Poster Exhibit Task Force

The Posters Exhibit Task Force enhances the educational value of the Academy Meetings by administering poster exhibits, poster discussion sessions, and poster awards. Poster abstracts are solicited, blind reviewed, and graded by peer review for selection as poster exhibits or poster discussions. The Task Force develops guidelines and monitors posters for quality educational content.

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2017 Annual Meeting Program Submissions

Poster Abstracts

American Academy of Dermatology
74th Annual Meeting
March 4-8, 2016
Washington, DC
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AB230 Pigmentary Disorders and Vitiligo
AB233 Psoriasis and Other Papulosquamous Disorders
AB281 Surgery—Cosmetic
AB283 Surgery—Dermatologic
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AB292 Wound Healing and Ulcers
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ACNE

3807
A multicenter clinical trial to evaluate the safety and efficacy of two OTC acne regimens comparing sonic to manual cleansing in individuals with mild to moderate acne vulgaris

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Background: The first line of defense in acne treatment for consumers typically starts with the use of over-the-counter acne treatment products. In this parallel-arm, multicenter (6 sites), 12 week study, we evaluated two methods of facial cleansing (sonic versus manual) and OTC acne products on tolerance and efficacy in subjects with mild to moderate acne.

Objective: To evaluate the tolerance and efficacy of a sonic skin cleansing brush and OTC acne treatment regimen compared to manual cleansing and a leading OTC acne treatment regimen.

Methods: Eighty-two subjects (male and female between ages of 18-50) with mild to moderate acne [0-2 cysts maximum, ≥12 inflammatory lesions (papules/pustules) and ≥10 non-inflammatory lesions (blackheads/whiteheads) on the face] were enrolled in this 12 week study comparing two methods of facial cleansing and OTC acne treatment regimens. Group 1 were assigned use of a treatment cleanser and treatment lotion plus the addition of a sonic skin care brush for facial cleansing to use over the course of the study while group 2 were assigned use of the leading OTC acne treatment regimen (cleanser, toner and lotion) and to clean their face manually. Participants were excluded from the study if taking medications for the treatment of acne. Subjects were stratified between the two treatment regimens at baseline based on acne severity to ensure that the treatment groups were balanced. At each visit (baseline, 2 days, 7 days, 4 weeks, 8 weeks and 12 weeks), trained investigators evaluated subjects for the condition of their acne (non-inflammatory lesions, inflammatory lesions, and overall acne assessment) as well as objective tolerance parameters (erythema, dryness, edema, and peeling). In addition, the subjects were asked to evaluate subjective tolerance parameters (itching, tingling, stinging, burning, and tightness).

Results: Both treatment groups (sonic cleansing versus manual cleansing groups) showed significant improvement from baseline for all acne parameters at each visit with no significant difference between the groups. The group assigned use of the sonic cleansing brush (group 1) showed significantly better reduction in non-inflammatory lesions than the group assigned manual cleansing (group 2) at weeks 8 and 12 (P = 0.082 and 0.024, respectively). Objective and subjective tolerance measures indicated that both the sonic and manual treatment regimens were well tolerated.

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AB1

3543
Activity of dapsone versus community and hospital bacterial pathogens from the CANNARD study

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Background: Topical dapsone gel is a sulfone antibiotic approved for acne treatment. Numerous in vitro and in vivo studies have been conducted during dapsone gel clinical trials and it is unclear whether (1) dapsone has antimicrobial activity with clinical relevance in dermatology and (2) dapsone could affect the normal microbiome of facial skin where it is usually applied. This study assessed in vitro activity of dapsone vs Gram-positive and Gram-negative bacterial pathogens obtained from patients with infections.

Methods: CANNARD is a national surveillance system of antibiotic resistance in Canada. Antimicrobial susceptibility was assessed using CLSI broth microdilution method. Fifteen centers collected 5,513 isolates from blood, respiratory tract, urine, and wounds. MIC panels were prepared at the Health Sciences Centre in Winnipeg, Canada.

Results: Dapsone demonstrated relatively poor activity versus Gram-negative bacilli with a MIC50/MIC90 in the range of 512 µg/ml and >512 µg/ml, respectively. In contrast, dapsone demonstrated activity versus Gram-positive cocci such as Staphylococcus, Streptococcus, and Enterococcus: several strains of S epidermidis had MICs of 32 and 64 µg/ml, there were strains of E faecalis with MICs of 8, 16, 32 and 64 µg/ml, and several strains of S faecium demonstrated dapsone MICs of 4 to 64 µg/ml.

Conclusions: Dapsone has demonstrated antimicrobial activity in vitro. Whether this activity is part of the mechanism of action of topical dapsone in acne remains unclear. In vitro there are few commercials that need to be challenged skin concentration data in the literature about dapsone; however, topical dapsone as a 2% nanoeumulsion has shown very high (1196-3857.54 µg/cm²) local skin concentrations. At these levels, topical dapsone would be expected to affect the skin flora of patients with acne (especially Gram-positive cocci, such as Staphylococcus and Streptococcus). These concentrations are multiple times higher (20×1000×) than the dapsone MICs found of many MSSA, MRSA, S epidermidis, S faecalis, and S pyogenes; any of which may be present on the skin of acne patients. Whether this results in resistance to dapsone (ie, in Gram-positive cocci such as Staphylococcus and Streptococcus) or more importantly results in resistance to chemically unrelated antimicrobials is currently unknown.

Supported by Galderma Laboratories, LP

3041
A patient with erythematotelangiectatic, papulopustulose and ocular forms of rosacea successfully treated by perioral doxycycline and local therapy - a case report

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Aim: A 32-year-old patient suffered from erythematotelangiectatic and papulopustulose forms of rosacea accompanied with serious keratopathy for 1.5 year. In the beginning of the problems the patient herself used local corticoids for 3 months. Following treatment with local metronidazole was without any effect. The patient had no skin therapy in the last 6 months. She was in a follow-up of an ophthalmologist treated by artificial tears only.

Methods: A therapy with perioral doxycycline was administrated, local metronida- zole cream was applied. Clinical state of skin on one hand and ophthalmological finding on the other hand were followed.

Results: Skin troubles reduced quickly. After healing of most papules an application of brimonidin gel was started. The doxytene therapy was finished after 6 months. At that time skin was healed except a facial erythema. Keratopathy was gradually cleared and later diminished completely after 5 months of perioral doxycycline treatment. The patient is still in a follow-up of our Acne clinic. She is applying local cream with azelaiac acid and brimonidin gel by now. She is regularly checked-up by an ophthalmologist.

Conclusions: In the presence of papulopustulose and ocular forms of rosacea, perioral doxycycline can be tried as the first line treatment. A positive effect not only on skin, but also on ocular troubles can be expected. Cooperation with an ophthalmologist is necessary.

Commercial support: None identified.

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3544
Adapalene 0.3%/benzoyl peroxide 2.5% gel for the treatment of severe inflammatory acne: A randomized, double-blind, parallel-group, controlled study

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More effective therapies are needed in the specific treatment of severe inflammatory acne vulgaris. This multicenter, randomized, double-blind, parallel-group, controlled study compared the efficacy and safety of adapalene 0.3%/benzoyl peroxide 2.5% (0.3%/A/BPO) topical gel vs vehicle in subjects with moderate to severe acne (overall population [OP]; and in a subpopulation of the OP [severe acne subjects only; severe population [SP]). The study also compared 0.3%/A/BPO to adapalene 0.1%/benzoyl peroxide 2.5% (0.1%/A/BPO) topical gel in the SP but the study was not powered to compare the active groups. Subjects were randomized to receive 0.3%/A/BPO, 0.1%/A/BPO (benchmark) or vehicle (comparator) once daily for 12 weeks. Co-primary efficacy endpoints were success rate at week 12 (percentage of subjects rated "clear" or "almost clear," ≥3 grade IGA improvement), and change in inflammatory (IN) and noninflammatory (NIN) lesion counts from baseline to week 12. Secondary efficacy endpoints were percent changes in IN and NIN lesion counts. Safety endpoints were incidence of adverse events (AEs) and local tolerability signs/symptoms. In the severe inflammatory acne population, a total of 252 subjects were randomized with 106, 112 and 34 subjects in the 0.3%/A/BPO, 0.1%/A/BPO and vehicle groups, respectively, reaching a high rate of study completion (98.5%). For success rate, 0.3%/A/BPO was superior to vehicle, with a treatment difference of 20.1% (31.9% vs 11.8%; 95% Confidence Interval [CI]: 6.0%, 35.2%); any of which may be present on the skin of acne patients. Whether this results in resistance to dapsone (ie, in Gram-positive cocci such as Staphylococcus and Streptococcus) or more importantly results in resistance to chemically unrelated antimicrobials is currently unknown.

Supported by Galderma Laboratories, LP
Background: Chloracne is a chemical-induced skin eruption resembling acne vulgaris. Exposure to polyhalogenated aromatic hydrocarbons in particular leads to the development of comedones, cysts, and pustules, as well as systemic effects in severe instances. Several cases of chloracne have been reported in forests at which lumberjacks, farmers, and military veterans exposed to pesticides and herbicides.

Case report: A 49-year-old African American male with hepatitis C presented with a 25-year history of persistent acne. He had mild adolescent acne; however, in his mid-twenties, he developed comedones on his forehead and cheeks eventually spreading to his ears, back, arms, and scrotum. When the acne first appeared, the patient was working as a carpenter, lumberjack, and landscaper, and often used fertilizers containing 2,4-dichlorophenoxyacetic acid (2,4-D), including Weed and Feed. On examination, the patient had numerous closed and open comedones on his forehead, malar checks, and eyelids, a distinct cluster of comedones overlying the temples, and comedones and small straw-colored cysts in the postauricular triangles. There was a closed comedone on the base of the penis and open comedones on the scrotum and inginal skin folds. The patient’s characteristic acne in the setting of work-related chemical exposure was consistent with the diagnosis of chloracne. Treatment with topical tretinoin 0.05% cream was initiated.

Discussion: Chloracne was first described in 1889 by Herxheimer as a chlorine-induced acneiform eruption. Systemic absorption of chloracnogens induces a distinctive acne-like picture that initially presents on the malar crescent and postauricular triangles; later affected sites include the penis, scrotum, temples, cheeks, shoulders, and trunk. Lesions usually spontaneously regress within 6 months but may persist up to 30 years due to the long half-lives of responsible chemicals. Chloracne is often resistant to typical acne interventions. We believe that our patient’s contact with Weed and Feed placed him at high risk for development of chloracne. Chloracne, long known to be the main ingredient of 2,4-D, led to a resistant acne-like eruption affecting characteristic body sites, which upon review of the literature has not been reported previously. We hope that our patient’s chloracne will improve with the use of tretinoin cream. More important, however, is further recognition and elimination of causative agents to prevent chloracne in the future.

Commercial support: None identified.

3244
Age and gender as predictors of treatment outcomes with once-daily dapsone 7.5% topical gel for acne vulgaris
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Introduction: A new, once-daily topical dapsone gel 7.5% (DAP) was developed to simplify topical anti-inflammatory acne treatment relative to twice-daily Azogra Gel 5%. Pooled data from 2 identical phase 3 randomized, double-blind, vehicle (VEH) controlled trials of DAP for acne assessed the effects of age, gender, and race on treatment outcomes.

Methods: Patients with moderate acne (20-50 inflammatory lesions, 30-100 noninflammatory lesions, and Global Acne Assessment Score (GAAS) of 3) were randomized to once-daily treatment for 12 weeks with DAP or VEH. Co-primary efficacy measures were GAAS responder rates (GAAS-RR; no or minimal lesions at week 12) and changes in inflammatory and noninflammatory lesions. In the pooled analysis, efficacy variables were analyzed by age group (12-17 [adolescents] and ≥18 years [adults]), gender, and race (white and non-white).

Results: Overall, the intent-to-treat analysis included 4340 patients (DAP, n = 2178; VEH, n = 2178). 50.5% were adults, 55.8% were female, and 57.4% were white. At baseline, all but one had a GAAS of 5, mean inflammatory and noninflammatory lesion count was 29.4 and 47.2, respectively. Significant improvements (P < 0.001) for DAP vs VEH on co-primary outcomes were observed at week 12. GAAS-RR was significantly greater (P < 0.001) for DAP (29.8%) vs VEH (21.1%). Significantly greater (P < 0.001) percent reductions for DAP vs VEH, respectively, were seen in inflammatory (45.6% vs 48.1%), noninflammatory (45.1% vs 39.4%), and total (48.8% vs 42.8%) lesions. In all subgroups, greater improvements with DAP vs VEH were noted in GAAS-RR and change in all lesion counts. Greater improvements in all outcome measures were seen in adults vs adolescents and in females vs males; results for whites and non-whites were similar. For GAAS-RR, DAP treatment (P < 0.001), age (P < 0.001), and gender (P = 0.029) were significant predictors of improvement, based on analysis of covariance. Incidence of adverse events was similar between subgroups of age, gender, and race and between treatment groups.

Conclusion: Once-daily DAP improved acne severity vs VEH for all subgroups. Improvements were greater in adults vs adolescents and in females vs males. Results were similar for whites and non-whites.

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2357
Clinical and anthropometric study of hidradenitis suppurativa in a prospective cohort of 77 patients
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Introduction: Hidradenitis suppurativa (HS) is an orphan disease which affects the pilosebaceous unit and it is frequently underdiagnosed.

Objective: To describe the epidemiological, anthropometrical, and clinical characteristics of a cohort of patients prospectively recruited during a period of three months.

Patients and methods: We describe epidemiological and clinical features of 77 patients with hidradenitis suppurativa. They were included in an electronic database from January to March 2015 in a monographic office of our dermatology department. They were dispatched to our office from the emergency area, surgery departments, or from another dermatology office. Anthropometric measurements were performed with a Tanita SC-240MA device. Data sets were analyzed with SPSS 17® software.

Results: 77 patients were included in our study (45 were male and 32 were female). Mean age of disease onset was 23.9 years, and two incidence peaks were noted (around 18 years old and 28 years each). Delay in diagnosis was common. Mean body mass index (BMI) was 30 ± 4. Electric bioimpedanciometry study showed that mean body fat content in our series was 35.9% of the total body mass, and mean visceral fat was 12.1%. Physician Global Assessment (PGA) scale; Hurley index and Sartorius index where used to evaluate severity disease. We noted that male sex, smoking habit and a positive family history of hidradenitis suppurativa were related to severity. On the other hand, PGA scale and Sartorius index seemed to be more reliable than Hurley index to quantify HS severity. Submamillar fold, armpit, and groin were significantly affected in women, whereas scalp, face and trunk were commonly affected in men. Furthermore, low BMI was related with scalp, neck and trunk distribution of the lesions, while high BMI was related with involvement of submamillar and intergluteal area.

Discussion: HS onset has been more frequently described in the second decade of life in the existing medical literature, but interestingly in our cohort we noticed a bimodal distribution. However, three cases were younger than 18 years old, and we did not find a significant relationship between early onset and family history of HS. Several clinical patterns have been suggested in the previous literature. However, we could not identify them in our series. In our cohort, male were more likely to have head and neck involvement, whereas lesions on skin folds are more frequent in women.

Commercial support: None identified.

2880
Chloracne in a suburban landscaper: A case report.
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Background: Chloracne is a chemical-induced skin eruption resembling acne vulgaris. Exposure to polyhalogenated aromatic hydrocarbons in particular leads to the development of comedones, cysts, and pustules, as well as systemic effects in severe instances. Several cases of chloracne have been reported in forests at which lumberjacks, farmers, and military veterans exposed to pesticides and herbicides.

Case report: A 49-year-old African American male with hepatitis C presented with a 25-year history of persistent acne. He had mild adolescent acne; however, in his mid-twenties, he developed comedones on his forehead and cheeks eventually spreading to his ears, back, arms, and scrotum. When the acne first appeared, the patient was working as a carpenter, lumberjack, and landscaper, and often used fertilizers containing 2,4-dichlorophenoxyacetic acid (2,4-D), including Weed and Feed. On examination, the patient had numerous closed and open comedones on his forehead, malar checks, and eyelids, a distinct cluster of comedones overlying the temples, and comedones and small straw-colored cysts in the postauricular triangles. There was a closed comedone on the base of the penis and open comedones on the scrotum and inginal skin folds. The patient’s characteristic acne in the setting of work-related chemical exposure was consistent with the diagnosis of chloracne. Treatment with topical tretinoin 0.05% cream was initiated.

Discussion: Chloracne was first described in 1889 by Herxheimer as a chlorine-induced acneiform eruption. Systemic absorption of chloracnogens induces a distinctive acne-like picture that initially presents on the malar crescent and postauricular triangles; later affected sites include the penis, scrotum, temples, cheeks, shoulders, and trunk. Lesions usually spontaneously regress within 6 months but may persist up to 30 years due to the long half-lives of responsible chemicals. Chloracne is often resistant to typical acne interventions. We believe that our patient’s contact with Weed and Feed placed him at high risk for development of chloracne. Chloracne, long known to be the main ingredient of 2,4-D, led to a resistant acne-like eruption affecting characteristic body sites, which upon review of the literature has not been reported previously. We hope that our patient’s chloracne will improve with use of tretinoin cream. More important, however, is further recognition and elimination of causative agents to prevent chloracne in the future.

Commercial support: None identified.
Clinical ultrasound agreement of acne scar
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Morphological evaluations of acne scars are still a major challenge, because most of them using only naked-eye. It is an ongoing problem, common and extremely difficult to treat, and rarely significantly risky for health, despite causing physical and psychosocial suffering. Surgical techniques are limited in their effectiveness and they can have adverse effects. The aim of this study was to assess the agreement between clinical morphology and ultrasound of acne scars (kappa coefficient). The efficacy of the therapy depends largely on the nature of the scar then each kind of cicatrix should receive a particular treatment. The ultrasound with 20-25 MHz frequency allows the operator to view both the epidermis and dermis being an important, noninvasive, non-ionizing and low-cost diagnostic tool in dermatology. This study evaluated whether there are benefits of using ultrasound examination for morphological identification of acne scars. The objective was to verify if there is an agreement between the clinical diagnostics and the ultrasonographic morphology of acne scars. A cross-sectional study on clinical and ultrasonographic morphology of acne scars was performed on 30 patients of both sexes (67% female and 33% male), aged between 15-50 years (median 27.00, average 28.47, ± 8.61). From 30 patients, 29 had boxcar scars, 24 had rolling and 22 had icepick. Most boxcar scars (82.75%) can be shown on the ultrasound. However, only 20.83% of the rolling type and 36.6% of icepick scars could be visualized. We observed that there was moderate agreement, according to Landis and Koch, between clinical morphology and ultrasound of acne scars (kappa 0.385, 2 = 8.71, P < 0.001). In this analysis, the type of acne scar is the only variable that influenced the correlation (X-squared = 22.24, df = 2, P < 0.001). Icepick scars and rolling type decrease the chance of ultrasound agreement when compared to the boxcar scar type by regression Logistic analysis (P < 0.001). These results suggest that high-frequency ultrasound is a useful technique for noninvasive evaluation of the morphology of acne scars, especially Boxcar type. However, the professional who will perform this procedure must be well trained and the ultrasound machine should have a frequency between 20 to 25 MHz with the highest image resolution. We believe that more studies are necessary to better use the technology in dermatology and, thus, be a strategy for quantitative evaluation of acne scars after treatment.

Supported by: None identified.

Clinical evaluation of a facial serum containing salicylic acid, capryloyl salicylic acid, HEPES, glycolic acid, citric acid, and dioic acid controlling skin oiliness and improving postinflammatory hyperpigmentation in subjects with acne vulgaris
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Introduction: Acne is a chronic disorder of the pilosebaceous gland characterized by inflammatory papules, pustules, open and closed comedones, cysts, and nodules affecting both adolescents and adults. One specific concern common to acne patients is the occurrence of postinflammatory hyperpigmentation (PIH). Previous studies have shown that an anti-acne treatment containing salicylic acid, capryloyl salicylic acid, HEPES, glycolic acid, citric acid, and dioic acid has similar efficacy as tretinoin 0.025% and as a combination of 5% benzoyl peroxide + 1% clindamycin in treating skin of acne vulgaris patients.

Objective: To evaluate the efficacy of a topical formulation containing salicylic acid, capryloyl salicylic acid, HEPES, glycolic acid, citric acid, and dioic acid on the control of skin oiliness and improvement in PIH on the face of healthy subjects with acne vulgaris.

Materials and Methods: A total of 42 patients (men and women) aged between 18 to 40 years with Fitzpatrick skin types II to IV with combined to oily skin were enrolled into the study. They were treated for 7 days with the investigational product twice daily for 56 days. The patients received a neutral standardized soap for facial cleansing and a sunscreen SPF 50 to be used during the study. The grade and the number of PIH marks were dermatologically evaluated and sebum production was measured by Sebumeter. The measures were taken at day 0, 7, 28, and 56. Standardized photographs were taken using the VISIA photographic equipment.

Results: There was a statistically significant decrease (95% confidence interval) in the clinical grade and number of PIH marks in both 28 and 56 days. The number of PIH marks also showed a significant decrease of 29.4% after 56 days of treatment. The Sebumeter data showed a significant decrease of 50.7% in sebum production after 7 days of treatment and remained under control for the entire 56 days (p value < 0.001 for all comparisons).

Conclusions: Daily treatment with the investigational product showed a significant decrease in the grade and number of PIH marks. Daily serum use also demonstrated a significant reduction in sebum production, which remaining stable for 56 days.

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Clinical evaluation of the tolerance and efficacy of a dermocosmetic skin care product containing retinal 0.1%, dienoyl and POC enzyme in subjects presenting acne vulgaris and postinflammatory erythema and hyperpigmentation
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Introduction: Acne vulgaris is characterized by presence of retentional and inflammatory lesions. They can lead to persistent postinflammatory lesions (PLL), erythema and/or hyperpigmentation. Few studies have evaluated the cosmetic product benefits in mild to moderate acne by paying particular attention to PLL. This study was performed to assess the effect of a cosmetic product on acne lesions and postinflammatory sequelae reduction.

Material and methods: 60 subjects aged 12 to 35 yo (mean age: 19 yo) presenting mild to moderate acne on the face were included with at least 10 retentional lesions. A 5 inflammatory lesions and at least 1 PLL. The product was applied once daily for 42 days. Clinical assessment was performed at D0, D22 and D45 using lesion count (Lucky method) and IGA of acne severity. Dermatologists evaluated the product tolerance using a 4 point scale (0-3). The effect on PLL was evaluated by subjects and investigators using a 4 point scale (0-3). Subjects evaluated the acne global improvement, their quality of life (CADI) and the cosmetic acceptability through a questionnaire.

Results: After 21 and 42 days of application, both retentional and inflammatory lesions decreased significantly (65%, 21% P < 0.001 respectively at D45). The mean IGA was improved from mild to almost clear at D22 and D45. The product was efficient on PLL reduction by investigators and subjects from D22. The tolerance was good with few transient side reactions reported (n 5/60) and no discontinuation. The subjects’ quality of life was improved and the product acceptability was demonstrated for most subjects.

Conclusion: The dermocosmetic product application improved the mild to moderate acne with a highly significant effect on the reduction of inflammatory lesions and PLL. The appreciation of the product cosmetic qualities and the good tolerance are main assets for adherence.

Supported by PFDC.
Combination of skin micro-needling and topical application of tranexamic acid followed by retinoid: A pilot study for treatment of persistent post acne erythema.

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Background. Acne is considered as one of the most common skin disease which has many etiological factors. Many treatment regimens of acne are being used with very successful results. However in the process of healing of the inflammatory lesions, they may leave a post acne erythema, also referred as postinflammatory erythema (PIE), which is defined as lesions of erythematous macules. Postacne erythema lesions may improve with time, or may persist for months and it even may end up by acne scarring. Variables methods of treatment has been tried to treat persistent post acne erythema including topical treatment with retinoids, intensive light therapy (IPL), or pulsed dye laser with variable results of success. Skin micro-needling is a technique which helps to facilitate skin healing and repair. Tranexamic acid (TA) is an antibrinolytic agent that shows a positive effect on wound healing in several studies and it showed benefits in treating skin diseases like melasma, rosacea erythema and ultraviolet induced pigmentation. Vitamin C, known for its antioxidant properties and its key role in collagen production and skin regeneration.

Methodology. Thirty two patients with persistent post acne erythema (more than 3 months duration) were involved in the study. Briefly, the skin micro-needling were done using a 1.5 mm dermaroller followed by application of 5 ml of TA (50 mg/ml) and Vitamin C (10 mg/ml) in the right side of the face, while the left side was treated with micro-needling only. The treatment was repeated for four times, 15 days gap. Counts of post acne erythematous macules were done on base line, 2 times, 4 weeks, and 6 weeks after the treatment. Results: The two sides were comparable with regard to the baseline counts. Decrease of the mean lesion counts of the post acne erythematous macules was significantly more on the right side of the face than on the left side (repeated measures analysis, P < 0.01). No side effects were reported from any patient after the treatment. Possible mechanisms of the therapeutic effect is the synergistic skin repair effects of micro-needling, TA and vitamin C.

Conclusion. A combination of skin micro-needling and topical application of TA and vitamin C may be considered as new and fast treatment for persistent post acne erythema. More studies need to be carried out to prove the exact mechanisms of how the technique improves the persistent post acne erythema.

Commercial support. None identified.
Evolution of acne assessments and impact on acne medications: An evolving imperfection paradigm

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Background: Outcomes for success in acne trials include statistically significant differences from baseline between treatment arms in lesion counts (comedonal, inflammatory, and/or total) and in categorical improvement in Investigator Global Assessment (IGA). However, IGA scales are subjective and standardized and there have been important differences in clinical trial endpoints.

Objectives: We evaluated differences in outcome measures and definition of success in acne trials, and their impact on FDA approval and indications for acne medications.

Methods: Review of acne clinical trial literature, prescribing information, and regulatory guidelines for currently approved acne medications in the United States.

Results: The impression of overall acne severity is subjective and arises from a composite of lesion size/density/type plus lesion distribution and intensity of involvement at affected sites. Numerous IGA scales exist which are similar on cursory evaluation, but have a number of important variations. Scales vary in number of categories (4-7), inclusion of skin discoloration (erythema present or not), guidance about area of involvement (eg, < half, > half, whole face), or overall quantity of lesions present (recent, rare, some, few). One scale defines “clear” as including rare open and closed comedones. Finally, most scales mix inflammatory and non-inflammatory lesions; yet it is very uncommon for these lesions to respond at the same therapy in the same fashion over the same time frame. There are also differences in definitions of global success: two grade improvement or achievement of clear/almost clear. Outcome success may not be accurately translated into clinical judgment and care and terminology for indications, as most currently approved acne drugs are indicated in the USA ‘for treatment of acne vulgaris’ which at times is independent of efficacy shown on specific lesion types and inclusion severity in clinical trials.

Conclusions: Variability in investigator global assessment scales and definitions of success confound comparison of acne trial results. Harmonization and standardization of these factors will facilitate meta-analytics and treatment selection in patient care. Outcome measure success have not consistently been incorporated into acne medication indications.

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3500

Fixed-combination adapalene 0.3%/benzoyl peroxide 2.5% gel provides optimal percutaneous absorption compared to monad formulations of these compounds: A bioequivalence study

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Adapalene 0.3%/benzoyl peroxide 2.5% gel (0.3%/BPO) is a new fixed-combination topical agent for the treatment of acne. However, both active compounds are also available as monads to be used in association or as monotherapy. This study determined the effect of different treatment regimens on the percutaneous absorption of adapalene 0.3% gel and benzoyl peroxide (BPO) 2.5% gel in ex vivo human skin. Full-thickness (1.6–3.2 mm) human skin from three donors was mounted as dermal–connective membrane inserts of well culture plates. A dose of 10 μg/cm² of each formulation was applied on the skin surface (1 cm²) and 2 mL of phosphate buffer saline were added in the receptor compartment. Treatment regimens included: (1) 0.5% A/BPO, (2) BPO 2.5% for 10 minutes followed by adapalene 0.3%, (3) adapalene 0.3% for 5 minutes followed by BPO 2.5%, (4) BPO 2.5% for 10 hours followed by adapalene 0.3%, and (5) adapalene 0.3% for 10 hours followed by BPO 2.5%. Skin samples were collected at different (24°C, 5% CO₂) × 24 hours. Concentrations of adapalene and BPO equivalent (BPO-eq) (ie, benzoic acid after chemical transformation of BPO) were measured in the epidermis (including stratum corneum), dermis, and receptor fluid using high-performance liquid chromatography. BPO-eq extraction was performed using a bioequivalence criterion (estimated ratio within 0.8 and 1.25). Adaptalene was recovered mainly in the epidermis and to a very lesser extent in the dermis, regardless of treatment regimen, while the amount recovered in the receptor fluid was below the limit of quantification (0.002 μg/cm²). Based on bioequivalence acceptance criteria, results showed that all association regimens were different from 0.3%/A/BPO. The fixed-combination gel showed higher adapalene release compared to all monads as well as was demonstrated in the receptor fluid and to a lesser extent in the epidermis and the dermis, regardless of treatment regime. Furthermore, the results showed no difference between the association regimens and low release for adapalene 0.3% for 5 hours followed by BPO 2.5% which showed lower BPO-eq release when compared to that observed for 0.5% A/BPO. Fixed-combination 0.3%/BPO gel provides optimal percutaneous absorption of active compounds compared to association regimens and monad formulations of adapalene 0.3% and BPO 2.5%. There is no bioequivalence between the use of the fixed-combination and the use of different regimens of monad formulations.

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Hidradenitis suppurativa in children

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Background: Hidradenitis suppurativa is an inflammatory disorder associated with many comorbidities. Patients have been shown to have an increased risk of metabolic syndrome and associated cardiac risks. The disease generally occurs during the second or third decade of life. It is rare before puberty.

Objective: We sought to investigate the characteristics of hidradenitis suppurativa with onset in prepubescent versus postpubescent children.

Methods: A retrospective chart review of all dermatology clinic encounters over an 18-month period identified 93 patients with an appropriate diagnosis of hidradenitis suppurativa who are currently under age 18. Of those, 46 of the patients had data available for the age of puberty or that they were prepubescent. Of those 46 patients, 17 were identified with prepubescent onset of disease and 29 were identified with postpubescent onset.

Results: Of the 93 patients identified with hidradenitis suppurativa, 46 had data available for the age of puberty or that they were prepubescent. Of the 46 evaluable patients several differences were noted between pre- and postpubescent onset of disease. Gender differences were noted in that in patients developing hidradenitis suppurativa prior to puberty, 9 out of 17 (56%) were male as compared with 4 out of 29 (14%) in those with postpubescent onset (P = .004). Severity was also increased in the prepubescent onset patients with 53% vs 92% with Hurley stage 1, 35% vs 8% with Hurley stage II, and 18% vs 0% with Hurley stage III (P = .004) for patients with prepubescent vs. postpubescent onset. Family history showed a trend toward being more common in prepubescent onset patients, 40% vs 19% (P = .26).

Limitations: This was a retrospective review. Data points were missing for several patients.

Conclusion: Our results indicate that children who develop hidradenitis suppurativa prior to puberty are more likely to be male, have greater disease severity, and have a family history of the disease than those who develop the disease after puberty.

Commercial support: None identified.

Hidradenitis suppurativa: A human leucocyte antigen allele association study in Singaporean Chinese patients

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Introduction: Hidradenitis suppurativa (HS) is a chronic, relapsing follicular occlusive disease that causes significant morbidity in the form of pain, disfigurement, and psychosocial embarrassment to patients. Mutations in the PSEN1 gene have been identified amongst a few kindred with autosomal dominantly inherited disease. The gene product of PSEN1 has been shown to interact with major histocompatibility complex class I proteins. This study aims to evaluate if HS is associated with HLA allelic variations amongst Singaporean Chinese patients.

Methods: Singaporean Chinese patients with HS presenting to the acme clinic at the National Skin Centre, Singapore, were recruited between July 2014 to March 2015. Patients were assessed for demographic and clinical data. HLA genotyping was performed using sequence-based typing on genetic material extracted from peripheral blood mononuclear cells. This was compared with randomly selected, ethnic-matched controls.

Results: The sera of 20 HS patients were compared with 130 normal healthy controls. Four alleles, HLA-B*1501 (P = .011), HLA-B*5401 (P = .007), HLA-C*0602 (P = .054), and HLA-DRB1*1401 (P = .046), were significantly associated with HS in the initial analysis. Adjusted P values, corrected for the number of HLA alleles tested for, however, did not achieve statistical significance.

Conclusion: This is the first study investigating the association of HLA alleles with HS in Chinese patients. We have identified 4 alleles which may be associated with HS amongst Chinese patients. Further studies involving larger cohorts will be useful to confirm these associations.
How is the severity of hidradenitis suppurativa measured in clinical practice?

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Introduction & objectives: Hidradenitis suppurativa (HS) is a chronic inflammatory disease characterized by recurrent, painful skin lesions and significant negative impacts physically and psychologically. Hurley stage and Sartorius scale are two severity measures defined in the literature and used in clinical studies. However, evidence is scarce on the real-world use of HS severity measures in clinical practice. This study examined physician-reported use of HS severity measures in the US using a dermatologist survey.

Materials & methods: A web-based survey was conducted among 20 dermatologists recruited from a physician panel. Included physicians were asked to report the number of HS patients that they had cared for during the past year, and indicate which severity measures they routinely recorded in the medical charts for HS patients.

Results: Among the dermatologists surveyed, 80% were male and the majority was based in the South (60%) or West (35%) regions of the country. The median number of years in practice was 15, and the median number of all patients seen in the past year was 4400. Counts of abscesses (70%), counts of inflammatory nodules (50%), counts of draining fistulas (45%), and Hurley stage (20%) were the most commonly used methods for assessing HS severity. A Physician's Global Assessment scale (10%) was sometimes used, and Sartorius scale (0%) was not routinely used. Notably, 15% of the surveyed dermatologists reported not routinely using any severity measure for HS.

Conclusions: Based on physician report, the most frequently used HS severity measures in the US included counts of inflammatory nodules, abscesses, and draining fistulas, followed by Hurley stage and Physician's Global Assessment. A substantial proportion of physicians did not routinely record any HS severity measure. The importance of severity monitoring in HS is expected to increase as new systemic treatments become available.

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Modulation of TLR 2 by combined oral contraceptive in adult female acne

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Background: Recent studies have demonstrated an increased prevalence of acne in adult women. These patients are predominantly normoandrogenic and have some clinical differences when compared with the adolescent acne. The local glandular metabolism converts hormonal precursors to more active ones that increase the sebum production and turn these areas more prone to colonization by Propionibacterium acnes (P. acnes). Toll-like receptor 2 expressed by inflammatory cells plays a crucial role in the innate immune response to this bacterium. An efficient option for women that may act in different factors related to acne is the combined oral contraceptives (COC). These drugs are able to control the androgen hormonal production and block some androgenic receptors, reducing the sebum production and turning the environment less favorable to the proliferation of P. acnes. The aim of this study was to investigate how COC can modulate the expression of TLR-2 receptor as compared to clinical progression of adult female acne.

Objectives: To increase the knowledge about the role of COC in the treatment of adult female acne in relation to possible modulation of TLR 2 expression in the epidermis and sebaceous gland.

Methods: Two biopsies were performed in lesion and no lesion area, at the midline region of the face in twenty patients with adult female acne and ten age-matched controls. The skin samples were analyzed by immunohistochemical techniques. Anti-TLR2 polyclonal antibodies were used to determine the precise location of TLR2 and a morphometric analysis of its expression was performed with a specific software. Subsequently, the acne patients were treated with COC composed of 3 mg drospirenone (DRSP) and 0.02 mg ethinyl estradiol (EE), during 6 months. After that a third biopsy was performed for comparative analysis.

Results: It was possible to demonstrate the exact distribution of this receptor (cytoplasmic). Its overexpression in the lesion and no lesion area compared with the control group was observed. The reduction of the TLR2 expression in epidermis and sebaceous gland indicated the possible modulation by the use of COC.

Conclusion: The reduction of the expression by COC indicates a possible antiinflammatory effect of these drugs. So, as far as we know this is the first time that another mechanism of action for COC in the treatment of adult female acne can be suggested.

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Morbidian disease: A case report with spontaneous resolution over time

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Introduction: Solid facial edema or Morbidian disease is an unusual complication of acne vulgaris. It consists of woody edema of the face that tends to distort the midline. It can also be found in other diseases, such as rosacea, or as a primary disease. Many treatments have been reported in the literature, with different success rates. Isotretinoin, ketotifen, and oral corticosteroids are the most useful treatments reported. Nevertheless, there aren’t 100% successful treatments, and therapeutic follow-up is the best approach.

Clinical case: A 16-year-old boy presented with hard non pitting facial edema affecting both superior eyelids, glabella, and forehead. Sinus RX, CT scan, and MRI of head and neck were reported to be normal. Rinoscopy and fibroscopy of nose, throat, and larynx did not show any sign of disease. Finally, Morbidian disease was diagnosed. Treatment was started with isotretinoin 50 mg/day and prednisone 30 mg/day for 6 months. Gradual improvement in facial edema was seen. One month after finishing the treatment, the disease recurred with lower edema with variations throughout the day. No active treatment was performed at this moment, and the patient was monitored every 6 months. Swelling decreased slowly over time, remaining just mild edema at glabella and forehead. After three years of follow-up, no worsening of the disease was noticed. Discussion: We report a case of solid facial edema with incomplete response to isotretinoin and prednisone and further regression over years. Follow-up of this patient suggests that Morbidian disease could be a self-healing disease and should be considered when making therapeutic attempts.

Commercial support: None identified.

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Nonclinical toxicology of BXP-01, a novel topical formulation for treatment of acne vulgaris

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Acne vulgaris is a common inflammatory skin condition considered as a chronic disease with accompanying aesthetic and social impacts on the patients. Propionibacterium acnes (P. acnes) a common bacterial organism, inhabits human skin and has been implicated in the pathogenesis of inflammatory acne. For patients with severe acne, oral treatments are often used, and sometimes in combination with topical products. Many of these current topical therapeutics show the lowest efficacy in standard treatment regimens and immunohistological examination of the organism due to overuse of these drugs is becoming an increasing problem. In addition to antibiotic resistance, oral antibiotics also result in various systemic side effects, that if repurposed to a topical form would be targeted and more effective. We have developed a novel, proprietary topical gel formulation (BXP/01) for acne. The active ingredient (API) has previously only been shown to be stable in lipophilic nonsoluble forms. The API is fully solubilized and stable in BXP-01 which is hydrophilic, nonoily, easy to use, and capable of penetrating into the skin where P. acnes typically reside. In our previous in vitro and in vivo studies, BXP-01 has demonstrated direct delivery of API to the epidermis and sebaceous glands at efficacious levels. In addition, preliminary in vivo rat studies show that the API does not alter the systemic circulating levels of the active ingredient. In vitro and in vivo sensitization studies were also conducted. Our findings suggest that BXP-01 via its direct follicular targeting capability provides a promising tool in topical acne therapy. Plans for evaluation of BXP-01 for clinical efficacy in acne vulgaris are in progress.

Commercial support: None identified.

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Once-daily topical dapsone gel 7.5% for acne vulgaris: Pooled efficacy and safety data from two pivotal studies

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Introduction: New, once-daily dapsone gel 7.5% (DAP) was developed to simplify topical antiinflammatory acne treatment relative to twice-daily Azzone® Gel 5%. Pooled data from 2 identically designed, randomized, double-blind, vehicle (VEH)-controlled pivotal studies of DAP for acne assessed overall safety and efficacy of once-daily DAP treatment.

Methods: Both studies enrolled adolescents and adults (aged ≥12 years) with moderate acne (20-50 inflammatory lesions, 30-100 noninflammatory lesions, and ≥10 dermoscopic Assessment Score (DAS) lesions) at the baseline visit. All patients were randomized to once-daily treatment for 12 weeks with DAP or VEH. Coprimary efficacy measures were GAAS responder rates (GAAS-RR, GAAS of 0 or 1 (none/minimal)), and change from baseline in inflammatory and noninflammatory lesion counts at week 12. Pooled analysis combined data from the DAP and VEH groups in both studies. Key safety outcomes were treatment-emergent adverse events (TEAEs) and local tolerability.

Results: Overall, 4340 patients (DAP, n = 2162; VEH, n = 2178) were treated; 50% (2055/4289) were female, 55% (2404/4340) were white, 22% (948/4340) were Hispanic, and 21% (915/4340) were Asian. Adverse drug reactions reported in ≥2% of participants treated with DAP vs VEH, respectively, were dryness (1.2% vs 1.0%), pruritus (1.1% vs 1.0%), scaling (1.0% vs 0.9%), burning (0.9% vs 0.8%), and stinging (0.9% vs 0.8%). No serious treatment-emergent adverse events were reported, and no drug-related deaths were reported.

Discussion: DAP was generally well tolerated; safety and tolerability were consistent with those previously reported for DAP. Our findings support the once-daily formulation of DAP for acne vulgaris treatment, and highlight the long-term safety profile of DAP over 12 weeks of treatment.

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Progression from mild hidradenitis suppurativa (HS) to moderate-to-severe (m2s) HS is associated with a substantial economic burden.

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Background: HS is a chronic inflammatory skin disease. Current treatments (tx) can help reduce the extent and progression of HS severity, but some patients (pts) eventually progress to more severe HS. This study estimated the risk and economic burden of worsening disease that may represent a transition from mild to m2s HS. Methods: Adults receiving tx for mild HS ([≥ 2 ICD-9 diagnoses of 705.83) were selected from a large US claims database (1998-2014). The index date was defined as the tx prescription date for 1 of the following mild HS therapies: antibiotics, antymycobacterials, antinfективs, corticosteroids (topical or oral for <90 days), or intraarticular steroids (<4 injections/year). Pts had chronic health plan enrollment for ≥12 months before and after the index date. Pts with indicators of possible progression to m2s HS within 12 months before or up to 7 days after index date were excluded. Indicators of flare or possible progression to m2s HS were defined as: inpatient (IP) or emergency room admission for HS, HS skin surgery, dermatologist more visits; setting anxiety when compared to a control group. Unfortunately, in addition to acne, many patients have residual postinflammatory hyperpigmentation (PIH) which may also contribute to psychosocial effects. Many patients would seek more aggressive treatment for the residual HS manifestation and anxiety (flare) (have period). Healthcare resource utilization and costs (2014 US $) were compared between cohorts using multivariate generalized linear regression models.

Results: A total of 904 mild HS pts met criteria; 240 (25.4%) pts had a worsening episode during the study period and 674 (74.6%) had no indicator of progression. Median age was 41 and 38 for pts who did and did not progress. Pts who progressed had significantly more IP visits (adjusted incidence rate ratio [IRR] 1.71), outpatient (OP) visits (IRR 1.52), and other medical services (IRR 1.65) than pts who did not progress (all P < 0.05). Similarly, compared with pts who did not progress, pts who progressed incurred greater total healthcare costs by $4,867 (unadjusted: $9887 vs $5076), mainly driven by greater OP costs by $3,455 (unadjusted: $5708 vs $2511; all P ≤ 0.05).

Conclusions: One in 4 pts had an episode consistent with flare or possible progression from mild to m2s HS ≤1 year after tx initiation for mild HS. Pts with signals of progression had worse outcomes and presented a major economic burden to the healthcare system.

Design, study conduct, and financial support for the study were provided by AbbVie; AbbVie participated in the interpretation of data, review, and approval of the abstract; all authors contributed to the development of the publication.

Risk and economic burden of antibiotic failure in patients with moderate to severe hidradenitis suppurativa

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Background: Although there are no clear guidelines for the treatment of hidradenitis suppurativa (HS), in clinical practice, patients (pts) are frequently treated with antibiotics. Little is known about the risk of antibiotic treatment failure for HS pts and the associated economic burden.

Objectives: To estimate the risk and economic burden of antibiotic failure in HS pts.

Methods: In a large US claims database (1998-2014), adults with HS ([≥ 2 ICD-9 diagnoses of 705.83) were identified. The index date was defined as the 91st day after the antibiotic course started. Pts were continuously enrolled in their healthcare plan for ≥6 months (baseline period) and ≥90 days after the index date (study period). Pts were classified into 1 of 2 categories: 1) pts with indicators of failure on antibiotics and 2) pts without antibiotic failure based on whether they had ≥1 indicator of antibiotic failure (ie, inpatient or emergency room admission for HS, skin surgery for HS, or the initiation of another HS treatment) during the study period. Time to the first indicator of antibiotic failure was assessed using Kaplan-Meier analyses. Healthcare resource utilization (HRU) and costs (2014 US $) during the study period were compared between cohorts using multivariate generalized linear regression models.

Results: A total of 402 pts were selected with a median age of 47 for pts with indicators of failure on antibiotics and 45 for pts without antibiotic failure. Over the 12-month study period, 272 pts had an indicator of antibiotic treatment failure and 130 pts did not. Median time to first antibiotic failure was 135 days. After adjusting for potential baseline confounding factors, pts with antibiotic failure had significantly higher HRU and costs, pts with antibiotic failure had more inpatient days (incidence rate ratio [IRR] 4.82, outpatient days (IRR 1.31) compared to pts without antibiotic failure (all P < 0.05). When compared to pts without antibiotic failure, pts with antibiotic failure also incurred higher healthcare costs ($14,024 vs $8850), mainly driven by greater outpatient costs ($2,072 [unadjusted: $5466 vs $2902] (all P ≤ 0.05).

Conclusions: Over the study period, 68% of HS pts had an indicator of antibiotic failure. Pts with such indicators had significantly higher HRU and healthcare costs for HS-related failure.
Skin lipids in acne – seasonal changes and effect on the epidermal barrier


The main objective of this research was to gain new fundamental understanding of the mechanism of acne lesion formation by using the advances in lipid analysis. Three clinical studies were conducted. Assessment of epidermal and sebaceous lipids was performed and correlated to acne and skin barrier parameters in different age populations with varying levels of acne severity. The first study was a 12-month long clinical involving 17 teenage boys with or without acne. Each month epidermal and sebaceous skin lipids were acquired using noninvasive tapes, skin barrier function was measured, and acne severity assessed. Monthly lipid analyses of sebum revealed differences in the amount and type of sebaceous lipids between acne and nonacne subjects. Greater secretion of sebaceous lipids (triglycerides, wax esters, free fatty acids [FFA], and squalene) was observed in the acne group than the nonacne subjects. More unexpectedly changes were observed in the composition and levels of epidermal lipids isolated from acne individuals. The proportion of ceramides to total lipids was 28% in the acne group and 56% in the nonacne group. Seasonal increases in ceramides appeared to be associated with improved acne although the changes were observed in both groups. Barrier function was impaired in the acne group compared with the non-acne group (increased TEWL). A second clinical study was conducted following monthly changes in the skin of women suffering from cycling acne lesions associated with the menstrual cycle. That study also revealed similar observations on changes in skin lipids and barrier function associated with acne. In a third study, assessing facial skin changes in children approaching puberty (ages 6 to 13), an increase in sebum with age also correlated with increase in TEWL, an indicator of a compromised skin barrier. In conclusion, the results from these three clinical studies on subjects with acne demonstrate that there are substantial differences in epidermal and sebaceous skin lipids and in skin barrier compared to normal skin and suggest that acne can be considered a type of impaired skin barrier condition.

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3641 Stigmatization of acne

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Introduction: Acne vulgaris often develops during adolescence, a critical time in personal development, and has been associated with reduced self-esteem, altered body image, feelings of shame and embarrassment, social dysfunction, and perceived stigmatization. This study aimed to explore perceptions of acne in the general public in order to better characterize the factors leading to its stigmatization.

Methods: Healthy subjects (n = 56) were shown images of common skin conditions including acne: psoriasis, eczema, vitiligo, rosacea, herpes (labials and whitlow), warts, and tinea versicolor, and completed a questionnaire exploring their reactions to the images and perceptions of each condition.

Results: The majority (62.5%) of subjects were upset by the acne images. This level was greater than any other condition aside from herpes, and this difference was statistically significant compared to eczema, vitiligo, rosacea, and tinea versicolor (P < 0.05). Location, color, and open sores were the most commonly reported upsetting features. Over half (55%) of subjects believed that acne was caused by poor hygiene; 37.5% thought it was related to diet, and 50% believed it was infectious. The majority of subjects said they would feel ashamed if they had acne and would find someone with acne unattractive (67%). In addition, 41% would feel uncomfortable being seen in public with a person with acne, and 44.4% would feel uncomfortable touching them. Only a minority of subjects, however, would exclude them from social events (19.6%), avoid hiring them for a job (14.3%), or separate from them sexually (3.6%). Over 80% of subjects felt pity towards acne sufferers, which was significantly higher than for all the other skin conditions except psoriasis (P < 0.05).

Conclusion: Acne can have a profound psychosocial impact on its sufferers and is highly stigmatized. This may be due to its visibility on the face, although images of rosacea were significantly less upsetting to the subjects in this study. It may also be related to common misconceptions about its etiology, such as poor diet or hygiene, and interestingly, the belief that it may be contagious.

Commercial support: None identified.
Uncovering burden disparity: A comparative analysis of moderate to severe psoriasis and hidradenitis suppurativa: impact on quality of life
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Objective: Psoriasis (Ps) and hidradenitis suppurativa (HS) are chronic, inflammatory dermatological diseases that can have a substantial impact on a patient’s quality of life (QoL). Patients with moderate to severe Ps and HS are clinically heterogeneous, but generally such Ps patients have at least 10% BSA involvement and such HS patients have at least 2 areas of active involvement with at least 3 abscesses and/or inflammatory nodules. Since many of the same instruments have been utilized to assess QoL in HS and Ps clinical trials, this study directly compares QoL-related patient burden in moderate to severe HS and Ps.

Methods: A comparative analysis of QoL outcomes from nine clinical trials (one phase 2, eight phase 3) was conducted. The following QoL measures were considered: pain, using Visual Analog Scale (VAS); total work productivity impairment (TWPI) domain of productivity and Activity Impairment Questionnaire (WIQ); Dermatology Life Quality Index (DLQI); and physical and mental components using the Short Form 36 Health Survey (SF-36). Pain-VAS was scored from 0 to 100 (no pain to severe pain). TWPI was scored from 0 to 100 (no impairment to total impairment). DLQI and SF-36 were scored from 0 to 100 (disability to no disability). Weighted averages were determined for each QoL measure by analyzing baseline values for Ps and HS patients, regardless of the treatment assignment during the study.

Results: Pain-VAS scores were higher for patients with HS vs Ps, 54.5 and 37.5, respectively. HS patients had increased TWPI scores vs Ps patients, 39.7 and 18.1, respectively. DLQI scores were greater for patients with HS vs Ps, 15.3 and 11.1, respectively. Physical component SF-36 scores were lower for patients with HS vs Ps, 56.7 and 60.8, respectively. Mental component SF-36 scores were also lower for patients with HS vs Ps, 51.5 and 47.6, respectively.

Conclusions: Patients with moderate to severe HS have greater pain, higher impairment in total work productivity, and reduced quality of life based on DLQI and SF-36 surveys. These results suggest that HS has a greater impact on QoL than moderate to severe Ps. This differential burden of disease must be a consideration in treatment decisions and evaluations of patient outcomes in HS.

AESTHETIC DERMATOLOGY

3773
A “men’s dirt” model for assessing cleansing efficacy of a sonic skin care Brush

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Background: Consumer devices for skin care have become increasingly popular among women in the US with sonic cleansing devices generating the highest usage according to a recent Mintel report (Beauty Devices – US 2015). A sonic cleansing brush is designed to remove men’s facial hair growth, beard, and/or contaminants as preparation for wet shaving. In order to evaluate the cleansing efficacy of this sonic brush, we have utilized a commercially available anti-aging stick for sports (a robust surrogate for dirty skin to mimic particulate dirt trapped in sebum/oils) to evaluate the cleansing efficacy compared to manual cleansing.

Objectives: To evaluate the cleansing efficacy of a sonic cleansing brush for men vs. manual cleansing on the removal of men’s dirt (dirt and oils) from the skin.

Methods: A “men’s dirt” model was used in this study to evaluate the ability of a new sonic cleansing brush for men to remove dirt and oil compared to manual cleansing. Thirty-two subjects of 18-65 were enrolled in a single-center study to compare the cleansing efficacy of a sonic cleansing brush for men compared to manual cleansing. Equal amounts of a no-glare/glare reducing stick (anhydrous stick containing mineral oil, paraffin wax, charcoal powder, petrolatum, and lanolin) were applied to the center of each cheek (left and right). Method of cleansing (sonic vs. manual) was randomized to the side of the face (left or right) for each subject. Each side was cleansed for five seconds using the men’s sonic cleansing brush versus manual cleansing of water for both methods of cleansing. Photographs (VISIA CR, Canfield Imaging, NJ) were taken at baseline, after the application of the no-glare stick (precleaning), and following cleansing. Image analysis of the VISIA CR (C18/C19) was performed on all subjects, and the results were compared to the “men’s dirt” on the skin using a scale of 0 to 255 (0 = all black pixels; 255 = all white pixels). Differences between the baseline and postcleansing values (pixels) are reported as the amount of dirt and oil remaining for each cleansing method.

Results: Using a robust cleansing protocol to assess removal of “men’s dirt”, the sonic cleansing brush for men removed significantly more men’s dirt (dirt and oil) than manual cleansing (P > 0.01). The amount of dirt and oil remaining after cleansing (average pixels) averaged 5.7 for sonic versus 196.5 for manual cleansing.

Conclusion: The regimen of AHA/bionic acid products including the daily AHA and evening benefits. Conclusion: The regimen of AHA/bionic acid products including the daily AHA and evening benefits.
A multicenter trial of cohesive polydensified matrix hyaluronic acid
Timothy Flynn, MD, Cary Skin Center, Cary, NC, United States; Miles Graivier, MD, The Graivier Center for Plastic Surgery, Raleigh, NC, United States

Background: To date, there have been no Canadian published retrospective studies in this field. A multicenter retrospective chart review of patients converted from onabotulinumtoxinA (Allergan, Inc) to incobotulinumtoxinA (Merz North America, Inc) was performed. The aim of this study was to evaluate the degree of improvement using the Merz POL Scale.

Methods: 21 subjects, 30 to 69 years of age, participated in this 4-week study: 10 in Arm A and 11 in Arm B. Enrollments of 109 and 112, respectively, were required to obtain 80% power to demonstrate the hypothesis that skin UV protection can be accomplished by topical antioxidants. Consenting subjects were randomized to receive either the test product (2 mg/cm2) or the control vehicle. The test product is a proprietary blend of antioxidants and sunscreen actives. Measurements were taken for histologic analysis (n = 3). In addition, 4 mm punch biopsies from the 3MED sites were taken for histologic analysis (n = 3). An elective touch-up was offered at 2 weeks (no volume was added). Perioral fine lines satisfaction was assessed by subject and investigator, using the GAIS scale for lips. Investigators monitored AEs as well as any evidence of Tyndall effect. Standardized photographs were taken at baseline and at 4 weeks; they were compared by independent evaluators to evaluate the degree of improvement using the Merz POL Scale.

Results: In Arm A, 100% of subjects experienced a reduction of ≥1 point on the Merz POL at the 4-week mark. Average volume of CPMHA injected in Arm A was 2.2 mL for initial treatment and 1.7 mL at touch-up. Average volume of CPMHA injected in Arm B was 1 mL for initial treatment and 0.15 mL at touch-up. In Arm A, 4 subjects reported Very Much Improved and 6 reported Much Improved. In Arm B, 5 subjects reported Much Improved, 5 reported Improved, and 1 reported No Change. In Arm A, 8 subjects reported minor AEs such as transient bruising; the investigator reported having observed Tyndall effect in no subjects. In Arm B, 3 subjects reported minor AEs; the investigator reported having observed Tyndall effect in no subjects. Conclusion: CPMHA can be safely injected into the superficial dermis and is effective in improving the perioral appearance of subjects with pretreatment scores of 1-4 on the Merz POL. Patient satisfaction was improved in 10 of 11 subjects in one treatment arm and in 10 of 10 subjects in the other. Minor transient AEs were observed but no Tyndall effect was observed.

Supported 100% by Merz North America, Inc

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A novel amino acid derivative significantly reduces melanin expression
Barbara Green, MS, NeoStrata Company, Inc, Princeton, NJ, United States; Yaling Lee, PhD, NeoStrata Company, Inc, Princeton, NJ, United States; Clara Milikowski, MD, Miller School of Medicine, Miami, FL, United States

Skin pigmentation irregularities are a significantaging concern for males and females alike. Despite nearly every racial ethnic type, as global regulatory limitations continue to mount for skin lightening ingredients, effective cosmetic brighteners are increasingly being utilized to meet the patient demand to deliver an even skin tone and reduced appearance of hyperpigmentation. Neo-L20 is a new amino acid derivative that was developed for potential topical use as a cosmetic skin brightening agent. The glycine derivative was tested in human epidermal melanocytes and dermal fibroblast cells to evaluate cellular toxicity at concentrations up to 0.01%. The maximum nontoxic dose was then tested over 7 days in melanocyte culture and found to significantly inhibit melanin production, P < .05. Upon microscopic evaluation, the melanocytes were found to be healthy and viable. Further evaluation of Neo-L20 was performed on Melan-A, an epidermal tissue model containing functional keratinocytes and melanocytes derived from black skin. A higher dose was selected for evaluation in this coculture model, which possesses a weak stratum corneum barrier. Neo-L20 significantly reduced total melanin production (intra- and extra-cellular) at 2 weeks in comparison to vehicle and 2% kojic acid controls, P < .01. Visual assessment of melanoderm tissues revealed a noticeable lightening effect beginning as early as 24 hours after treatment. Microscopic evaluation demonstrated viable melanocytes with reduced pigmentation. A one-week regression study demonstrated temporary and reversible inhibition of melanin production, a measure of melanocyte safety. Neo-L20 is a novel amino acid derivative that significantly reduces melanin content in melanocyte culture as well as a 3-D coculture model, and is being developed for use as a topical brightening agent.

Supported 100% by NeoStrata Company, Inc.

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A novel blend of antioxidants minimizes UV-induced DNA damage markers in human skin
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Ultraviolet (UV) rays, UVA and UVB, have been implicated in DNA damage and immune suppression. UV-exposed skin shows an increased level of sunburn cells, cyclobutana pyrimidine dimers (CPD), and expression of mutant p53 proteins. We hypothesize antioxidants may protect the skin against UV-induced damage by neutralizing reactive molecule species. Effective protection with antioxidants depends on potency as well as its stability in skin or in the formulation. Topical antioxidants may also increase skin antioxidant capacity by accumulating in the skin or by inducing/restoring endogenous antioxidant levels. A novel topical product (TD+R SPF 34) containing a proprietary blend of antioxidants and sunscreen actives was developed to provide patients with combined protection against UV-induced skin damage. Increased antioxidant capacity in the skin was assessed in a double-blind, randomized, single-center study by comparing TD+R SPF34 vs. an acidic solution containing the most common antioxidants (AAx1 and AAx2). In this study, the melanocytes were found to significantly inhibit melanin production, P < .002, Tukey's HSD test as well as consistently lower than the AAx1 + SPF 30 untreated sites. Histological analysis for sunburn cells by H&E staining, CPD and mutant p53 proteins by immunohistochemistry, supported these results, showing that TD+R SPF 34 treated sites had consistently lower damage vs. untreated/UV exposed sites. These results indicate that skin UV protection can be accomplished by topical antioxidants.

Supported 100% by SkinMedica, an Allergan Company.
3953 A prospective, single-site, single-blinded, randomized, split-body pilot study of the safety and effectiveness of microfocused ultrasound with visualization (MFU-V) for lifting of the buttock
Sabrina Fabi, MD, Cosmetic Laser Dermatology, San Diego, CA, United States; Douglas Wu, MD, PhD, Cosmetic Laser Dermatology, San Diego, CA, United States; Minahk Goldman, MD, Cosmetic Laser Dermatology, San Diego, CA, United States; Keysin Fischer, PA, Cosmetic Laser Dermatology, San Diego, CA, United States

Objective: Study objective is to evaluate the safety and effectiveness of microfocused ultrasound with visualization (MFU-V) for lifting buttock tissue to reduce buttock ptosis, enrolling 24 adult females presenting with mild-moderate buttock ptosis.

Methods: Subjects receive two, single-side buttock treatments 90 days apart, receiving 280 treatment (Tx) lines each with the 4 MHz-4.5 mm (4-4.5) and 7 MHz-3.0 mm (7.5-0) transducers. Pre-Tx medications include tretinoid (60 mg) and optional valium (10 mg). Quantitative and qualitative efficacy posts (90, 180, and 270 days) will be measured by percentage of subjects aesthetically improved.

Adverse events to be collected.

Interim results: At this interim time point, 24 enrolled subjects received Tx#1, 20 received Tx#2, and 14 completed Tx#1 D90 and Tx#2 D90 visits, respectively. Average age and BMI were 43 (range 25-64) and 22 (range 19-25), respectively.

Subjects were skin types I (4%), II (54%), III (21%), and IV (21%). Average total Tx lines delivered per Tx were 561 (range 556-571). Using a validated numeric rating scale (0-10), subjects average pain scores during MFU-V Txs for the 4-4.5 and 7.5-0 transducers were 5.6 (range 1-0) and 4.8 (range 1-9), respectively. Interim efficacy results for baseline versus day 90 posttreatment #2 include: masked quantitative assessment reflecting 38% (5/14) and 13% (1/8) of subjects improved in gamma and beta buttock angles, respectively; masked qualitative assessment reflecting 65% (5/8) subjects were assessed as having visibly observable tissue lift; 64% (9/14) and 60% (5/14) subjects improved by CBIS and SBIS, respectively; 50% (7/14) subjects were satisfied and reported improvement. Seven subjects reported mild-moderate bruising; average duration 12 days. No serious adverse events were reported.

Conclusion: Interim results suggest MFU-V may reduce buttock ptosis; however, at the time of this abstract, the sample size is limited. Final results of all completed follow-up assessments after the second Tx will be completed prior to AAD 2016 and will be presented.

Supported 100% by Ulthera, Inc.

3022 A two week clinical study evaluating the effect of a product containing omega ceramide on hydration and skin barrier performance
Peter Mattravers, PharmD, Arbonne International, Irvine, CA, United States; Sherree Wiener, Arbonne, Irvine, CA, United States; Bob Bianchini, PhD, Arbonne, Irvine, CA, United States; Stephen Schwartz, IRSI, Port Chester, NY, United States; Stefanie Kligman, IRSI, Port Chester, NY, United States; Robert Frumento, IRSI, Port Chester, NY, United States

Background: The skin outermost structure, contains several layers, of which the stratum corneum, functions as a rate-controlling barrier to limit the entrance of foreign substances and facilitate the excretion of endogenous substances. This barrier can be altered by aging and environmental factors. While the lower stratum corneum is hydrated by body fluids, the outer stratum corneum can be moisturized by environment or topical products improving skin appearance and condition. One novel ingredient, omega ceramide (Conjugation of Omega 3,6 Fatty acid with an amino-glycerol moiety forming Omega 3,6 Ceramide-Solabia, France), has been found to increase moisturization, as well as improve cellular cohesion, comfort for sensitive skin, firmness, elasticity, and restructuring properties of the skin in the laboratory. Arbonne International has formulated a topical product containing omega ceramide as a key ingredient intended to improve the appearance and condition of skin dryness and barrier function.

Methods: 35 female subjects between the ages of 55 and 69 years old participated in a three-visit evaluation of the effects of a skin product. Subjects washed their lower lateral legs with a standardized soap for seven days and applied the test product to their lower lateral legs for two weeks. Assessments occurred at Screening/Washout, Baseline (BL), Immediate (T5min) and Week 2 (W2) The Corneometer CM 820 (Courage-Khazaka, Germany) was used to measure the relative degree of hydration of the skin surface. To measure the separation of the skin’s barrier, subjects used tape to pull off thin layers of their skin at two sites. On one site the product was applied and the other site was left untouched. The Vapo Meter (Delfina Technologies, Stanford CT USA) was used to measure water loss of the skin.

Results: After immediate application of the omega ceramide product, dryness was significantly reduced (P < 0.001) with a mean percent improvement from baseline of 166.22%. Moreover, after two weeks, 82.9% of subjects showed significant improvement in the hydration of their skin (P < 0.004) by an average of 34.81%. After tape stripping, water loss through the skin’s barrier increased on average by 21%. After application of the product, posttape stripping, the skin’s leakage was significantly repaired compared to the control group (P = 0.017). Conclusion The omega ceramide product led to significant improvements in skin appearance and condition as shown.

Supported by Arbonne.

3052 A therapeutic moisturizer with fragrance that is mild and provides skin barrier benefits

Fragrances are commonly thought of as potential irritants that can induce skin inflammation reactions in subjects with very dry, sensitive, or compromised skin conditions. Consequently, dermatologists often recommend the use of unfragranced therapeutic moisturizers to patients with sensitive or compromised skin, which may result in poor patient compliance. A therapeutic moisturizer containing a fragrance that is nonirritating to skin could provide clinicians with options to recommend to patients to improve compliance. A set of fragrances were evaluated in vitro for their irritation potential in skin cells and coconut and chamomile fragrances were found to be very mild and nonirritating. Indeed, moisturizers containing the coconut and chamomile fragrances were shown to be as gentle as the unfragranced moisturizer. Furthermore, the therapeutic moisturizers containing fragrances were found to induce the expression of genes related to epidermal differentiation, tight junctions and lipid regulation in skin which are associated with a strengthened skin barrier. In a functional in vitro model representing disrupted skin barrier in atopic dermatitis, treatment with this fragranced moisturizer resulted in an improved skin barrier. Taken together, these results demonstrate that this fragranced moisturizer is as mild as an unfragranced lotion, and additionally can induce the expression of multiple barrier genes which could improve skin barrier function. Mild, nonirritating therapeutic moisturizers containing fragrances which strengthen skin barrier can provide clinicians with treatment options using fragranced therapeutic moisturizers for increased patient compliance.

Supported by Johnson & Johnson Consumer Inc.

3423 Absorbable polydioxanone sutures for facial and body rejuvenation
Kian Karimi, MD, Rejuva Medical Aesthetics, Los Angeles, CA, United States

Absorbable polydioxanone sutures for facial and body rejuvenation
Kian Karimi, MD, Cosmetic Laser Dermatology, San Diego, CA, United States; Sabrina Fabi, MD, Cosmetic Laser Dermatology, San Diego, CA, United States; Stefanie Kligman, IRSI, Port Chester, NY, United States; Robert Frumento, IRSI, Port Chester, NY, United States

Objective: Study objective is to evaluate the safety and effectiveness of microfocused ultrasound with visualization (MFU-V) for lifting of the buttock
Sabrina Fabi, MD, Cosmetic Laser Dermatology, San Diego, CA, United States; Douglas Wu, MD, PhD, Cosmetic Laser Dermatology, San Diego, CA, United States; Minahk Goldman, MD, Cosmetic Laser Dermatology, San Diego, CA, United States; Keysin Fischer, PA, Cosmetic Laser Dermatology, San Diego, CA, United States

Background: The skin outermost structure, contains several layers, of which the stratum corneum, functions as a rate-controlling barrier to limit the entrance of foreign substances and facilitate the excretion of endogenous substances. This barrier can be altered by aging and environmental factors. While the lower stratum corneum is hydrated by body fluids, the outer stratum corneum can be moisturized by environment or topical products improving skin appearance and condition. One novel ingredient, omega ceramide (Conjugation of Omega 3,6 Fatty acid with an amino-glycerol moiety forming Omega 3,6 Ceramide-Solabia, France), has been found to increase moisturization, as well as improve cellular cohesion, comfort for sensitive skin, firmness, elasticity, and restructuring properties of the skin in the laboratory. Arbonne International has formulated a topical product containing omega ceramide as a key ingredient intended to improve the appearance and condition of skin dryness and barrier function.

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Results: After immediate application of the omega ceramide product, dryness was significantly reduced (P < 0.001) with a mean percent improvement from baseline of 166.22%. Moreover, after two weeks, 82.9% of subjects showed significant improvement in the hydration of their skin (P < 0.004) by an average of 34.81%. After tape stripping, water loss through the skin’s barrier increased on average by 21%. After application of the product, posttape stripping, the skin’s leakage was significantly repaired compared to the control group (P = 0.017). Conclusion The omega ceramide product led to significant improvements in skin appearance and condition as shown.

Supported by Arbonne.

3423 Absorbable polydioxanone sutures for facial and body rejuvenation
Kian Karimi, MD, Beijuva Medical Aesthetics, Los Angeles, CA, United States

Background: Thread lifting was a popular technique a decade ago but fell out of favor due to unacceptably high complications rates and patient dissatisfaction. Since this time, advances in thread lifting have been developed including the introduction of polydioxanone (PDO) threads which are completely absorbable, safe, and effective for short term facial and body rejuvenation.

Objective: To describe novel techniques of polydioxanone thread lifting techniques for facial and body rejuvenation and to describe its efficacy, longevity, and discuss any potential complications.

Methods: To review single surgeon’s experience with polydioxanone thread lifting procedures in an outpatient aesthetic clinic.

Supported by CosmoFrance, Inc - parent company of NolyxThreads, Inc.
Aesthetic dermatology procedures: Do we know what patients think?
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Introduction: Aesthetic dermatology has been increasing last years. Botulinum toxin or hyaluronic acid injections are daily procedures in our dermatology practice. Non-surgical aesthetic procedures making up 81%. The main procedures are: botex injections, laser hair removal, hyaluronic acid injections, microdermabrasion, and chemical peels. Women between 55 and 50 years accounted for the majority of procedures. These treatments have been offered by plastic surgeons, aesthetic physicians, or ophthalmologists, but nowadays dermatologists increasingly incorporate them into our clinical practice.

Objective: Analyze the interest and awareness of the general population about aesthetic dermatology procedures.

Material and methods: We developed a questionnaire about aesthetic dermatology procedures. It was distributed to consecutive dermatology patients (from public and private healthcare system) and general population (100 questionnaires from each group). Demographic data and a total of 6 issues were collected, differentiating these subjects who had already performed some of these treatments or not. Within the group who had undergone some treatment, the questions include: what specialist made it, whether he/she was or not satisfied with the results, what treatment was chosen and how many had done, how he/she had chosen the professional, and if he/she knew all the treatments mentioned in the survey. Within the group that had not undergone any treatment we analyze: whether they knew all the procedures, if they’d like to receive any of which, one, and what age they thought most appropriate for this.

Results and conclusions: It is observed that a large proportion of respondents have not made any treatment. In addition, many patients reply that the reason why have not done this type of treatment is its price. Many patients do not know all the techniques and most believe that the time to perform them is above 40 or 50 years. With all this, we conclude that there are many misconceptions about these aesthetic dermatology procedures. Dermatologists should have a main role place in this field to help patients to choose the best treatment and avoid adverse effects.

Commercial support: None identified.

3752 Aesthetic/cosmetic
Jeffrey Dover, MD, SkinCare Physicians, Chestnut Hill, MA, United States

Background: In 2006, the Food and Drug Administration (FDA) approved the first PMMA-collagen filler in the United States. At that time, a 5-year prospective study assessing the correction of nasolabial folds (NLF) was undertaken to support the safety of the PMMA-collagen. This represents the largest and longest prospective filler study ever conducted.

Methods: 1732 subjects received a final in-office evaluation at the end of the study. 3D photography was obtained at rest and at maximum frown before and 14 days after treatment. All photos were taken perpendicular to the glabella area using a Vapometer (TEWL-Delfin Technologies, Stamford, CT USA), SIAscopy (Collagen - Astron Clinica, Canada) and Vectra 3D (Facial Contouring - Canfield Scientific New Jersey USA) imaging bioinstrumentation was used at each visit.

Results: Visual grading revealed 61.1% of subjects having an immediate improvement from baseline in Jawline lift (P < .001), and 69.4% of subjects showed significant immediate improvement in hydration (P = 0.004). At Week 4, 80.6% of subjects showed a significant increase in firmness (P < .001), and 66.7% in elasticity, with a mean improvement of 43.12. At Week 8, 86.1% of subjects showed a significant improvement in jawline lift (P < .001). 88.9% of subjects showed a significant improvement in firmness (P < .001), 97.2% of subjects showed a significant improvement in elasticity (P < .001), 77.8% of subjects showed an improvement in collagen with a mean percent improvement of 41.51% (P < .001). Vapometer (TEFL) assays revealed that after application of the product, post tape-stripping, the skin’s leakage was significantly repaired compared to the control group (P = .017). Vectra 3D analysis showed an increase in facial volume of 0.35 ml and a change in height of 0.86 mm, these values are approximately 29% and 25% of comparable injectable data (Canfield Scientific internal data).

Conclusion: Under the conditions of this study, the use of the lifting and contouring facial cream.

Supported by Arbonne.

3944 An objective 3D photographic reconstruction analysis of frown lines after incobotulinumtoxinA treatment
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Background: Facial aging is attributed to the deterioration and descent of cutaneous structures due to a variety of factors including downward gravitational pull, hormonal changes and photo damage. Moreover, skeletal remodeling and subcutaneous fat redistribution and loss among many areas of the face contribute to the appearance of age. To rejuvenate such features: injectable tissue fillers are effective in improving skin appearance, creams applied to the surface of the skin can significantly alleviate signs of aging as well. Such products affect the content of collagen in the skin and repair and protect the skin’s moisture barrier.

Methods: 36 female subjects aged 55-69 years old participated in an eight week study. Assessments occurred at Screening/Washout, Baseline (BL) and Immediate (T15sec), Week 2 (W2), Week 4 (W4) and Week 8 (W8). Expert clinical grading as well as Cutometer MPA 580 (Viscoelastic properties - Courage + Khazaka Electronic Germany), Vapometer (TEFL-Delfin Technologies, Stamford, CT USA), SIAscopy (Collagen - Astron Clinica, Canada) and Vectra 3D (Facial Contouring - Canfield Scientific New Jersey USA) imaging bioinstrumentation was used at each visit.

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Conclusion: Under the conditions of this study, the use of the lifting and contouring facial cream.

Supported by Merz North America, Inc.

3929 An eight week clinical study evaluating lifting and contouring efficacy of a facial cream
Sheree Wiener, Arbonne, Irvine, CA, United States; Robert Bianchini, Arbonne, Irvine, CA, United States; Robert Frumento, IRSI, Port Chester, NY, United States; Amanda Dahl, IRSI, Port Chester, NY, United States; Stephen Schwartz, IRSI, Port Chester, NY, United States; Robert Frumento, IRSI, Port Chester, NY, United States

Background: Facial aging is attributed to the deterioration and descent of cutaneous structures due to a variety of factors including downward gravitational pull, hormonal changes and photo damage. Moreover, skeletal remodeling and subcutaneous fat redistribution and loss among many areas of the face contribute to the appearance of age. To rejuvenate such features: injectable tissue fillers are effective in improving skin appearance, creams applied to the surface of the skin can significantly alleviate signs of aging as well. Such products affect the content of collagen in the skin and repair and protect the skin’s moisture barrier.

Methods: 36 female subjects aged 55-69 years old participated in an eight week study. Assessments occurred at Screening/Washout, Baseline (BL) and Immediate (T15sec), Week 2 (W2), Week 4 (W4) and Week 8 (W8). Expert clinical grading as well as Cutometer MPA 580 (Viscoelastic properties - Courage + Khazaka Electronic Germany), Vapometer (TEFL-Delfin Technologies, Stamford, CT USA), SIAscopy (Collagen - Astron Clinica, Canada) and Vectra 3D (Facial Contouring - Canfield Scientific New Jersey USA) imaging bioinstrumentation was used at each visit.

Results: Visual grading revealed 61.1% of subjects having an immediate improve-
ment from baseline in Jawline lift (P < .001), and 69.4% of subjects showed significant immediate improvement in hydration (P = 0.004). At Week 4, 80.6% of subjects showed a significant increase in firmness (P < .001), and 66.7% in elasticity, with a mean improvement of 43.12. At Week 8, 86.1% of subjects showed a significant improvement in jawline lift (P < .001). 88.9% of subjects showed a significant improvement in firmness (P < .001), 97.2% of subjects showed a significant improvement in elasticity (P < .001), 77.8% of subjects showed an improvement in collagen with a mean percent improvement of 41.51% (P < .001). Vapometer (TEFL) assays revealed that after application of the product, post tape-stripping, the skin’s leakage was significantly repaired compared to the control group (P = .017). Vectra 3D analysis showed an increase in facial volume of 0.35 ml and a change in height of 0.86 mm, these values are approximately 29% and 25% of comparable injectable data (Canfield Scientific internal data).

Conclusion: Under the conditions of this study, the use of the lifting and contouring facial cream.

Supported by Arbonne.
Assessment of cutaneous rejuvenation clinical changes associated to intake of ortho-silicon acid stabilized by hydrolyzed collagen of marine origin

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Introduction: Among the silicones, ortho-silicon acid stabilized by hydrolyzed collagen of marine origin has been shown to protect against reactive molecule species (RMS) when topically applied, and are commonly recommended for morning-use, since chronic sun exposure is a key environmental factor contributing to RMS generation, ultimately resulting in the appearance of photaged or photoaged skin. A novel topical product (TD+R SPF 34) containing a proprietary blend of antioxidants and sunscreen actives was developed to not only provide protection against the damaging effects of RMS but also to support the repair of existing photodamage. To assess the efficacy and tolerability of TD+R SPF 34, an open-label clinical usage study was conducted on subjects presenting with moderate to severe facial photodamage. Eighteen male and female subjects aged 35-65 years with Fitzpatrick skin type II-VI completed the twelve week study. Subjects applied TD+R SPF 34 twice-daily, once in the morning after cleansing and then once again at least two hours after the initial application as per current recommendation for sunscreen use. Subjects were also provided with a basic skincare regimen including a facial cleanser as well as a light moisturizer (evening use only). Investigator assessments for key photodamage parameters, including the appearance of lines/wrinkles (perioral, forehead, cheek, perioral), tactile roughness, and skin tone unevenness were conducted at all visits (baseline, week 2, week 4, week 8, and week 12). Global improvement was assessed by the investigator at all follow-up visits. Standardized digital photography was conducted at all visits. Subjects also completed a self-assessment questionnaire on product efficacy and attributes at all follow-up visits. At weeks 2, 4, 8, and 12, statistically significant improvements were observed for perioral, forehead, cheek, and perioral lines/wrinkles, tactile roughness, and skin tone unevenness (all P < 0.05). Results from standardized digital photographs and subject self-assessments support the improvements observed by the investigator with 100% of subjects agreeing that the test product “improved skin’s overall health, firmness, fine lines and wrinkles, and skin tone evenness.” In conclusion, the results from this study suggest that the proprietary antioxidant blend within TD+R SPF 34 may help improve the appearance of existing photodamage with twice-daily use.

Commercial support: None identified.
3394
Combination therapy with IPL, deep RF heating, and fractional RF for skin rejuvenation
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Introduction and objectives: Facial skin rejuvenation treatments address pigmented, vascular, and textural skin changes. It has been successfully achieved by several technologies. Each technology has an advantage and this IRB study was designed to observe combination treatment for enhanced, long lasting results. IPL is known to break down pigmented lesions and to coagulate blood vessels by specific absorption and to cause some dermal tightening. The addition of RF heating produces deeper and longer lasting tightening. The fractional RF ablation hand piece contributes to the improvement of depressed lesions and superficial coagulation.

Materials and methods: Thirteen female subjects with mean age of 55 years, Fitzpatrick skin types I-II and Fitzpatrick wrinkling average score of 7 were enrolled. This study design included 6 treatment sessions, performed 3 weeks apart. The treatments were high peak power IPL alternating with bipolar RF, 3 session of each. The RF treatment was composed of 2 stages. First, a nonablative RF subnecrotic dermal and subdermal heating was administered immediately followed by fractional ablative RF. Subjects were evaluated at baseline and follow-up time points 6 and 12 weeks post–last treatment session. The evaluation included photographs and physician assessments. Adverse events and subject satisfaction were recorded.

Results: All subjects showed an overall facial skin improvement in skin quality: pigmentation, vascular lesions, wrinkles, scars, large pores, and laxity all showed marked improvement. No unexpected adverse events were reported. Photos were independently reviewed.

Conclusions: The above results indicate the safety and efficacy of combination treatment of IPL, non-ablative RF and fractional ablative RF Combination treatment of the above three technologies is yielding a better outcome than by each of the technologies alone. A platform that contains all three technologies proved to be an overall positive treatment for treating general photodamage and overall textural appearance.

3252
Cutaneous sarcoidosis during interferon and ribavirin therapy in a patient with hepatitis C virus infection located at silicone injection sites
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We present a case of a 55-year-old woman with chronic hepatitis C, that developed facial lesions at silicone injection sites, during hepatitis C virus (HCV) treatment. First crop of lesions were developed one month after interferon (IFN) and ribavirin therapy was completed, and resolved after a month of oral prednisone therapy. She did not respond to HCv treatment. She started IFN, ribavirin, and telaprevir. She reached negative HCV viral load. Two months after finishing treatment, second crop of lesions occurred. A biopsy was performed, showing granulomatous reaction next to groups of random empty vacuoles of different sizes, corresponding to foreign body particles compatible with silicone. Microbiological tests, blood tests, eye exam, and chest x-ray were negative. Serum angiotensin-converting enzyme levels were elevated. We established a diagnosis of induced interferon sarcoidosis.

Lesions were refractory to treatment with prednisolone oral therapy, triamcinolone acetonide injectable suspension therapy, and oral doxycycline. The patient refused further therapy, and she only accepted oral antihistamines, which currently are controlling burning and itching sensation. The role of IFN-α in the induction of sarcoidosis is probably related to its capacity to induce a predominant Th1 immune response, generating the main immunological changes seen in sarcoidosis. Cutaneous sarcoid granulomas have been described around synthetic fillers injection sites. It has been reported that IS is more common in patients receiving IFN treatment for HCV infection, than those receiving IFN treatment for other proliferative disorders. This is partly explained by firstly, higher doses of IFN used in the treatment of HCV; secondly, ribavirin increases IFN-α production mediated by stimulation of Toll-like receptor (TLR) TLR7 and TLR8; and finally, by the hepatic damage caused by VHC itself, up-regulating Th1 response. Injectable dermal fillers are more and more frequently used in cosmetic dermatology, and they themselves could be a trigger for developing sarcoidosis. As mentioned above, VHC patients may develop sarcoidosis easier than other patients, independently of IFN therapy. We consider mandatory, to recognize this nosologic status of HCV before undergoing filler injection, in order to avoid this adverse effect. We should inform patients with previous sarcoidosis, of the risk of developing or reactivating sarcoidosis after filler injection.

3764
Effect of magnet applicators on niacinamide skin delivery and associated clinical improvements in barrier function
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Background: Deoxycholic acid injection (ATX-101) is a first-in-class drug approved in the US for submental fat (SMF) reduction and is a durable, minimally invasive, nonsurgical alternative for submental contouring. Injection of ATX-101 into preplatysmal fat causes adipocyte lysis leading to reduction in SMF. ATX-101 and surgical treatment (tx) options result pre- vs post SMF reduction; however, published data from cadaver studies provide limited information on the distribution of fat superficial and deep to the platysma muscle. In identical US/Canadian phase 3 trials (REFINE-1 [NCT01542034] and REFINE-2 [NCT01546142]) that evaluated the efficacy and safety of ATX-101, magnetic resonance imaging (MRI) was a secondary endpoint. The pooled results provide the largest standardized dataset using MRI to evaluate SMF volume. The objective of this posthoc analysis was to characterize baseline pre- vs postplatysmal SMF distribution and to assess the effect of ATX-101 vs placebo (PB) tx on change in pre- vs postplatysmal fat volume.

Methods: The REFINE trials enrolled adults with moderate or severe SMF who were dissatisfied with their submental region. Subjects were randomized to ≤6 txs of ATX-101 2 mg/cm² or PB. MRI was performed in a prespecified subset of subjects (71.7%) as a secondary endpoint on the prefront of subjects with ≥10% reduction in SMF volume, achieved by 43.5% of ATX-101 vs 5.3% of PB subjects (P < .001). For the present analysis, MRIs were reevaluated by an independent reviewer (NCR) to assess baseline SMF distribution and mean change from baseline in pre-and postplatysmal fat volume for subjects whose MRI showed a visible platysma muscle (baseline and 12 wks after last tx).

Results: Overall, 73.9% (352/479) of MRIs had a visible platysma muscle. In the ATX-101 and PB groups at baseline, 41.7% (84/202) and 50.6% (107/212) of the total SMF volume was preplatysmal. At 12 weeks after last tx, ATX-101 subjects showed reductions of 23.8 ± 14.6% in preplatysmal and 2.3 ± 8.3% in postplatysmal fat volume, while PB subjects showed 1.9 ± 10.7% increase and a 1.0±6.8% reduction.

Conclusion: This analysis demonstrates that fat is evenly distributed submental and deep to the platysma muscle in adults with moderate or severe SMF. The results confirm that the vast majority of SMF volume reduction following ATX-101 tx is in the target preplatysmal fat compartment, supporting the adipooyctotic mechanism of action and efficacy of ATX-101 for submental contouring.

3292
Deoxycholic acid injection (ATX-101) treatment markedly reduces pre- vs postplatysmal fat
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Introduction and objectives: Facial skin rejuvenation treatments address pigmented, vascular, and textural skin changes. It has been successfully achieved by several technologies. Each technology has an advantage and this IRB study was designed to observe combination treatment for enhanced, long lasting results. IPL is known to break down pigmented lesions and to coagulate blood vessels by specific absorption and to cause some dermal tightening. The addition of RF heating produces deeper and longer lasting tightening. The fractional RF ablation hand piece contributes to the improvement of depressed lesions and superficial coagulation.

Materials and methods: Thirteen female subjects with mean age of 55 years, Fitzpatrick skin types I-II and Fitzpatrick wrinkling average score of 7 were enrolled. This study design included 6 treatment sessions, performed 3 weeks apart. The treatments were high peak power IPL alternating with bipolar RF, 3 session of each. The RF treatment was composed of 2 stages. First, a nonablative RF subnecrotic dermal and subdermal heating was administered immediately followed by fractional ablative RF. Subjects were evaluated at baseline and follow-up time points 6 and 12 weeks post–last treatment session. The evaluation included photographs and physician assessments. Adverse events and subject satisfaction were recorded.

Results: All subjects showed an overall facial skin improvement in skin quality: pigmentation, vascular lesions, wrinkles, scars, large pores, and laxity all showed marked improvement. No unexpected adverse events were reported. Photos were independently reviewed.

Conclusions: The above results indicate the safety and efficacy of combination treatment of IPL, non-ablative RF and fractional ablative RF Combination treatment of the above three technologies is yielding a better outcome than by each of the technologies alone. A platform that contains all three technologies proved to be an overall positive treatment for treating general photodamage and overall textural appearance.

Supported by Kythera Biopharmaceuticals, Inc.
Effect of midfacial augmentation with nonanimal stabilized hyaluronic acid on the nasolabial fold and overall aesthetic appearance
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Introduction: Nonanimal stabilized hyaluronic acid (Perlane, Galderma, SA) was FDA approved in 2007 for the treatment of facial wrinkles and folds. Off-label use led to the observation that injection of Perlane in the midface improved both global aesthetic appearance and reduced the depth of nasolabial folds. A proof-of-concept trial was undertaken to explore this clinical observation further.

Methods: 20 subjects with moderate midfacial volume loss and prominence of nasolabial folds underwent injection of the midface with Perlane between May and July, 2009. The average volume administered was 3.68 ± 0.55 ml. Assessments were performed by the injecting physician and subject self-assessment for 6 months following treatment.

Results: 17 of 20 subjects completed all study visits. At the 6-month follow-up visit, 16 of 17 subjects were found to have clinically significant improvement of the midface and 14 of 17 subjects were found to have clinically significant improvement of the nasolabial folds. No serious adverse events occurred.

Conclusion: In this early stage, proof-of-concept trial, the majority of patients treated demonstrated clinically significant, aesthetically pleasing improvement 6 months after injection of Perlane in the midface.

This was an investigator-initiated study funded by Medicis.
3940 Evaluation of key biophysical properties and microscopic structures of 11 cross-linked hyaluronic acid (HA) fillers before and after needle extrusion, as a proof-of-concept for clinical applicability
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Introduction and objectives: Distinct flow-related (rheologic) and other biophysical properties of different hyaluronic acid (HA) fillers reflect their manufacturing processes and resultant structures; and provide rationale for science-based selection of appropriate fillers for specific clinical applications (rheologic tailoring). They predict extrusion patterns and clinical characteristics including efficacy of nasolabial fold correction. The clinical applicability of biophysical properties depends on their presentation during the injection process. The purpose of this study was to evaluate rheologic properties, cohesivity and microscopic structure of 11 HA fillers before and after needle extrusion.

Materials and methods: 3 NASHA, 2 Hylacross, 3 Vycross, and 3 Cohesive Polysulfidized Matrix (CPM) HA fillers were analyzed. Automated extrusion at 60min/minute was performed through needles packaged with each product. Cohesivity, a recently defined property, was determined by a new standardized assay developed by the authors, with scoring on a validated 5-point visual scale. Elastic modulus (G'), viscous modulus (G'') and complex viscosity (η*) were measured in a parallel plate rheometer at a clinically relevant oscillation frequency of 0.7 Hz. Tan delta (G'/G'') was calculated. HA structure was examined by optical microscopy of toluidine blue dyed specimens at 40-fold magnification, in association with a high-definition imaging system.

Results: For each tested filler, there was no significant difference in cohesivity scores, rheologic values or microstructure before and after extrusion. In contrast, there were significant differences between the 11 fillers. Cohesivity scores ranged from 1 to 5. Cohesivity was lowest for NASHA, low-medium for Vycross, medium-high for Hylacross, medium-low for CPM HA. Elastic modulus ranged from 60 to 774 Pa. It was highest for NASHA, medium for Vycross, medium-low for Hylacross, and lowest for CPM HA. Filler microstructure was unchanged after extrusion. It varied significantly between fillers, from discrete HA fragments to a reticulated molecular matrix.

Conclusions: Key biophysical properties and microstructure of the HA fillers were maintained after extrusion through their associated needles. This supports correlation of these manufacturing attributes with clinical behavior of fillers after tissue implantation. Rheologic tailoring is of value in guiding appropriate technique and maintaining after extrusion, as a proof-of-concept for clinical applicability.

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3274 Evaluation of the efficacy of a naturally derived facial oil treatment in reducing signs of skin fatigue and protecting skin against age-accelerating oxidative damage
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Introduction: Studies have shown that during the course of the day, there is an evolution of skin quality. Signs of skin fatigue appear more noticeable at the end of the day and these signs gradually ameliorate to become aging signs that set in over months to years. A new form of payments were made for authorship.

Methods: An instrumental test was performed to assess the antioxidative potential of the facial oil treatment by measuring the UV Induced Chemiluminescence of Human Skin before and after 2 weeks of product application. In addition, a single-center, 4-weeks clinical study was conducted on 43 women ages 25-45, with mild to moderate skin fatigue/tired look, fine lines and overall facial appearance of fatigue/tired look, to assess the effectiveness of a natural derived facial oil treatment containing sunflower seed, tamanu and ginger root oils in its ability to provide antioxidation benefits and to improve signs of fatigue immediately, over the course of a day and overtime.

Results: The ICLS test showed a significant decrease in ICLS signal confirming the antioxidative potential of the facial oil. Prior to use of the facial oil treatment, a statistically significant worsening for skin fatigue/tired look, fine lines, and radiance/lumino-sity scores were observed (p<0.05). After 2 weeks of treatment using the facial oil treatment, a statistically significant improvement in clinical grading scores for overall appearance of fatigue/tired look, fine lines, radiance/lumino-sity/glowl and overall exuberance was observed. Immediately after in-clinic application, and continued to do so 8 hours later with compared with baseline scores. Improvements were continuously observed after 2 and 4 weeks of use when compared with baseline scores.

3930 Glutathione as a systemic skin whitening agent via the buccal mucosa: an open-label, single-arm study
Joyce Castillo, MD, Ramiro Community Hospital, Tagbilaran City, Philippines; Evangeline Handog, MD, Asian Hospital and Medical Center, Muntinlupa, Philippines; Ivan Singzon, MD, St Luke’s Medical Center Global City, Taguig, Philippines; Maria Suzanne Dato, MD, St Luke’s Medical Center Global City, Taguig, Philippines

Background: Skin color is the most apparent phototypic variation among humans and is primarily determined by the type and amount of melanin synthesized within melanocytes and the pattern and home distribution within the epidermis. In the Philippines and in most parts of Asia, behavior favoring a lighter skin color has driven the development of a lot of skin whitening products, making it one of the most common forms of body modification practices in the world.

Objective: To determine whether glutathione administered via the buccal mucosa at 500 mg per day for 12 weeks is effective and safe as a skin whitening agent.

Methods: This open-label, single arm study. Thirty-six otherwise healthy female medical secretaries and hospital personnel with Fitzpatrick skin type IV or V received 500 mg of glutathione daily for 12 weeks administered through the buccal mucosa. The main outcome was mean reduction of melanin indices measured at a sun-exposed area (extensor right wrist) and sun-protected area (mid-sternum) after 2 weeks. The melanin indices were measured daily after discontinuing the glutathione for 4 weeks (at week 16). Secondary outcomes were the mean change in melanin indices at 4-week intervals in sun-exposed vs sun-protected areas and abnormalities, if any, in the blood counts and liver enzymes at the end of the study.

Statistical significance was determined using t-test.

Results: Thirty-four participants completed the study out of thirty-six enrolled subjects. There was a significant decrease in melanin index evident at 4 weeks (for sun-exposed area) and 8 weeks (sun-protected area). The reduction in melanin index was significantly higher in the sun-exposed area compared to the sun-protected site. Four weeks after discontinuing glutathione, melanin indices continued to decrease significantly. No serious adverse events were reported and laboratory examinations remained normal.

Conclusion: Glutathione administered via the buccal mucosa is an effective and safe method of skin lightening in a small number of Filipino females. The effect is evident even after 4 weeks of discontinuation. However, long-term safety has not been established and placebo-controlled clinical trials are warranted.
Improved appearance of eye-area wrinkles with use of a cosmetic preparation containing retinol, peptides, and niacinamide: Results from the HARMONY study

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The earliest signs of facial skin aging in women worldwide include fine lines and wrinkles around the eyes. To address the need for treating these signs of facial skin aging, we evaluated a daily-use facial moisturizer formulation containing cosmetic ingredients including a cosmetic retinyl ester (retinyl propionate), peptides including Pal-KT and Pal-KTTKS, and niacinamide. These ingredients have been shown to affect skin health and structure biomarkers in vitro skin models. In addition, we reported previously the results of two independent double-blind 12-week facial studies conducted in the U.S. (Cincinnati, OH) and China (Xian) with the HARMONY formulation. In this study, we evaluated the efficacy of a novel topical formulation (HA5) containing five forms of hyaluronic acid, polysaccharides, and plant-derived stem cell extracts to provide instant and long-term improvement in skin texture as well as skin moisture content.

Subjects and Methods

Subjects were randomized to a treatment group and 29 to a delayed treatment group on hand function. In this multicenter, controlled, single-blind study, 85 subjects (35-65 years old with moderate to severe facial fine lines, wrinkles, and uneven texture) were randomized to a treatment group and 29 to a delayed treatment group. Treatment group subjects returned at month 3 for comparative assessment and then initial treatment. CaHA was mixed with 2% lidocaine HCl and injected as small boluses of up to 0.5 cc into the dorsum of each hand. Subjects received up to 2 syringes (5 cc) per hand. A series of real-time hand function tests was performed at baseline, weeks 1, 2, and 4, and at 3, 6, 9, and 12 months after treatment. Control group subjects were also tested prior to the initial treatment. Sixteen hand function tests were conducted and included assessment of (a) range of motion for flexion and extension using a Jamar goniometer, (b) sensation using an index finger touch protocol, (c) dexterity using the Functional Dexterity Test, and (d) grip strength using a standard, adjustable Jamar hydraulic hand dynamometer and pinch strength using a pinch digital dynamometer. The skin's hyaluronic acid (HA) content starts to decrease in as early as twenty years of age and is reduced to half by the age of fifty. Clinical manifestations of this reduction in HA levels include a diminished endogenous skin moisturizing capacity and the appearance of fine lines and wrinkles. In this study, we evaluated the efficacy of a novel topical formulation (HAS) containing a blend of five forms of hyaluronic acid, polysaccharides, and plant-derived stem cells extract to provide instant and long-term improvement in skin texture as well as skin moisturization. The immediate and long-term effects of HAS formulation were evaluated in an open-label, single-center clinical study. 24 subjects (35-65 years old) with Fitzpatrick skin types IV-VII completed the study. All subjects presented with mild to severe periocular lines/wrinkles. Subjects applied the HAS twice daily on the area of concern (forehead and/or around the eyes) using a thin, even coating with light pressure. The study duration was 12 weeks. Support for publication of this study was provided by Merz North America, Inc. Supported 100% by The Procter & Gamble Company.

Results: Of 100 subjects commencing treatment (mean age: 52.5 ± 6.4 years), 95 completed the study and received treatment with onabotulinumtoxinA, bimatoprost (0.03% solution) for the reduction of upper and lower eyelid folds and/or mid-face volume deficits, and a retinol product. Agreement scores on the HARMONY study aimed to investigate the psychological impact of full-face rejuvenation using sophisticated and validated patient-reported outcome measures. Design: Treatment-naive adults (53-65y) with moderate or severe facial wrinkles and/or fine lines, skin laxity, pigmentary changes, and/or mid-face volume deficits (MFVD) and eyelash hypotrichosis were enrolled. Detailed study methods are described in a companion abstract. Key outcome measures included several of the validated FACE-Q scales, including Satisfaction with Facial Appearance Overall (SFAO; primary measure), Age Appraisal (AA), Social Confidence (SC), and Psychological Well-being (PW), in addition to the Global Aesthetic Improvement Scale (GAIS).

Supported 100% by The Procter & Gamble Company.

Supported by Allenard, Inc.
IncobotulinumtoxinA versus onabotulinumtoxinA in the treatment of glabellar facial lines: Results from a multicenter, randomized, double-blind trial

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The purpose of this study was to evaluate the efficacy of incobotulinumtoxinA at the FDA-recommended dose of 20 units (U) for the treatment of glabellar facial lines (GFLs), when compared to onabotulinumtoxinA. This randomized, double-blind, parallel group study evaluated 250 females with moderate-to-severe GFLs on the Facial Wrinkle Scale (FWS). Subjects were randomized 1:1 to incobotulinumtoxinA (N = 122) or onabotulinumtoxinA (N = 128). All subjects were treated with a single 20 U dose injected into the glabellar complex at 5 injection points. Injection volume was 0.5 mL of botulinum toxin type A reconstituted with 1.25 mL sterile, preservative-free, 0.9% sodium chloride injection, USP. Subjects returned for visits at 1, 2, 3, and 4 months postinjection. The primary endpoint was defined as a ≥1-point improvement from baseline on the FWS at maximum frown 1-month posttreatment as rated by independent panel review (IPR) using standardized subject photographs. In order to determine the equivalence of treatment effect for incobotulinumtoxinA and onabotulinumtoxinA, a difference (D) in response rates (ie, ≥1-point improvement from baseline on the FWS) was obtained. The margin of equivalence based on clinical judgment was 15%. A two-sided 95% Newcombe-Wilson confidence interval (CI) was computed around the difference in response to treatment between incobotulinumtoxinA and onabotulinumtoxinA treatment groups. Secondary endpoints were ≥1-point improvement at all visits as assessed by IPR and by treating investigator; subject assessment of treatment satisfaction at all visits; subject reported date of onset and peak effect; Safety was assessed by recording all AEs. The primary endpoint was met with 95.7% and 99.2% of subjects achieving ≥1-point improvement in the incobotulinumtoxinA and onabotulinumtoxinA treatment groups, respectively. Equivalence was demonstrated with a D (95% CI) of: -3.5% (-7.5% to 0.6%). Similar efficacy profiles were demonstrated at all timepoints. Subject reported satisfaction, treatment onset, and peak effect were similar between the groups. Among all subjects, 11.5% of incobotulinumtoxinA subjects and 11.4% of onabotulinumtoxinA subjects experienced at least 1 AE with headache as the most common. There was no difference in safety profiles between the groups. The results from this study demonstrate that incobotulinumtoxinA and onabotulinumtoxinA result in similar efficacy and safety profiles for the treatment of GFLs.

Supported 100% by Merz North America, Inc.

Isotretinoin and lasers: Friends or foes

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Introduction: Traditionally lasers are avoided in patients on oral isotretinoin treatment. Most of the literature suggests that laser should be done approximately 6 months after stoppage of medication due to the belief that it may lead to scarring and delayed healing.

Background: In our center, we have been doing laser for hair reduction on patients taking oral isotretinoin since more than 15 years. Over these many years approximately 10% of our patients of laser hair reduction were at some point of time on isotretinoin therapy and were subjected to the procedure. Initially lower fluences for patients on oral isotretinoin were used as a conservative approach. Later on, laser settings were kept similar to what they were not on isotretinoin therapy. Acne scar resurfacing with long pulsed Nd:YAG laser, affirm laser and microfractional erbium glass laser have been used on patients in our center while on oral isotretinoin since the past 7 years. Q-switched YAG lasers have also been used on our patients since its introduction in our set up.

Study: We hereby present a retrospective analysis of data over the last 5 years of patients who have undergone various laser procedures while being on isotretinoin therapy. The data have been collected from both our centers over different period of time. A total of 408 patients over the above said period underwent some sort of laser procedures concurrent with the oral therapy. With hair reduction lasers there were no untoward side effects. The degree of erythema, perifollicular edema, sensitivity were comparable to those not on isotretinoin therapy. With scar lasers the results have been comparable and/or better to those not on oral isotretinoin without any major complications.

Conclusion: This experience over extended period of time in our practice suggests that laser therapy for hair reduction - alexandrite, LP Nd:YAG, Q-switched YAG laser and scar reduction using LP Nd:YAG, fractionated lasers is a safe option in patients on isotretinoin therapy.

Commercial support: None identified.

Isotretinoin and lasers: Friends or foes

Minal Patwardhan Andrade, MD, MBBS, Minal Specialised Clinic Dermatology, Sharjah, United Arab Emirates

Introduction: Traditionally lasers are avoided in patients on oral isotretinoin treatment. Most of the literature suggests that laser should be done approximately 6 months after stoppage of medication due to the belief that it may lead to scarring and delayed healing.

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New posttreatment therapy provides better results than traditional options

Carl Thornfieldt, MD, CT Derm, PC, Fruitland, ID, United States

The interest and frequency of cosmetic procedures using methods that produce controlled wounds, such as the population ages. Among the most popular postcare products is a blend of petrolatum, mineral oil, panthenol, glycerin, bisabolol and two known irritants, cetyl alcohol and lanolin alcohol. This traditional postcare approach has only been revealed to be not the best posttreatment option since more than half of patients developed worsening of erythema, and 5% suffered with edema (Morales-Burgos, A. et al. JDD 2015; 3:26-164). Air drying mildly accentuated erythema (12%) and edema (6%), but significantly accentuated crusting (15%) and epilation (14%). A single skin peel, such as a microcrust, may increase inflammation, edema and dyspigmentation. The use of petrolatum induced mild erythema (12%), edema (9%) and crusting (12%). Based on these findings, it would appear that a better postcare regimen is needed that will not only reduce complications but will have the added benefit of optimizing the permeability barrier, controlling stinging, increasing hydration, controlling inflammation, and promoting collagen, elastin and hyaluronic acid synthesis. This was the premise behind a new postcare kit (NPCK). The hypothesis was that utilizing a combination of three natural formulation products together following a moderate to deep resurfacing procedure would prevent the documented complications, and would provide the other added benefits. Two single-center, split-face, randomized, controlled clinical trials were conducted using NPCK vs TPCP after fractional laser and chemical peel with subjects aged 45-65 and Fitzpatrick skin types I-III. The clinical evaluations included clinical grading of efficacy parameters at baseline (prelaser) and day 28. TEWL and erythema were measured at baseline (pre- and postlaser), immediately after the first application, and at days 2, 4 and 7. The primary endpoint was the TEWL, and the subjects were between the ages of 18 and 60 with Fitzpatrick skin types I-III. The clinical evaluations included grading of erythema using a modified Griffiths 10-point scale, and the TEWL measurements were taken with a Tewameter TM300. For trial 1, following the postlaser application, Days 2, 4, 7 and 8, the skin showed severe erythema and marked worsening of TEWL as expected. At the second time point (postapplication), NPCK was highly statistically significantly superior (P < 0.001) by reducing erythema 25.8% greater than TPCP. At day 2, NPCK had only 2.5% greater improvement, which was not statistically significant. At day 4, the erythema equaled baseline with both products. At three time points compared to baseline, both NPCK and TPCP produced highly statistically significantly superior (P < 0.001) improvement in erythema. Two other time points with each regimen produced a statistically significant decrease in erythema (P < 0.05). The NPCK reduced postlaser mean TEWL from 61.6% to 56.7% after a single posttreatment application, then reduced further to 25.8% at day 2 and 18.5% at day 4. TPCP reduced postlaser TEWL from 60.7% to 29.6% with a single application, then further to 17.8% at day 2 to 18.6% at day 4. This change was highly statistically superior to NPCK reduction of 5.9%, but NPCK reduction of 32.9% was statistically superior to TPCP’s reduction of 17.1% at day 2. Both were comparable on day 4. In trial 2, application of the chemical peel produced the expected statistically significantly severe erythema to 3.8% (P < 0.008) and statistically significant increase in TEWL to 42.45 (P < 0.004). After a single application of one component of the NPCK, erythema was reduced by 5.1% then reduced by 70% to 1.00 at day 2 by 50%, which is not statistically different from baseline of 0.65. TEWL was reduced by 37% to 2.62% with a single application that was not statistically significantly different from baseline of 2.62%. In trial 2, the TEWL was 21.09, equivalent to baseline. This clinical study suggests that a new strategy for posttreatment therapy has merit for additional study, as the results when compared to a traditional approach were significant.

Supported 100% by Episciences, Inc.

Noninvasive Assay of Epidermal Proliferation via UV Fluorescence Excitation Spectroscopy

Eduardo Rovulo Junior, MS, Avon Products Inc, Suffern, NY, United States; Lisa DiNatale, Avon Products Inc, Suffern, NY, United States; David Merino, Avon Products Inc, Suffern, NY, United States; Uma Santhanam, PhD, Avon Products Inc, Suffern, NY, United States; John Lyga, PhD, Avon Products Inc, Suffern, NY, United States

The epidermis is the outermost part of the body and is comprised of cells primarily containing keratin. It consists of about ten layers of living cells (keratinocytes) and ten layers of dead keratinocytes (corneocytes). These cells are continually shed from the outside and continuously replaced from the inside. The desquamation process is controlled by two biological events: proliferation and differentiation. One method to noninvasively study biological markers in the epidermis and dermis of skin is by using fluorescence excitation spectroscopy. These markers, including tryptophan, pepsin-digestible collagen cross-links, collagenase digestible elasmin cross-links, have been correlated with changes in skin proliferation, cell turnover, changes in epidermal thickening and skin aging. However, there are no studies reported controlling these fluorescence markers with immunostaining of Ki67 in histology samples. A double blind, randomized 16 week study was performed in a panel of 22 female volunteers with ages between 50 and 80 years showing mild to moderate signs of photodamaged on the dorsal forearm. Subjects had one arm treated with a product containing 4% glycolic acid and the other with a placebo formula. Skin fluorescence data and biopsies and were acquired before and after 16 weeks of daily product application. Results indicated a significant increase in tryptophan fluorescence in skin on sites treated with 4% glycolic when compared with placebo after 16 week treatment. On the same sites, the epidermal thickness assessed from H&E staining of biopsies and keratinocyte proliferation, as assessed by Ki67 positive cells showed a similar trend. These results indicate that the noninvasive UV skin excitation fluorescence of tryptophan (excitation maxima at 295nm) can be used as a surrogate to document changes in epidermal thickening and proliferation as evaluated by Ki67.

Supported 100% by Avon Products, Inc.

Noninvasive cryopolyposis to reduce subcutaneous fat in the arms

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Background: Cryopolyposis provided U.S. Food and Drug Administration clearance for reducing fat from the flanks, abdomen, and thighs. The upper arms are an off-label indication for cryopolyposis, and outcome data on reducing fat from the arms using a cryolipolytic device has rarely been published.

Objective: This pilot study evaluated cryopolyposis to reduce upper arm fat.

Methods and materials: A flat vacuum applicator was used to treat seven subjects in a single-side study. The patients underwent one cycle of upper arm cryolipolysis, and outcome data on reducing fat from the arms using a cryolipolytic device has rarely been published.

Results: Ultrasound measurements showed a decrease in the fat layer at 83.3% of the upper arm. Side effects and adverse events were monitored.

Conclusion: Cryopolyposis was safe and effective to reduce arm fat.

Commercial support: None identified.
Noninvasive subcutaneous fat reduction in the submental area using cryolipolysis

Hector G. Leal Silva, MD, iDerma/ UltraLaser, Monterrey, Nuevo Leon, Mexico; Esther Carmona-Hernandez, MD, iDerma, Monterrey, Nuevo Leon, Mexico

Background: Fat reduction and body contouring procedures, which include invasive, minimally invasive, and noninvasive procedures, have become increasingly popular aesthetic procedures. Targeted cool temperatures trigger apoptosis of the adipocytes. Cryolipolysis has shown to significantly reduce localized subcutaneous fat. Cryolipolysis may have the potential to offer a noninvasive method to selectively reduce submental fat. In this study, the safety and the efficacy of a novel handpiece of a cryolipolytic device was evaluated for the noninvasive treatment of the submental fat.

Objectives: The purpose of this study is to evaluate safety and efficacy of cryolipolysis for noninvasive reduction of submental fat using lower temperatures and reduced treatment time.

Methods: Fifteen (15) subjects with suitable submental fat (>1 cm by professional caliper) were treated with a noninvasive device that cools tissue during 45–55 minutes, to induce a reduction of the submental fat. Two sessions, with an interval of 10-12 weeks were performed. Treated area was evaluated using photography and caliper measurements prior to treatment and at 10-12 week posttreatments (10-12 weeks after first treatment and 10-12 weeks after second treatment). All patients were also evaluated before and after 10-12 weeks post–last treatment by magnetic resonance imaging (MRI).

Results: A significant reduction in the submental fat was assessed by clinical observation, ultrasound, professional caliper measurement, before and after clinical photographs, 3D imaging of the face and neck, and by objective measurements in MRI. A significant area fat reduction was accomplished with only minimal discomfort. Side effects were mild and temporary, resolved completely within 10 days after treatment.

Conclusions: Cryolipolysis with lower temperature and reduced treatment time continues to be safe and effective for noninvasive fat reduction of the submental area.

Support: None identified.

Pilot study: Protective effects against infrared radiation-induced heat from a proprietary blend of antioxidants with sunscreen actives

Elizabeth Makino, MBA, Research & Development, SkinMedica, an Allergan Company, Irvine, CA, United States; Rahul Mehta, PhD, Research & Development, SkinMedica, an Allergan Company, Irvine, CA, United States

Conclusions: In a pilot study, it was demonstrated that a proprietary blend of antioxidants with sunscreen actives was effective at protecting skin from IR-induced heat.

Pilot, multicenter, open-label evaluation of safety, tolerability and efficacy of a novel, topical multipotent growth factor formulation for the periorbital region

Jwala Karnik, MD, Suneva Medical, Inc, Santa Barbara, CA, United States; Hemasundaram, MD, Suneva Dermatology, Cosmetic & Laser Surgery Center, Rockville, MD, United States; Hedi Waldorf, MD, Mount Sinai Dermatology Associates, New York, NY, United States; Mary Lupo, MD, Lupo Center for Aesthetic and General Dermatology, New Orleans, LA, United States; Vivien Nguyen, PharmD, Suneva Medical, Inc, Santa Barbara, CA, United States; Jwala Karnik, MD, Suneva Medical, Inc, Santa Barbara, CA, United States

Background: This multicenter, open-label pilot study was designed to investigate safety, efficacy and tolerability of a topical preparation containing a multipotent growth factor resignaling complex (MRCxTM), when applied to infraorbital and lateral canthal skin.

Methods: Thirty-nine female subjects with a mean age of 56.8 years who had periorbital lines and wrinkles, uneven skin texture, puffiness, and lack of periorbital skin firmness were enrolled, and 38 completed the study. All subjects were required to apply the eye cream containing multipotent growth factors bilaterally to the periorbital area, twice daily for 60 days. Efficacy and treatment-related adverse events were evaluated at Baseline and Days 14, 30, and 60. Investigators rated the periorbital areas based on 1-point scales.

Results: Subjects’ self-reported compliance with the study treatment was high (>99% compliance reported at each follow-up visit). At the study conclusion on Day 60, all subjects had improvement in the following parameters for the infraorbital area: overall brightness (+2 points), moisture (+2 points), wrinkles (+1 point), shine (+1 point), crepiness (+1 point), smooth texture (+1 point), skin tightness (+1 point), and skin tone (+1 point). Investigator-rated assessments of the infraorbital periorbital area showed a 1-point improvement for wrinkles, dyschromia/mottled pigmentation, skin tone, overall brightness, and moisture. Investigator assessments based on the Global Aesthetic Improvement Scale (GAIS) demonstrated that 76.7% of subjects were improved/improved/much improved by Day 14, and that 63.1% remained improved when evaluated at Day 60. Overall, 70.2% and 79.0% of subjects were very pleased/pleased/mostly pleased with the appearance of their infraorbital and lateral canthal areas at Day 60, respectively. Adverse events were rare, mild, and temporary consisting of mild erythema of the canthal region (N = 1) and mild eye irritation (N = 1).

Conclusions: This pilot study showed that the topical multipotent growth factor formulation was safe, effective and well-tolerated for periorbital skin rejuvenation.

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3952

Proof-of-concept evaluation of microfocused ultrasound and visualization (MFU-V) for the treatment of spider veins

Daniel Friedmann, MD. Westlake Dermatology Clinical Research Center, Austin, TX, United States; Steven Gitt, MD. North Valley Plastic Surgery, Phoenix, AZ, United States

Purpose: The purpose of this study is to evaluate microfocused ultrasound with visualization (MFU-V) for improving the appearance of lower extremity spider veins (telangiectasias). It is hypothesized that the creation of microthermal coagulative points (TCPs) will coagulate spider veins, arrest blood flow, and result in vein resorption.

Design: This was an open-label, evaluator-blinded, proof-of-concept trial of 10 female subjects aged ≥18 y/o with ≤5 discrete linear or branched spider veins measuring ≤2 cm in length. Subjects received up to 3 treatments at 2-week intervals using a narrow single-depth (1.5 mm) transducer to treat the length of each vein, starting at the junction with a feeding reticular vein, if present. The primary endpoint was qualitative assessment efficacy at 60 days posttreatment by 3 masked evaluators using randomized before and after photographs and a percentage improvement score. Secondary endpoints included physician (PGAIS) and subject (SGAIS) global aesthetic improvement scale scores at days 30 and 60, subject satisfaction, treatment-related pain scores, and the incidence of adverse events.

Summary: Ten female subjects were enrolled, 9 subjects with Fitzpatrick skin types I-III and a mean age of 46 y/o (range 32-63) completed all treatments and follow-up visits. Masked assessment of 35 before and after photographs demonstrated improvement in 34% (n = 12), no change in 57% (n = 20), with incorrect selection of pre and post treatment photographs in 6% (n = 2) and 5% (n = 1) unable to be scored due to poor image quality. PGAIS scores indicated improvement in 78% of subjects at both 30 and 60 days posttreatment. SGAIS scores of 78% and 67% and subject satisfaction rates of 78% and 89% at the same timepoints mirrored these results. Average pain score was 1.7 (range 1-4.5). Reported adverse events were expected, mild, and transient, primarily erythema and edema lasting 1 day.

Conclusion: This proof-of-concept study indicates that MFU-V can be an effective noninvasive treatment for lower extremity telangiectasias. Subjects experienced no significant adverse events and procedural comfort was easily managed without the need for pre-treatment medication. Development of a transducer with a smaller footprint, larger TCPs, and TCPs delivered closer together may increase treatment efficacy.

Supported 100% by Ulthera, Inc.

3941

Prospective evaluation of calcium hydroxylapatite in the management of jawline aesthetics

Andreas Nikolis, MD, Victoria Park, Montreal, Quebec, Canada; Arthur Swift, MD, Victoria Park, Montreal, Quebec, Canada

Introduction: Aging and facial volume loss results in sagging of jowls along the jawline. Calcium hydroxylapatite (CaHA; Merz North America, Inc) is a calcium based dermal filler that provides immediate volume correction. The objective of this study was to illustrate the improvement of jawline seventy following treatment with CaHA.

Methods: This study enrolled females with mild (Grade 1) to very severe sagging (Grade 4) on the Merz Aesthetics Scale for Jawline at rest. Patients were evaluated and scored using the Merz Validated photo assessment scale for the Jawline at Baseline, Day 14, Month 4 and 6 visits. The right and left sides of the jawline were rated independently at each visit. The jawline was treated using a 25 gauge cannula and scored using the Merz Validated photo assessment scale for the Jawline at Baseline, Day 14, Month 4 on the Merz Aesthetics Scale for Jawline. Secondary efficacy variables included change from Baseline at Month 4 on the Merz Aesthetics Scale for Jawline, patient satisfaction by questionnaire, and GABS rating at each posttreatment visit. Safety was assessed by recording AEs throughout the study and monitoring treatment-emergent AEs of special interest (bruising, pain, hematomata, edema and redness).

Results: Fifteen female patients were recruited and evaluated for the primary efficacy endpoint. Thirteen patients were evaluated for all secondary endpoints. The mean patient age was 57.95 years. The mean total injection volume (Baseline and Day 14 touch-up) was 2.80mL (SD 0.68) and 1.99mL (SD 0.37) for the right and left side, respectively. Significant improvement in jawline sagging ratings was demonstrated at months 4 (P < 0.1) and 6 (P < 0.05), when compared to Baseline. At all study time points, all patients reported satisfaction of treatment with the exception of one. Aesthetic improvement was observed in all patients with the exception of one. No change, bruising, pain, and edema were the most commonly observed AEs.

Conclusion: Treatment with CaHA resulted in significant improvement in jawline contouring and high patient and physician satisfaction at 4 and 6 months after treatment. Future studies are warranted to determine optimal volume and longevity beyond 6 months.

Supported 100% by Merz North America, Inc.

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Prospective randomized split-face evaluation of a topical crosslinked hyaluronic acid serum following three minimally invasive aesthetic dermatological procedures

Hema Sundaram, MD, private practice, Rockville, MD, United States; Julie Miniotti, Teoxane Laboratories, Geneva, Switzerland; Agnieszka Cegelska, Dermcscn Poland, Gdansk, Poland; Layla Zaidan, Dermcscn Poland, Gdansk, Poland; Nicolas Mackiewicz, Teoxane Laboratories, Geneva, Switzerland; Patrice Delobel, PhD, Teoxane Laboratories, Geneva, Switzerland; Stephane Meunier, PhD, Teoxane Laboratories, Geneva, Switzerland

Introduction: Homeostatic regulation of water content is essential for normal skin function, optimizing elasticity, barrier characteristics, electrical resistance, and appearance. Skin aging is characterized by decreased water-binding capacity, increased transdermal water loss (TEWL), and decreased water content. This study investigated ability of a humectant topical crosslinked resilient hyaluronic acid (HA) serum to enhance clinical results from fillers, microneedling or chemical peeling of aging skin. Previous comparative skin explant studies have demonstrated that this crosslinked HA is more effective than topical noncrosslinked high or low molecular weight HA in decreasing TEWL, increasing epidermal hydration, and improving corneocyte microstructure.

Methods: 24 female subjects aged 35 to 55 were enrolled. 8 received HA filler injection, 8 received microneedling, and 8 received superficial chemical peeling with mandelic acid. Subjects initiated twice-daily, standardized application of the crosslinked HA serum to one side of the face 2 days after the procedure. Imaging and bioinstrumental evaluations were performed at days 0, 14, and 28, comprising: surface topography by 3D Prensom imaging of lateral canthal regions, hydration by corneometry of the cheeks, and elasticity by cutometry of the temples.

Results: Areas treated with the crosslinked HA serum showed statistically significant improvements in surface topography and hydration compared to untreated areas. Blanded investigator scoring on 0 to 10-point visual analog scales showed greater improvement of the HA serum-treated areas in skin moisturization, tone/complexion, radiance, texture, uniformity, and global appearance. Subjects’ questionnaire responses correlated with these findings. Subjects expressed greater satisfaction with the appearance of the facial half treated with the crosslinked HA serum. No adverse events were observed in any subjects during the study period.

Conclusion: When initiated during the post procedural period, the crosslinked HA serum enhanced biomechanical properties, quality, and clinical appearance of the skin; and was well-tolerated. Based on these data, the crosslinked HA serum may be of value in improving patient outcomes and satisfaction following minimally invasive aesthetic procedures. Further investigations are in process.

Commercial support: None identified.

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Q-switched alexandrite laser for the treatment of drug-induced hyperpigmentation

Andrew Kim, MD, UCONN Health, Department of Dermatology, Farmington, CT, United States; Justin Finch, MD, UCONN Health, Department of Dermatology, Farmington, CT, United States

Drug-induced cutaneous hyperpigmentation is an uncommon adverse effect associated with a number of medications. Though considered benign, medication-associated dyspigmentation can be severely disfiguring and thus disconcerting for patients. Treatment for medication-related hypermelanosis involves cessation of the offending drug in addition to photoprotection to limit further exacerbation. Most cases of drug-induced hyperpigmentation gradually fade after stopping the inciting medication, but some cases may be slow to resolve or even permanently persist requiring modification of the offending drug. This study investigated the effects of Q-switched alexandrite laser on diltiazem, minocycline, and amiodarone-induced hyperpigmentation treated with the 755-nm Q-switched alexandrite laser. Clinically, our diltiazem patient presented with brown-grey reticulated discoloration involving the sun-exposed cheeks, neck and earlobes. Extensive blue-grey dyspigmentation of the sun-exposed face; neck and ears was observed in our amiodarone patient and blue-grey discoloration on the sun-exposed face, gingiva, nail bed and sclera was seen in the minocycline case. Confiratory biopsy was performed in the diltiazem case which exhibited changes consistent with a drug eruption with interface dermatitis and increase in sun-exposed face, gingiva, nail bed and sclera was seen in the minocycline case. Andreas Nikolis, MD, Victoria Park, Montreal, Quebec, Canada; Arthur Swift, MD, Victoria Park, Montreal, Quebec, Canada

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Conclusion: Treatment with CaHA resulted in significant improvement in jawline contouring and high patient and physician satisfaction at 4 and 6 months after treatment. Future studies are warranted to determine optimal volume and longevity beyond 6 months.

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Commercial support: None identified.

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Commercial support: None identified.
3047 Safety and effectiveness of the hyaluronic acid injectable gel, Y-CVL-17.5L, for correction of nasolabial folds: multicenter, randomized, within-subject controlled trial
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Objective: To evaluate micro-focused ultrasound (MFU-V) for its potential interaction with toxins and/or fillers.
Methods: 101 subjects were enrolled across 5 sites in this retrospective 2-year chart review, which included data from April 2013. A questionnaire was completed for each patient. Treatment dates, volume of product used, treatment areas, etc. were collected. All subjects underwent a combination treatment with MFU-V and botulinum toxin A, hyaluronic acid, and/or calcium hydroxylapatite within 6 months of MFU-V. Treatments were in the face and/or neck regions. Further data on other types of aesthetic procedures completed during the chart review period were also collected.
Results: Both male (n = 4) and female (n = 96) subjects were enrolled in this chart review. The average age was 55.32 (range 32-72). Of the 101 subjects receiving MFU-V treatments, 81 (81%) also received either hyaluronic acid/calcium hydroxyapatite, 2 (2%) received both hyaluronic acid/calcium hydroxyapatite and botulinum toxin A, 18 (18%) received botulinum toxin A. Of the 85 receiving hyaluronic acid/calcium hydroxyapatite, 57 (66%) received hyaluronic acid and 26 (31%) received calcium hydroxylapatite. 59 (59%) subjects also received treatments/procedures other than MFU-V. Adverse events (AEs) were reported in 7 subjects (7%). 5 of the adverse events were related to the MFU-V treatment, 3 related to hyaluronic acid/calcium hydroxyapatite, and 1 was related to a combination of MFU-V, botulinum toxin A, hyaluronic acid with granulocytes and retinal proteins and hyaluronic acid. None of these adverse events required any intervention. Of the 7 adverse events, 6 were listed as bruising/purpura, 1 as swelling, 1 as paresthesia, and 1 as HSV outbreak. Only 1 (HSV outbreak) was related to a combination therapy. All adverse events were mild to moderate in severity with the exception of one bruising (related to MFU-V) which was listed as ‘moderate.’ Minor medical interventions were undertaken to resolve six of the adverse events with one not requiring any intervention. Of the 7 adverse events, 4 were resolved without sequelae and 3 are listed with resolutions unknown (there was no documented resolution in the subject’s medical record).
Conclusion: Safety data have shown that there are no serious adverse events or any documented resolution in the subject’s medical record.

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3466 Substantial improvements in subject-assessed satisfaction with appearance from combined facial aesthetic treatment with onabotulinumtoxinA, dermal fillers, and bimatoprost: Primary RESULTS FROM THE Harmony Study
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Objective: To evaluate the safety and effectiveness of Juvéderm Volbella XC (Y-CVL-17.5L, cross-linked hyaluronic acid gel with lidocaine) versus non-stabilized hyaluronic acid with lidocaine (NASHA; Restylane-L) for lip and perioral enhancement.
Methods: This prospective multicenter study enrolled adults during improved touch-up frozen face scale (FFS), at 1-day, 14 days, minimal, mild, moderate, or severe, or any LFS score for those with Fitzpatrick skin type V or VI. For perioral treatment, subjects had Perioral Lines Severity Scale (POLSS) scores of moderate or severe. Evaluating investigator’s (EIs) and subjects were blinded to treatment. Subjects were randomized to receive up to 6.0 mL of Y-CVL-15L or NASHA for initial treatment and optional touch-up 30 days later. The primary effectiveness endpoint was non-inferiority of Y-CVL-15L vs NASHA by EAssessed change from baseline at month 3 in mean lip fullness using the LFS. Other endpoints included subject responses on the Satisfaction with Lips and Lip Lines modules of the FACE-Q questionnaire; and EI assessments of responders (≥1-grade improvement from baseline) on the LFS, POLSS, Oral Commissures Severity Scale (OCSs), and the Global Aesthetic Improvement Scale (GAIS). Injection site reactions (ISRs) and adverse events (AEs) were recorded.
Results: Of 224 subjects, 168 received Y-CVL-15L and 56 received NASHA. Most were female (96.9%) and white (96.2%). Median total injection volume for lips and perioral area was 2.6 mL. The primary endpoint was met. At months 3 and 9, LFS responder rates for Y-CVL-15L were 80.1% and 64.8% vs 70.8% and 57.8% for NASHA; POLSS responder rates for Y-CVL-15L were 65.4% and 65.8% vs 68.2% and 52.4% for NASHA; and OCSs responder rates were 50% vs 48% and 72.4% for Y-CVL-15L and NASHA, respectively. At month 3, more than 90% of subjects in both groups had GABS ratings of improved or much improved; by month 9, this rate was 75% for Y-CVL-15L and 66.0% for NASHA. For perioral lines, the difference in mean percentage (~P < 0.001) increased versus baseline at months 3 through 9. The most common ISRs were swelling, firmness, and lumps/humps; most were mild or moderate for Y-CVL-15L and severe for NASHA. The most common AEs for Y-CVL-15L were mild lumps/bumps and bruising.
Conclusion: Y-CVL-15L was found to be safe and effective for lip and perioral enhancement, with durable improvement in lip fullness, perioral lines, and oral commissures and a high degree of subject satisfaction.

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3459 Safety and effectiveness of the hyaluronic acid injectable gel, Y-CVL-15L, for lip and perioral enhancement: multicenter, randomized, controlled trial
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Objective: To evaluate micro-focused ultrasound (MFU-V) for its potential interaction with toxins and/or fillers.
Methods: 101 subjects were enrolled across 5 sites in this retrospective 2-year chart review, which included data from April 2013. A questionnaire was completed for each patient. Treatment dates, volume of product used, treatment areas, etc. were collected. All subjects underwent a combination treatment with MFU-V and botulinum toxin A, hyaluronic acid, and/or calcium hydroxylapatite within 6 months of MFU-V. Treatments were in the face and/or neck regions. Further data on other types of aesthetic procedures completed during the chart review period were also collected.
Results: Both male (n = 4) and female (n = 96) subjects were enrolled in this chart review. The average age was 55.32 (range 32-72). Of the 101 subjects receiving MFU-V treatments, 81 (81%) also received either hyaluronic acid/calcium hydroxyapatite, 2 (2%) received both hyaluronic acid/calcium hydroxyapatite and botulinum toxin A, 18 (18%) received botulinum toxin A. Of the 85 receiving hyaluronic acid/calcium hydroxyapatite, 57 (66%) received hyaluronic acid and 26 (31%) received calcium hydroxylapatite. 59 (59%) subjects also received treatments/procedures other than MFU-V. Adverse events (AEs) were reported in 7 subjects (7%). 5 of the adverse events were related to the MFU-V treatment, 3 related to hyaluronic acid/calcium hydroxyapatite, and 1 was related to a combination of MFU-V, botulinum toxin A, hyaluronic acid with granulocytes and retinal proteins and hyaluronic acid. None of these adverse events required any intervention. Of the 7 adverse events, 6 were listed as bruising/purpura, 1 as swelling, 1 as paresthesia, and 1 as HSV outbreak. Only 1 (HSV outbreak) was related to a combination therapy. All adverse events were mild to moderate in severity with the exception of one bruising (related to MFU-V) which was listed as ‘moderate.’ Minor medical interventions were undertaken to resolve six of the adverse events with one not requiring any intervention. Of the 7 adverse events, 4 were resolved without sequelae and 3 are listed with resolutions unknown (there was no documented resolution in the subject’s medical record).
Conclusion: Safety data have shown that there are no serious adverse events or any documented resolution in the subject’s medical record.

Supported by Allergan, Inc.
Synergistic sequential treatment (SST) combining fractional nonablative laser and intense pulsed light for skin rejuvenation

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A variety of technologies, such as surgery, dermabrasion, and ablative laser treatments have been developed to resurface the epidermis, promote collagen synthesis and achieve overall skin rejuvenation. However, the ablative nature of many of these methods carries the risk of complications and require long recovery periods. Intense Pulsed Light (IPL) applies the principles of selective photothermolysis via flashlamp-generated pulses of light, leading to the reduction of unwanted pigment and the stimulation of collagen. Nonablative fractional photothermolysis refers to energy-based heating and subsequent damage to a portion of skin while leaving areas of intact unaffected. When compared with traditional ablative procedures, non-ablative fractional laser (NAFL) allows for more rapid healing with minimal downtime. IPL and NAFL are individually popular procedures in patients seeking cosmetic enhancement with minimal downtime. This study aimed to evaluate the impact of synergistic sequential treatment (SST) for skin rejuvenation using IPL and 1565nm NAFL. A total of 20 (90% female and 10% male) subjects with Fitzpatrick skin type I-VIII baseline Goldman/Fitzpatrick Wrinkle and Elastosis Scale (WES) of 4-6 were enrolled in this study, with mean ages of 47.5 ± 6.1. Most subjects (90%) were white who had never undergone any previous light / laser based treatments. Subjects were pretreated with BET (20% benzocaine/6% lidocaine/4% tetracaine) cream for 80 minutes and received three full-face SST of IPL immediately followed by NAFL (M22 IPL and ResurFX, Lumenis Ltd.) at 6 week intervals. The Global Aesthetic Improvement scale (GAI) was used by the investigator and subjects to grade skin improvement. Subjects were examined at 1, 3 and 6 months following their last treatment. The mean WES gradually decreased from 4 at baseline throughout the treatments and follow-up visits to 3.2 ± 0.5. In the 6-month follow-up visit, this change was statistically significant (P < 0.001). Both investigator and subjects noticed a significant improvement in fine lines, skin texture, pigmentation, tightness and brightness. At the 6-month follow-up, overall improvement was assessed as “Improved” to “Very Much Improved” by 94% of the subjects and 65% of subjects demonstrated “Good” to “Very Good” satisfaction with the treatment.

Lumenis, Ltd. provided research support for this study.

Transective noninvasive treatment with weakly focused high-frequency ultrasound in reducing abdominal subcutaneous tissue

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Weakly focused ultrasound is a noninvasive alternative to improve body contour. It acts by altering the permeability of adipocytes, reducing its volume without cell necrosis, and causes minimal discomfort. It's reported five cases treated with eight weekly sessions of weakly focused ultrasound on the abdomen (MediContour General Project, Montespertoli, Italy), from November to December of 2014. Each session had a duration of one hour. The parameters evaluated before and one week after the last session, were: (a) circumference ultrasound on the abdominal height, at 3cm below and above the umbilicus and at 6cm above the umbilicus, (b) measurement of the thickness of abdominal subcutaneous tissue by ultrasound (at mesogastrium, right and left side) and (c) photography with digital camera (Sony Cybershot DSC-W80). Patients were instructed to not change eating habits and exercise routine during the study. Treatment was comfortable for most, with only one patient (the one with the lowest body mass index) referring discomfort and exercise the next day. In the last session, overall improvement was assessed as ‘moderate’ to ‘very improved’ by 94% of the subjects and 65% of subjects demonstrated ‘good’ to ‘very good’ satisfaction with the treatment.

Commercial support: None identified.

Understanding the male perspective on office-based aesthetic procedures: Awareness, motivating factors, and barriers

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Purpose: This study explores men’s awareness and attitudes towards office-based aesthetic procedures and their motivations and barriers to undergoing these procedures.

Methods: Injectable-naive but aesthetically-oriented men aged 30-65 from the United States participated in an online study (N = 600). They were asked to identify reasons why they would/would not consider an injectable treatment. They were also asked which signs of aging would they undergo injectable treatment for. They were asked if they have consulted a cosmetic provider (dermatologist or plastic surgeon), and what signs of facial aging they would feel comfortable talking to their physician about (out of 15 facial areas). They also were asked about their awareness and trial of specific facial aesthetic procedures.

Results: Subjects had a mean age of 48 years and were mainly white (90%), married (73%), had at least some college education (95%). The primary motivating factors for considering a facial aesthetic procedure were: to make them feel younger (70%) and ‘to look more youthful’ (51%). Other reasons were cited < 20% of the time, and these trends were consistent between older and younger subjects. In contrast, the main barriers to undergoing injectable treatment in the future included concerns regarding cost (42%), sensitivity to needles (41%), side effects and safety (46%), injecting a foreign substance in their body (45%), and thinking that they do not need it yet (47%). Overall, 43% of subjects had a dermatologist visit and 4% had a plastic surgeon visit, with 64% of those having seen their provider within the last year. Men are most open to talking to their physician about facial wrinkles, hair loss/balding, and their periorbital area but unlikely to talk about a red complexion, acne scarring, or broken capillaries. The awareness level of facial aesthetic procedures among men varied, ranging from higher awareness (≥90%) for plastic surgery, liposuction, and hair transplant surgery to lower awareness (39%) for dermal fillers; however, the trial rate for all procedures was low (24%).

Conclusion: Despite a willingness to discuss signs of aging and a relatively high awareness of many available procedures, aesthetically-oriented men have a low adoption rate for facial aesthetic procedures. The primary drivers for considering an injectable were that they want to look good for their age and look more youthful. This data provide a novel perspective on attitudes towards aesthetic treatments among men and may help clinicians better understand their needs.

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Clinical efficacy and tolerance of a chemical peel on women with mild to moderate photodamaged skin

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Introduction: A Jessner peel is a combination of resorcinol, salicylic acid and lactic acid which is widely accepted as an effective method for skin exfoliation and rejuvenation to address common indications such as acne and photodamage. However, high concentrations of resorcinol have been proposed to present a tolerance risk. The present study evaluated the efficacy and tolerance of a novel chemical peel containing salicylic acid, lactic acid and phenyleryl resorcinol tested in subjects with clinically determined mild to moderate photodamaged facial skin.

Methods: Thirty seven (37) female subjects between the ages of 35 and 55 were enrolled in a sixteen week single center clinical study. Each subject received a series of 4 peels, 4 weeks apart, on their face and neck. Female volunteers were provided with a cleanser, balm, moisturizer, and SPF 30 sunscreen product to use daily at home between peel treatments. Evaluations were performed at baseline, 4, 8, 12 and 16 weeks. Assessments included subjective and objective tolerance evaluations using a 10 point scale and expert clinical grading of facial skin attributes including texture and elasticity, using a 10 point scale.

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Dermatologist resident physician training and readiness to identify and manage elder mistreatment

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Background: No formal postgraduate geriatric dermatology curriculum exists currently, even though many manifestations of elder mistreatment are cutaneous. The world's population shifts toward an older demographic in many countries, currently, even though many manifestations of elder mistreatment are cutaneous.

Methods: Thirty seven female subjects between the ages of 35 and 55 were enrolled in a sixteen week single center clinical study. Each subject received a series of 4 peels, 4 weeks apart, on their face and neck. Female volunteers were provided with a cleanser, balm, moisturizer, and SPF 30 sunscreen product to use daily at home between peel treatments. Evaluations were performed at baseline, 4, 8, 12 and 16 weeks. Assessments included subjective and objective tolerance evaluations using a 10 point scale and expert clinical grading of facial skin attributes using a 10 point scale. Image analysis of Siflo Skin Replica and Canfield's VISIA CR images were included to assess fine lines/wrinkles and UV/brown spots, respectively. Ten (10) sets of Siflo Skin Replica biomarkers and selected random sets of Houston patch biopsies collected for the face area (baseline & week 16) for immunohistostaining and analysis of selected biomarkers collagen, elastin, melanin, and epidermal thickness.

Results: Statistically significant improvements were observed in fine lines and wrinkles, firmness, elasticity, skin radiance, skin tone evenness and clarity, skin color uniformity, appearance of dark/sun spots, hyperpigmentation, PIIH, pore appearance, neck crepiness and the overall skin appearance at all time points compared to baseline. Skin replica image analysis showed a statistically significant improvement in all skin attributes evaluated. The VISIA CR images showed a statistically significant improvement in invisible and brown spot intensity. Analysis of biopsy samples showed statistically significant improvement in epidermal thickness. Global tolerance evaluations showed the chemical peel was well tolerated by the study panel.

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Does clinical pseudoxanthoma-like papillary dermal elastolysis require typical elastolysis on histology? A case report and controversy

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Objective: To highlight the first case of pseudoxanthoma-like papillary dermal elastolysis (PXELike PDE) diagnosed clinically, yet histologically representing only solar elastosis.

Patient case: An otherwise healthy 75-year-old woman presented to our complex medical outpatient dermatology clinic with a four-year history of asymptomatic skin growths. Examination revealed multiple yellow papules in a cobblestone pattern on her posterior neck, axillae, sun-exposed upper extremities, and periorbital region. She demonstrated no systemic involvement. There was no history of trauma or sun overexposure to these sites.

Methods/results: A 3-mm punch biopsy was taken of a representative lesion on the patient’s left posterior neck at 3 weeks post treatment with the masque. There was no evidence of pseudoxanthoma elastica and no significantermal fibrosis to support fibroelastic papillomas. Elastolysis was not appreciated on histology. Based on the above findings, a clinical diagnosis of PXE-like PDE was formed. Treatment was initiated with a topical retinoid noting marked improvement.

Conclusion: Solar elastosis does not have a primary papular lesion. Furthermore, our patient’s lesions are on sun-protected sites. Barr ing extensive solar acneatics, these lesions could only be explained by a process in which there is a primary popular lesion. The lateonset, sex, lack of systemic involvement, and clinical presentation all support PXE-like PDE over any other disorder of elastic tissue. It is novel that our patient’s histology did not show any findings of PXE-like PDE. Solar elastosis has been previously described as a result of solar elastosis: may be a mechanism behind these papules. It is plausible, moreover, that mere changes mimicking solar elastosis represent early histological findings of PXE-like PDE.

Commercial support: None identified.

Evaluation of efficacy, tolerability and safety of a novel facial cream containing high level, cholesterol-dominant physiological barrier lipids, for improvement of skin barrier function and signs of aging

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Introduction: Physiologically aged skin exhibits reduced delivery of secreted lipids to the stratum corneum. This may contribute to delayed recovery following barrier insult. Topical application of products containing specific ratio of epidermal lipids is known to accelerate repair of barrier damage. The goal of these studies was to evaluate the efficacy of the masque in mature subjects of a novel topical formula containing high levels of physiological barrier lipids, in a cholesterol-dominant ratio that has been hypothesized to accelerate barrier recovery in aging skin.

Method: Bioinstrumental measurements were performed to evaluate the effective ness of the facial cream containing high level, cholesterol-dominant physiological barrier lipids and (2) improvement of skin barrier function and (2) improvement of skin hydration. Additionally, an 8-week single-center, clinical study was conducted on females ages 55-75 with mild to moderate fine lines/rhytides; uneven skin tone; lack of skin tone, clarity and firmness; dullness; and rough texture. Evaluations were conducted at baseline, immediately after first product use, and after 4 and 8 weeks of twice daily product use. Efficacy evaluations comprised blinded expert grading of skin attributes using a 10-point scale, bioinstrumental measurements, and self-assessment questionnaires. Tolerability assessments included subjective and objective tolerance evaluations using a 0-4 scale.

Further noninvasive assessments included biochemical analysis of lipid contents and double staining with Nile red (stains mature cells) and involucrin (stains immature cells) to determine and compare the ratio of immature and mature corneocytes at baseline and week 8.

Results: Statistical significant improvements were observed in protection, repair and improvement of barrier repair function and hydration over the 24-hour and 8-week periods. Lipid analysis showed directional increases in total ceramide and cholesterol contents. Double staining analysis demonstrated statistically significant increase in the ratio of mature to immature corneocytes at week 8 when compared to baseline. Moreover, statistically significant improvements were observed in all assessed skin attributes assessed during the 8 weeks clinical study. Global tolerability evaluations showed the formulation was well tolerated by the study subjects.

Conclusion: This novel physiological lipid formulation was efficacious, well-tolerated, and may have significant utility for barrier repair of aged skin.

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Evaluation of the efficacy and tolerance of a 30% glycolic acid peel alone and in combination with a home use facial product treatment

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Introduction: The purpose of the study was to evaluate the enhanced efficacy and tolerability of professional grade 30% glycolic acid peel when used alone and in combination with pre and post treatment of a home use facial product including a sustainable sourced quinoa husk extract, a novel and naturally derived extract for desquamation, fruit acid mix and HEPES in females with moderate signs of photodamage.

Methods: This study included 30 female subjects, of all skin types, with mild to moderate fine lines/wrinkles, lack of radiance, rough skin texture and uneven skin tone. Subjects were given the home use facial product to use daily in the evening on one side of the face based on computer-generated randomization for one week. After this week, subjects pre-treatment with 30% glycolic acid peel was applied by the dermatologist to the entire face. Subjects were instructed to continue the use of the home treatment on the side of the face that was pretreated. Evaluations were performed to assess objective and subjective tolerance, clinical efficacy of fine lines/wrinkles, radiance/brightness, skin texture, softness and evenness. Digital photography was also included in the study.

Results: The results showed that both peel alone and the peel + home use facial product-treated sides of the face elicited statistically significant increases in erythema at week 1 post 30% glycolic acid peel when compared to baseline. However, 3 days after 30% glycolic acid application, only the side treated with peel alone showed a statistically significant increase in erythema whereas the erythema on the side treated with peel + home use facial product had already subsided. Statistically significant improvement in skin softness was observed at week 1 for the peel + home use facial product. By week 2, statistically significant improvements were observed in all the efficacy parameters evaluated in both treatments and continued to week 4 when compared to baseline. When compared to pre-treatments, improvements in the appearance of fine lines/wrinkles were statistically greater for the side treated with both 30% glycolic acid peel and home use facial product at week 4. No statistically significant differences in subjective or objective irritation were found between treatments.

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Evaluation of the efficacy and tolerance of a broad protection anti-pollution masque

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Introduction: It has been shown that pollution is a key source of age-accelerating skin damage. The objective of the present studies was to assess the efficacy and safety of a naturally derived novel technology for protecting skin. This technology contains a blend of natural ingredients: tocopherol and squalene monohydroperoxide level present after a single application and exposition to UV and cigarette smoke, and (3) protective effect against micronized iron oxide particles modeling atmospheric after a single application using image analysis to assess the amount of residue on skin after wash. In addition, 50 Chinese women ages 18-45 with mild to moderate skin dullness, roughness, fine lines, uneven skin tone and lack of skin clarity/translucency, were exposed to polluted environment, in a single-center, 4 weeks clinical study. Efficacy evaluations consisted of expert grading of facial skin attribute using a 10-point scale, bioinstrumental measurements and self-assessment questionnaires at baseline, weeks 1, and 4. Objective and subjective tolerance assessments were performed at baseline and week 4 using a 4-point scale.

Results: The ICLS test showed a significant decrease of ICLS signal therefore confirming the antioxidative potential of the masque. The masque also demonstrated a significant protective effect against lipid peroxidation induced by cigarette smoke, UVA, and micro particles modeling atmospheric pollution. Moreover, statistically significant improvements were observed in all skin attributes assessed during the 4 weeks clinical study at all the time points compared to baseline. Bioinstrumentation measurements showed improvement in hydration and TEWL at each time point except T.E.W.L. measurements at week 1. Global tolerance evaluations showed the masque was well tolerated by the study panel.

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Evaluation of the efficacy and tolerance of a gentle nightly micro peel treatment on women with mild to moderate signs of aging
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Introduction: The purpose of this multiethnic study was to evaluate a gentle nightly micro peel formulated with a mild pH and including a sustainable sourced quinoa husk extract, a novel and naturally derived extract for desquamation, fruit acid mix and HEPES, tested in subjects with clinically determined mild to moderate signs of aging.
Methods: This clinical study enrolled 50 female subjects aged 33-50, with mild to moderate skin roughness, dullness, fine lines/wrinkles, skin discoloration and uneven skin tone. 50% of the subjects had self-reported sensitive skin. Efficacy was assessed by clinical grading, digital photography and self-assessment questionnaires at baseline, day 1, and weeks 1, 4, and 8. Separate statistical analysis was performed on sensitive skin alone and Asian panel alone. Tolerability was assessed by objective and subjective assessments and monitoring of adverse reactions.
Results: Results indicated that the gentle nightly micro peel treatment including a sustainable sourced quinoa husk extract, fruit acid mix and HEPES was effective in refining skin texture, improving skin softness, brightness/radiance/luminosity, fine lines/wrinkles, skin tone evenness, skin discoloration and overall appearance of skin quality. Self-assessment questionnaires indicated positive test product performance over the course of the study for the majority of product attributes assessed. Separate analysis on sensitive skin and Asian panel demonstrated improvements in most of the skin attributes. The product was well tolerated by all the subjects.

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Honokiol protects against cigarette smoke—induced collagen downregulation
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Extrinsic aging is attributed to skin changes due to lifestyle and environmental insults. Cigarette smoke contains more than 4,000 toxic compounds including many polycyclic aromatic hydrocarbons, dioxins, and furans; all of them exert negative effects on the skin, contributing to extrinsic skin aging. Cigarette smoke induce the lung and nonfunctional form of transforming growth factor beta (TGF-beta); consequently, cellular responsiveness to TGF-beta is blocked by this nonfunctional form, which results in decreased synthesis of extracellular matrix proteins, such as collagen. In this study, we evaluated the effects of honokiol—a natural biphenolic compound derived from the bark of magnolia trees, which presents antiinflammatory, antioxidative, antitumor, and neuroprotective properties—through the quantification of collagen and TGF-beta1 levels in human skin fragments exposed to cigarette smoke. Human skin fragments were incubated in culture medium and treated with honokiol (10 μM and 20 μM) and then exposed to cigarette smoke using a cigarette smoke chamber. Total collagen and TGF-beta1 levels were measured in supernatants of skin fragments culture through ELISA method. Our results demonstrated that cigarette smoke promotes significant reduction (51.1%) in collagen synthesis and an increasing of TGF-beta1 (2.1 fold), compared to control baseline group. Conversely, honokiol treatment prevented the substantial decline in the collagen synthesis in relation to the group exposed to cigarette smoke (8.62%) and 29.4% at concentrations of 10 μM and 20 μM, respectively. Interestingly, incubation of the explants with honokiol plus cigarette smoke led to a further increase in the synthesis of TGF-beta1 (96.5%) and 19.1% at concentrations of 10 μM and 20 μM, respectively. Honokiol appears to reverse the collagenolytic effects of smoking-induced TGF-beta1 dysfunction.

Commercial support: None identified.

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High frequency ultrasound parameters and forearm photaging: Correlation with age and clinical assessment
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High frequency ultrasound is a noninvasive tool used in skin ageing research to assess dermis thickness and echogenicity. This study evaluated the reliability of a range of high frequency ultrasound parameters and tested their correlation with age and a validated clinical scale for the assessment of forearm skin photaging; the difference between two body sites according to environmental exposition patterns was also investigated. Twenty-three volunteers aged 28-82 years were divided into three groups according to forearm photaging degree. A 20 MHz ultrasound unit was used to obtain cross-sectional images of the skin by two trained investigators on two different sites: the dorsal forearm (chronically photoposed skin) and the proximal medial arm (nonphotoposed skin). Several echogenicity parameters were studied for each skin compartment: total dermis (TD), upper dermis (UD) and lower dermis (LD), and the ratio between upper and lower dermis (U/L). The intraclass correlation coefficient for intrarater reliability (A vs A and B vs B), were higher than the ICC for the interrater (A vs B) reliability (median A vs A = 0.95; B vs B = 0.94; A vs B = 0.85) and 20 μM, respectively. Interestingly, incubation of the explants with honokiol plus cigarette smoke led to a further increase in the synthesis of TGF-beta1 (96.5%) and 19.1% at concentrations of 10 μM and 20 μM, respectively. Honokiol appears to reverse the collagenolytic effects of smoking-induced TGF-beta1 dysfunction.

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3288
Improvement of signs of xerosis and pruritus in elderly subjects using a skincare regimen formulated with filaggrin and ceramide technology
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Aging skin progressively degenerates, which results in reduced hydration, reduced lipid content, and reduced skin thickness among other changes; xerosis and pruritus are common manifestations of these changes. A clinical study was conducted in subjects aged 60 y and older to assess the performance and tolerability of a body wash and moisturizer formulation with filaggrin and ceramide technology. The study enrolled 50 subjects aged 60 y and older to assess the performance and tolerability of a body wash and moisturizer formulation with filaggrin and ceramide technology. Subjects with xerosis and pruritus were eligible for enrollment and used CRW once daily and CRM at least once daily after bathing and as needed for 15 days. ItchyQoL scores significantly improved from baseline to day 15. TEWL scores also improved, but were not significant. A majority of subjects reported that the regimen soothed irritated skin, relieved itchy skin, improved skin texture, and made skin feel softer. No adverse events were reported. Overall, a regimen of CRW and CRM improved skin dryness and pruritus as well as skin barrier function, and was well liked by subjects over the age of 60 y.

Galderma Laboratories, LP funded this study.

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Pattern of nonsteroidal antiinflammatory drug–specific to aging of features around the eye will enable development of specific facial sites, as determined by cutometry. Understanding the biological pathways the skin around the eye ages earlier than other sites on the face by this measure. In epithelial tissue source or body site (GenEx Age model). The results indicated that have been demonstrated to be universal indicators of dermal aging independent of analyzed using a signature of 400 consensus genes, the expression levels of which comparison. Biological sampling was coupled with measures of skin appearance and phenotypes. Tissue samples were collected from multiple periorbital locations (upper and lower eye lids, Crow’s feet and under eye), as well as other facial sites for comparison. Biological sampling was coupled with measures of skin appearance and with measures of skin functional properties, enabling correlation of molecular changes to visual and physical properties of the skin. Gene chip analysis (Affymetrix HG-U129 gene arrays) of isolated dermis from multiple facial biopsy sites were analyzed using a signature of 400 consensus genes, the expression levels of which have been demonstrated to be universal indicators of dermal aging independent of epithelial tissue source or body site (GenEx Age model). The results indicated that the skin around the eye ages earlier than other sites on the face by this measure. In support of this finding, the skin around the eye exhibited lower elasticity than other facial sites (Mechanobiology by cutometry). Understanding the aging processes specific to aging of features around the eye will enable development of specific solutions to proactively address these features.

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Pattern of nonsteroidal antiinflammatory drug–induced cutaneous adverse drug eruption in the elderly

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Background: Elderly people are commonly prescribed with polypharmacy due to multiple medical conditions which are associated with the risks for drug hypersensitivity. In addition, pharmacodynamics and pharmacokinetics alterations, including decreasing hepatic drug clearance and the decline of renal function, are also capable of contributing to the particularly risk for adverse drug reactions (ADRs) in elderly. Nonsteroidal antiinflammatory drugs (NSAIDs) are one of the most commonly prescribed medications, and about half of NSAID prescriptions are for elderly people. The aim of this study was to determine the clinical knowledge of NSAID-induced cutaneous ADRs in elderly is limited.

Objective: The aim of this study was to determine the association between the patient histories, clinical course, and causative NSAIDs drugs which contributed to cutaneous ADRs in the elderly.

Methods: A retrospective analysis was conducted involving elderly patients age 60 years and older with cutaneous ADRs suspected from NSAIDs from 2004 to 2014. Demographic data, concurrent medications, clinical course of cutaneous ADRs and possible causative drug were analyzed.

Results: One hundred and one patients were included in the study. The mean age was 67.5 years and the cutaneous ADRs occurred in more women (65%) than men (35%). Etoricoxib was the most commonly suspected drug. Single and multiple NSAIDs reacors were identifed in 91.1% and 8.9%, respectively. Angioedema with and without urticaria was the most common cutaneous ADRs in the elderly (59.3%) followed by maculopapular rash (18.8%). Forty one patients (40.6%) were cated as serious ADRs. Almost all of the patients who developed serious reactions (97.5%) were diagnosed as angioedema with or without urticaria including angioedema with and without urticaria.

Conclusion: Age-related pharmacokinetics alteration may predispose to severe ADRs from NSAIDs. This study could promote rational drug used and awareness of NSAIDs-induced ADRs in elderly patients.
3853
Dermatologic care of the transgender patient: Highlighting a practice gap within dermatology
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Background: A practice gap exists in dermatology regarding optimal care for transgender patients, especially those undergoing cross-sex hormone therapy and/or sex reassignment surgery (transsexual patients). Comprehensive, formalized guidance of this population’s dermatologic concerns are both timely and necessary.

Objectives: To review current literature on the dermatologic needs that may be unique to transgender individuals, especially those undergoing transition into their desired gender.

Methods: A MEDLINE and pubmed.org search was utilized in order to review all currently published literature related to dermatology and transgender individuals.

Results: The literature search described above using the keywords ‘transgender’ and ‘skin’ yielded 9 articles, which were reviewed. A review of the scant dermatologic and endocrine literature revealed that hormonal therapy leads to drastic skin alterations, impacting sebum production, hair growth, acne, and fat distribution, all of which may become a dermatologic concern for the transgender patient. Male-to-female transsexuals commonly present with xerosis and nail fragility due to estrogen therapy. Hair removal is a chief concern as, while beard growth is relatively resistant to androgen suppression. Further studies are needed to determine the most effective form of hair removal in this population. Female-to-male transsexuals employ testosterone treatment to achieve virilization, with acne developing in approximately 40% of subjects, and 31% developing moderate to severe alopecia. Other topics in need of further studies include recognition and treatment of dilatid fillers injections, often administered at ‘pumping parties’ where large volumes of fillers are injected into hips, buttocks, breasts, and other areas of male-to-female transsexuals by an unlicensed ‘provider.’ Topics that had relatively little literature-based guidance for dermatologists include cosmetic management of HAART-induced lipodystrophy in transgender people, and addressing cutaneous complications arising from genital surgery (neovagina or neophallus).

Conclusions: Through anecdotal experience, transgender individuals do seek care from dermatologists, and high-quality, dermatologic care may be impactful especially during the ‘transition’ process. Further studies and practice strategies are needed in the dermatologic literature in order to provide better support and quality dermatologic care for the transgender community.

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3528
Dermatologic discrimination
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Discrimination is often associated with race, ethnicity, or religion. Interestingly, dermatologic conditions have historically been a source of discrimination as well. Various skin diseases have led to significant, exile, and even death. Herein, we explore shocking historical beliefs and practices regarding specific dermatologic conditions.

Leprosy has been the target for ostracism in many cultures. The English dermatologist Robert William (1757-1812) was exiled from London in the 14th century and Hawaii in the 19th century. Various skin diseases have led to significant, exile, and even death. Herein, we explore shocking historical beliefs and practices regarding specific dermatologic conditions.

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Here, we explore the main contributions to dermatology of Professor Rona MacKie, a world-renowned Scottish dermatologist best known for her research on melanoma from the 1970s to the early 21st century. Rona MacKie was born in 1940 in Dundee, Her father, Norman Davidson, was a Biochemistry professor. She completed her medical degree at Glasgow University in 1963. From 1972-1978, she served as an advisory Clinical Lecturer at Glasgow University, and in 1978, she was awarded a Professorship, making her the first British female dermatologist to become a professor, but also the first female professor ever appointed at Glasgow University in any subject. She served as editor of the British Journal of Dermatology from 1985-1988, and as President of the British Association of Dermatologists for 1994-1995. Although now retired from clinical practice, she remains active in research. While she has published on myriad topics, her major interest focuses upon melanoma. Since 1971, she has published 185 articles on the topic. She was one of the first to stimulate interest in dermoscopy, publishing on the usefulness of the desktop microscope as an aid to the diagnosis of pigmented lesions. She played a pivotal role in the development of a “Checklist for the timely recognition of early melanomas. She performed multiple case-control studies, which showed intermittent intense UV exposure to be a risk factor for melanoma. In the 1980s, she determined the most important prognostic factors were tumor thickness, ulceration, and sex. She helped to establish a Scottish public health campaign that ultimately resulted in more tumors being detected at an earlier stage, leading to a reduction in mortality. Much of what is considered factual with regard to melanoma by today’s dermatologist was first established by Rona MacKie. She has made substantial contributions to the fields of undergraduate dermatologic education, and to direct patient education and self-help.

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3464
Professor Rona Mackie: Pioneering female dermatologist and melanoma world authority
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It is surprising how little was known about melanoma etiology, prevention and prognostication even until relatively late into the twentieth century. For instance, fluorescent lighting was considered to be a risk factor by some dermatologists in the early 1980s, and the relationship between ultraviolet radiation and melanoma was not understood. It was also an era in which female physicians faced considerable barriers within the medical profession compared to their modern day counterparts. Here, we explore the main contributions to dermatology of Professor Rona Mackie, a world-renowned Scottish dermatologist best known for her research on melanoma from the 1970s to the early 21st century. Rona MacKie was born in 1940 in Dundee, Her father, Norman Davidson, was a Biochemistry professor. She completed her medical degree at Glasgow University in 1963. From 1972-1978, she served as an advisory Clinical Lecturer at Glasgow University, and in 1978, she was awarded a Professorship, making her the first British female dermatologist to become a professor, but also the first female professor ever appointed at Glasgow University in any subject. She served as editor of the British Journal of Dermatology from 1985-1988, and as President of the British Association of Dermatologists for 1994-1995. Although now retired from clinical practice, she remains active in research. While she has published on myriad topics, her major interest focuses upon melanoma. Since 1971, she has published 185 articles on the topic. She was one of the first to stimulate interest in dermoscopy, publishing on the usefulness of the desktop microscope as an aid to the diagnosis of pigmented lesions. She played a pivotal role in the development of a “Checklist for the timely recognition of early melanomas. She performed multiple case-control studies, which showed intermittent intense UV exposure to be a risk factor for melanoma. In the 1980s, she determined the most important prognostic factors were tumor thickness, ulceration, and sex. She helped to establish a Scottish public health campaign that ultimately resulted in more tumors being detected at an earlier stage, leading to a reduction in mortality. Much of what is considered factual with regard to melanoma by today’s dermatologist was first established by Rona MacKie. She has made substantial contributions to the fields of undergraduate dermatologic education, and to direct patient education and self-help.

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2722  Syphilis: A historical depiction through artists eyes
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‘A night with Venus, a lifetime with Mercury’ has been used to describe one of humankind’s most feared diseases. Syphilis has garnered much attention in literary and artistic realms, focusing on the horrors of its manifestations and implications. Through artistic depictions, insights are gained as to how syphilis was experienced and commonly understood and endured by its victims. This poster focuses on the various portrayals of syphilis throughout the centuries of artists. Physicians in the last few hundred years including a 15th century European woodcut, Richard Tennant Cooper’s Syphilis (1912), and Jan van der Straet’s Preparation and use of guayaco for treating syphilis (1557-1612). A common theme shows syphilis viewed as retribution and consequence of the sin of desire/lust. The artists’ portrayal of syphilis throughout history allows us to see through a visual depiction the impact of this infection on the lives of its victims. While medical textbooks and atlases can impart factual information, art, the artistic medium fluently communicates a human perspective of syphilis in history.

Commercial support: None identified.

2830  The emerging trend of biohacking—self-implanted devices for human enhancement
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Biohacking broadly encompasses the practice of individuals without a specific disability applying technology to self-experiment with aspects of their own biology. There have been limited studies on biohacking in the medical literature despite popular media attention over the past several years. One video on biohacking has over 100,000 views since 2012. Harvard Business School hosted an inaugural conference in 2015. Multiple internet sites with active user bases are dedicated to biohacking. Herein we review the available literature and popular media on the more controversial and high-risk aspects related to self-implanted devices. The first scientific paper on self-implantable magnets in the fingers was published in 2011. These implants allow individuals to pick up ferromagnetic objects. In addition, the magnets provide tactile feedback through Pacinian and Meissner corpuscles when stimulated by electromagnetic fields produced by nearby electronics. Beyond magnets, radiofrequency identification (RFID) chips are used for storage and bidirectional wireless communication. The FDA approved a human RFID technology (VeriChip) in 2004 for implantation by a medical professional for patient identification purposes. By 2007, numerous RFIDs had been self-implanted by biohackers found on internet sources. RFIDs create an additional cyber security threat—researchers have demonstrated their ability to store and transmit computer viruses. Currently, online retailers offer magnetic and RFID implants directly for sale.

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2646  The history of delusional infestation
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Humanity has always been concerned about infection and infestations. There were numerous references to devastating plagues in ancient sources, such as the writings of the ancient Greeks and in the Old Testament. Delusional infestation (DI) is a disorder in which patients have a fixed, false belief that they are infested with insects, other organisms, fibers, or inanimate particles. The disease presentation has evolved over time with society and culture, and its names have changed to reflect this. In the French dermatologist, Théophile Ekbom gave the first detailed description of the disorder calling it ‘acrophobia,’ highlighting that his patients falsely believed they had scabies. The term ‘Ekbom’s syndrome’ came into use in the 1930s, named after the Swedish neurologist who published several reports, identifying the disease as a distinct isolated delusional disorder. As medicine moved away from the use of eponymous medical terms, ‘delusional parasitosis’ became the most widely used term. In many cases, patients presented to their doctors with matchboxes containing alleged parasites. However, with the decline in the use of matches, patients are now more likely to transport their specimens in other small containers or to record images with digital media, thus the so-called ‘matchbox sign’ has been renamed the ‘specimen sign.’ More recently, the Morgellons disease phenomenon has arisen in which affected patients believe they are being infiltrated with fibers, threads, oils, or other nonorganic matter. The term ‘Morgellons’ was introduced by a lay person after she saw similarities between her son’s supposed infestation with fibers and descriptions of ‘The Morgellons’ by 17th century writer Thomas Browne. DI is now the preferred term as it encompasses false beliefs of infestation with both organic and nonorganic material, including Morgellons disease.

Commercial support: None identified.
Antioxidant mixtures protect against ozone induced damage in human reconstructed skin models

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Background: Earlier findings showed that antioxidants mixtures could prevent ozone-induced oxidative damage in human keratinocytes. The aim of this study was to further evaluate the protective effect of the same antioxidants mixtures (L-ascorbic acid, alpha-tocopherol, ferulic acid, and phloretin) on reactive oxygen species (ROS) production induced by ozone (O3) exposure in a reconstructed human epidermis (RHE) model. We aim to understand whether the addition of sebum could modify the observed response.

Methods: RHE, with and without sebum, was incubated with two different antioxidant compounds for 24 hours (active ingredients: L-ascorbic acid, alpha-tocopherol, ferulic acid, and phloretin) and then exposed to different O3 concentrations (0.4 or 0.8 ppm) between 1 h and 4 h. Initial viability experiments were performed using the LDH release assay. To evaluate the oxidative stress level, the presence of 4HNE protein adducts were determined by Western blot and ROS levels using a DCFH-DA probe. Finally, the modulation of the transcription factors NFκB and NFKB were evaluated in RHE nuclear and cytoplasmic lysates after O3 exposure.

Results: RHE exposed to O3 (0.4 and 0.8 ppm) for 4 hours showed an increase in LDH release in a dose-dependent manner. RHE treated with sebum showed a higher LDH release than without sebum after 4 hours of O3 exposure (P < 0.05). In contrast, when treated with the antioxidant mixtures clearly prevented O3 induced cell damage. In the next step, we observed a significant increase in 4HNE protein adduct levels after 4 hours of O3 exposure (0.4 and 0.8 ppm) and again pretreatment with the antioxidant mixtures reduced 4HNE protein adducts formation.Likewise, there was a 24% increase in 4HNE protein adducts in RHE with sebum showed higher 4HNE levels. In addition, RHE exposed to O3 (0.8 ppm) presented an increase in overall ROS levels compared to control, of circa 5 fold, and pretreatment with the antioxidant mixtures significantly prevented the increase in ROS proliferation. To further study the protective effect of the mixtures, their ability to modulate NFKB and NFKB expression was evaluated. After O3 exposure, there was a marked increase in NFKB and NFKB, and pretreatment with the antioxidant mixtures yielded a more pronounced activation of NFKB. Furthermore, RHE exposed to O3 demonstrated an evident increase in p65 subunit translocation into nucleus in dose and time dependent manner, while RHE pretreated with the antioxidant mixtures, clearly showed a decreased in NFKB activation.

Supported 100% by Oreal.

Characteristics and outcomes of prospectively reported pregnancies exposed to certolizumab pegol from a safety database

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Background/purpose: Data on the impact of anti-TNF medications on pregnancy outcomes are limited. Certolizumab pegol (CZP) is a PEGylated Fe-free anti-TNF monoclonal antibody approved in over 50 countries for treatment of rheumatoid arthritis and/or Crohn’s disease, axial spondyloarthritis and psoriatic arthritis. The objective of this project is to provide information on pregnancy outcomes in women receiving CZP.

Methods: The UCB Pharma safety database was searched for CZP-exposed pregnancies through 1 February 2015. Maternal/paternal CZP exposure, prospective/retropective reports were included. We focus on prospective maternal exposure pregnancies to reduce bias in outcome reporting rates. Data on CZP exposure, pregnancy data, pregnancy outcomes, comorbidities and infant events were reviewed. The number of live births, miscarriages, induced abortions and stillbirths was examined.

Results: There were a total of 723 CZP exposed pregnancy reports, 572 of which were prospective. 540 pregnancies were maternally exposed (256 had known pregnancy outcomes, 47%). Of the 256 maternally exposed pregnancies with known outcome, 207 were live births (80.9%), 26 miscarriages (10.2%), 22 induced abortions (8.6%), and 1 stillbirth (0.4%). The majority of pregnancies were reported through routine surveillance (65.9%); clinical trials accounted for 9% of pregnancy reports. Indications for CZP use included rheumatoid disease (n = 100, 39.1%) and Crohn’s disease (n = 140, 54.1%). Many pregnancies (n = 70, 44.6%) were exposed only during the first trimester, when the majority of fetal organ and system development takes place. 92 cases (35.5%) were exposed to CZP in all 3 trimesters. 9 cases of congenital malformations were prospectively reported among 210 infants (including 3 sets of twins) with no discernable pattern in the reported malformations.

Conclusion: The analysis represents a uniquely large number of pregnancies exposed to a single anti-TNF medication, a high proportion of prospective exposure, and up to a third of prospectively-collected pregnancies continued treatment into the second and/or third trimesters. A limitation of this study is that the data originate from the drug manufacturer’s reporting system which can be affected by bias and inherent limitations due to the passive and voluntary nature of the reporting systems. The data collectively suggest that CZP exposure in utero does not adversely affect pregnancy outcome.

Supported by UCB Pharma.
While Tau is a well-known component in the pathogenesis of Alzheimer disease, it normally functions to bind microtubules during cell division in healthy cells. Expression of phosphorylated Tau has been demonstrated in lung, breast, prostate, and bladder carcinomas; however, it has not been studied in nonmelanoma skin cancers. We identified skin cancers from routine specimens submitted for pathology analysis from nursing home patients. Squamous cell carcinoma in situ (SCIS), invasive squamous cell carcinoma (SCC), and basal cell carcinoma (BCC) samples were acquired via shave biopsies from the nose, right ear, and right cheek, respectively. The samples were stained with rabbit monoclonal Tau antibodies directed to different phosphorylation sites (Serine 202, Serine 396, and Threonine 231) and with Ki-67 rabbit antibodies. Tau immunopositivity was remarkable with phosphorylated Serine 202 (p-Tau). The SCIS showed p-Tau immunopositivity within the epidermis (cytoplasmic and nuclear), whereas SCC staining was found predominantly in the periphery of the tumor (cytoplasmic and nuclear). In BCC, the p-Tau staining was in both the basal center and periphery of the tumor (cytoplasmic and predominantly). Ki-67 nuclear staining was more extensive than that of p-Tau. SCIS had the most Ki-67 staining at the base of the tumor, while SCC had predominantly peripheral staining. BCC also stained positive for Ki-67 mostly at the periphery of the tumor. Ki-67 staining in the tumor center Ki-67 is a well-known proliferation marker, and appears to be a more sensitive marker than p-Tau in nonmelanoma skin cancers. Previous studies have also established that high expression phosphorylated Tau was associated with breast cancers that were more chemotherapy resistant. Whether phosphorylated tau in skin cancers translates into a more aggressive behavior remains to be explored in future studies. The significance of cytoplasmic vs nuclear staining remains to be defined. The utility of p-Tau staining may find an application in therapies that target mitotic activity, such as superficial radiation.

Commercial support: None identified.

Evaluation of the cleansing efficacy of a sonic skincare brush on sunscreen removal

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Background: Dermatologists strongly recommend daily use of a sunscreen year-round for all skin types. Commerically available sunscreens are composed of either organic chemical active ingredients that act as filters to absorb ultraviolet radiation and/or mineral/physical active ingredients such as titanium dioxide and zinc oxide which physically block ultraviolet radiation. Though these sunscreens help protect the skin from harmful effects of UVA and UVB rays, inefficient removal of these sunscreens at the end of the day may lead to skin problems such as ingrown hairs and breakouts. Pacific Bioscience Laboratories has developed a new sonic skincare brush with a compact handle that deeply cleanses the skin in a gentle manner. Several clinical studies have been performed to assess the efficacy of this new-generation sonic brush in removing sunscreen from the skin.

Objective: Assess the efficacy of a sonic skincare brush in sunscreen removal.

Methods: Clinical studies were conducted to test the removal of different types of commercially available sunscreens- chemical, combination of physical and chemical, and chemical varying SPF and water resistance. Twenty-eight to 50 female subjects were enrolled in each split-face designed study (comparing two methods of cleansing for sunscreen removal, i.e., sonic cleansing vs. manual cleansing randomized to right or left cheeks for each subject). Amount of sunscreen, cleansing time, amount of cleanser, and amount of water were standardized in each study. UV imaging and image analysis (Image J, NIH, Bethesda, MD) was used to quantify sunscreen levels pre- and postcleansing. Results: Sonic cleansing removed significantly more sunscreen (chemical, combination of physical and chemical, and chemical with 80 minutes water resistance) from the skin than manual cleansing for all studies (P ≤ 0.01, Wilcoxon signed-ranks test for each comparison). Conclusions: The sonic skincare brush is shown to be extremely efficient in thoroughly removing different commercially available sunscreens from the skin.

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Evaluation of the irritation and sensitization potential of household cleaning products when topically applied to self-described sensitive skin

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Background: Acute dermal exposure to household cleaning products is a regular occurrence and represents an important route of dermal exposure to environmental chemicals. Such exposures are of particular interest in patients with self-described sensitive skin: a common patient complaint partially addressed through avoidance of certain types of consumer products. As few data are available in the literature, here we show the dermal effects of direct contact to common household cleaning products in a self-described sensitive skin population.

Methods: Human repeat insult patch tests (HRIPTs) were conducted under the supervision of a Board certified dermatologist using subjects with self-described sensitive skin (N = 57). Participants with a history of adverse reactions to cosmetics or personal care products were excluded from the study. The HRIFT used standard methodology, including an induction and challenge phase, with a total duration of 6 weeks. Samples included biobased, dye free fragranced and unfragranced liquid laundry detergents and hand dishwashing liquids. Test articles were patched semiclinically on the upper back between the scapulae.

Results and conclusions: Induction Phase: Based on the four point rating scale (0 = no visible reaction, 4 = severe reaction), the average erythema score for each test article was 0. In addition, no dermal sequelae occurred during the induction phase. Challenge Phase: The challenge patches applied on day one and three did not cause dermal irritation or sequelae. As such, these results show that the household cleaning products tested did not exhibit dermal irritation or allergic contact sensitization. These findings suggest that these formulated products will not produce adverse dermal effects from dermal exposure, even in self-described sensitive skin patients.

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Evaluation of the cleansing efficacy of a sonic skincare brush on sunscreen removal

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Background: Dermatologists strongly recommend daily use of a sunscreen year-round for all skin types. Commerically available sunscreens are composed of either organic chemical active ingredients that act as filters to absorb ultraviolet radiation and/or mineral/physical active ingredients such as titanium dioxide and zinc oxide which physically block ultraviolet radiation. Though these sunscreens help protect the skin from harmful effects of UVA and UVB rays, inefficient removal of these sunscreens at the end of the day may lead to skin problems such as ingrown hairs and breakouts. Pacific Bioscience Laboratories has developed a new sonic skincare brush with a compact handle that deeply cleanses the skin in a gentle manner. Several clinical studies have been performed to assess the efficacy of this new-generation sonic brush in removing sunscreen from the skin.

Objective: Assess the efficacy of a sonic skincare brush in sunscreen removal.

Methods: Clinical studies were conducted to test the removal of different types of commercially available sunscreens- chemical, combination of physical and chemical, and chemical varying SPF and water resistance. Twenty-eight to 50 female subjects were enrolled in each split-face designed study (comparing two methods of cleansing for sunscreen removal, i.e., sonic cleansing vs. manual cleansing randomized to right or left cheeks for each subject). Amount of sunscreen, cleansing time, amount of cleanser, and amount of water were standardized in each study. UV imaging and image analysis (Image J, NIH, Bethesda, MD) was used to quantify sunscreen levels pre- and postcleansing. Results: Sonic cleansing removed significantly more sunscreen (chemical, combination of physical and chemical, and chemical with 80 minutes water resistance) from the skin than manual cleansing for all studies (P ≤ 0.01, Wilcoxon signed-ranks test for each comparison). Conclusions: The sonic skincare brush is shown to be extremely efficient in thoroughly removing different commercially available sunscreens from the skin.

Supported 100% by Oreal.

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Evidence that a measured melanin index correlates with the clinically determined skin phototype: A pilot investigation

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In many scientific and clinical situations, it can be seen as a prerequisite to determine the skin phototype according to Fitzpatrick (SP). As the SP as clinical parameter may be influenced by the individual view of the investigator, a measurable parameter to confirm the score might be interesting. However, searching the literature, surprisingly limited information concerning the relation of SP and a measurable parameter is available. Therefore, the aim of the present study is to compare the SP with a measured melanin index (MI). Overall, 73 female white volunteers (SPI: 11, SP II: 27, SP III: 19, SP IV: 16) aged 28.6 ± 7.3 were included after informed consent. The SP was determined by a combination of the clinical inspection of the skin color, hair and eye color as well as sun reactivity as the most important aspect. Areas of investigation for determination of the MI were the forearm (FA), forehead (FH) and the cheeks (CH). For measurement of the melanin Index (MI) a reflectance spectrophotometer was used. The statistical evaluation consisted of an analysis for regression and correlation between SP and MI as well as a comparison between neighboring SPs using t-tests. The MI shows an increase with increasing SP in all three localizations investigated. A linear regression as well as a correlation between the regression line was found for all localization. RA varied between different SPs, at least when measuring in the forearm or forehead region. Challenge Phase: The challenge patches applied on day one and three did not cause dermal irritation or sequelae. As such, these results show that the household cleaning products tested did not exhibit dermal irritation or allergic contact sensitization. These findings suggest that these formulated products will not produce adverse dermal effects from dermal exposure, even in self-described sensitive skin patients.

All authors are employed by Seventh Generation, Inc which funded this research study.

Commercial support: None identified.
2943 Functional inhibition of IL-23/IL-17 in KC-Tie2 psoriasisform mice improves skin inflammation and decreases skin fibrosis by significant increase in class III \( \beta \)-tubulin expression in both melanocyte and Merkel cell populations

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Previously, we demonstrated up-regulation of neuropeptides (NPY and SP) in human cutaneous wounds treated with electrical stimulation (ES) at one time point. Therefore, the aim here was to quantitatively evaluate the expression of novel neural markers and their association with neuronal lineage related cell types in sequential cutaneous wounds in human skin treated with ES. In a cohort of volunteers (n = 40), skin wound biopsies from inner arms were either treated with ES or left to heal, in a randomized design. Whole genome transcriptional analysis of biopsies were profiled on days 3, 7, 10 and 14. Here, we identified Class III \( \beta \)-tubulin (TUBB3), neural differentiation marker as a highly up-regulated gene (P < 0.01) on day 14 ES-treated samples (ESD14). Subsequent qRT-PCR, and protein detection by quantitative immunohistochemistry and Western blotting for TUBB3 as well as for nerve fiber-associated markers PGP9.5 and neuropeptide Y, indicated the presence of up-regulated transcripts (P < 0.05) in ESD14. Moreover, the number of PGP9.5+ and neuropeptide Y+ nerve fibers, and TUBB3+ cells in ESD14 samples were significantly increased (P < 0.05, 7%, 8% and 10% respectively). Furthermore, we asked whether neural crest-derived cells (epidermal melanocytes) and/or mechano-sensory epithelial cells that express neuromarkers (Merkel cells) respond to ES. Here, we showed that both intra-epidermal human melanocytes and Merkel cells express TUBB3. In addition, ES significantly increased the number of both cell types in wounded human skin (melanocytes, P < 0.05, ESD14/control ≥ 26%, Merkel cells, P < 0.05, ESD14/control ≥ 26%). Furthermore, ES enhanced Merkel cell innervation (P < 0.05, ESD14/control ≥ 48%) and intra-epidermal melanogenesis (P < 0.05, ESD14/control ≥ 50%). Ki67/gp100 and Ki67/CK20 double immunostaining indicated that ES may expand both melanocyte and Merkel cell populations by differentiation of progenitor cells as opposed to cellular proliferation (P < 0.05, ESD14/control). This study reveals the first evidence that ES profoundly impacts skin nerve fiber sprouting and innervation of wounded human skin, in addition to significantly increasing melanocyte and Merkel cell populations.

Commercial support: None identified.

3725 Induction of neural differentiation markers by electrical stimulation in human skin: potential for epidermal wound repair

John D. Hill, ... None identified.

Antibodies used in the experiments were provided to our laboratory by Ely Lilly, but they had no part in experimental design, data collection, or analysis.

3479 In vitro skin biomarker responses to Pal-KTTKS in a UV-damage skin model

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Sun exposure has well-known effects on skin health and appearance, including increased signs of facial skin aging including wrinkles. We have reported previously that Pal-KTTKS peptide affects skin health and structure biomarkers in in vitro skin models. In the current work, we evaluated Pal-KTTKS peptide responses in a human skin equivalent culture model exposed to UV irradiation. Human skin equivalent models. In the current work, we evaluated Pal-KTTKS peptide responses in a human skin equivalent culture model exposed to UV irradiation. Here, we show that Pal-KTTKS peptide affects skin health and structure biomarkers in in vitro skin models. In the current work, we evaluated Pal-KTTKS peptide responses in a human skin equivalent culture model exposed to UV irradiation. The biomarkers included ones related to dermal matrix (collagens I and III; elastin); basement membrane and cell adhesion (laminins I and IV); and wound healing (fibronectin). Based on these results, Pal-KTTKS peptide demonstrated effects in vitro that reduced UV damage to skin cell viability and function; these in vitro effects can be related to possible prevention of photodamage and photoaging. The results provide additional support for the use of Pal-KTTKS peptide as a cosmetic ingredient in skin care formulations.

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3111 Lack of active placental transfer of certolizumab pegol: Preclinical and clinical data

Alexa B. Kimball, ... None identified.

Background: Maternal-fetal transfer of antibodies across the placenta is mediated by Fc-region binding to the neonatal Fc receptor (FcRn). Anti-TNFs adalimumab (ADA), etanercept (ETA), infliximab (IFX) have a G1 antibody Fc-region. Certolizumab pegol (CZP) is a PEFligated Fc-free anti-TNF approved in over 50 countries for treatment of rheumatoid arthritis and/or Crohn’s disease, axial spondyloarthritis and psoriatic arthritis, which can affect women of childbearing age. Based on the structural difference, we hypothesized that CZP does not bind to FcRn and is not transferred across the placenta.

Methods: The binding affinity of ADA, CZP ETA and IFX to FcRn was measured in vitro by Surface Plasmon Resonance technology. Transcytosis across a cell layer was measured in a human FcRn-transfected cell line. In the rat model, placental transfer of the fetuses of a rodent CZP-surrogate, PEGylated Fab’ and a complete IgG were compared. Materno-fetal transfer of CZP was studied in an ex vivo human placent al perfusion model. Neonatal levels of ADA, CZP and IFX were measured by ELISA and correlated with maternal levels in women receiving these anti-TNFs during pregnancy.

Results: The binding affinity to FcRn was 132m (IFX), 225m (ADA) and 1500m (ETA); no measurable affinity of CZP binding was detected. FcRn-mediated transcytosis across a cell layer (mean SEM; n = 3) was 249.6 ± 20.2 (IFX), 159 ± 20.2 (ADA), 48.3 ± 13.1 (ETA); 3 ± 4 (CZP) and 59 ± 4 ng/mL (negative control). The level of CZP-surrogate PEGylated Fab’ was >100-fold lower than the complete IgG anti-TNF in fetuses of pregnant rats. The ex vivo placental perfusion model model measured transferable antibody in patients receiving these anti-TNFs, with no detectable CZP was always much lower and often below the quantification limit.

Conclusions: The inability of CZP to bind to FcRn resulted in negligible FcRn-mediated transcytosis across the placenta. The fetuses of a rodent CZP-surrogate, PEGylated Fab’ and a complete IgG were compared. Materno-fetal transfer of CZP was studied in an ex vivo human placent al perfusion model. Neonatal levels of ADA, CZP and IFX were measured by ELISA and correlated with maternal levels in women receiving these anti-TNFs during pregnancy.

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Long noncoding expression of RNAs in skin-derived cells: Silencing of TINCR in a new reconstructed epidermal equivalent model

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A large part of the genome (98%), once called ‘‘junk’’ DNA, in fact encodes many non–protein coding RNAs (ncRNAs) that are today considered as important regulators of the major cellular and physiological processes. Over the past few years, thanks to advances in genomics analyses, emerging new regulators of skin physiology with various modes of action were reported as part of the ncRNAs, particularly the microRNAs and the long non-coding RNAs (lncRNAs). Almost 2000 microRNAs have been identified in humans, and most of them act as gene expression negative regulators, by repressing transcription and translation. Concerning lncRNAs, if more than 2600 have been described in human to date, only 175 transcripts are known with published evidence (Hugo Gene Nomenclature Committee, http://www.genenames.org/rna/LNCRNA), suggesting that a myriad of new activities and modes of action are to be unveiled. In the skin, only a few lncRNAs are today known to exert a physiological role, e.g., DANCR (differentiation antagonizing non-protein coding RNA), PRINS (psoriasis associated non-protein coding RNA), TINCR (tissue differentiation-inducing non-protein coding RNA) in the epidermis; BANCR (BRAF-activated non-protein coding RNA) and SPRY4-IT1 (SPRY4 intronic transcript 1) in melanocytes; and HOTAIR protein coding RNA induced by stress), and TINCR (tissue differentiation-inducing non-protein coding RNA) in fibroblasts. In this study, we characterized the expression of various lncRNAs in several cultured human skin cell types and in 3D-reconstructed epidermis, and focused on studying the role of TINCR and DANCR in the regulation of the epidermal homeostasis.

Commercial support: None identified.

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Models to study the effect on environmental particulate pollution on skin in vitro: Effect of PM10 and PM2.5 particles applied on human skin cultured cells and on 3D reconstructed epidermises

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The skin is exposed on a daily basis to UV radiation and environmental pollution such as volatile organic compounds, cigarette smoke, ozone, and particulate matter (PM). Major effects on human skin have been linked with air pollution, and more particularly with PM. Indeed, repetitive and prolonged exposure to environmental particulate pollution acts synergistically with UV exposure to exert negative consequences on the skin epigenetic and proteoglycan expressions. This potentially can lead to increased visible photodamage and skin aging, allergic and inflammatory conditions, and even skin cancers. Particulate air pollution is triggered by particles from the nanometer to the micrometer range, which contain harmful compounds such as heavy metals and polycyclic aromatic hydrocarbons that may modulate skin xenosensitivity pathways (eg, arylhydrocarbon receptor signaling pathway - AhR). A bioinformatics model taking into account AhR, phase I/phase II metabolism enzymes and focusing on skin antioxidant responses, was designed in order to modelize the relationships between key genes and microRNAs involved or dysregulated as a consequence to skin exposure to PM. With the goal of studying the bioinformatics predictions allowed by the model, we exposed cultured human skin keratinocytes and 3D reconstructed skin models to standardized particulate fine dust up to 10 μm in diameter (PM10-like). Then, we observed the subsequent morphological modifications, cellular viability, protein markers using specific immunodetection, DNA damage and measured the expression level of specific genes and microRNAs. In conclusion, the complementary approach involving bioinformatics and experimental testing on skin engineered tissue constitutes a strong platform for understanding and characterizing in vitro the effects of PM exposure, and represents an important implementation for the identification of protective strategies.

Commercial support: None identified.

3185
Morphologic changes of zebrafish melanophore after intense pulsed light irradiation

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Background: Recently, the pulse-in-pulse mode of IPL has been used increasingly for treatment of melasma.

Objective: To observe morphologic changes of the melanophore of adult zebrafish after irradiation with conventional and pulse-in-pulse IPL.

Materials and methods: Adult zebrafish were irradiated by conventional and pulse-in-pulse mode of IPL. The conditions for conventional IPL were 3 mJ/cm², 560 nm filter, and pulse widths of 7, 20 and 35 msec. The pulse-in-pulse conditions were 3 mJ/cm² and on-time 1/off-time 2. Specimens were observed using light microscope, transmission electron microscope (TEM), scanning electron microscope (SEM) and confocal microscope.

Results: After conventional IPL irradiation with a 7 msec pulse width, melanophore breakage was observed using light microscopy. Under TEM, irradiation with conventional IPL at 7 msec and pulse-in-pulse IPL produced melanophore thermolysis, with vacuolization. However, changes of the melanophore was not observed at 35 msec IPL. Specimen examined by confocal microscope after conventional IPL irradiation showed larger green stained area in TUNEL staining than after pulse-in-pulse mode IPL irradiation. Conclusions: Zebrafish irradiated by long pulse-IPL showed no morphologic change using light microscopy, with morphological changes of melanophores evident using TEM. Pulse-in-pulse mode IPL revealed less damage by light than conventional IPL under confocal microscope.

Commercial support: None identified.
Nitric oxide releasing nanoparticles as a potential treatment for superficial and deep cutaneous dermatophylosis

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Dermatophytes are keratinolytic fungi infecting the skin, hair, and nails. Depending on the location and depth of dermatophytosis, high rates of treatment failure and recurrence can occur with topical and oral medications. Eradication may be deterred by lengthy treatment schedules, poor drug penetration, and side effects of oral medications. Antimicrobial resistance is also increasing among dermatophytes, especially Trichophyton rubrum, the most common etiologic agent worldwide. Thus, antifungals to which resistance would be difficult to develop are sorely needed. Topical nanoparticle therapy may overcome previous limitations as the small size of nanoparticles (1-100 nm) enhances their penetration and permeation of the skin and its appendages, and their large surface area increases therapeutic interaction with fungal cells. Here, we evaluated the activity of nitric oxide (NO) releasing nanoparticles (NO-np) against dermatophyte infection. NO is an endogenous broad spectrum antifungal agent with an extremely short half-life in vivo; NO-np enable its sustained release for continuous interface with pathogens at a steady concentration. In vitro testing with T rubrum in a resazurin colorimetric assay revealed minimal inhibitory concentrations (MIC) of 5-10 mg/mL NO-np. NO-np impact was directly visualized by transmission electron microscopy, whereby T rubrum membrane disruption and intracellular changes were seen only at the correlating NO-np MIC. The translatability of these in vitro findings was assessed in a validated murine model of deep dermatophyte infection (Majocchi granuloma) by injecting T rubrum intradermally on the dorsum of BALB/c mice. Seven days postinfection, mice began daily topical treatment with saline, NO-np, vehicle controls or Terbinafine 1%. By day 5 of treatment, the fungal burden of NO-np treated mice was significantly reduced compared to all other groups based on tissue colony forming unit assays. By day 7, no fungal growth was noted in the NO-np treated group only, whereas infection persisted in all other groups. On histology, NO-np treated skin demonstrated fastened tissue recovery and decreased dermal inflammation. Inflammatory cytokines were also reduced, as measured by specific enzyme-linked immunosorbent assay. These results present NO-np as a potential therapeutic for both superficial and deep cutaneous T rubrum infection, although clinical studies are necessary to confirm the translatability to human disease.

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Presence of photocytokins and probable human carcinogens in sensitive skin laundry detergents

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Background: Laundry detergent products made for sensitive skin are a common recommendation for patients with a variety of dermatologic conditions. The primary difference in these detergents is the absence of fragrances and dyes. However, laundry detergents may also contain optical brighteners (OBs), a residue deposited by detergents that reflects visible light. OBs transferred from textiles to skin can result in phototoxicity which presents as a sunburn-like rash. Additionally, ethoxylated surfactants used in these products can be contaminated with 1,4-dioxane, a probable human carcinogen, resulting in increased exposure to this chemical.

Methods: Five commercially available sensitive skin liquid laundry detergents were evaluated. The ingredients of each product were reviewed for chemicals classified as fluorescent whitening agents. Samples of each detergent were examined for fluorescence under a Wood’s lamp to determine the presence of OB. To analytically measure the concentration of 1,4-dioxane in each sample, direct injection headspace gas chromatography-mass spectrometry with a detection limit of 0.2 ppm was conducted.

Results: Of the five detergents tested, 3 of 5 contained detectable levels of 1,4-dioxane ranging from 5.8-12.0 ppm. Wood’s lamp evaluation revealed that 3 of 5 detergents fluoresced, indicating the presence of OB, which was further confirmed via review of voluntary ingredient disclosure for the products.

Conclusions: The presence of OB in laundry detergents intended for sensitive skin could represent a dermal chemical exposure for patients suffering from a variety of dermatologic conditions, particularly if concurrent sensitivities to sunlight exist. Additionally, the recommendation of these detergents could unnecessarily expose patients to a probable human carcinogen. Decreasing patient exposure to potential phototoxins and probable human carcinogens by recommending OB and 1,4-dioxane free detergents should be considered.

All authors are employed by Seventh Generation, Inc which funded this research study.
Skin homeostasis evaluation of an autologous model of human bio-engineered skin in a GMP facility
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Introduction: Several models of bioengineered human skin have been developed by tissue engineering. Previous analyses have focus on graft integration and epithelial differentiation, but no prior studies about maintenance of skin homeostasis have been developed. The objective of this work was to analyze transdermal water loss and other clinical parameters (temperature, pH, and sebum production) in an in vivo human model of fibrin-agarose artificial skin.

Materials and methods: Human skin biopsies were obtained from healthy donors using local anesthesia. First, samples were enzymatically digested with TrypLE select (Invitrogen) to obtain keratinocytes and the remaining tissues were treated with collagenase to isolate fibroblasts. Cells were cultured in a medium with normal and low fetal bovine serum concentration (10% vs. 2%). To generate a bioengineered artificial skin, human fibrin obtained from a sample of human blood and agarose were mixed with subcultured dermal fibroblasts. Finally, keratinocytes were subcultured on top of the dermal substitutes and air-liquid technique was used for 2 weeks to induce epithelial stratification. The artificial skin was implanted in Balb-c nude mouse and measurement of transepidermal water loss (TWL), pH, temperature and sebum (Microcowa MPA) was performed weekly for a month. Histologic analyses of the in vivo and in vitro samples were performed periodically.

Results: Histologic analyses in the in vivo model showed an appropriate integration and differentiation of the epidermis. TWL of the implanted skin decreased significantly 42.3 vs. 18.02 g/h/m² P < 0.05 for the first to forth week, respectively. Progressive increase in sebum values were found, although lower significant sebum values regarding controls areas were measured.

Conclusions: These results imply that the novel fibrin-agarose human skin substitute maintenance skin homeostasis reaching similar values to native skin four weeks after the implantation.

Skin surface lipid composition analysis in healthy 22-year-old females utilizing gas chromatography-mass spectrometry
Tiffany Oliphant, MS, Floratech, Chandler, AZ, United States; Jeff Addy, Floratech, Chandler, AZ, United States; Robert Harper, PhD, Harper & Associates, La Jolla, CA, United States

The objective of this research was to evaluate the skin surface lipid (SSL) composition of healthy, 22-year-old females. While recent data has been published on the quantity of SSL, little data are available on the variation in composition of SSL when age and sex are controlled. Fifty-nine healthy, 22-year-old females were sampled on the forehead with lipid-free cigarette paper and analyzed by GC/MS for the following lipids: squalene, wax esters, glycerides, free fatty acids, cholesterol, and cholesteryl esters. For the purpose of analysis, glycerides and free fatty acids were combined due to the variation in degree of hydrolysis of triglycerides by bacteria. The variability among subjects for each component was minimal. Correlations among the five components were calculated and found to be statistically or directionally significant with the exception of the following: squalene with free fatty acids, and wax esters, and cholesteryl esters with squalene or cholesterol. Analysis of subpopulations (even though small in number) indicated that composition of SSL did not appear to be affected by race/ethnicity, self-identified oily skin, or physiological changes produced by birth control; however, may be affected by vegetarian or vegan diets. Furthermore, lipid samples taken during various time periods during the menstrual cycle (n = 9) demonstrated that the changes that occurred throughout the menstrual cycle did not immediately affect the composition of the SSL. This information provides insight into the variation and complexity of skin surface lipid composition that exists within a well-defined population.

Skin homeostasis evaluation of an autologous model of human bio-engineered skin in a GMP facility

Skin surface lipid composition analysis in healthy 22-year-old females utilizing gas chromatography-mass spectrometry

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Skin homeostasis evaluation of an autologous model of human bio-engineered skin in a GMP facility
A case of fibroosseous pseudotumor of the digit

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Fibroosseous pseudotumor (FP) of the digit is a rare, nonneoplastic heterotopic ossifying lesion involving the subcutaneous tissues of the digits. It commonly affects young adults from 20 to 30-year-olds, with women predominance. Forty to fifty of the patients do not notice. We present a case of FP on the left subungual area of 25-year-old man. Diagnosis was confirmed by histopathologic features, followed by excision of the lesion. At the 1-year follow-up, this patient came to hospital with local recurrence in same location. And complete excision was done with clear margin. After 6 months of follow-up, there was no recurrence. We suggest that FP should be considered in the differential diagnosis of any digital mass. And it is important that it needs complete excision to avoid local recurrence.

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A case of hidradenitis suppurativa with treatment effective by finasteride

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Background: Hidradenitis suppurativa (HS) is a chronic inflammation of the skin and subcutaneous tissue from the apocrine glands, with fistulas, unsightly scars and scar retractions. It affects axillary, gluteal, perineal, inguinal, submammary and umbilical areas. It is associated with endocrine disorders, immune abnormalities, genetics and poor hygiene. It initial treatment, broad spectrum antibiotics, corticosteroids, immunosuppressive agents and radiotherapy. Good progress has been observed in patients treated with antiandrogenic drugs such as finasteride.

Case report: A leukodermia patient, 30 years old, male, recurrent infections three years ago, evolution in axillary and inguinal areas and inner thighs bilaterally with nodules that progressed to suppuration and consequent scarring. It was progressive decline in the last year, even with antibiotic treatment without improvement. It was observed great increase in the size of groin and inner thigh regions, associated with firm subcutaneous nodules, with areas of fibrosis and fistulae holes. There were suppurative lesions in both arms with erythematous nodules and violet color, unsightly scars, and areas with purulent secretion, diagnosis of HS. He instituted Treatment was with finasteride 5 mg/day, single dose, resulting in good evolution of lesions, aspect of improvement and healing without recurrence to date. The process of involution was visible within 60 days of medication use. HS is an undiagnosed disease, with a prevalence of one case in every 300 adults. The therapeutic arsenal in HS is diverse but is limited at same time. Here we show an alternative for the treatment of HS with finasteride, antiandrogen drug, for a case unresponsive to treatment. This case was reported to us by Dr. A. de Souza, who was able to prescribe adequate treatment, which led to remission of HS and improved patient's quality of life.

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A case of idiopathic granulomatous mastitis associated with erythema nodosum, reactive cough and arthritis
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Idiopathic granulomatous mastitis (IGM) is a rare benign chronic inflammatory disease of the breast characterized by presence of chronic noncaseating granulomas confined to the breast lobules in the absence of an underlying etiology. The exact pathogenesis of IGM is unknown, although it is suggested to be immunologically mediated. IGM affects young healthy parous women and is thought to be associated with pregnancy and lactation. The clinical presentation includes the presence of a firm, ill-defined breast lump (often unilateral) simulating malignancy both clinically and radiologically. There are rare reports of IGM presenting with extramammary manifestations. We present a unique case of IGM that may be of interest to dermatologists who are not readily familiar with this condition. A previously healthy non-smoking 43-year-old Korean woman presented to our clinic complaining of a two-month history of a gradually worsening left breast mass. This was accompanied by a two-week history of fevers, chills, sceleral injection, nonproductive cough, joint swelling and pain involving the bilateral knees and ankles. Physical examination revealed a markedly indurated, swollen, and tender left breast as well as painful red nodules on the lower extremities. She had previously failed multiple courses of antibiotics. A prior core needle biopsy of the left breast demonstrated a granulomatous lobular mastitis, with no identifiable malignancy or infection. Tuberculosis infection was ruled out by virtue of a negative chest radiograph and previous history of BCG vaccination. A diagnosis of IGM was made, and she was started on prednisone with marked improvement in her breast mass as well as all of her other symptoms. As she continued to have residual left-sided breast mass, she was transitioned to azathioprine which she continues to take to date maintaining the improvement of her condition. To our knowledge, this is the first reported case of IGM in the United States associated with erythema nodosum, reactive cough and arthritis. IGM is a diagnosis of exclusion once infection, malignancy and other autoimmune disorders have been ruled out. It often has a chronic, relapsing course without an established optimal treatment regime for the disease. Review of the literature suggests that IGM responds well to immunosuppressive medications. Awareness of this rare condition is important as prompt diagnosis and medical treatment may prevent patients from undergoing unnecessary and disfiguring surgery.

Commercial support: None identified.

A case of rivaroxaban-induced subacute lupus erythematosus
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A 68-year-old female was referred to the dermatology outpatient department in January 2015 with a two-week history of an extensive annular pruritic papulosquamous rash of sun-exposed sites. A clinical diagnosis of subacute lupus erythematosus was made. The patient had been diagnosed with left ankle filariasis months previously and rivaroxaban had been introduced as an anticoagulant in the preceding month. The patient developed a papulosquamous pruritic eruption on the forearms, trunk, neck and face in a photodistribution. She was found to have a positive antinuclear antibody, anti-Ro, and anti-La suggestive of subacute cutaneous lupus erythematosus (S克莱) and a skin biopsy confirmed the diagnosis. Rivaroxaban was discontinued and the patient's ulcerative skin condition was managed with oral corticosteroids, acetaminophen, topical clobetasol ointment was commenced to good effect. The clinical appearance, presence and activity of the rash satisfied the criteria of S克莱. Postoperatively, she developed painful swelling and erythema, which progressed to necrosis and ulceration. She did not respond to multiple empiric antibiotics for suspected infection. The wound was debrided twice by her surgical team, with subsequent worsening of the skin lesion. Pathology from these debridements demonstrated necrosis and many neutrophils. Bacterial, AFB, and fungal tissue cultures were negative. A diagnosis of pyoderma gangrenosum was made and dermatology was consulted. Our examination revealed a large ulceration of the right superolateral chest wall and right inferior axilla with a necrotic, undermined border and surrounding erythema. Review of the patient’s history was significant for diabetes mellitus type II, Hypertension, and was negative for inflammatory bowel disease or hematologic disorder. The patient was started on infliximab, a prednusone taper, and tacrolimus 0.1% topical ointment, with improvement in her ulceration. Her progress was complicated by heavy growth of Pseudomonas aeruginosa, but healing resumed following treatment with oral ciprofloxacin and dilute bleach dressings. She healed over the course of approximately six months.

Comment: This case demonstrates the importance of considering pyoderma gangrenosum when evaluating postoperative ulcerations. In patients who are not candidates for prolonged steroids, infliximab infusions offer a suitable alternative therapy.

Commercial support: None identified.
A case of multiple trichoepitheliomas associated with alopecia areata and systemic lupus erythematosus

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Trichoepithelioma is a benign adnexal neoplasm derived from basal cells in the hair follicle. More commonly seen in female adults, there are three clinical forms: solitary, multiple and desmoplastic. The most important differential diagnosis is basal cell carcinoma because they share histological features. It has good prognosis and therefore treatment is usually for aesthetic purposes, even though it is associated with recurrence. We report a 45-year-old female patient with twelve years history of an autoimmune disease (systemic lupus erythematosus) who also presented by the time of this diagnosis a single episode of alopecia areata universals that evolved to a complete repilation, except for the eyelashes and eyebrows, after intravenous corticosteroid therapy prescribed for an episode of lupus nephritis. Simultaneously, multiple follicular normochromic papules were developed on the central portion of the face, where three biopsies were performed. The histological findings, including the alopecia area (eyebrows) revealed palisading basaloid cells surrounded by a dense fibrous stroma, compatible with trichoepitheliomas. Only lesions that aesthetically bothered the patient were removed surgically.

Commercial support: None identified.
A natural cosmetic active ingredient dedicated to the needs of pregnant woman’s skin
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Background and objectives: During pregnancy, the skin, mainly affected by the particular hormonal status, is subjected to important physiological modifications. Indeed, pregnant women’s skin is frequently described as suffering from itch and dryness and being more irritable and sensitive. In addition, the skin has to withstand important variations in volume and stretching. That’s why a cosmetic active ingredient (avocado peptides) has been specifically developed in order to address the needs of pregnant women’s skin. This patented ingredient is obtained from avocado cake, according to a biotechnological process, in compliance with our sustainable policy. The biological activity of avocado peptides has been evaluated using in vitro and ex vivo models.

Methods: Mast cells were treated with calcium ionophore or substance P to induce release of tryptase and histamine, respectively, measured according to spectrophotometric and spectrofluorometric methods. Hyaluronic acid release by epidermal keratinocytes was measured by ELISA. Glycerosaminoglycans synthesis by keratinocytes was evaluated by measuring incorporation of 35S-sulfate. Immunofluorescent staining was used to evaluate the expression of hyaluronic acid, filaggrin and transglutaminase in human skin explants previously delipidated, or not, by a mix of organic solvents, in order to alter the barrier. Gene expressions of collagen I and elastin were evaluated in dermal fibroblasts by real-time RT-PCR.

Results: Avocado peptides were able to significantly inhibit the release of histamine (-21%, P < 0.01) and tryptase (-50%, P < 0.01) by mast cells. The production of hyaluronic acid and glycosaminoglycans by keratinocytes were significantly enhanced by 31% (P < 0.05) and 34% (P < 0.05), respectively. Furthermore, in human skin explants, avocado peptides clearly enhanced the expression of hyaluronic acid by (+220%) and strongly restored the expression of filaggrin and transglutaminase after barrier disruption. Finally, avocado peptides were able to significantly increase collagen I (+44%, P < 0.01) and elastin (+78%, P < 0.01) expression by fibroblasts.

Conclusion: Based on our expertise in skin physiology and plant extraction, we developed a natural active ingredient able to preserve the comfort and beauty of the skin in the hormonal environment of motherhood: avocado peptides with soothing, moisturizing and restructuring properties.

Commercial support: None identified.

3621
A pediatric case of multinucleate cell angiohistiocytoma responsive to intralesional triamcinolone
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Background: Multinucleate cell angiohistiocytoma (MAHI) is a rare condition, with fewer than 150 cases reported in the literature. It is characterized by discrete violaceous papules most commonly involving the dorsal hands, lower extremities, and face. MAHI is composed of a vascular and fibrohistiocytic proliferation, with presence of bizarre multinucleate giant cells, increased number of capillaries and venules in the superficial and mid-dermis, and thickened collagen bundles. The etiology is unknown but several mediators such as estrogen receptors and vascular endothelial growth factor have been implicated in its pathogenesis. It is considered a benign entity with a progressive course. While it does not necessitate therapy, treatment may be pursued for management of pruritus or for cosmetic purposes. Treatment with cryotherapy, laser therapy with carbon dioxide, argon gas and intense pulsed light, and surgical excision have been described in literature.

Case report: An 11-year-old male presented to dermatology clinic with a 6 month history of symmetrically distributed tender 2-4 mm erythematous to violaceous papules over proximal and distal interphalangeal joints over the dorsal hands. The patient’s medical history was unremarkable with no known trauma or systemic symptoms such as fevers, chills, joint pain. The patient did not have lesions elsewhere on the body. A biopsy was performed revealing a multifocal, reactive fibrohistiocytic proliferation consistent with MCAH. The patient was treated but unresponsive to high-potency topical corticosteroids, cryotherapy and pulsed-dye laser. A subsequent trial of intralesional triamcinolone was effective in reduction of the size and extent of the lesions.

Conclusions: We present a unique case multinucleate cell angiohistiocytoma in a young male child. The etiology in his case is unclear. This case introduces new potential treatment options for this rare condition. The patient underwent a trial of several therapies, including pulse-dye laser and intralesional triamcinolone. To our knowledge, this case is the first described intralesional triamcinolone (which was effective) has been previously reported in the literature for treatment of MCAH.

Commercial support: None identified.

3690
A rare case of a perforated bowel loop presenting as an erythematous rash in a 78-year-old woman
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Patients with perforated bowel loops commonly present with abdominal pain, guarding and vomiting and require urgent surgical intervention. To the best of our knowledge, this is the first described case of a perforated bowel loop initially presenting as an erythematous rash in an elderly adult. A 78-year-old female presented to the acute medical unit with a ‘rash’ over the anterior aspect of her abdomen which had been present for 2 weeks. Examination revealed a temperature of 37.5 degrees Celsius. Her erythematous rash was well demarcated measuring 18 by 18 centimetres with surrounding edema and induration. Initially the acute medical team diagnosed her with abdominal cellulitis and she was prescribed a course of amoxicillin. The next day her rash had evolved into small blisters which raised suspicion of necrotizing fasciitis as a differential. Chest and abdominal radiographs revealed extensive surgical emphysema. Computed tomography imaging revealed a bowel loop hernia within the periumbilical area which appeared twisted and perforated causing free air in the abdomen. The patient underwent urgent surgery, debridement of the affected skin area showed necrosis on histological analysis. The patient recovered well postoperatively. Perforated bowel loops are a surgical emergency; patients can present a variety of ways however cutaneous manifestations are not usually a key differentiating feature except in cases driven over the spin by otherwise otherwise medical cause. In this case has immense teaching value with regards to not only the radiological imaging but also emphasizes that cutaneous lesions can manifest as a result of pathology skin deep.
3639

Acral pseudolymphomatous angiokeratoma

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Introduction and objectives: The pseudolymphomatous acral angiokeratomas (APACHE) is a benign skin disease that although histopathologically compatible with lymphomatous processes, should be included in the group of skin pseudolymphomas. The etiology of APACHE is still unknown, but believed in a hypersensitivity reaction to insect bites, due to histopathology and acral location of the disease presented.

Methods: A cross sectional study was conducted with 103 patients from the dermatology clinic of National University Hospital, Singapore. Patients with CU were asked to fill out a questionnaire for assessment of adherence to therapy and QoL. Using the Morisky 8 Item Medication Adherence Scale to categorize adherence as high, medium, low. For assessment of QoL, we used the validated CU-QOL questionnaire by Bazzar et al with modifications, consisting of 18 items.

Results: Of the 633 patients (ADA, n = 462; placebo, n = 171) completed 12 weeks of treatment. ADA therapy was associated with a trend toward reduced need for acute surgical interventions in these studies, by assessing the proportion of patients receiving incision and drainage (I&D) procedures the incidence of complete elimination of abscesses, draining fistulas (among subjects with at least 1 of these lesions) as indicators for the reduced need for surgery.

Methods: Adults with long-term HS were randomized (1:1) to receive ADA (160 mg at week 0, 80 mg at week 2, and 40 mg weekly starting at week 4) or placebo for 12 weeks. Patients were allowed ≥2 I&D interventions or intralesional steroid injections to treat acute painful lesions.

Results: A total of 635 patients (ADA, n = 316; placebo, n = 319) were randomized and 596 (ADA, n = 300; placebo, n = 296) completed 12 weeks of treatment. ADA therapy was associated with a 55% reduction in the proportion of patients receiving I&D procedures (ADA, n = 11; placebo, n = 17; P = 0.008). A greater proportion of patients who received ADA, compared with placebo, experienced complete elimination of abscesses (39% vs 33%, P = 0.02) or draining fistulas (33% vs 19%; P < 0.001) at week 12.

Conclusions: Adalimumab treatment is associated with a trend toward reduced need for acute surgical interventions in patients with moderate-to-severe hidradenitis suppurativa.

Introduction: Adalimumab (ADA) weekly therapy has been demonstrated to improve clinical signs of hidradenitis suppurativa (HS) based on results from 2 randomized, double-blind, placebo-controlled phase 3 trials (PIONEER I and PIONEER II). This analysis was conducted to determine whether ADA therapy was associated with reduced need for acute surgical interventions in these studies, by assessing the proportion of patients receiving incision and drainage (I&D) procedures the incidence of complete elimination of abscesses, draining fistulas (among subjects with at least 1 of these lesions) as indicators for the reduced need for surgery.

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Conclusions: Adalimumab treatment is associated with a consistent trend toward reduction in the need for acute surgery, with a significant effect noted on the complete elimination of draining fistulas.

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Adrenaline in anaphylaxis treatment and self-medication: Experience from a Belgian inner city emergency department
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Background. Anaphylaxis is a life-threatening emergency of which reliable epidemiological data are lacking. This study aimed to analyze how fast an emergency specialist was encountered and whether treatment was adherent to the actual World Allergy Organization (WAO) guidelines for management of anaphylaxis.

Methods. Patient data were collected between 04/2009-04/2013. Emergency doctors completed a questionnaire for adult patients with anaphylaxis presenting at the emergency department (ED) of the St. Pierre hospital in Brussels. Inclusion criteria were based on the Sampson criteria of anaphylaxis. Data were analyzed using a Microsoft Excel database.

Results. 0.04% of all emergency visits in adults presented with anaphylaxis. 64% of patients received medical help later than 30 minutes after disease onset. 67% of all patients received adrenaline, 85% oral antihistamines, and 89% received IV glucocorticosteroids. 46% of all patients were discharged directly from the ED. 87% of those patients received further recommendations. 67% corticosteroids, 85% antihistamines, 9% adrenaline IM, 74% were instructed to consult an allergist for adequate diagnosis. 54% of all patients were hospitalized as in-patients.

Conclusion. The majority of patients were treated according to the WAO guidelines for management of anaphylaxis, but only a minority received the recommended adrenaline auto-injector for self-medication at discharge. Because the majority of patients received medical help later than 30 minutes after symptom onset, adrenaline autoinjector prescription is a necessity. The low rate of doctors prescribing adrenaline autoinjectors in ED setting underlines the need to train doctors of various backgrounds in prevention and treatment of anaphylaxis, and the close collaboration with allergologists.

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An atypical manifestation of graft-versus-host disease presenting as discrete subcutaneous nodules
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Introduction: As the number of patients undergoing stem cell transplantation rises and survival improves, the prevalence of graft-versus-host disease (GVHD) is expected to increase. Chronic cutaneous GVHD is classically described as lichenoid papules or sclerotic plaques. Although these are the most common presentations, many others may be encountered. We present one such case of GVHD manifesting as discrete subcutaneous sclerotic nodules following allogegenic stem cell transplantation for acute myelomonocytic leukemia. This case highlights an unusual presentation of chronic cutaneous GVHD and emphasizes the importance of clinicoanatomopathological correlation.

Case report: A 43-year-old female was diagnosed with acute myelomonocytic leukemia in 2012 for which she underwent chemotherapy with idarubicin and cytarabine. Repeat bone marrow biopsy after chemotherapy showed dysplastic changes with granulocyte and megakaryocyte hyperplasia, and stem cell transplant was recommended. The patient had a conditioning regimen of busulfan and fludarabine followed by a matched unrelated donor allogegenic stem cell transplantation in 2013. She subsequently developed acute GVHD of the skin which responded well to oral steroids. Later that year following routine PET-CT scan, she was diagnosed with diffuse large B-cell lymphoma, which responded completely to four doses of rituximab. Two years later, she presented to the dermatology clinic with discrete tan-purple subcutaneous nodules on the abdomen. H&E-stained sections revealed an interface reaction pattern with apoptotic keratinocytes and significant pigment incontinence. There was homogenization of the collagen in the papillary dermis and sclerosis of the collagen in the mid and deep dermis, as well as decreased adnexal structures. Bacterial, fungal, and atypical mycobacterial cultures were negative. The diagnosis was consistent with sclerodermod GVHD, and the nodules were responsive to triamcinolone 0.1% cream.

Conclusions: This case highlights an unusual clinical manifestation of chronic GVHD. We report a case of nodular sclerotic GVHD in a patient following allogegenic stem cell transplantation for acute myelomonocytic leukemia. Clinicoanatomopathological correlation was essential to rule out a cutaneous manifestation of the patient’s B-cell lymphoma or development of an infection. Treatment of these skin lesions with topical triamcinolone 0.1% resulted in significant resolution.

Commercial support: None identified.
An observational analysis of office-based microscopy

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Introduction: These data were captured over a two year period.

Methods: The number of patients seen in an academic dermatology clinic between June 2013 and the same time period: KOH and scabies preparations were recorded as either positive or negative. Gram stains were totaled and divided into five groups: Gram-positive, Gram-negative, mixed, fungi, and negative (no organisms). Tzank smears were also counted and divided into four groups: multinucleated giant cells (MNGCs), eosinophils, molluscum bodies, and negative. The data was recorded and analyzed yearly and in monthly quartiles using an excel spreadsheet.

Results: KOH testing was performed on 3.3% of patients from June 2013 to December 2013 and 25% of this group had a positive test. In 2014, KOH testing was performed on 4.2% of patients and 26% of this group had a positive test result. From January 2015 to June 2015, KOH testing was completed in 4.3% of patients and 15% had a positive result. The percentage of gram stains performed during 2013 (June to December), 2014, and 2015 (January to June) was 1.0%, 1.4%, and 1.4% respectively. Of these groups the majority of the stains returned Gram-positive (>40%) and the minority (<4%) returned Gram-negative. A negative stain (no bacteria) averaged 17% in 2014 and 2015 and 32% in 2013. Scabies preparations were utilized in 0.3%, 0.7%, and 1% of patients during 2013 (June to December), 2014, and 2015 (January to June) respectively with the percent positives 38%, 31%, and 40%. The Tzanck smear was utilized in less than 1% of patients during each year. A negative smear was found on average in 48% of this group. molluscum bodies in 14%, eosinophils in 12%, and MNGCs in 29% over the two year time period.

Conclusion: KOH testing was the most common laboratory test performed in our dermatology clinic over the course of a two year period. During this period, KOH testing was performed on 3.9% (3.3 to 4.5) of patients with a positive test result in 22% (15 to 26) of this group. The Gram stain was the next most common test performed on approximately 1.5% of patients with over 40% of patients in that group positive for Gram-positive bacteria. While the scabies preparation was used infrequently in our clinic (<1% of patients per year), it yielded a positive test result in 36% of those tested. The Tzank smear was also a less commonly utilized test (<1% of patients per year) and more patients in this group tested negative (45%, 40-48) compared to those who tested positive for MNGCs (29%, 17-40).

Commercial support: None identified.

An unusual case of annular purpura in a patient with overlapping systemic lupus erythematosus and rheumatoid arthritis

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A 45-year-old woman with an overlap syndrome of systemic lupus erythematosus and rheumatoid arthritis developed bizarre annular purpuric lesions on her arms and legs after stopping clarithromycin treatment for uroinfection. Histopathology revealed vacuolization along epidermal basement membrane, diffuse sparse neutrophilic infiltration of the dermis with slight leukocytoclasia, dermal edema and some extravasated erythrocytes. Direct immunofluorescence examination found fine granular linear deposits of IgG, IgA, IgM, and C3 complement along epidermal basement membrane, immunofluorescence of the nonepitheliun upexposed skin showed the same pattern of positivity in IgG and IgM. The diagnosis of urticarial vasculitis with erythema gyratum repens like eruption associated with systemic connective tissue diseases was suggested. The patient was treated successfully with higher doses of systemic corticosteroids and hydroxychloroquin with complete resolution of skin lesions in two weeks. No similar lesions were seen in three years of follow-up.

Commercial support: None identified.

An unusual case of erythema elevatum diutinum

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Clinical history: A 51-year old male presented with a 12-month history of progressive skin swellings. They first appeared on his dorsal hands and elbows, then extended to involve his lower limbs. They were occasionally tender and frequently caught in his clothing. He was systemically well with no weight loss. On examination, he had large soft, mobile and multi-lobulated swellings localized to his elbows and knees. He had scattered smaller nodules present on his lower legs and dorsal hands. A vasculitic petechial eruption was noted on the flexural aspects of his arms. He had no associated lymphadenopathy or organomegaly. He was systemically well.

Investigations: Autoimmune profile; ANA, ENA, ANCA and cryoglobulins were all negative. HIV, Hepatitis B and C screen were negative. FBC showed a mild monocytosis. ASOT was normal. IgG was normal. IgA was elevated at 12gL (0.8-4 g/L) and IgM was low at 0.37 g/L (0.5-2 g/L). No paraproteins were identified on immunofixation. An incisonal skin biopsy of one of the characteristic lesions showed dense dermal mixed inflammation within the superficial and mid dermis. The infiltrate was composed of a mixture of lymphocytes, macrophages, neutrophils with scattered eosinophils and was separated from the overlying epidermis by a Grenz zone. Foci of collagen necrobiosis with a palisade of neutrophils, leukocytoelastic debris and occasional foci of red blood cell (RBC) extravasation were noted. A second punch biopsy taken from the petechial areas, showed a much milder infiltrate, but with abundant leukocytoclastic debris and RBC extravasation, consistent with leukocytoclastic vasculitis. Combining the histological findings from both biopsies with the clinical presentation, a diagnosis of erythema elevatum diutinum (EED) was made. Dapsone 100 mg once daily was commenced and after only 4 weeks of treatment the lesions significantly improved.

Discussion: EED is a rare dermatosis that characteristically presents with papules or plaques involving dorsal hands and extensor surfaces. Our patient’s presentation was atypical as the swellings were pedunculated and very large in size. Clinopathologic correlation is important to aid the diagnosis and histology may demonstrate the changes of leukocytoclastic vasculitis. EED can be associated with underlying infection or hematologic abnormalities. Response to dapsone can be dramatic and in our case resulted in almost complete resolution of the lesions.

Commercial support: None identified.
Annular leukocytoclastic vasculitis associated with underlying infection: A case report
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Introduction: Leukocytoclastic vasculitis (LCV) is characterized by a fibrinoid necrosis of small blood vessels surrounded by neutrophilic inflammation. The typical presentation of LCV is palpable or macular purpura, although urticarial papules, purpura, vesicles, petechiae and targetoid lesions may also be seen. An annular, geographic appearance of LCV is rare. LCV may be idiopathic or it may occur secondary to connective tissue disease, drug reaction, exposure, malignancy, infections and infections. Approximately 15-20% of cases of small vessel cutaneous vasculitis are considered to be secondary to underlying infections. We present a case of this uncommon presentation of LCV secondary to a bacterial infection.

Case report: An 83-year-old man was admitted to our center in May 2015 with a 2-week history of purpuric, erythematous-to-violaceous, concentric annular and polycyclic lesions affecting both his lower extremities. The lesions were non-palpable and asymptomatic. The patient’s medical history was significant for a Merkel cell carcinoma of the right leg diagnosed in September 2013, treated with wide surgical excision and radiotherapy. In March 2015, the patient’s PET scan showed enlarging right inguinal lymph nodes. He subsequently underwent right inguinal lymph node dissection in April 2015. The patient also had longstanding hypertension, coronary artery disease, benign prostatic hyperplasia and an adrenal adenoma. His treatment for these conditions included bisoprolol, dutasteride and soludol. He had not received any new medications in the weeks preceding his admission. Upon admission to our center in May 2015, the patient presented, in addition to the cutaneous lesions, a two-week history of increased pain and redness of the surgical site with associated drainage of fluid and pus as well as fever and chills. The patient had no other systemic symptoms. Ultrasound examination of the surgical site showed an infected seroma. Bacterial culture of the surgical wound revealed infection with Staphylococcus aureus, Klebsiella pneumonia and Escherichia coli. Laboratory study findings were as follows: leukocytic count 9.0 x 10^3 cells/mm^3, hemoglobin 9.1 g/dl, platelet count, 288 x 10^3 cells/mm^3, AST, 69 U/L, ALT 59 U/L, alkaline phosphatase, 67 U/L, total bilirubin, 11 mg/dl. Screening tests for hepatitis B, hepatitis C and HIV were all negative. ANA, PR3-ANCA and MPO-ANCA tests were negative as well. Serum protein electrophoresis showed changes in response to acute inflammation. Our patient also developed acute kidney failure with microscopic hematuria and proteinuria requiring several days of hemodialysis. He was seen by our nephrology service and diagnosed with a parainfectious glomerulonephritis. Histopathologic examination of a purpuric annular lesion found perivascular and interstitial infiltration of neutrophils within the superficial dermis, extravasated erythrocytes, characteristic of LCV. The patient was treated with intravenous vancomycin and ertapenem for 14 days. The cutaneous lesions improved dramatically upon initiation of antibiotic therapy. Upon discharge, the lesions were completely resolved, the patient’s liver enzymes were within normal range and his kidney function had partially recuperated.

Discussion: Annular LCV is an uncommon clinical variant of LCV first described by Degos and Guilaine in 1962. To date, this clinical variant of LCV has been reported in association with several systemic diseases such as sarcoidosis, ulcerative colitis, chronic hepatitis B with associated mixed cryoglobulinemia, monoclonal gammopathy, lymphoma and systemic lupus erythematosus. It has also been linked to pregnancy, cholelithiasis, sarcoidosis, antihypertensive medication and nonsteroidal antiinflammatory drugs. Although annular LCV is not a defined condition within LCV, Cribier et al reported that some cases of annular LCV represent a distinct subset of recurrent LCV characterized by multiple attacks for years. Upon initiation of treatment, the lesions completely cleared with no new lesions for 7-10 days and complete clearance of all lesions with dapsone therapy. Our patient does not fulfill all the criteria established by Cribier et al and therefore cannot be classified as having this subtype of annular LCV. Our patient’s lesions developed together with the histopathologic findings is consistent with a diagnosis of annular LCV. The appearance of the annular purpuric lesions having coincided closely with the development of symptoms of a postoperative infection, the resolution of these lesions with treatment of the infection, the lack of new medications to impute and lack of evidence of an autoimmune process all suggest that in this case the cause of the LCV was infectious. To the best of our knowledge, this is the first reported case of annular leukocytoclastic vasculitis associated with an underlying bacterial infection.

Commercial support: None identified.

Association of neurogenic rosacea and chronic posttraumatic stress disorder (PTSD): Possible role of autonomic nervous system dysregulation and high sympathetic tone in PTSD
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Background: ‘Neurogenic’ rosacea is a distinct clinical subtype (Scharschmidt 2011) of rosacea. Neuronal dysregulation is believed to play a role in its pathogenesis via mechanisms such as vasomotor instability and release of proinflammatory neuropeptides. The skin is innervated with a network offferent sensory nerves and dihagnosed with a para

Objective: Evaluate the prevalence of neurogenic rosacea in chronic PTSD
Methods: Naturalistic observations of patients (MAG’s psychiatric practice) over a period of 1 to 7 years. 20 female patients with chronic PTSD (all meeting DSM-IV-TR or DSM-5 criteria: mean age: 45 ± 6 ± 2 years. Clinician Administered PTSD Scale scores in all cases) were evaluated. Controls consisted of 20 age and sex-matched controls with mood disorders, conditions also associated with rosacea.

Results: 7/20 (35%) PTSD patients versus 2/20 (10%) controls had symptoms of neurogenic rosacea. The typical case reported a tingling sensation, some burning and tenderness to touch affecting the face for 1 to 2 weeks, which was followed by chronic facial flushing. During acute flare-ups there was some facial edema and a few pruritic papules. The most prominent symptoms were erythema and flushing in all patients. The patients described exacerbation of rosacea by psychological stress which often preceded its onset. Dermatologic examination revealed erythema and telangiectasia. Treatment of the autonomic dysregulation in PTSD with mood stabilizers such as lamotrigine and valproic acid, was associated with improvement in both subjective and objective symptoms of rosacea.

Conclusion: PTSD may be associated with higher prevalence of neurogenic rosacea, possibly secondary to the autonomic dysregulation and high sympathetic tone in PTSD. This previously unreported finding needs to be replicated in other clinical settings.

Commercial support: None identified.

Assessing the efficacy of a sonic skin care brush used for cleansing prior to shaving
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Background: Consumer devices for skincare have become increasingly popular among women in the US with sonic cleansing devices generating the highest usage according to a recent Mintel report (Beauty Devices – US 2015). A sonic cleansing brush has recently been targeted to men for facial cleansing, beard cleansing, as well as preparation to wet shaving. In order to evaluate the efficacy of this sonic brush when used before shaving, a split-face study was performed comparing sonic cleansing to manual cleansing.

Objective: To evaluate and compare the efficacy and tolerability of a sonic brush versus manual cleansing when used for cleansing prior to shaving.

Methods: Fifty-two male subjects between the ages of 25 to 59 years completed this four-week, randomized, single-center study comparing the cleansing efficacy of a sonic cleansing brush versus manual cleansing. Subjects were asked to cleanse their face and neck area twice per day (one side manually with the study cleanser using their normal cleansing routine and the opposite side using the study cleanser and sonic brush). They were asked to shave after cleansing using the same type of razor and shaving lubricant as they were using prior to the study. Subjects were graded for skin redness, visible bumps, tactile粗糙ness (new area and beard area), visible粗糙ness (beard area), shine, pore size, and overall healthy skin appearance on a ten-point scale at baseline, 15 minutes after product use, week 2 and week 4 (pre- and postshave). Subjects graded their face and neck area for subjective toxicities associated with (burning, stinging, itching, tingling) and were also graded by the evaluator for objective tolerability parameters (pruritus, erythema, edema, dryness) on a four-point scale. They also completed a self-assessment questionnaire responding to questions about the side of the face/nack on which they used the device at 15 minutes, 7 hours, 2 weeks, and 4 weeks posttreatment time points.

Results: Sonic cleansing side was significantly better than the manual cleansing side in improving skin smoothness (no bearded area) after 2 weeks of product use (P = 0.014) and in improving the appearance of visible bumps (postshave) after 4 weeks of product use (P = 0.048). Tolerance data indicated that both the treatments were well tolerated. Questionnaire data indicated that subjects liked using the device and its effect on their skin.

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3680
Azathioprine hypersensitivity syndrome: A rare and challenging diagnosis
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We report a case of a 35-year-old male with a medical history of ulcerative colitis who presented with an acute diffuse skin eruption accompanied by fevers and fatigue three weeks after starting azathioprine. Physical examination revealed scattered erythematous papulovesicles on the face, trunk and upper extremities. Additional findings included bilateral conjunctivitis, yellow crustulation along the lower eyelid margins and superficial erosions on the lower mucosal lip. A punch biopsy was consistent with suppurative folliculitis. The patient was treated with an oral antibiotic and antifungal. After four weeks azathioprine was restarted. Within twenty-four hours of readministration of the medication, the patient erupted in numerous lesions with a similar morphology and location as the initial presentation. A repeat biopsy was performed and demonstrated a patchy lichenoid dermatitis with papillary dermal neutrophilic microabscesses, consistent with a drug eruption. Azathioprine was stopped indefinitely. Azathioprine hypersensitivity reaction is a rare adverse drug reaction with roughly 70 reported cases over 25 years. It typically occurs within the first month of treatment. The majority of reported cases present with clinical features similar to the neutrophilic dermatoses. Patients frequently experience a constellation of systemic symptoms including fever, fatigue, arthralgias, myalgias and gastrointestinal upset. Cases are often initially misdiagnosed as infectious etiologies. Several case reports have described a shock-like syndrome upon rechallenge with azathioprine. Thus it is important for dermatologists to understand, recognize and accurately diagnose this potentially fatal drug reaction.

Commercial support: None identified.

3855
Biologic therapies for moderate to severe hidradenitis suppurativa
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Introduction: Hidradenitis suppurativa (HS) is a chronic, debilitating and recurrent inflammatory disease that affects the folliculopilosebaceous unit. It is often refractory to multiple medical and surgical approaches with the consequent deleterious effects on the patients’ quality of life. Although the pathogenesis of HS has not been fully elucidated, addressing local inflammation is an innovative therapeutical principle. Biological drugs, particularly anti-TNF alpha, have emerged as a new treatment alternative to target chronic inflammation involved in HS.

Material and methods: A retrospective study from a Spanish tertiary hospital collecting data from the charts of patients with moderate to severe HS treated with biologic therapies was carried out. Crucial information was obtained including epidemiological data, clinical features, Hurley stage, concomitant comorbidities, response and adherence to treatment and associated side effects.

Results: Twenty-six patients were included in the study: 14 women (53.8%) and 12 men (46.2%). Eleven patients (42.3%) showed a Hurley severity stage II and 15 a stage III (57.7%). Regarding body weight, 18 (69.2%) patients were overweight or obese. In our patient population, 10 were active smokers, 10 were ex-smokers and 6 were nonsmokers. Adalimumab was prescribed as the first biological treatment in twenty out of 26 cases (3.9%). Whereas infliximab was prescribed in five cases (19.2%) and ustekinumab in one case (10%). A complete response was observed in fourteen patients (all of them with adalimumab), a partial improvement in 10 patients and in two patients no clinical improvement was noted. One patient developed anti-TNF induced psoriasis and ceased treatment. In 4 cases, a second biological treatment was prescribed. In three of such cases, a partial improvement was noted, whereas in one case no clinical improvement was observed. Patients with BMI in the normal range showed a 75% rate of complete response to therapy in contrast to 46.2% and 40% for overweight and obese patients, respectively. The group of active smokers had the lowest rate of complete response (20%). In our study, both patients who showed no clinical improvement were actively using tobacco.

Discussion and conclusions: Biologic therapies should be considered among the novel and effective treatment options for patients with moderate to severe HS. In our patient population, adalimumab was the biological drug who obtained the highest number of complete clinical responses. A considerable number of patients showing complete improvement can be seen within the normal weight and not-actively-smoking groups. High BMI values and smoking seem to be associated with poor responses. Obesity and nicotine smoking are two of the most well-known associations in HS, however their effect on clinical outcomes during biological therapy has not been studied thoroughly.

Commercial support: None identified.

2551
Baboon syndrome (SDRIFE): A rare cutaneous reaction in a Filipino woman induced by intravenous immunoglobulin G (IVIg)
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Introduction: Drug reactions can present as common morbilliform eruptions or severe cutaneous adverse reactions. Accurate diagnosis of unusual forms of drug eruptions can be challenging. Baboon syndrome with no history of contact sensitization is known as systemic-drug-related intertriginous and flexural exanthema (SDRIFE). It has uncommonly manifested as pustules, vesicles, and bullae. Intravenous immunoglobulin G (IVIg) rarely induce baboon syndrome.

Case report: This report describes a 73-year-old female with Guillain-Barre syndrome. She received IVIg as the culprit drug were unusual disease expressions in the patient. Knowledge of this diagnosis and the uncommon culprit drug is important for proper management and prevention of detrimental allergen reexposure.

Commercial support: None identified.
3664

Body-focused repetitive behaviors (BFRB) (trichotillomania, skin picking, onychophagia) among disorders (ED): Preliminary findings in a nondermatologic sample

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Background: In the body-focused repetitive behaviors (BFRB) (trichotillomania, skin picking, onychophagia), which are classified as obsessive-compulsive and related disorders (OCRD) (DSM-5, 2013), emotions are managed through the manipulation of the integument (hair, skin, nails). In the eating disorders (ED), (eg, anorexia nervosa and bulimia nervosa) emotions are also managed through somatic channels as patients may undergo severe dietary restriction and/or binge and purge in an attempt to lose weight and regulate emotions. Few studies (Favaro 1999; Zucker 2011) have reported BFRB among ED patients and have suggested that obsessive-compulsive disorder (OCD) can co-occur with both BFRB and ED.

Objective: Examine the association of BFRB and core symptom dimensions of ED while controlling for the possible confounding effect of OC symptoms.

Methods: 346 consecutive consenting volunteers from London, Ontario, Canada (39 psychiatric outpatients, 307 nonclinical participants; 75.1% female; 93.6% ‘white’, 3.2% ‘black’, 3.2% ‘other’; mean ± SD age: 28.75 ± 14.53 years) completed a large battery of instruments including: (1) The BFRB scale, a 6-item instrument addressing the behavior; (2) Eating Disorder Inventory (EDI) subscales of Drive for Thinness (DT) and Body Dissatisfaction (BD), that measure some of the core disturbances of ED; (3) The Brief Symptom Inventory (BSI), that assesses functioning of the psychological symptoms. (4) The Obsessive-Compulsive subscale of the Brief Symptom Inventory (OC-BSI).

Results: The mean ± SE BFRB scores were significantly (P < 0.001) greater in the clinical vs. nonclinical DT (12.6 ± 1.1 vs 7.6 ± 0.6) and BD (12.1 ± 0.9 vs 6.8 ± 0.6) score categories. The BFRB score was significantly correlated with both the DT (r = 0.287, P < 0.01) and BD (r = 0.285, P < 0.005) scores. The correlation between DT and BFRB was 0.145 (P = 0.001) and BD (12.3 ± 0.149, P = 0.005) remained significant after the confounding effect of OC-BSI was statistically partialled out.

Comment: The BFRB were significantly correlated with DT and BD that measure core symptoms of ED. The correlation between the BFRB and ED symptoms cannot be explained entirely by underlying OC symptoms in both disorders.

Commercial support: None identified.

3501

Bowel-associated dermatosis-arthritis syndrome clinically mimicking dermatomyositis as a manifestation of colon resection

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Background: Bowel-associated dermatosis-arthritis syndrome (BADAS) was first described in patients who experienced arthritis, papulopustular skin rash and flu-like symptoms following intestinal bypass surgery. It is likely related to bacterial overgrowth with resulting deposition of circulating immune complexes to bacterial peptidoglycans into the skin. Since the first description of BADAS, it has since also been associated with surgical intervention for diverticulitis and peptic ulcer disease.

Case report: An 85-year-old white male with a history of colon cancer resected 20 years prior presented for recurrent outbreaks of well-demarcated violaceous papules on the dorsal hands and flexor surface of the elbows with overlying papules and pustules. Associated with these episodes, patient experienced malaise, marked arthralgias and swelling of the hands and fingers. Prior to this appointment, patient was seen in clinic when his rash was resolving and no pustules were present but patient was noted to have violaceous erythema with scaling of the bilateral dorsal hands and extensor upper extremities. Dermatomyositis was suspected but appropriate work-up, including search for underlying malignancy was negative. At his return appointment, two 4-mm punch biopsies were performed for examination under light microscopy and direct immunofluorescence (DIF). An intraepidermal pustule with a neutrophilic dermal infiltrate was seen with rare leukocytoclasia. DIF was negative. Infectious studies were negative. Based on the clinical presentation and histopathologic findings, the diagnosis of BADAS was made. Patient was prescribed doxycycline, which resulted in rapid clearing of his skin lesions.

Discussion: BADAS is a rare neutrophilic dermatosis traditionally associated with intestinal bypass surgery. Our patient represents an interesting case of BADAS associated with partial colon resection for adenocarcinoma of the colon. BADAS is known to be a disease that frequently recurs. In the appropriate setting, if a patient is suspected of having dermatomyositis, evolving BADAS should also be considered in the differential diagnosis. Objective histopathologic and immunofluorescence studies can be differentiated histopathologically with dermatomyositis displaying interface dermatitis and BADAS showing a neutrophilic infiltrate with pustule formation.

Commercial support: None identified.

3503

Can valproic acid cause DRESS?

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A 30-year-old woman with a known history of seizure disorder presented with a generalized pruritic maculopapular rash, fever, swelling, anorexia, and nausea for the past week. One month before the onset of symptoms, the patient began taking valproic acid and lamotrigine simultaneously. On physical exam she had a generalized morbilliform eruption as well as lymphadenopathy, facial edema, and jaundice. Laboratory values revealed leukocytosis with eosinophilia and elevated transaminases. A skin biopsy revealed a perivascular lymphocytic infiltrate with papillary dermal edema and eosinophils consistent with a drug eruption. DRESS syndrome is a rare and severe delayed drug hypersensitivity reaction characterized by involvement of multiple organ systems including the skin, liver, and hematologic system. 

DRESS, but cases with lamotrigine have also been reported. Valproic acid is rarely the sole cause of DRESS; however, there is an increased risk when given concurrently with other antiepileptics. When two or more antiepileptic drugs are used simultaneously, the potential for drug interactions is increased. Lamotrigine is metabolized in the liver by glucuronidation. Valproic acid is associated with increased hepatic toxicity as it inhibits hepatic glucuronidation enzyme activity, thereby allowing for increased metabolism of lamotrigine. Valproic acid is known to be metabolized in the GI tract, which inhibits hepatic glucuronidation enzyme activity, thereby allowing for increased metabolism of lamotrigine. Lamotrigine has been reported in the literature to cause DRESS syndrome, and this is the probable cause in our case due to concurrent use with valproic acid. For our patient, valproic acid and lamotrigine were discontinued and replaced by levetiracetam for treatment of her seizures. The patient received two days of methylprednisolone IV followed by prednisone PO with a slow taper. She was also treated symptomatically with trimacinolone cream and diphenhydramine. Her rash improved within days, but ASAT remained elevated, and she was continued on levetiracetam.

Commercial support: None identified.
3406
Can we control fistulic hidradenitis suppurativa patients using systemic treatments and avoiding surgery? A sonographic analysis of 12 cases
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Background: One of the most difficult-to-treat phases of hidradenitis suppurativa (HS) in which the disease progression results in fistuliferous lesions. The absence of gold standard guidelines to treat these special cases, makes difficult to define the most recommended treatment.
Objective: To evaluate the effectiveness of the medical treatment in managing HS with associated fistula.
Methods: We performed a prospective study that included all those new HS patients with fistular formations attended at the HS Unit, Hospital of Manises, Valencia (Spain), from June 2014 to October 2015.
Results: 12 HS patients (8 males, and 4 females, aged between 25 and 52) with fistulae were analyzed. 6 cases were in treatment with oral rifampicin + clindamycin 300 mg/bid (group A), 2 patients received rifampicin 300 mg/bid combined with topical clindamycin (group B). The last 4 patients were in treatment with adalimumab using the HS posology (group C) (week 0: 160 mg; week 2: 80 mg; from week 4: 40 mg weekly). Improvement of fistuliferous lesions occurred in all cases. In the first 6 months after therapy onset, sonography revealed signs subclinical improvement that contrasts with the clinically appearance of nonresponse to therapy in the physical exam. This improvement was earlier (week 4) in the adalimumab cases (Group A, week 12, Group B, week 16). Follow-up revealed a maintained fistular activity control during the treatments. Group A and B abandoned the treatment after a median of 7 months of therapy. Disease relapse occurred in 5 cases (Group A, 3; Group B, 2) cases after a median time of 6 months of treatment suspension. Group C patients maintained the treatment (median of follow up: 15 months). None patient required to finish the treatment for intolerance or non-response. Mild recurrences were observed in 2 cases (case 1, 2 recurrences in 14 months of follow-up; case 2, 1 recurrence in 13 months of follow-up), that were controlled combining oral corticosteroids (0.5 mg/kg/day for 2 weeks).
Conclusions: Patients with HS fistular-type respond to medical treatment, avoiding unnecessary surgeries. Sonography allow us to better explore our HS patients, detecting the response to treatment earlier compared with the isolated physical exam.

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3407
Commercial support: None identified.

3403
Case report: Hutchinson-Gilford progeria syndrome associated with epulis human papilloma virus lesion
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Hutchinson-Gilford progeria syndrome (HGPS) is a rare autosomal dominant premature aging disorder. Its incidence is 1-4 per 8 million newborns. The cause of HGPS is an abnormally formed Lamin A, either directly by a mutated LMNA gene, or through abnormal posttranslation processing. Literaturely, it can be associated of HGPS is an abnormally formed Lamin A, either directly by a mutated LMNA gene, or through abnormal posttranslation processing. Literaturely, it can be associated

Commercial support: None identified.

3407
Case report: Primary cutis verticis gyrata associated with psoriasis
My Tra Le Nguyen, MD, University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam; Anh Quynh Ngoc Phan, MD, University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam
Cutis verticis gyrata is the condition of the scalp, which manifests as convoluted, wrinkled skin of the scalp. This condition is usually unsatisfactory literaturely, many cases treated successful with topical corticosteroids, topical calcipotriol, topical retinoid, ablation or carbon dioxide laser. However, there is no report about treatment with tacrolimus. We report a case of a 19-year-old woman with a 2-year history of progressive brownish discoloration and warty thickening of the skin of both breast in turn from the left areola, nipple to the right areola and nipple, slight itching, no tenderness or discharge. The patient’s personal and family histories were negative for epidermolysis, achondroplasia, neurofibromas, acromegaly or other hyperkeratotic skin disease. She had been diagnosed eczema and treated with topical Fucicort twice daily for 2 weeks and mometasone twice daily for 1 month without any improvement. On physical examination, diffuse, panniculitis verrucous, hyperkeratotic hyperpigmented plaques which showed a warty surface in the central area and reticulate papillomatosis towards the edge were seen on both areola and nipples. Histological examination showed the characteristic features consistent with NHNA. She was treated with topical calcipotriol twice daily for the left breast and topical tacrolimus 0.1% twice daily for the right breast. After 2 months, hyperkeratosis and hyperpigmentation were improved. Then she was maintenance treated with topical calcipotriol and tacrolimus once for two days. To our knowledge, it is the first case report of NHNA from my country.

Commercial support: None identified.

3408

Commercial support: None identified.
Characteristics of cutaneous leiomyomas in a tertiary hospital
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Background: Cutaneous leiomyomas are relatively rare benign smooth muscle neoplasms and are described by different types of cutaneous leiomyomas: polioido leiomyoma, angioleiomyoma, and genital leiomyoma.

Objective: This study aims to consolidate clinicopathological data of cutaneous leiomyomas in our institute so as to improve clinical acumen and further manage these lesions.

Materials and methods: Patients with a histological diagnosis of pilar, angioleiomyoma or genital leiomyoma, made between 1 Jan 2000 and 31 Dec 2014 were identified from the Department of Pathology database, National University Hospital, Singapore. Retrospective analysis of the data was performed by two independent reviewers who had no access to the clinical data.

Results: A total of 40 patients were identified. 11 patients had pilar leiomyoma (29.5%), 24 had angioleiomyoma (58.5%) and 5 had genital leiomyoma (12.2%). Male to female ratio was 1:1. Mean age at diagnosis was 51.0 years and median duration between appearance of lesion and diagnosis was 36 months. Pilar leiomyomas were more frequently found on the upper body and trunk (63.6%) while angioleiomyomas were more common on the lower extremities (79.2%). Lesions were skin colored in all but 2, both of which were pink in color and were pilar leiomyomas. 81.5% of patients had symptoms, with the most common symptoms being pain (35.7%), increase in size (32.1%) and itch (14.3%). Lesions were multiple in 6 patients, of which 5 had multiple pilar leiomyomas and 1 had multiple scrotal leiomyoma. One patient with multiple pilar leiomyomas over the back had recurrence a year later. Most lesions were misdiagnosed as sebaceous cyst, dermatofibroma and ganglions.

Conclusion: While cutaneous leiomyomas are considered rare, they should be considered in the differentials for a nodules especially if it is symptomatic. Recognizing common clinical features may aid in the diagnosis but if uncertain, a biopsy should be done.

Commercial support: None identified.

3692
Clinical and instrumental efficacy and tolerability of a moisturizing body lotion containing polidocanol and prucritine-4 on reducing pruritus and xerosis
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Introduction: A monocentric open-label study to assess the clinical and instrumental efficacy and tolerability of a body lotion with polidocanol (0.2%) and prucritine-4 (0.5%) for dry and pruriginous skin in use conditions for 28 days. The lotion was formulated as oil in water emulsion (17% oily phase) allowing a melted ‘quick break’ texture.

Methods: Fifty-five white subjects (55 to 75 yo) with xerosis (≥ 2 (0-5 scale) and pruritus score ≥ 4 (0-10 scale)) were included. Product was applied on the whole body at least twice-daily during 28 days. Evaluations were performed at baseline, immediately after the 1st application and at 28 days of use: investigator's scoring of efficacy (IGA), xerosis, desquamation, lichenification, subject’s scoring of efficacy (PGA), pruritus, insomnia. Cosmetical acceptability and quality of life (DLQI) were evaluated. Subjects assessed their pruritus score (0 to 10) at baseline and after 24 hours of product use. Instrumental measurements included corneometry, D-squame, sebumetry and transepidermal water loss (TEWL).

Results: All subjects completed the study (mean age: 63 yo). From the 1st application to 28 days, the clinical evaluation showed a significant improvement (P < .001) of the xerosis (up to 92%), desquamation (98%) and lichenification (96%). There was a significant decrease of pruritus from 5.9 to 0.1 (P < 0.001) immediately after 1st application, and the efficacy was maintained after 24h and 28 days. Accordingly, insomnia score decreased from 2.2 to 0 (P < .001). The significant improvement of the IGA and PGA score confirmed product efficacy: Increase of hydration index, sebum rates and decrease of desquamation values were found indicating moisturizing, nourishing and exfoliating effect after 28 days. Accordingly, the IGA and PGA score confirmed product efficacy. Increase of hydration index, sebum rates and decrease of desquamation values were found indicating moisturizing, nourishing and exfoliating effect after 28 days (P < .001). TEWL were at normal range at baseline without significant increase, reflecting the respect of the cutaneous barrier. The DLQI showed a significant improvement in subjects’ quality of life (7.5 to 0.7). The product was appreciated for its immediate soothing and skin protection effect by more than 92% of subjects and for its efficacy on reducing itching after 28 days of use by 96% of subjects.

Conclusion: The twice daily application of a body lotion containing polidocanol and prucritine-4 reduced significantly the pruritus and xerosis showed by clinical, Subject’s and instrumental evaluations, suggesting this product could be a choice for pruritus and xerosis management in elderly subjects.

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2506
Clinical management of etanercept recall reactions: A case report and review of the literature
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We present a 54-year-old white female with a nine-month history of severe scalp and body pruritus and xerosis. She failed initial treatments including class 1 topical steroids and intraleSIONAL steroid injections to the scalp. We started her on etanercept 50 mg subcutaneously twice a week. She started to note improvement in her scalp psoriasis after three injections, which she tolerated well. After the fourth injection, at two weeks of treatment, she developed four bright red edematous plaques at the sites of all four prior injections on her bilateral thighs. The lesions were approximately 5 cm in diameter, targetoid, tender, and hot to the touch. She had no systemic symptoms and was afebrile. We recommended that the patient continue therapy, treat pretreat with diphenhydramine, apply an ice pack to the injection site, and inject at least several centimeters away. With these interventions, she was able to continue therapy and noted that the recall phenomenon decreased with each week she continued treatment. Injection site reactions (ISRs) are a common adverse event associated with use of TNF-alpha inhibitors, such as etanercept and adalimumab, however recall ISRs have been reported infrequently, and only with etanercept use. According to Zelzer et al. (JAMA Derm, 2001), recall reactions occur in 8% of patients using etanercept and typically occur in the first few months of treatment. Involvement by both CD4+ and CD8+ T cells has been noted in the literature in this delayed-type hypersensitivity reaction (Gonzalez-Lopez et al, Clin Exp Dermatol, 2007). Treatment recommendations in the literature include topical corticosteroids (Gonzalez-Lopez et al, Clin Exp Dermatol, 2007), oral histaminas (Rajakulendran and Deighton, Rheumatology, 2004), and cold compresses with rotation of sites 2007). Treatment recommendations in the literature include topical corticosteroids (Gonzalez-Lopez et al, Clin Exp Dermatol, 2007), oral histaminas (Rajakulendran and Deighton, Rheumatology, 2004), and cold compresses with rotation of sites (Gonzalez-Lopez et al, Clin Exp Dermatol, 2007). None of the case reports or case series reviewed recommended etanercept discontinuation for recall ISR. Therefore, as with our patient, an attempt should be made to continue etanercept treatment with these modifications, as this type of recall reaction tends to improve with time. If unsuccessful, other treatment modalities for psoriasis, such as ustekinumab, could be considered.

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3456
Clinical meaningfulness of the hidradenitis suppurativa clinical response endpoint to assess inflammation and treatment response in 2 phase 3, randomized, placebo-controlled trials (PIONEER I & II)
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Objective: This study aims to consolidate clinicopathological data of cutaneous leiomyomas in a tertiary hospital.

Introduction: Clinical measures for assessing hidradenitis suppurativa (HS) disease severity include Hurley stage, modified Sartorius score, or HS Physician’s Global Assessment. HS clinical response (HiSCR) is a newer, validated tool that has been used to assess treatment efficacy in clinical trials. This post hoc analysis combined data from 2 phase 3 randomized, controlled, double-blind trials (PIONEER I and II) to further assess the correlation between HiSCR and manifestations of HS commonly seen in the clinical setting.

Methods: Data from PIONEER I and II were combined to evaluate the efficacy and safety of adalimumab in adults with moderate-to-severe HS. This analysis includes data from the first 12 weeks of the studies. Patients (pts) must have had ≥1year history of HS, inflammatory lesion count (sum of abscess and inflammatory nodules [ANI]) count ≥ 5, HS lesions in ≥2 body areas (≥1 at Hurley Stage II or III), and no prior TNF-α inhibitor treatment. Pts were randomized (1:1) to receive adalimumab 160 mg at week 0, 80 mg at week 2, and 40 mg weekly at weeks 4 to 12 or matching placebo. HiSCR at 12 weeks, defined as ≥50% reduction in ANI count and no increase in number of abscesses or draining fistulas compared with baseline, was the primary endpoint. Differences between pts who did or did not achieve HiSCR were calculated using least squares means and analysis of covariance (α = 0.05).

Results: There were 634 pts randomized and 629 pts were included in the integrated analysis. 4 pts were excluded due to missing data. Irrespective of treatment, 0% (0/245) of pts achieved HiSCR at week 12, and 61% (384/629) did not. Pts who achieved HiSCR experienced greater reductions in lesion counts and had significantly fewer ANIs (least squares mean difference, 8.6; 95% CI, 7.6-9.7), abscesses (1.9; 1.6-2.3), inflammatory nodules (0.7; 0.5-0.9), fistulas (3.4; 2.4-4.3), and draining fistulas (2.6; 1.9-3.3), at week 12 compared with pts who did not achieve HiSCR (all P < 0.001).

Conclusions: Pts with HS who achieved HiSCR after 12 weeks of treatment experienced significantly fewer all types of HS compared with those who did not achieve HiSCR. These data support the rationale for routine inflammatory lesion counts and use of HiSCR in noninvestigative daily practice, both in primary care and dermatology clinical settings, as an easy to use, reliable tool for assessing clinically meaningful HS treatment effectiveness in controlling inflammatory manifestations.

AbbVie Inc, funded this study and participated in the study design, study research, data collection, analysis and interpretation of data, and writing, reviewing, and approving this abstract for presentation.
Contrast media-induced acute generalized exanthematous pustulosis
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Introduction: Toxicodermias are the mucocutaneous expression of undesirable drug effects and are sometimes associated with a systemic component. A rigorous diagnostic approach based on drug history, chronology of events and clinical presentation can target certain agents. Appropriate allergy assessment helps to clarify the accountability of these suspected drugs.

Material and methods: The patient is a 45-year-old woman, without known allergy or past medical history. She was hospitalized for a lower limb edema related to uterine leiomyomas and a pelvic abscess. The infection was initially treated with Piperacillin/Tazobactam. However, she developed a pan convoyenia and was switched to Tigecycline. Five days later, this drug also had to be discontinued after the onset of an exfoliative maculopapular rash that quickly resolved without complications or systemic involvement. The patient was improving with Ciprofloxacin/Metronidazole until a C + scan (iohexol) was performed two weeks later. Four hours after the procedure, she developed generalized erythema with fever, dyspnea and acute renal failure. Sterile tulips then appeared on her flanks and the skin biopsy confirmed the diagnosis of AGEP. In retrospect, we realized that a C + imaging had also preceded the first eruption by a few hours and an allergy assessment was requested.

Results: Approximately two months after the event, skin tests (prick, intradermal and patch tests) were done. The three contrast agents available at our hospital were tested and the patient developed a late onset papular erythema to iopamidol, ioxitalam and iohexol.

Discussion: These results confirmed a delayed allergic reaction to nonionic monomer and dimer contrast agents. In our patient, iohexol was the causative agent of both eruptions. The second episode was more serious because the patient had been previously sensitized. Through our review of the literature and pharmacovigilance monitoring, we found 11 similar cases. However, our patient is the first to react to so many tested agents.

Conclusion: Contrast media can cause serious delayed allergic reactions including AGEP. It is therefore important to include radiological examinations in the drug history to avoid repeated exposure. Furthermore, intradermal and patch tests are useful tools in the diagnosis of these reactions.

Commercial support: None identified.

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Cutaneous polyarteritis nodosa in a 19-year-old female
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Introduction: Cutaneous polyarteritis nodosa (cPAN) is a necrotizing vasculitis of small and medium arteries. Patients typically present with tender subcutaneous nodules of the extremities, livedo reticularis, purpura, and/or cutaneous ulceration. Diagnosis of cPAN can only be made after systemic vasculitis is ruled out and anti-neutrophil cytoplasmic antibodies (ANCA) are negative. The characteristic systemic involvement may include fever, arthralgia, myalgias, headache, malaise, and paresthesias. The most common identifiable inciting agent of cPAN is Group A beta-hemolytic streptococcus, which can be confirmed by positive antistreptolysin O (ASO) antibodies titer. Recent literature proposes a basis for cPAN, an autosomal recessive mutation in the CERC1 gene leading to a deficiency of adenosine deaminase 2 (DADA2).

Case report: An otherwise healthy 19 year old female presented for evaluation of painful lesions on her forearms, present for 2 months. Review of systems was positive for generalized fatigue for 2 weeks duration with subjective shortness of breath for 1 week. No family history of blood clots or pulmonary embolism was known. She had received regular medroxyprogesterone acetate injections for contraception. Physical exam revealed multiple scattered, indurated, flat, purpuric macules and patches with a few tender, poorly circumscribed subcutaneous nodules on bilateral upper and lower extremities. A punch biopsy from a lesion on the left forearm was significant for vasculitis of a medium-sized blood vessel. Autoimmune serologies and ANCA were negative. Chest x-ray and transthoracic echocardiogram were unremarkable. Hypercoagulable work-up was nonrevealing. A genetic workup revealed an elevated ASO titer. She was treated with cephalixin due to penicillin allergy, with a decrease in number of new lesions. Adenosine deaminase levels are being investigated.

Conclusion: An underlying genetic basis for cPAN has been confirmed in a subset of patients; a mutation in the CERC1 gene and resulting DADA2. This genetic defect can most be associated with a spectrum of B cell immunodeficiencies, which can lead to recurrent bacterial infections. Diagnosis of cPAN should prompt suspicion for adenosine deaminase 2 deficiency.

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Delayed diagnosis of Schimmelpenning syndrome in a 47-year-old female
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Schimmelpenning syndrome (SS), a rare epidermal nevus syndrome first described by Gustave Schimmelpenning in 1957, is characterized by sebaceous nevi associated with ipsilateral intracranial, ocular and skeletal findings. Sporadic somatic mosaicism secondary to postzygotic mutations suggest the associated extracutaneous manifestations of SS are due to the impact of HRAS, KRAS or NRAS gene aberrations as compared to isolated sebaceous nevi. A 47-year-old female patient with widely distributed unilateral sebaceous nevi along the lines of Blaschko extending from the face, neck, trunk all the way down to the lower extremity with underlying port wine stains in some anatomic locations. Scarring alopecia was noted on the left scalp in the temporal-parietal region covered with the nevus. Other findings included chronic left lower extremity lymphedema that had been present since early childhood, two berry aneurysms arising from the left internal carotid artery, left- sided arachnoid cyst and caligo cornea of the left eye. Structural abnormality of cerebral has been noted in 72% of cases in patients with linear nevus sebaceous syndrome. These structural abnormalities can vary from benign arachnoid cyst to pachygyria, hemimegalencephaly, Dandy-Walker malformation or agenesis of corpus callosum. Schimmelpenning syndrome has associated vascular anomalies that can be arterial, venous, lymphatic, capillary or arteriovenous in origin as they occur at a much higher frequency (12.6-53%) in 38 patients compared to the general population (<3%). Ocular abnormalities including conical clouding, coloboma, strabismus or the development of epithelial lipoid membrane have been reported. When Schimmelpenning syndrome is suspected in patients with sebaceous nevus, cerebral and ocular survey and a complete ophthalmologic examination are warranted. Brain imaging such as MRI can be helpful to identify central nervous involvement. In a study analyzing 65 separate nevus sebaceous lesions from two individuals with Schimmelpenning syndrome, 63 sebaceous nevi (97%) were found to have HRAS and/or KRAS mutations. Testing for both of the RAS-RAF-MAPK pathway can potentially unravel the pathogenesis of Schimmelpenning syndrome and serves as a molecular target for treatment.

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Development of stasis dermatitis in a patient with Budd-Chiari syndrome

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Background: Budd-Chiari syndrome involves obstruction of hepatic venous outflow tracts at various levels from small hepatic veins to the inferior vena cava and is the result of thrombosis or its fibrous sequelae. The clinical presentation of patients with Budd-Chiari syndrome is variable. Abdominal pain, hepatomegaly, and ascites are commonly seen, but the occurrence of the skin lesion, such as stasis dermatitis, is rare.

Patient and methods: A 42-year-old man was diagnosed with Budd-Chiari syndrome 10 years ago and referred to our clinic for 10-year itching sensation of both lower legs. The patient had no history of operation. On physical examination, the skin of his both lower legs was dry, scaly and showed hyperpigmentation with varicose vein. Biopsy was performed on his right skin.

Result: The biopsy revealed hyperkeratotic epidermis with focal parakeratosis and proliferation of small blood vessels in the papillary dermis, forming lobular aggregates with perivascular lymphocytic infiltration. Extravasated erythrocytes were present superficially. The iron stain was positive. According to the biopsy results, the both leg lesion was diagnosed as stasis dermatitis and it was treated with body emollient and topical steroid. He underwent a cavo-bijugular bypass. After 5 months he visited our clinic. He showed improvement of itching sensation and dryness of both legs and complained only hyperpigmentation of both legs.

Conclusion: Clinicians need to have further investigation for vascular disorders when they meet patients with severe stasis dermatitis. We report this case because occurrence of stasis dermatitis associated with Budd-Chiari syndrome is rare and an interesting manifestation.

Commercial support: None identified.

Diagnostic delay of tuberous sclerosis complex: A case report of a 48-year-old man

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Background: Tuberous Sclerosis Complex (TSC), is an autosomal dominant disease caused by mutations on either of two genes, TSC1 and TSC2, which encode for the proteins hamartin and tuberin respectively. These proteins act as tumor growth suppressors. It has an incidence of 1:10,000 births. TSC has variable clinical expression, manifested by the presence of hamartomas in many organs, including the skin, brain, eyes, kidneys, heart and lungs, depending on the existing genetic alteration type. Cutaneous findings are the most prevalent and consist of hypopigmented macules, facial angiofibromas, facial fibrous plaques, shagreen patches and nail fibromas. The diagnostic criteria for TSC are grounded in clinical and radiological data. Although skin lesions are benign, they may require symptomatic or cosmetic treatment.

Objective: This case report intent to alerts the dermatologists of the myriad potential presenting symptoms and signs of TSC, avoiding late diagnosis.

Methods: Review of medical records and literature search in MEDLINE, LILACS, Scielo and MD Consult and comparison with the case described.

Case description: Male, 48 years old, with a history of seizures initiated in the childhood and treated as a case of epilepsy with the use of anticonvulsants and no further investigation. As a teenager, he began to show skin lesions on the face and periumbilical lesions, which progressively increased in quantity over the years. The patient came to our dermatology service and the physical examination found:

- Several confluents papules, some brownish and others violets, localized at the frontal, malar, chin and nasolabial areas. The lesions were symmetrical and bilateral;
- Periungual lesions, which progressively increased in quantity over the years. The patient had a history of normal hygiene and rapid improvement after rubbing with alcohol as well as “stone pavement” in dermoscopic evaluation are highly suggestive of this entity.

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3668
Diagnostic implications of American cutaneous leishmaniasis
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Introduction: American cutaneous leishmaniasis (ACL) is a zoonotic disease that affects humans and several species of wild and domestic animals. It is considered as a polymorphic and spectral disease of the skin and mucous membranes.

Objective: to describe a case of ACL emphasizing the importance of a rapid and accurate diagnosis, given the limitations of the Montenegro reaction and lesion morphology as a guide for biopsy.

Materials and methods: A 56-year-old woman resides in urban areas and attends rural area, has three tumor lesions with raised borders, central crust, tending to ulcerate, distributed in the neck, right and left forearm with 30 days of evolution. She is referred to the Dermatology Service with a result of negative Montenegro intradermal reaction. It was performed material collection for histopathologic analysis and polymerase chain reaction (PCR). It was treated with meglumine antimoniate.

Results: Histopathologic analysis showed amastigotes of Leishmania spp. In the case of an initial ulcer at the lesion, this becomes justified by high parasite load this stage. The PCR technique has shown positive and it is confirmed as a method of high sensitivity and specificity. Negative Montenegro intradermal reaction and meglumine antimoniate method limited by the fact become positive after a longer period after the onset of skin lesions (approximately 50 days). The meglumine antimoniate institution was successful in the lesions disappeared, the drug of first choice in the treatment of LTA according to the WHO

Conclusions: PCR is increasingly becoming a preferred method of choice for the diagnosis of ACL due to its high sensitivity and specificity, as to provide a species-specific diagnosis and, consequently, enabling species-specific treatment. The degree of morphological lesion stage must be taken into account when submitting the material for histopathologic analysis, as chronic ulcers or healed lesions have lower parasite load. Criteria as the first thirty days of injury, diffuse, diffuse cutaneous and visceral leishmaniasis, and immunosuppressed patients should be searched when there is an outcome of negative Montenegro test and clinical suspicion.

Commercial support: None identified.

3910
Disseminated eruptive clear cell acanthoma: A case report of a rare entity
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Introduction: Clear cell acanthoma (CCA) is a benign epidermal tumor that most commonly appears as a solitary lesion on the legs. However, case reports of multiple CCA in an adult or disseminated CCA in children have been described. The disseminated variety presents as multiple erythematous papules, with a moist or scaly surface, surrounded by a characteristic peripheral collarette of scale. Dermoscopic pattern consists of a linear or arcuate pattern that resemble a string of pearls.

Case report: A 53-year-old white male presented with a 3-month history of progressive asymptomatic erythematous papules of the thighs and lower legs. These papules were approximately 2-5mm and were surrounded by a collarette of scale. Dermoscopy revealed dotted vessels in a linear pattern and a collarette of scale. A biopsy was performed and revealed an acanthotic epidermis with large keratinocytes with clear cytoplasm, consistent with clear cell acanthoma. There was a serous crust with inflammation and slight hemorrhage. Exocytosis of neutrophils was also noted. There was no evidence of cytologic atypia. The patient’s past medical history was notable for bilateral orbital mucosa-associated lymphoid tissue (MALT) lymphoma that was treated with localized radiation therapy. He also had a longstanding history of relapsing multiple sclerosis (MS) that failed treatment with interferon beta. He started treatment Gilenya (fingolimod) 4 years ago and was regularly followed by dermatology. The patient’s CCA improved with cryotherapy. However, he has continued to develop new CCAs as he has remained on fingolimod.

Discussion: The etiology of CCA is unknown. There is not significant evidence to support a traumatic or drug induced cause. Fingolimod, a sphingosine-1-phosphate receptor (S1PR) modulator, binds to S1PRs on lymphocytes and prevents egress of lymphocytes from lymphoid tissues, thus reducing the infiltration of autoaggressive lymphocytes into the central nervous system. However, the drug may induce some autoimmune responses, by influencing endothelial cell—cell adhesion, angiogenesis, vascular development, and cardiovascular function. Herein we describe a case of a man affected by MS who developed after three weeks of fingolimod administration purplish blots over the dorsal surface of the distal phalanges of second and fifth digits and the middle phalanges of the fourth ray, tingling, itching and edema on his left hand, with no other evident clinical manifestations. As fingolimod was stopped, the clinical picture regressed in few days. Physicians should be aware of unexpected cutaneous reactions due to vascular dysregulation, especially at a peripheral level. Moreover, patients suffering from vascular-based acropathies have to be carefully screened and monitored with using this drug.

Commercial support: None identified.

3834
Double blind randomized clinical study on skin texture improvement with specialized moisturizers
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Dry skin may be induced by one or more factors such as low humidity, low environmental temperature, aging, psychological stress, microorganisms, and/or exposure to chemicals. Use of moisturizers to combat symptoms of dry skin are often the first treatment option to increase skin hydration. Unfortunately, the dry skin transepidermal water loss can induce inflammatory cytokine release and subsequent inflammatory cell infiltrate. These complex interactions can then lead to additional inflammation and hyperproliferation. This inflammation cannot be resolved simply by adding moisture to the stratum corneum. A moisturizer that can hydrate, provide penetrating lipid profiles (eg. ceramides and fatty acids) and ingredients that decrease inflammation was hypothesized to resolve dry skin symptoms and associated inflammation more quickly than a leading dermatologist recommended ceramide containing moisturizer. The test moisturizer was developed with hydrophilic and lipophilic ingredients, in a double blind study to control for placebo and personal care products. Skin appearance, moisturization, smoothness, tone, pore size, flakiness, elasticity and skin barrier function were assessed in 32 female subjects (15 test: 17 control) of Messina, Messina, Italy; Serafinella Patrizia Cannavan, MD, Department of Dermatology, University of Messina, Messina, Italy.

As expected, both products had significant improvements in hydration and skin dryness in as little as 4 hours and 24 hours following a single application as well as during the 4 week study period. Significant improvements in TELW, skin tone, fine lines and wrinkles, and hydration were observed in as little as one week and throughout the entire study. The control moisturizer was statistically outperformed for pore size and visible smoothness. Within 21 days, 100% of test product subjects had significant visible and tactile smoothness improvements. Use of a most presentation of multiple ingredients that target key deficiencies can improve skin texture and appearance. Breaking the dry skin cycle may be of use in maintaining healthy skin and improving compromised skin quickly.

Supported 100% by Swiss-American Products.
There was a significant difference in pruritus intensity from the first application, improving pruritus direction and its impact on sleep quality during the treated period compared to the untreated period (P = 0.0253). Xerosis was significantly decreased as measured by VAS (P < 0.001). The impact of pruritus on sleep was also significantly improved during the treated period compared to the untreated period (P = 0.025). Xerosis was significantly decreased during the treated period compared to the untreated period as assessed by the overall dry skin score after 1 and 2 weeks (P = 0.002). This efficacy persisted until 4 weeks after the last application (67.2%) in the group having begun with treated period. The 5-D Pruritus Scale confirmed the efficacy of the emollient on reducing pruritus intensity. A significant difference was shown on pruritus direction between two periods (P = 0.0001). The impact of pruritus on sleep was also significantly improved during treated period compared to untreated period (P = 0.025). Xerosis was significantly decreased during treated period compared to untreated period as assessed by the overall dry skin score after 1 and 2 weeks (P = 0.002 and P < 0.001). The tolerance of the emollient was considered good or very good, with no drop out. This study demonstrated the good tolerability and the efficacy of this emollient reducing pruritus intensity from the first application, improving pruritus direction and its impact on sleep and reducing xerosis among elderly people suffering from idiopathic chronic pruritus.
3031
Efficacy of iteixizumab therapy: Integrated analysis of 3 double-blind, controlled trials
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Background and objectives: Iteixizumab (IXE) is an anti-IL-17A IgG4 monoclonal antibody with a high binding affinity in development for the treatment of moderate-to-severe psoriasis. In this analysis, we report integrated efficacy results for dosing regimens of IXE compared to placebo (PBO) and high-dose etanercept (ETN) over 12 weeks. A pooled dataset from the Phase 3 trials is provided here to show an overview of clinical outcomes associated with iteixizumab treatment for psoriasis.

Results: Data were integrated from the 12-week induction phase of three phase 3 trials, in which patients (intent-to-treat population) were randomized to receive 90 mg IXE every 2 (IXEQ2W, N = 1169) or 4 weeks (IXEQ4W, N = 1169) after a 160 mg starting dose; ETN (50 mg biweekly; in 2 of 3 trials only N = 740), or PBO (N = 792).

The coprimary endpoints were the percentage of patients achieving PASGA (0, clear; 1: minimal plaque severity) and PASI at Week 12. All response rates were compared between treatment groups by using Cochran-Mantel-Haenszel test stratified by study. Missing data were imputed as nonresponse. Comparisons to PBO were made using Wald tests from 3 studies, while comparisons to ETN were based on data from the 2 active-controlled studies.

Table: Results of percentage of patients meeting response criteria.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>PASGA 0</th>
<th>ETN 75%</th>
<th>IXE 75%</th>
<th>IXE 81.8%</th>
<th>IXE 3%</th>
<th>IXE 0.1%</th>
<th>IXE 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBO</td>
<td>3.5%</td>
<td>38.9%</td>
<td>71.7%</td>
<td>81.8%</td>
<td>3%</td>
<td>0.1%</td>
<td>95%</td>
</tr>
<tr>
<td>ETN</td>
<td>1.3%</td>
<td>11.4%</td>
<td>16.2%</td>
<td>80.2%</td>
<td>2.4%</td>
<td>0.1%</td>
<td>87.6%</td>
</tr>
<tr>
<td>IXE Q2W</td>
<td>0%</td>
<td>13.6%</td>
<td>14.0%</td>
<td>75.1%</td>
<td>0.6%</td>
<td>0.1%</td>
<td>88.4%</td>
</tr>
<tr>
<td>IXE Q4W</td>
<td>0%</td>
<td>11.4%</td>
<td>14.0%</td>
<td>75.1%</td>
<td>0.6%</td>
<td>0.1%</td>
<td>88.4%</td>
</tr>
</tbody>
</table>

Conclusions: Using the response rates for the PASGA and PASI co-primary measures, we report integrated analyses confirm the rapid onset of action and superiority of both IXE dosing regimens compared to PBO and to ETN.

Supported by Eli Lilly and Company.

3916
Epidemiological profile of dermatological changes observed in early postpartum women cared for at São José Hospital in Criciúma, Santa Catarina
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Introduction: During pregnancy a woman’s body undergoes profound hormonal and mechanical modification, the skin also pass through this process. Even this change should not be confusing as they can be cause of distress for many pregnant women and need to be carefully studied.

Objective: The aim of this study was to determine the prevalence of major skin changes during pregnancy among women cared for at Hospital São José, Criciúma, Santa Catarina.

Methods: Cross-sectional study involving 188 pregnant women. We interviewed and examined women in the early postpartum period at Hospital São José, Criciúma, SC-Brazil in December 2010. The following variables were considered: age, weight before and at the end of pregnancy, number of pregnancies, hair loss, nail changes, skin blemishes, appearance of stretch marks or pruritic papules.

Results: We identified 104 cases of stretch marks (55.31%) and 61 cases of melasma (32.44%). Stretch marks were most often found in the abdomen (71.3% of cases, 51.4%), breasts (54.7%), thighs (43.6%), and buttocks (37.9%). Melasma was frequent in the center-faceal region (52, 77.61%) and malar region (7, 10.44%).

Conclusions: Young patients who had greater weight gain were the most affected with stretch marks. Melasma struck just over a quarter of the sample and occurred more frequently in younger women.

Commercial support: None identified.

3709
Eruptive pruritic papular porokeratosis: A unique presentation of a rare variant
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Background: Disseminated superficial porokeratosis (DSP) is a variant of porokeratosis characterized by an insidious course of asymptomatic diffuse annular lesions. A rare pruritic variant of DSP, eruptive pruritic papular porokeratosis (EPPP), is a variant characterized by eruptions from other forms of porokeratosis by repeated acute flares of intensely pruritic papules. EPPP has only been reported in approximately 10 patients in the English literature.

Case report: A 79-year-old man presented with an eight-year history of initially asymptomatic erythematous annular papules on the legs. Biopsy at that time revealed findings consistent with porokeratosis. Four years later, the patient developed a diffuse eruption of intensely pruritic 2-4 mm well-demarcated annular erythematous papules that started on his lower extremities and rapidly spread to his trunk and upper extremities. Biopsy revealed hyperkeratosis, hyperpigmentation, a superficial perivascular infiltrate with diffuse eosinophils. Previous unsuccessful treatments included topical steroids, calcipotriene, and 5-fluorouracil. After 20-25 lesions were treated with cryotherapy, the patient's condition improved, leading to temporary relief of pruritus, however, no symptoms of regression were reported.

Discussion: On histopathology, DSP and EPPP both reveal a cornoid lamella with a perivascular infiltrate in the upper dermis. Therefore, the distinction between DSP and EPPP is made clinically rather than histologically. Spontaneous regression of the lesions in EPPP generally occurs within 12 months of onset of the eruption. In our case, the patient had no evidence of regression after 16 months of follow-up. Since the vast majority of reported cases of EPPP resolved spontaneously, determining appropriate therapeutic regimens is based largely on trials of treatment options typically used for DSP.

Commercial support: None identified.

3341
Erythema induratum related to nontuberculous mycobacterial infection
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Erythema induratum (EI) is characterized by chronic, recurrent, tender subcutaneous nodular eruptions that usually occur on the legs of young to middle-aged women. It is regarded, most often, as a form of tuberculoid induced by Mycobacterium tuberculosis (MTB) infection. We herein report a first case in the literature of EI relating to nontuberculous mycobacterial infection. A 74-year-old woman suffering a progressive cough with dry sputum, hoarse voice, intermittent chills, as well as multiple firm erythematous subcutaneous nodules on both legs was presented to the hospital. The initial impression was erythema nodosum mediated by the manifestation of tender nodules on both her skins and calves. The pathological findings including a lobular granulomatous with granulomato- nous inflammation, an occluded large vein infiltrated by lymphocytes and multinucleated giant cells, sepal fibrosis, thickened vessels with mononuclear cell infiltration, and fat necrosis in the lobules were all consistent with the diagnosis of EI. Follow-up confirmatory studies consisted of acid-fast stain of the sputum specimens, sputum culture, and Mycobacterium kansasii infection as isolated and identified in the polymorphonuclear cells (PMN) (PCR). The Culture of M kansasii infection was confirmed and considered the etiology of EI. The skin lesions regressed rapidly after the administration of a triple anti-mycobacterial therapy combining rifampicin, isoniazid and ethambutol and showed no recurrence in the 6-month follow-up. The patient was discharged, and the lesions regressed completely. In this case, the clinical presentation and histopathology is consistent with EI. Erythema nodosum and associated with MTB infection are both induced by Mycobacterium kansasii infection. The cases reported previously that the patient had concomitant pulmonary disease confirmed M kansasii infection as isolated and PCR identification. The clinical presentations and positive response to treatment suggest a causative relationship between pulmonary M kansasii infection and EI. Therefore, in patients with EI and MTB infection, NTM infection could be a trigger for erythema nodosum. A high clinical suspicion, early diagnosis by clinical presentation, identification of the pathogen, and specific antitycobacterial treatment are all essential in the management of EI relating to NTM infection.

Commercial support: None identified.

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Erythema multiforme during etanercept treatment for psoriasis

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Introduction: Erythema multiforme (EM) is an acute, self-limited but potentially recurrent skin disease. Many etiologic factors have been suggested but in the majority, the lesion is precipitated by herpes simplex virus (HSV) infections. We report a case of a patient treated for chronic plaque psoriasis with etanercept who developed erythema multiforme.

Case report: A 17-year-old woman with a history of chronic plaque psoriasis was being treated with topical steroids. At the end of 2014, etanercept was prescribed because of the insufficient efficacy of topical therapy. Two months after receiving a 50 mg dose of subcutaneous etanercept twice a week she developed an erythematous facial rash with a regular round shape and a well-defined border. Biopsy of one of the lesions demonstrated mild spongiosis and vacuolar degeneration of the basal keratinocytes. A diagnosis of EM was made.

Discussion: EM is predominantly observed in young adults. It can be triggered by chemicals, drug intake or several infections in particular HSV infection, which has been identified in up to 80% of EM cases. It has been described that HSV associated EM is pathogenically distinct from drug-induced EM. In the case of drugs, it is known that TNF-alpha plays an important role in the pathogenesis of the disease. If TNF-alpha is indeed involved, it seems paradoxical that our patient would experience an EM in the setting of this cytokine inhibition, so it is possible that immunosuppression induced by TNF-alpha inhibitors may interact with HSV and consequently promote an eruption.

Commercial support: None identified.

2331

Extensive full-thickness chemical burn caused by the holistic hazard black salve

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Introduction: Frequently advertised as a natural and safe skin cancer treatment by online vendors, black salve is a highly destructive compound comprised of varying concentrations of several different ingredients. Two of the most common ingredients are Sanguinaria canadensis and zinc chloride, both of which are escharotic. Adverse events reported with black salve use include severe pain, cosmetically undesirable scar formation, destruction of tissue architecture, and metastatic recurrence from residual malignant cells not destroyed by the salve. We present a severe case of a full-thickness chemical burn requiring surgical debridement as a result of black salve application to a large cutaneous lesion.

Case report: A 61-year-old man presented with a painful 9 cm x 11 cm necrotic, escharotic nodule on his left posterior shoulder. The lesion started as a small papule that progressively enlarged to a large nodule over a 10 year period with frequent episodes of bleeding after minimal trauma. After the patient had applied black salve to this lesion for 11 consecutive days, he developed a full-thickness chemical burn. The large mass had become a giant eschar with purulent drainage and surrounding cellulitis, necessitating inpatient surgical debridement down to fascia and intravenous antibiotic therapy. Histologic examination of the postsurgical specimen showed acute skin and soft tissue inflammation throughout. The patient also had rubbery, non-tender, and mobile left axillary lymphadenopathy. Thoracic computed tomographic (CT) scan showed left axillary and upper back lymphadenopathy. Whether the lymphadenopathy was reactive or malignant could not be determined.

Conclusion: The current case serves as an important reminder that ‘natural remedies’ like black salve have the potential to cause severe damage. Dermatologists should be aware of the homopathic treatment that patients use because they can distort the clinical and histologic appearance of cutaneous lesions and potentially result in disastrous consequences.

Commercial support: None identified.

3705

Granuloma annulare disseminatum: Successful treatment with adalimumab. Clinical course and immunohistochemistry in a case series of 6 patients

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Disseminated granuloma annulare, a necrobiotic granulomatous dermatitis degrading collagen, is notoriously difficult to treat. We report the successful treatment of 6 patients with adalimumab, moreover, we examined biopsies before and after 12 weeks' treatment by immunohistology since no such studies have been reported previously. In an open label study 6 female patients aged 50 to 60 years were treated subcutaneously with an initial dose of adalimumab of 80 mg followed by 40 mg after one week and 40 mg every other week. Biopsies of skin lesions were taken before treatment and after 12 weeks and stained with H&E, anti-CD3, -CD4, -CD8, -CD54 (ICAM-1), -HLA-DR, -CD1a, and -CD163 (activated macrophages) and evaluated microscopically. Skin lesions were also photographed at weeks 0 and 12. We found a dramatic improvement of skin lesions in all patients studied. Before treatment there was an increase in all immunohistological markers, the most consistent strongest staining occurred with anti-CD54, -HLA-DR and -CD163. Clearing of skin lesions was accompanied with a varying decrease of CD3, CD4, CD8 and CD1a; however, there was a massive decrease of CD54, HLA-DR and CD163 after treatment in all patients. We conclude that the clearing of disseminated granuloma annulare with adalimumab therapy is accompanied by an immense reduction of cellular inflammatory markers most notably ICAM-1, HLA class II and activated macrophages. This suggests that the necrobiotic inflammation in disseminated granuloma annulare is driven by TNF-alpha. Anti-TNF-alpha therapy should be considered as first choice for disseminated granuloma annulare.

Commercial support: None identified.

3345

Granuloma annulare successfully treated with the 308-nm excimer laser

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Granuloma annulare is a relatively common benign dermatosis of unknown etiology, typically characterized by skin-colored to violaceous annular or arcuate lesions. Many therapeutic approaches including topical steroids, intralesional steroids and topical calcineurin inhibitors have been reported, but the clinical outcomes are varied. The excimer laser system is a source of 308nm wavelength light, which has shown efficacy in treating psoriasis, vitiligo and other inflammatory dermatoses. However, treatment of GA with the excimer laser has rarely been reported in dermatologic literatures. A 65-year-old man presented with multiple patches and papules on his upper extremities for one year. He complained of pruritus, and lesions showed polycyclic patches with erythematous to brownish margins and adjacent papules. Histopathologic examination revealed palisading and interstitial lymphohistiocytic granulomatous infiltration with degeneration of connective tissue in the reticular dermis, which was consistent with granuloma annulare. The lesions of granuloma annulare had poor treatment outcomes despite various attempts including topical and systemic steroids and oral cyclosporin. Excimer laser therapy was then initiated, and the lesions were almost resolved without any adverse effects after 20 sessions of laser treatment. Herein, we report an interesting case of localized form of granuloma annulare that was refractory to various treatments, but showed clinical improvement with excimer laser therapy.

Commercial support: None identified.
2339

Helpful clinical features for differential diagnosis of palmoplantar pustulosis and pustulosis.

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Background: Palmoplantar pustulosis (PPP) and pustulosis are both chronic vesiculopustular conditions of palms and soles. Because both PPP and pustulosis share similar clinical and histological features, it is difficult to differentiate between these two diseases even for dermatologists.

Objective: To analyze for clinical features that can be helpful in differentiating the two diseases.

Method: The clinical history from 153 patients with vesicles or pustules on palms and/or soles was evaluated and statistically analyzed. Patients were divided into PPP group and pustulosis group based on the information obtained from medical records such as clinical presentations, comorbidities, histopathologic diagnosis and treatment response.

Result: There was no sexual or age predilection in either group and no significant difference in overall localization and symmetry of lesions. Lesions were 56.9% palmar, 15.9% palmar and 29.2% plantar in PPP group. In pustulosis group, lesions were 62.5% palmoplantar, 16.4% palmar and 21.3% plantar. Bilaterality was found in 75.6% of PPP and 82% of pustulosis. More lesions were found on the tip of the fingers in those who showed greater impairment in HRQoL and WPAI domains. However, there was no difference between two groups in the lesions on the sides of fingers. More PPP lesions involved right DIP (P = 0.036), left PIP (P = 0.011), and right PIP (P = 0.001) joint areas compared with pustulosis. There were more past or current smokers in PPP group (P = 0.01). There was no association between the smoking history or the amount of smoking consumption and the location, distribution, or extent of involvement in each body part in PPP group. In pustulosis group, current or previous smokers had more lesions on the tip of the fingers, thenar area and hypothenar area. Among several comorbidities, only atopic dermatitis (P = 0.02) and nummular eczema (P = 0.019) were more frequently associated with pustulosis.

Conclusion: Several characteristics of patients and clinical findings may serve as useful ‘clues’ to differentiate between and determine treatment for PPP and pustulosis. At the same time, the two diseases may share some pathogenic mechanisms, as seen by some overlapping clinical features.

Commercial support: None identified.

2495

Hidradenitis suppurativa and lung diseases: A study of 3207 patients

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Background: Hidradenitis suppurativa (HS) is a chronic inflammatory skin condition, also known as acne inversa. HS is associated with inflammatory and genetic disorders. To the best of our knowledge, an association between HS and lung diseases has never been reported to date.

Objective: To investigate the association between HS and two lung diseases: chronic obstructive pulmonary disease (COPD) and asthma.

Methods: A cross-sectional study was performed utilizing the database of the Clalit Health Services (CHS). Case patients were defined as having HS in their records, diagnosed by a dermatologist. Control patients without HS were matched by age and gender. Dichotomous variables were compared by Pearson’s chi-square or Fisher’s exact test. Continuous variables were compared by the use of analysis of variance (ANOVA) or T-tests. The associations between HS and COPD or asthma were tested in multivariate analyses.

Results: The study population included 3207 patients with HS and 6412 controls. Among HS patients, 7.4% (236) had asthma and 2.7% (86) had COPD, compared to 5.3% (339) with asthma and 1.6% (105) with COPD in the control group. Using multivariate analyses, a significant association was observed between HS and asthma (OR 1.3; 95% CI 1.1-1.6) and between HS and COPD (OR 1.4; 95% CI 1.0-1.8).

Conclusion: In the current study, HS was associated with asthma and COPD. Physicians taking care of patients with HS should be aware of these associations.

Commercial support: None identified.

3191

Health related quality of life and work productivity impairment among patients with moderate to severe psoriasis in Taiwan

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Background: Plaque psoriasis is a chronic, systemic autoimmune disorder which can cause significant physical discomfort and psychological distress. The aim of this study was to document the health-related quality of life (HRQoL) in patients with moderate to severe plaque psoriasis in Taiwan.

Methods: This was a multicenter, noninterventional, cross-sectional study. Patients with moderate/severe psoriasis attended a single clinic visit at which they completed assessments including body surface area (BSA), Psoriasis Area Severity Index (PASI), Dermatology Life Quality Index (DLQI), Euro Quality of Life-5 Dimensions (EQ-5D), 10-level satisfaction scale for psoriasis treatment, and Working Productivity and Activity Impairment (WPAI). Data analyses included descriptive statistics and a regression model to assess predictors of HRQoL and WPAI.

Results: 305 patients with moderate to severe psoriasis were included. The average age was 43.7 years, and 82.0% of patients were male. The mean PASI score was 11.8. The average overall work productivity loss was 33.3%, and mean impairment in activity domains (EQ-5D), 10-level satisfaction scale for psoriasis treatment, and WPAI. However, there was no difference between two groups in the lesions on the sides of fingers. More PPP lesions involved right DIP (P = 0.036), left PIP (P = 0.011), and right PIP (P = 0.001) joint areas compared with pustulosis. There were more past or current smokers in PPP group (P = 0.01). There was no association between the smoking history or the amount of smoking consumption and the location, distribution, or extent of involvement in each body part in PPP group. In pustulosis group, current or previous smokers had more lesions on the tip of the fingers, thenar area and hypothenar area. Among several comorbidities, only atopic dermatitis (P = 0.02) and nummular eczema (P = 0.019) were more frequently associated with pustulosis.

Conclusion: Several characteristics of patients and clinical findings may serve as useful ‘clues’ to differentiate between and determine treatment for PPP and pustulosis. At the same time, the two diseases may share some pathogenic mechanisms, as seen by some overlapping clinical features.

Commercial support: None identified.

2671

Granulomatous pigmented purpuric dermatosis: Report of a case and review of the literature

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Granulomatous pigmented purpuric dermatosis is a rare histologic variant described in 1996 by Saito and Matsuo. It was described as classical histologic changes of pigmented purpuric dermatoses with superimposed granulomas. This variant is thought to be associated with hyperlipidemia and found predominantly in individuals of Far East Asia; however, a literature review of 26 documented cases including ours, reveals these associations might become less clear. We report an additional case of granulomatous pigmented purpuric dermatosis in a white male with an eruption involving the majority of the lower extremities. Our patient represents the seventh male and eleventh patient to present without hyperlipidemia.

Commercial support: None identified.

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Hidradenitis suppurativa and the association with hematological malignancies: The case series of two cases
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Background: Hidradenitis suppurativa (HS) is a chronic inflammatory disease has been associated with many risk factors. However the association of malignancies with HS is unknown.

Objective: We report two patients with hematological malignancies that preceded the development of HS, which may be a risk factor for the development of HS later in life.

Methods: A case series of two patients who presented to our dermatology clinic with HS that were preceded by leukemia. This recurrent finding led to a review of literature investigating the association of malignancies and HS. A literature search was performed using two databases, PubMed and Scopus. Each database was searched for articles from 1960 to present in English with the keywords ‘hidradenitis suppurativa, acne inversa, malignancy, cancer, hematological malignancy, epidemiology, and acneiform eruptions.’

Results: Both patients had untreated hematological malignancies preceding the development of late onset HS. To date literature does not report this association. Moreover, both of our patients were effectively managed with adalimumab.

Conclusion: Our study is the first case series reporting the possibility of hematological malignancies as a risk factor for development of late onset HS.

Commercial support: None identified.

3796
Hyperkeratotic papules and macules on the neck, intermammary interescapular areas and armpits
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Introduction: Confluent and reticulated papillomatosis, also known as Gougerot-Carteaud syndrome, was first described in 1927. It is characterized by hyperkeratotic papules and patches on the neck, intermammary and interescapular areas and armpits, being difficult to differentiate from other pathologies as pityriasis versicolor, acanthosis nigricans, pseudocancrathosis nigricans, cutaneous amyloidosis, and others.

Clinical cases: We report two patients with clinical and histological characteristics compatible with confluent and reticulated papillomatosis, analyzing in each one of them gender, age, lesions aspects, the initial diagnosis, the delay time until final diagnosis and the treatment. Case 1: A 56-year-old Colombian male with reticulated lesions on the back and chest for 10 years, and refractory to any treatment. Case 2: A 20-year-old Spanish male with hyperpigmented lesions on the neck, back and armpits for 5 years. Different treatments had been tried with no satisfactory response.

Discussion and conclusions: Confluent and reticulated papillomatosis is an unknown disease. There are different hypothesis which try to explain it. It is a condition usually underdiagnosed and misdiagnosed. The treatment is often focused on other diseases with similar clinical appearance. Once the diagnosis is established, and because its unknown origin, it is difficult to reach a consensus on the appropriate treatment. In the cases presented, both patients were diagnosed with confluent and reticulated papillomatosis even if the form of presentation was different. In both of them, lesions were treated for several years as mycosis and improved only after the reassessment of diagnosis and beginning of tetracyclines.

Commercial support: None identified.

3743
High incidence and potential risk factors for venous thromboembolism in Stevens–Johnson syndrome
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Background: Venous thromboembolism (VTE) which includes which includes deep vein thrombosis (DVT) and pulmonary embolism (PE) is a frequent cause of preventable illness and death in hospitalized patients. There have been no studies on the incidence and potential risk factors for VTE which consists of PE and DVT in patients with SJS.

Objective: Identify the incidence and potential risk factors for VTE in patients with SJS.

Methods: A retrospective review of consecutive adult patients (over 17 years old) diagnosed with of SJS seen by the department of dermatology at three tertiary referral centers based in urban centers from 2000 to 2014. Diagnosis and classification of SJS are based on the consensus definition by Basuji-Garin et al in 1993. The diagnosis of DVT was made by duplex ultrasound at the patient’s bedside. Routine DVT scanning was not performed. Clinically symptomatic patients with increased limb edema or pain underwent evaluation. PE was diagnosed either by ventilation and perfusion lung scan, spiral computed tomography scan or at autopsy.

The primary outcome was diagnosis composite end point of incident VTE (either PE or DVT) based on discharge diagnosis. Patients were followed up for a period of one year. Patients with and without VTE during the follow-up period were then compared to identify possible risk factors for development of VTE in patients with SJS.

Results: Average time to VTE incidence was 21 ± 32 days from admission (range 5-94 days). Incidence rate of DVT and PE was 3.94% and 0.99% respectively. Patients who experienced VTE are more likely to be females (P = 0.007), have a higher BMI (P = 0.037), have been admitted to ICU (P = 0.017) or IVG treatment (P = 0.0017). They are also more likely to have a diagnosis of malignancy within 90 days of admission (P = 0.0086).

Discussion: To our best knowledge, this is the first study on VTE risk in patients with SJS. The incidence rate of VTE is high and comparable to other patients who are recommended to receive thromboprophylaxis. The link between SJS and VTE is currently unknown. It can be caused by the increased inflammation induced coagulability. It is also possible that patients with SJS have more risk factors of VTE such as immobility and acute hospitalization.

Conclusion: Patients with SJS could have a high risk for VTE. Factors identified in study can be used to better manage the requirements for thromboprophylaxis in SJS patients.

Commercial support: None identified.

3787
Hypertrichosis lanuginosa acquisita in a patient with stage 4 non–small cell lung cancer: A case report
Robert Fischer, MD, Roger Williams Medical Center, Providence, RI, United States; Alison Fischer, MD, Roger Williams Medical Center, Providence, RI, United States

Hypertrichosis lanuginosa acquisita (HLA) is an acquired condition most often presenting in patients with endocrine or metabolic disorders (such as hyperthyroidism and porphyria) and medication use. While the association of HLA with malignancy has been noted for quite some time, it remains an important diagnostic factor in patients who may present with undiagnosed malignancy. We describe the case of a 54-year-old woman with recently diagnosed stage 4 non–small cell lung cancer who presented with fine, thin, and nonpigmented hair shafts located densely across her face, neck, and chest.

The new onset hair growth was reported to start weeks prior to the diagnosis of cancer. This case demonstrates the importance of differentiating between different abnormal hair growth patterns and types such as hirsutism. Although uncommon, it is important for physicians to keep HLA and other paraneoplastic manifestations in their differential and to be able to distinguish important but sometimes subtle hair characteristics.

Commercial support: None identified.


3667 Impact of lichen sclerosus, lichen planus, and vulvodynia on quality of life for patients using the vulvar-specific Skindex-29 patient reported outcome measure.

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Introduction: Vulvar disease impact on quality of life (QoL) is not well studied. Although vulvar-specific Skindex-29 (vSK-29), a patient self-administered instrument, has been validated in vulvodynia, its utility has not been reported in other vulvar diseases.

Methods: Patients seen in a vulvar mucosal specialty dermatology clinic at a tertiary referral center completed the vSK-29 questionnaire per standard of care. This instrument has 29 items divided into functioning, symptoms and emotions domains. vSK-29 data for patients diagnosed with vulvodynia (V, ICD9 262.5), lichen sclerosus (LS, ICD9 701.0) or lichen planus (LP, ICD9 697.0) between 2010 and 2014 were analyzed. Patients diagnosed with two or more of these conditions or those with squamous cell carcinoma were excluded. vSK-29 mean total score and mean score for each domain were calculated for each disease.

Results: 238 subjects were evaluable. Analyzed subjects included 179 (75.2%) LS, 49 (20.6%) LP and 10 (4.2%) V. Mean age was 53.5 years for LS, 66 years for LP and 50 years for V. Mean total vSK-29 score for LS was 45.38, with domain scores of 50.55, 49.60 and 38.98 for emotions, symptoms and functioning, respectively. Mean total score for LP was 43.49, with domain scores of 40.24, 47.58 and 36.65 for emotions, symptoms and functioning, respectively. Mean total score for V was 53.62 with domain scores of 49.20, 60.00 and 51.67 for emotions, symptoms and functioning, respectively.

Limitations: Limitations include a single academic center, varying sample size per subgroup, comorbid conditions, and concomitant treatment.

Conclusion: Women with vulvodynia, lichen sclerosus and lichen planus have poor quality of life in all domains. Women with lichen sclerosus have the worst QoL, indicating poorer QoL when compared to lichen sclerosus or lichen planus. These data support prior vSK-29 validation reporting and indicate that the impact of vulvodynia on QoL is similar from that on lichen sclerosus or lichen planus. Within vulvodynia, the symptoms domain exhibited the highest mean domain score indicating greatest effect on QoL, similar to lichen planus but in contrast with lichen sclerosus. While all women with vulvar diseases may experience severe impact on quality of life, the specific nature of this impact may vary with disease process.

2980 Hypertrophic osteoarthropathy: A case report

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Introduction: Pachydermoperiostosis (PDP) is a rare osteo-arthro-dermopathic syndrome with familial and idiopathic forms differentiating from secondary hypertrophic osteoarthropathy (HOA). PDP is characterized by digital clubbing, periosteal new bone formation of the long bones and polyarthralgia, associated with thickening of scalp and facial skin, seborrhea and hyperhidrosis with the absence of any disease involving any other system of the body. It apparently result of increase in prostaglandin E2, with predominance in males. The secondary HOA is associated with some heart, liver or intestinal diseases, but primarily in 80% as a paraneoplastic syndrome, lung adenocarcinoma being the most often linked.

Methodology: A 24-year-old male, presented with complaints of progressive thickening of facial and scalp skin, with formation of multiple folds and generalized hyperhidrosis, for past 2 years. Associated clubbing of fingers and toes and recurrent episodes of arthritis, for which he was prescribed nonsteroidal antiinflammatory mediation causing symptomatic relief. There were no complaints pertaining to cardiac, respiratory or gastrointestinal systems, any history of fever or recent weight loss. No other member of his family exhibited similar complaints.

Results: Laboratories showed elevated alkaline phosphatase (164 IU/L) and parathyroid hormone (124 pg/ml), decrease in vitamin D35 (15.2 ng/ml), Serum and urinary calcium, phosphorus, VDRL, thyroid and renal function tests, glucose, LDH, alpha fetoprotein, growth hormone levels, and endoscopic colonoscopy within the normal limits. X-rays of hands and feet showed periostosis without osteolysis, bone softening, lack of changes in the chest, echocardiography and brain MRI revealed no abnormality. Skin biopsy of taken from scalp stained with Alcian blue showed gross widening of the dermis, deposits of mucopolysaccharides with increase of collagen fibers, and the number of eccrine glands.

Conclusion: Based on the clinical and radiological findings, a diagnosis of the classic or complete form of PDP or idiopathic HOA was suggested.

Commercial support: None identified.

2911 Impact of iexeizumab on skin pain in patients with moderate to severe psoriasis compared to placebo and etanercept in UNCOVER-2

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Background and objectives: Psoriasis is characterized by red thick and scaly plaques which can often be painful. Skin pain associated with psoriasis is reported in up to 45% of patients, has an impact on quality of life and is currently not a well-studied symptom of psoriasis. Ixekizumab (IXE) is an anti-IL-17A monoclonal antibody with 45% of patients, has an impact on quality of life and is currently not a well-studied properties of active ingredients and anti-stretch marks topical products.

Methods: In the UNCOVER 2 trial, 1224 patients were randomized to receive injection of 80 mg IXE every 2 weeks (IXE Q2W; N = 477) after a 160-mg starting dose at Week 0. At Week 0 and Week 12, patients rated the severity of skin pain on a visual analog scale (VAS) ranging from 0 to 100 (0 = severe skin pain). Treatment comparisons among patients with skin pain VAS > 0 at baseline were made using an analysis of covariance model including treatment, pooled center, and baseline VAS value as covariates. Missing data were imputed using the last observation carried forward.

Results: At baseline, 89% (N = 1092) of patients reported experiencing skin pain with a mean (SD) skin pain VAS of 49.2 (28.2) and 50.3 (26.5) and 48.9 (29.4) in the IXE Q2W, IXE Q4W, ETN and PBO groups, respectively. The improvements in skin pain VAS were significantly greater in the IXE groups compared to ETN and PBO with least-squares mean (SE) changes of -42.2 (1.2) in the IEXE Q2W and -37.7 (1.3) in the IXE Q4W groups, compared to -29 (1.3) in the ETN and -4.6 (1.8) in the PBO groups (P < .001, all comparisons).

Conclusion: Skin pain is an important symptom of psoriasis, and in this study, the vast majority of patients reported baseline painful skin symptoms. Both dose regimens of IXE resulted in significantly greater improvements in skin pain compared to PBO and ETN.

 Supported by Eli Lilly & Company.

Commercial support: None identified.

2497 Improving stretch mark pathophysiology knowledge by specific in vitro study models

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Introduction: Common during pregnancy, stretch marks or striae distensae (SD) are the result of many factors and look like atrophied scars. Despite their frequency of occurrence, the physiopathogenic pathways involved in their formation are not fully elucidated. The dermal fibroblasts, the target cell under biomechanical and hormonal influences. Mechanical distension, perceived via integrins, induces the differentiation to myofibroblast via TGFBeta which balance is impaired in SD. This is linked to an alpha-SMA (smooth muscle actin) increased production. In order to improve our understanding of the mechanisms involved in SD development, we have developed several in vitro study models.

Methods: We used normal dermal fibroblasts under different treatment conditions mimicking mechanical distension or hormonal environment of pregnancy, as well as wounds isolated from SD, and study their behavior and synthesis potential.

Results: Fibroblasts exposed to TGFBeta1 transformed to myofibroblasts as shown by alpha-SMA fluorescent immunostaining. Corticosteroids inhibited the fibroblast secretion of collagen 1, as measured by qPCR. Scratch-test assay coupled with TGFBeta1 or corticosteroid demonstrated opposite results on proliferation. Evaluated in the Glassbox system, SD fibroblasts exerted stronger contractile forces under tension than classic ones. Their synthesis of dermal matrix proteins, evaluated by ELISA, was decreased (collagen 1 and 3 -20%, fibronectin -14% and elastin -16%). Whole-transcriptomic analysis of SD fibroblasts compared to normal fibroblasts from the same donors tended to demonstrate increased inflammation and elastin degradation factors as well as altered repair and migration process. To go further, we used a specific model that mimics dermal injury: in vitro injury mimicking mechanical stretch marks formation: a dermal injury was conducted on a full-thickness skin model. The injury had an impact on dermal and dermal-epidermal junction markers as it induced collagen 1, VII, elastin gene expression, evaluated by qPCR and beta1 integrin, evaluated by immunohistochemistry.

Conclusion: These in vitro models allowed us to understand the different phases involved in SD formation, they provide useful tools to evaluate the biological properties of active ingredients and anti-stretch marks topical products.

Commercial support: None identified.
3098

3101

Increased total immunoglobulin E levels in moderate to severe hidradenitis suppurativa
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Integrated safety of ixekizumab in patients with moderate to severe
psoriasis: Results from a pooled analysis of 7 clinical trials
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Background: Hidradenitis suppurativa (HS) is a chronic and recurrent inflammatory
disease mainly affecting the inverse skin areas. It has been suggested that HS may be
a disease of immune dysregulation.
Aim: Measure the total immunoglobulin E (IgE) levels in HS and determine the
association of these levels with clinical and patient characteristics.
Methods: A transversal multicenter study was carried out in 3 Spanish tertiary
hospitals with dedicated HS clinics. All consecutive patients with HS (Hurley II or III)
who had undergone immunoglobulin determination within the past year were
included. Demographic and disease related information was recorded. IgE levels
were compared to the population mean. Univariate analysis was carried out to
determine association between demographic and clinical characteristics and IgE
levels. This is an ongoing study and patients will now be included prospectively.
Results: 74 patients with HS (Hurley II n ¼ 57, Hurley III n ¼ 17) were included. Out
of 74 patients, 40 (54.1%) were female, mean (standard deviation) age was 39.4
(612.9) years, mean duration of the disease was 15.1 (613.0) years. 52 (70.3%) of
the subjects were smokers. 33 (44.6%) were overweight and 25 (33.8%) obese. 50
(67.6%) of the patients had an axillary-mammary phenotype. No patient had been
diagnosed with atopy. Median total IgE level was 88.1 UI/ml (IQR 40-126.6 UI/ml),
with a maximum value of 2379 UI/ml. Prior data shows that mean total IgE levels in
the general population are 38 UI/ml. 28 patients (38%) had increased total IgE levels
($100 UI/ml), 11 (14.9%) had increased IgA levels ($450 UI/ml) and 7 (9.5%) had an
increased IgG level ($1591 UI/ml). 4 patients had concomitant elevation of IgE and
IgA, and another 3 had increased IgE, IgA and IgG levels. Median total IgE levels were
higher in smokers (94.0 UI/ml, IQR 41.8-181.1) than in nonsmokers (58.2 UI/ml,
IQR 22.3-102.3) (p.024). No differences in IgE levels were found according to other
patient demographic or clinical characteristics (sex, age, BMI, clinical phenotype,
duration of the disease, areas affected, pilonidal cyst, CRP, Hurley, DLQI, pain,
pruritus).
Conclusion: Total IgE levels were frequently elevated in patients with HS. Our data
suggest that the increased frequency of smokers might partly explain the increase in
IgE. It remains to be determined whether the heavy inflammatory infiltrate of plasma
cells in the HS chronic lesions promotes elevated IgE levels in HS patients.
Commercial support: None identified.

Background and objectives: In moderate-to severe psoriasis, long-term treatment is
usually required to achieve adequate control of disease activity. This publication
analyzes the safety of ixekizumab (IXE), a monoclonal anti-IL-17A antibody with a
high binding affinity, which is currently in development for the treatment of psoriasis.
Methods: Treatment-emergent adverse event (TEAE) and serious adverse event
(SAE) data were integrated from the induction period of 3 randomized, controlled
trials [RCTs] (0-12 weeks), the maintenance period of 2 of the 3 RCTs with a
randomized withdrawal design (12-60 weeks), and all patients exposed to IXE from
all 7 psoriasis trials (controlled and uncontrolled). For the induction period, patients
with moderate to severe psoriasis were randomized to IXE every 2 (IXE Q2W; N ¼
1167) or 4 weeks (IXE Q4W; N ¼ 1161) after a 160-mg starting dose, etanercept
(ETN) (50 mg biweekly; N ¼ 739), or placebo (PBO) (N ¼ 791). The maintenance
period included IXE-treated patients who had an sPGA 0,1 at Week 12 (responders)
who then were re-randomized to IXE Q4W (N ¼ 416), IXE every 12 weeks (IXE
Q12W, N ¼ 408), or PBO/withdrawal group (N ¼ 402). The group of all patients
exposed to IXE (N ¼ 4209), accounted for 6480 patient years (PY) of exposure.
Comparison of induction and maintenance periods were descriptive.
Results: During the induction period, the frequency of any TEAE was higher in Total
IXE (58.6%), IXE Q2W (58.4%), IXE Q4W (58.8%), and ETN (54.0%) compared to
PBO (46.8%). Most TEAEs were mild or moderate. The frequency of AEs reported as
severe, SAEs, and discontinuations due to AEs did not differ among treatment
groups. During the maintenance period, the exposure-adjusted incidence rate (IR e
per hundred patient years) of TEAEs was lower for IXE Q4W patients than for the
PBO/withdrawal group (IR: PBO, 123.8; IXE Q12W, 106.2; IXE Q4W, 95.6), with no
significant difference observed between the IXE Q12W and IXE Q4W groups. The IR
of TEAEs was lower during the maintenance phase than during the induction phase
among patients who received continued dosing on IXE Q4W (99.3 and 256.8,
respectively). Among all patients exposed to IXE, the exposure adjusted IR of TEAEs
was 54.4. Most TEAEs were mild or moderate.
Conclusions: IXE had a safety profile that was similar to ETN during the induction
period. The overall incidence of AEs in the Q2W and Q4W dosing regimens were
similar. The IR for AEs decreased over time with continued IXE treatment.
Supported by Eli Lilly and Company.

3217

3080
Innovative therapy with alitretinoin
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At the Dermatology Clinic of the Policlinico of Bari, Alitretinoin therapy for the
treatment of two particular clinical cases was performed: 1. Verneuil’s disease, 2.
pustular handheld psoriasis. First clinical case: male patient, born in 1983, suffering
from Verneuil’s disease for about 8 years, BMI 22.89, smoker of 10 cigarettes/day for
about 12 years, in medical history no disease whatsoever, reported emotional stress
in the professional field and in the affective-sexual one because of dermatosis.
Clinically the patient presented the classic lesions in different evolutionary phases:
deep and painful nodules, abscesses, fistulas and exuberant scar tissue. The affected
areas of the skin were typical: groin, perianal and axillary surfaces. The lesions
appeared somewhat infiltrated, rather painful at palpation and very purulent; the
patient reported a discrete frequency of occurrence of new lesions. Before the visit
at our clinic, which took place in mid-May 2014, the patient had already undergone
numerous systemic antibiotic therapies for the dermatosis (mainly tetracycline), for
long periods of time with mediocre results and posttreatment periods of wellness of
short duration. After performing blood tests with normal results, in June 2014, the
patient began the treatment with 30 mg alitretinoin for a total duration of 7 months
with good results. Currently the patient continues to enjoy a state of physical wellbeing with good quality of life. Second clinical case: female patient, born in 1965,
suffering from pustular handheld psoriasis for about 3 years, denied luxurious
habits, housewife, dyslipidemia in drug therapy, reported poor quality of life due to
the reduced hands activity resulting from the dermatosis. Bilaterally, the palmar
surface looked hyperkeratotic, erythematous, and covered by numerous pustular
lesions and scales. Before the visit at our clinic, which took place in late July 2014,
the patient had already undergone topical therapy with potent corticosteroids for
long periods of time with poor results. After performing blood tests with normal
results, in August 2014, the patient began the treatment with 30 mg Alitretinoin for a
total duration of 7 months with regression of the dermatosis and significant
improvement in quality of life.
Commercial support: None identified.

AB58

Intermittent anakinra therapy for symptom control in Schnitzler
syndrome
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Schnitzler syndrome is a rare, acquired autoinflammatory condition characterized
by nonpruritic urticarial plaques, bone pain, recurrent fever, and a monoclonal IgM
gammopathy. The cutaneous eruption is often the first sign of Schnitzler syndrome
and consists of a chronic urticaria lasting 12-24 hours, commonly on the trunk and
limbs. Histologic examination reveals a dense neutrophilic infiltrate, with an
urticarial reaction pattern. On immunofluorescence, IgM deposition around superficial dermal vessels is seen in about 30% of patients. Laboratory data demonstrate an
IgM monoclonal gammopathy in 100 percent of patients. Other important
laboratory findings are an elevated ESR, leukocytosis, thrombocytosis, and anemia.
Bone marrow exam is normal in approximately 80 percent, while the remaining 20
percent of patients will develop a lymphoproliferative disorder, most commonly
Waldenstr€
om disease and lymphoma. The gold standard of therapy is anakinra, an IL1 receptor antagonist, which is effective in inducing complete remission within
hours of injection but does not result in a sustained response if therapy is
discontinued, thus requiring patients to maintain daily injections. Newer IL-1
receptor antagonists, such as rilonacept and canakinumab, also appear similarly
efficacious. Our patient is an 85-year-old white male who presented with a diffuse
nonpruritic rash of ten-year duration. The rash occurred every five to ten days
concurrently with cyclic febrile episodes and occasional chills. These episodes
lasted less than twenty-four hours. He also reported a history of arthritis with
moderate pain in the bilateral knees and wrists. Over the previous five years, his
fevers had become more severe and frequent and the rash became more persistent.
On physical examination the patient had diffuse pink to red edematous papules and
plaques on the chest, back, abdomen and bilateral upper and lower extremities.
Laboratory data revealed an IgM monoclonal band on immunofixation, elevated ESR
and CRP, leukocytosis, and anemia. Biopsy revealed a dense neutrophilic infiltrate,
both interstitial and perivascular, along with dilated vessels and dermal edema in the
upper dermis. Direct immunofluorescence was negative. The patient has found
complete relief of his symptoms with a once yearly four week course of anakinra
injections.
Commercial support: None identified.

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3711

Is nevus lipomatous superficialis derived from pericyte around vessel?

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Nevus lipomatous superficialis (NLS) is an uncommon benign hamartomatous congenital nevus characterized by the presence of mature adipocytes under the dermis. The fat deposition of NLS in the dermis has been considered to be a consequence of degenerative changes in connective tissues or a result of developmental displacement, with subsequent deposition of fat beneath the dermis. However, recent studies have suggested that the induction period of 3 randomized controlled trials (RCTs) (0-12 weeks) and maintenance periods of these 3 RCTs. These results and the exposure-adjusted IR of MACE observed in all patients exposed to IXE across 5 phase 3 trials suggest that IXE treatment is not associated with increased risk of MACE.

Commercial support: None identified.

3413

Ilexizumab shows no association with major adverse cardiac events (MACE) in patients with moderate-to-severe psoriasis: An integrated safety analysis of clinical trials

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Objectives: We evaluated the incidence of major adverse cardiovascular events (MACE) in patients (pts) treated with ixekizumab (IXE), an anti-IL-17A monoclonal antibody, vs. high-dose etanercept (ETN) or placebo (PBO).

Methods: Treatment-emergent MACE were examined based on integrated data from the induction period of 3 randomized controlled trials (RCTs) (0-12 weeks) and maintenance periods of these 3 RCTs. There were 2,398 pts exposed to IXE (N = 416), IXE Q12W (N = 408), or PBO/IXE withdrawal (N = 402). All pts exposed to IXE (N = 4053) accounted for 0.8% of the total evaluated population.

Results: A total of 82 pts (3.9%) experienced a MACE vs. 1 PBO pt (IR = 0.6) and 1 ETN pt (IR = 0.6). All P values were nonsignificant (NS). In the randomized population, 0 IXE Q12W pts and 3 IXE Q4W pts (IR = 0.8) experienced a MACE vs. 1 PBO pt (IR = 0.6) and 1 ETN pt (IR = 0.6). Of the 82 MACE pts, 10 showed atrial fibrillation, 10 showed a cardioembolic event, 9 showed angina, and 10 showed deep vein thrombosis. Of the 82 pts, 77% (63/82) had one or more cardiovascular risk factors (male ≥45 or female ≥55 yrs, diabetes mellitus, hypertension, fasting high-density lipoprotein cholesterol < 40 mg/dL, and currently smoking) vs. 42.1% of pts who never had a MACE, 50.0% of pts with MACE were obese (≥30% vs. 4.0% of pts who never had a MACE).

Conclusions: No statistically significant difference between treatment groups in exposure-adjusted IR of MACE was observed in integrated data from the induction and maintenance periods of these 3 RCTs. These results and the exposure-adjusted IR observed in all patients exposed to IXE across 5 phase 3 trials suggest that IXE treatment is not associated with increased risk of MACE.

Commercial support: None identified.

3558

Juvenile dermatomyositis after repeated episodes of pharyngotonsillitis: A case report of a 3-year-old Brazilian girl

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Background: Juvenile dermatomyositis (JDM) is a systemic, autoimmune inflammatory muscle disorder and vasculopathy that affects children younger than 18 years, it has an incidence of 5 cases/million children/year in the general population. Findings include characteristic skin rash and muscle weakness. The major dermatological manifestations are the Heliotrope rash and the Gottron’s papules. The first one is a purpuric or violet erythema seen around the eyes, especially in the upper eyelids, usually associated with periorbital edema. The second one are erythematous, desquamative lesions seen on the extensor surface of the fingers. JDM is thought to arise from a complex interplay of immunological dysfunction resulting from environmental stimuli in genetically susceptible patients. The criteria of Bohan and Peter are used for diagnosis. Patients with the characteristic rash who fulfill 2 criteria have probable JDM. Oral corticosteroids are the mainstay of treatment.

Objective: This case report intent to draw the attention of the dermatological community for a rare but important JDM.

Methods: Review of medical records and literature search in MEDLINE, LILACS, SciELo and MD Consult.

Case description: Female, 3 years and 8 months of age, history of progressive dermatomyositis for the past 2 months, with itching and muscle weakness for the past 6 months. Episodes of pharyngotonsillitis were reported in the last months, and fifteen days ago she was diagnosed with itching and muscle weakness for the past 6 months. Episodes of pharyngotonsillitis were reported in the last months, and fifteen days ago she was diagnosed with pharyngotonsillitis. The medical examination revealed erythematous, desquamative lesions on the extensor surface of metacarpophalangeal and proximal interphalangeal joints of both hands. Proximal and symmetrical muscle weakness of the pelvic and scapular girdle was confirmed. The patient was hospitalized and the follow laboratory exam were performed: RBC: 4.15 million/mm3, Hgb: 11.9 g/dL, Hct: 35.4%, MCV: 82.89 fL, MCHC: 28.67 g/dL, MCH: 35.49 g/dL, RDW: 12.9%. Platelets 319 million/mm3, WBC: 3,870.00/mm3 (1/47/48/3/1/0) CPK-MB: 42IU/L; CPK-NAC: 355.8 IU/L; Creatinina: 0.20 mg/dL; AST: 49 UI/L; ALT: 22 UI/L; Urea: 24.9 mg/dL.

Conclusion: The diagnosis of JDM is important to identify, as early diagnosis and prompt institution of appropriate therapy are essential for good results and improve the quality of life of affected children.
Keratosis lichenoides chronica 110 years on: Time for diagnostic criteria?

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Keratosis lichenoides chronica (KLC) is an enigmatic dermatitis with a complex clinical phenotype and ill-defined histological features. Clinically it is most commonly characterized by lichenoid hyperkeratotic lesions in association with a seborrhoeic or acniform facial eruption, keratoderma, mucosal lesions and nail changes. The term KLC was coined by Margolis et al in 1972 but is thought to refer to a condition first described by Kaposis in 1895. Despite over a century of reported cases, the condition remains uncertain as to its nosologic status. The most recent and exhaustive review of previously published cases suggests that the majority are likely to represent atypical presentations of more common cutaneous disorders, such as lichen planus, lupus erythematosus and atopic dermatitis. After reviewing published case reports, series and reviews, we propose clinical, histopathologic and laboratory diagnostic criteria to facilitate recognition of this condition. We believe the application of such criteria will further elucidate the true phenotype of this complex and rare disease.

Commercial support: None identified.

3914

Laugier-Hunziker syndrome: Case report and a review of the literature

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Background: Laugier-Hunziker syndrome (LHS) is a rare sporadic disorder, characterized by acquired macular hyperpigmentation of the oral and genital mucosa, often associated with longitudinal melanonychia. No underlying systemic abnormalities are associated with LHS and no malignant predisposition exists. Cases have been reported in related family members. The condition has been variably reported as sporadic and inherited in an autosomal dominant fashion. The lesions are most commonly located on the lips, buccal mucosa, and hard palate. The nails are affected in about 50-60% of the cases, usually presents as single or double stripes or as homogeneous pigmentation on one-half of the nail or complete nail. The pigmentation may spread from the proximal nail fold into the surrounding skin, which is known as Hutchinson's sign.

Objective: This case report intent to draw the attention of the dermatological community for a rare syndrome that has important differentials diagnosis such as Peutz–Jeghers syndrome (PJS), subungual hematomata, racial pigmentation, and AIDS, in association with the use of certain drugs such as minocycline and zidovudine, and in Bowen's disease.

Methods: Review of medical records and literature search in MEDLINE, LILACS, Scielo and MD Consult.

Case report: Female, 32 years old, housewife, presented longitudinal pigmentation of the finger nail on the right index, which was noted 7 years ago. The patient observed during the last years darkened spots on the lips and tongue, and a pigmented injury on her right thumb. The lesions are asymptomatic. She denies gastrointestinal symptoms or use of medications. The dermatological examination showed hyperpigmented stains on the lingual mucosa and lips well-defined, with punctate pattern on the tongue and confluent on the lips. Rounded hyperchromic stain on the side of the first right finger, associated with hyperpigmentation of the proximal nail fold (Hutchinson sign). Longitudinal range of hyperpigmentation of the second right finger nail. The diagnosis of LHS was raised and investigated. No comorbidities were found. To exclude PJS, colonooscopy was performed and the result was considered normal.

Management: The patient received guidance about the benign nature of LHS, and the result was considered normal.

Conclusion: Although the rare prevalence of the LHS, the prompt clinical recognition averts the need for excessive and invasive procedures and treatments.

Commercial support: None identified.

3798

Lichen striatus in a patient with hepatitis C virus infection and interferon-induced sarcoidosis

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Background: Lichen striatus is a rare inflammatory disorder of unknown etiology, with a characteristic distribution along the lines of Blaschko, which may appear at any age. It has been found to be frequently associated with atopy. There are no specific histologic findings, however some features are more frequently found in this disease.

Material and method: We present the case of a 51-year-old male patient with multiple gross morbilliform lesions that were diagnosed in our clinic with lichen striatus based on clinical and histologic findings.

Results: Our patient presented with a linear papulosquamous pruritic eruption with linear distribution, creating an s-shaped swirled pattern located on his right thorax and abdomen developed during the previous two months. The patient had hepatitis C virus infection for which he was receiving triple therapy with pegylated alpha interferon, ribavirin and protease inhibitors. During this therapy, he developed sarcoidosis. The patient also had atopic dermatitis. Histologic findings consistent with lichen striatus diagnosis were: parakeratosis, intracapillary necrotic keratinocytes and lichenoid inflammatory infiltrate at the dermoepidermal junction.

Inflammatory infiltrate consisted of lymphocytes and monocytes. The patient received systemic therapy with antihistamine medication and topical therapy with medium to high potency corticoids and emollients, with good results.

Conclusion: The etiology of lichen striatus is unknown. Association with atopy has been documented, however the presence of lichen striatus in a patient with HCV infection and drug-induced sarcoidosis was not previously described according to our knowledge. Histology of his disorder is nonspecific and the diagnosis is made through correlation between clinical and pathologic findings, as was the case of our patient. Treatment response to topical therapy was satisfactory. As lichen striatus is a rare disorder, well established treatment standards are lacking and further research is needed to overcome this limitation.

Commercial support: None identified.
MAGIC syndrome: A case report of a rare entity

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MAGIC syndrome is an acronym for mouth and genital ulcers with inflamed cartilage syndrome. Patients reported with this syndrome have features characteristic of both Behçet syndrome and eosinophilic granulomatosis with polyangiitis. We report a patient with this rare syndrome. A 58-year-old man presented to us with a history of ulceration and loss of digits of hands and feet since 6 years of age. He had recurrent episodes of oral and scrotal ulcers, swelling and deformity of ears and nose for the past 7 years. He had a history of episodes of eye redness and pain which spontaneously subsided over a few weeks. No family member had similar complaints. Mucocutaneous examination revealed erythema, scarring, resorption and atrophy of cartilaginous portions of both ears and the nose. Ulcers of size 5 x 3 cm were seen over both heels and the lateral border of the right foot. The ulcers had an erythematous halo, sloping (right foot) undermined edges (left foot), black necrotic base with exposure of the underlying bone. There was a partial loss of the lateral two fingers of the right hand and loss of lateral 3 fingers till the proximal interphalangeal joints of the left hand. Erythema, atrophy and scarring over both hands were seen. There was loss of nails of both hands except thumbs. He had loss of toes of both feet. There were multiple aphthae over the mucosal aspect of lips and scrotum. The pathology test was also negative. The hemogram, liver and renal function tests, urine examination, chest x-ray and coagulation profile were normal. Cryoglobulins, ANA, dsDNA, pANCA and cANCA were negative. The VDRL was non-reactive, the ELISA for HIV was also negative.

The biopsy from the ulcer on the scrotum revealed a neutrophilic infiltration of the subepidermal zone with vasculitis. The patient was administered Prednisolone 40 mg and prednisolone acetate (Hydrocortisone 50 mg) as eye drops three times a day. The ophthalmological examination and slit lamp examination was normal. The urine mcu polycytoplasmichacarides were negative. The color Doppler scan showed arteritis with thickened walls of both the femoral and sciatic arteries. The treatment started on oral prednisolone 40 mg which was gradually tapered and azithromycin 50 mg twice a day, with which the patient had healing of the ulcers of the feet and decrease in the frequency of aphthous ulcers at 3 months of follow up.

Commercial support: None identified.

2500 Major emotional and physical complications among survivors of Stevens–Johnson syndrome and toxic epidermal necrolysis

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Background: Stevens–Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are life-threatening mucocutaneous reactions resulting mainly from drugs. Few studies assessed the long-term physical sequelae of SJS/TEN survivors. No studies have objectively evaluated the emotional and physical complications among this group. Objective: To characterize the long-term emotional and physical complications and health-related quality of life among SJS/TEN survivors. Methods: Patients ≥18 who survived SJS/TEN were assessed using various questionnaires: Impact of Events Scale-Revised, General Health Questionnaire, and Hospital Anxiety and Depression Scale. Health-Related Quality of Life was assessed by 3 validated questionnaires: Dermatology Life Quality Index, EQ-5D. Skindex-29 and one specially designed for the study. Medical assessment was conducted by an interview and physical examination. Results: Our cohort consisted of 17 patients with mean 51.6 ± 74.7 months (median = 9, range = 1-1228) following SJS/TEN. Eleven out of 17 (65%) patients were found to have symptoms of posttraumatic stress (Impact of Events Scale-Revised, mean total score = 24.2 ± 5.1). These scores met the criteria for posttraumatic stress disorder. Twelve out of 17 (71%) had psychological distress (General Health Questionnaire, mean total score = 4.6 ± 2.4 and 11/17 (65%) had symptoms of a psychiatric clinical disorder (Hospital Anxiety and Depression Scale, mean total score = 3.5 ± 2.1). The Dermatology Life Quality Index indicated a moderate to extremely large effect on the lives of 9/17 (53%) patients (mean total score = 6.9 ± 7.6). Skindex-29 indicated a mild-severe effect on Health-Related Quality of Life in 10/17 (58.8%) participants (mean total score = 26.9 ± 21.5). Participants rated their general health at a mean of 66.2/100 ± 18.1 (EQ-5D VAS). We also found that SJS/TEN has a major impact on Health-Related Quality of Life as was evident by the high scores for the 29 items of the Skindex-29. Most complications found were cutaneous (15/17, 76%) and psychiatric (11/17, 65%). Conclusions: Survivors of SJS/TEN suffer from severe emotional and physical complications and impaired Health-Related Quality of Life and require long-term medical follow-up.

Commercial support: None identified.

3540 Malignancies in McCune-Albright syndrome

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McCune-Albright Syndrome (MAS) consists of a classic triad of fibrous dysplasia (FD), focal macular hyperpigmentation of skin and endocrine dysfunction. A 68-year-old male patient presented with a 30-year history of ‘‘coast of Maine’’ hyperpigmented patch on the right upper trunk and shoulder and no history of endocrine abnormalities, presented for evaluation and treatment of a squamous cell carcinoma on the left temporal scalp. He was noted to have cranial bone deformity in both the right frontotemporal and orbital regions. The bony deformities of the scalp and the alignment of orbital ridges were partially corrected with surgery 30 years ago. Despite these interventions, bony deformity of the scalp had been progressive and disfiguring. While MAS can be associated with malignancies such as malignant transformation of fibrous dysplasia of bone, evidence suggesting an increased risk for squamous cell carcinoma in MAS patients is lacking. The genetic basis of MAS is not yet fully understood. In the early 1990s, a mutation in the GNAS gene was identified in selected patients. The scalp SCC in this patient is believed to be unrelated to the MAS as the altered signaling pathway from GNAS gene mutation in MAS does not play a role in FD. The case of the patient is believed to be an isolated event of FD has been reported in less than 1% of FD cases. A high index of suspicion for FD may be warranted in this patient.

Commercial support: None identified.

3879 Malassezia yeasts in seborrheic dermatitis and seborrhea

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Malassezia yeasts are lipophilic organisms, commensals of the normal human skin, and the pathogens of certain skin diseases such as seborrheic dermatitis (SD). The pathogenetic role of Malassezia in SD remains unclear. The relationship between SD and Malassezia is based on evidence that removal of the yeasts from the skin, using an antifungal agent, usually leads to remission. Based on the antiinflammatory properties and decreased sebum production, some authors have administered low-dose oral isotretinoin for moderate to severe SD and seborrhea. The purpose of this study was to analyse the prevalence of Malassezia species in the scalp skin of patients with SD and seborrhea prior and after therapy, with 10 mg oral isotretinoin every other day and antiseborrheic shampoo, for six months. Sampling was performed from the scalp lesions and from clinically healthy skin of the scalp in seborrhea cases. Skin scales were scraped with a sterile curetta, and then the material was inoculated on agar. The cultures were inoculated and incubated at 35°C for 7 days. Malassezia species were identified according to their physiological and molecular characteristics. We used a PCR technique to amplify the fungal ITS and D1/D2 regions and the ITS and D1/D2 amplicons were sequenced. Forty five patients with SD and/or seborrhea with scalp involvement (30 females and 15 males, aged from 18 to 48 years) were selected for the clinical trial. All participants signed a Consent Form after approval of the study by institutional review board. A total of 86 isolates were studied prior to and after the therapies. The results of culture were positive for Malassezia yeast in 92% of cases. The predominant species was M globosa, found in 46% isolates and the prevalence of other species was 36% for M slooffiae, 24% for M pittii, 2% for M japonica and M furfur each and 1% for M stellatoidea. Three species, M obtusa, M pachydermatis and M yamatoensis were not isolated. The prevalence of Malassezia species after therapies remained similar to the baseline and no treatment group differences were noted. In fact, the reduced sebum secretion rate from the scalp environment was not sufficient to eliminate Malassezia yeasts in scalp lesions in subjects treated with low-dose oral isotretinoin or anti-seborrheic therapy. We believe that the most adapted Malassezia yeasts remained in the scalp despite both therapies.

Commercial support: None identified.
Cutaneous pseudolymphoma (CPL) is a term that encompasses a myriad of reactive dermatides with various etiologies, pathogeneses, clinicopathologic presentations, and behaviors. The benign lymphoproliferative processes of CPL are marked by reactive polyclonal B-cell (CBP) and/or T-cell (CTLP) lymphoid aggregates that histologically and often clinically mimic cutaneous lymphoma. Thought to be an inflammatory process provoked by foreign antigens, CPL can be a reaction to the inflammatory process provoked by foreign antigens, and the clinical presentation can range from an asymptomatic, hyperpigmented, violaceous, 5-13 mm plaques affecting the scalp, right lateral eyebrow, retroauricular folds, left nasal ala and tip of the nose. Some of the plaques had marked atrophy in the center and others had a lichenoid papular appearance with discoid lupus erythematosus (DLE) features. Some of these lesions had been biopsied in the past and were determined to be PK. The patient was treated with metronidazol with no improvement. 2.5% hydrocortisone, 0.025% tacrolimus, 0.05% desonide, and 0.1% fluocinonide ointment were prescribed. Brief resolution was achieved with clobetasol propionate and intralesional triamcinolone, but the lesions recurred. A punch biopsy of one of the scalp lesions was performed and revealed an epidermis with a column of large parakeratotic cells overlying dyskeratotic keratinocytes. No atypical changes were noted. The papillary region showed a mild perivascular lymphohistiocytic infiltrate. These changes were consistent with PK. The rest of the skin was free of significant for recurrent porokeratotic papulofolliculitis (CARP) on the upper posterior trunk. Patient denied any family history of similar conditions. CBC, chemistry, and complete autoimmune panel, including complement, were performed and were within normal ranges; ANA was reported as 1:40 with a speckled and nucleolar pattern; vitamin D levels were 14.5 ng/mL (30-100 ng/mL).

Discussion: Mibelli’s PK usually affects non-sun-exposed areas, such as the trunk and neck, rarely affects the face and mucous membranes. There are rare reports of PK presenting with discoid-like atrophic lesions on sun-exposed areas such as the face, as observed in this case. Generally, response to PK treatments is variable and, in this particular case, the patient failed several treatments. In addition, the potential malignant transformation of this condition warrants increased vigilance and efforts for photoprotection in these patients.

Commercial support: None identified.

3595 Multifocal cutaneous pseudolymphoma treated with mycophenolate mofetil: A case report

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Cutaneous pseudolymphoma (CPL) is a term that encompasses a myriad of reactive dermatides with various etiologies, pathogeneses, clinicopathologic presentations, and behaviors. The benign lymphoproliferative processes of CPL are marked by reactive polyclonal B-cell (CBP) and/or T-cell (CTLP) lymphoid aggregates that histologically and often clinically mimic cutaneous lymphoma. Thought to be an inflammatory process provoked by foreign antigens, CPL can be a reaction to the inflammatory process provoked by foreign antigens, and the clinical presentation can range from an asymptomatic, hyperpigmented, violaceous, 5-13 mm plaques affecting the scalp, right lateral eyebrow, retroauricular folds, left nasal ala and tip of the nose. Some of the plaques had marked atrophy in the center and others had a lichenoid papular appearance with discoid lupus erythematosus (DLE) features. Some of these lesions had been biopsied in the past and were determined to be PK. The patient was treated with metronidazol with no improvement. 2.5% hydrocortisone, 0.025% tacrolimus, 0.05% desonide, and 0.1% fluocinonide ointment were prescribed. Brief resolution was achieved with clobetasol propionate and intralesional triamcinolone, but the lesions recurred. A punch biopsy of one of the scalp lesions was performed and revealed an epidermis with a column of large parakeratotic cells overlying dyskeratotic keratinocytes. No atypical changes were noted. The papillary region showed a mild perivascular lymphohistiocytic infiltrate. These changes were consistent with PK. The rest of the skin was free of significant for recurrent porokeratotic papulofolliculitis (CARP) on the upper posterior trunk. Patient denied any family history of similar conditions. CBC, chemistry, and complete autoimmune panel, including complement, were performed and were within normal ranges; ANA was reported as 1:40 with a speckled and nucleolar pattern; vitamin D levels were 14.5 ng/mL (30-100 ng/mL).

Discussion: Mibelli’s PK usually affects non-sun-exposed areas, such as the trunk and neck, rarely affects the face and mucous membranes. There are rare reports of PK presenting with discoid-like atrophic lesions on sun-exposed areas such as the face, as observed in this case. Generally, response to PK treatments is variable and, in this particular case, the patient failed several treatments. In addition, the potential malignant transformation of this condition warrants increased vigilance and efforts for photoprotection in these patients.

Commercial support: None identified.

3034 Multiple cutaneous angiofibromas as predominant manifestation of the cardiofaciocutaneous syndrome (BHDS)

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Numerous facial angiofibromas are characteristic of tuberous sclerosis and can be found in multiple endocrine neoplasia type 1. We reported a patient with multiple facial angiofibromas leading to the diagnosis of Birt-Hogg-Dube syndrome (BHDS). A 41-year-old woman was referred for evaluation of multiple facial skin lesions for almost 15 years. She has a history of four spontaneous pneumothorax. She also had a history of smoking cigarettes. She reports no history of other major medical problems or seizures. Family history indicated that the patient’s both sister and aunt had spontaneous pneumothoraces. There was no family history of renal tumors, colon carcinoma, or other tumors. Clinical examination revealed multiple skin-colored papules on the nose, cheeks, and neck but no shagreen patch nor hypopigmented macules. Histologic analysis of two facial papules showed angiofibroma but no evidence of trichodiscoma or fibrofolliculomas on multiple tissue sections. There were numerous angiofibromas found in multiple endocrine neoplasia type 1. We reported a patient with multiple facial angiofibromas leading to the diagnosis of Birt-Hogg-Dube syndrome (BHDS). We offer MSNP as an entity related to the previously described localized pruritus and encourage awareness of this often encountered yet underappreciated diagnosis. We attribute MSNP possibly to a combination of multilevel degenerative disc disease of the spine, spinal nerve root impingement and/or nerve root traction. We suggest attherosclerosis of the arterial vessels as a strong contributing factor accounting for disc degeneration and thus, for nerve root impingement and/or traction. In addition, we offer our “marking pen sign” as a useful clinical tool to aid in diagnosis. Consistent with MSNP as a neuropathic-based phenomenon affected individuals respond best to gabapentin (300-1200 mg daily) treatment.

Commercial support: None identified.

3043 Multilevel symmetric neuropathic pruritus (MSNP) presenting as recalcitrant, severe generalized pruritus

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Background: Chronic itch is a disruptive and disabling condition, the etiology of which is poorly characterized. Pruritic neurocutaneous syndromes can often evade proper diagnosis in a timely manner, often exposing patients to improper and ineffective treatment. There are several well-known entities of localized pruritus stemming from nerve dysfunction, including brachioradial pruritus, notalgia paresthetica, and scalp dysesthesia. The exact etiologies of these incessantly pruritic disorders remain elusive.

Objective: We describe an entity of a relatively common neuropathic pruritus, which we term multiple symmetric neuropathic pruritus (MSNP), and offer possible explanations accounting for its pathogenesis. MSNP presents clinically as a recalcitrant, severe, ‘generalized’ pruritus, which on closer clinical evaluation involves specific, symmetrical areas of distribution with sparing of the face, hands and feet.

Methods: A case series of 14 patients was evaluated in our academic institutions from 2011 to 2015. Imaging modalities and laboratory tests were reviewed in all patients.

Results: All affected patients exhibited detectable degenerative vertebral changes, as seen by plain film radiographic or magnetic resonance imaging. In 12 of 14 (85.7%) subjects, the radiographic imaging abnormalities directly correlated with the distribution of their cutaneous findings. 12 of 14 (85.7%) patients also had cutaneous findings along the C5-C6 or C6-C7 dermatomal distributions. 11 of 14 (78.5%) patients were overweight or obese, and 14 of 100% (100%) patients had at least 4 risk factors for the development of atherosclerosis. 12 of 14 (85.7%) patients noted complete or near complete resolution after treatment with gabapentin 500-1200mg daily.

Conclusion: We offer MSNP as an entity related to the previously described localized pruritus and encourage awareness of this often encountered yet underappreciated diagnosis. We attribute MSNP possibly to a combination of multilevel degenerative disc disease of the spine, spinal nerve root impingement and/or nerve root traction. We suggest atherosclerosis of the arterial vessels as a strong contributing factor accounting for disc degeneration and thus, for nerve root impingement and/or traction. In addition, we offer our “marking pen sign” as a useful clinical tool to aid in diagnosis. Consistent with MSNP as a neuropathic-based phenomenon affected individuals respond best to gabapentin (500-1200 mg daily) treatment.

Commercial support: None identified.
Multiple miliary osteoma cutis of the face associated with chronic inflammatory acne and its treatment with micoincision-extriration method

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Multiple miliary osteoma cutis of the face is characterized by primary extraskeletal bone formation within the skin of the face. It may be idiopathic or a rare complication of chronic inflammatory acne vulgaris. We hereby present a case of a 40-year-old healthy woman with multiple asymptomatic skin colored to brownish lesions involving the cheeks and forehead of 5 years duration. She had history of chronic inflammatory acne vulgaris in the past. She had taken multiple treatments for acne with subsequent improvement of the acne but no difference in the skin colored lesions. On physical examination there was presence of multiple skin colored indurated hard papules 1-2 mm in diameter over the forehead and cheeks. On attempting to extract with a needle, a sand like gritty sensation could be felt. Patient did not consent for biopsy. A radiograph of the face revealed multiple calcified spots. A blood examination including serum calcium, phosphate, alkaline phosphates and parathormone levels were normal. The lesions were incised with a no. 11 blade under local anesthesia and calcified papules were extirpated using a small curettage device. Histological examination revealed structure similar to bone of a lamellar pattern with nucleated osteocytes hence confirming the diagnosis of osteoma cutis. It is essential to differentiate the above presentation from micro/macro comedones as treatment is distinctive for osteoma cutis.

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Nevoid hyperkeratosis of the nipples in a man
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Background: Many diseases demonstrate a predilection for the nipple and areola. These range from benign, common disorders such as eczema to more rare and malignant disorders such as Paget’s disease. Nevoid hyperkeratosis of the nipple and areola is a rare benign disorder in this category.

Case report: A 62-year-old man was transferred from an outside facility for acute cholecystitis and pulmonary embolus. Incidentally, he was noted to have asymptomatic lesions on his nipples that he reported had been present for two weeks. He had not attempted any treatment. Examination revealed brown, papillomatous plaques located bilaterally and diffusely on the areolae with less pronounced involvement of the nipples. No other lesions or rashes were identified on examination of the remainder of his skin with the exception of the groin and buttocks which were not examined. A shave biopsy was performed revealing hyperkeratosis, slight acanthosis, and papillomatosis. In the clinical setting, this supported a diagnosis of nevoid hyperkeratosis of the nipples.

Discussion: Hyperkeratosis of the nipple and areola (HNA) is an uncommon condition that presents as brown verrucous plaques on the nipple and/or areola. HNA can be divided into 3 main categories. Type 1 is associated with an epidermal nevus, type 2 with a dermatosis, and type 3, or the nevoid form, is idiopathic. The vast majority of patients affected with nevoid HNA are young women. Although nevoid HNA is a benign condition, it is a diagnosis of exclusion and should be evaluated with scrutiny, especially in males in whom it is exceedingly uncommon. Mycosis fungoides has been reported to mimic nevoid HNA, and medications, including estrogens and mitogen-activated protein kinase pathway inhibitors, can induce HNA. Biopsy of nevoid HNA is nonspecific but useful to help exclude conditions with more distinctive pathologic findings. Interestingly, several cases of HNA have been demonstrated to demonstrate Mib1+ and responded rapidly and favorably to antieast therapy. In cases without an identifiable cause, treatment varies and includes topical keratolytics, steroids, or retinoids, and destructive measures.

Conclusion: Nevoid HNA is a rare condition with an undetermined etiology. Presentation in men is an even more uncommon occurrence and should be evaluated closely.

Commercial support: None identified.

Ocular, oral, and cutaneous fixed drug eruption
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Fixed drug eruptions are characterized by recurrent singular or multiple lesions occurring at the same cutaneous or mucosal sites with each administration of the causative drug. The pathogenesis is due to excessive activation of effector memory T cells localized to the lesional epidermis. We report a case of a 37-year-old man with no recent past medical therapy who presented with oral, cutaneous, and ocular lesions. He reported intermittent oral ulcers for 18 months prior to visit. On subsequent outbreaks of oral ulcers, he also developed multiple pruritic cutaneous lesions on the trunk and extremities as well as recent painless left eye redness. Diagnostic considerations included Behc¸et’s disease. His clinical disease suggested a lack of involvement of the eyes and oral lesions. He reported oral aphthous ulcers for 18 months prior to visit. On subsequent outbreaks of oral ulcers, he also developed multiple pruritic cutaneous eruptions due to herpes simplex virus (HSV) infection; however, upon further questioning, he recalled taking naproxen for muscular strains prior to each episode. These symptoms could develop quickly and resolve spontaneously after one week leaving only hyperpigmentation at sites of skin lesions on examination. He had conjunctival injection of the left eye with crusting at the medial canthus. He had superficial, discrete palatal erosions. There were two well-demarcated, thin, reddish-brown oral plaques on the trunk. Ophthalmology slit lamp evaluation revealed episcleritis and mild anterior uveitis of the left eye. HSV1 and HSV2 cultures were negative. Histopathologic evaluation of cutaneous lesions revealed lichenoid dermatitis with perivascular and a normal stratum corneum. Direct immunofluorescence was negative. Given his history, disease course and biopsy results, fixed drug eruption was diagnosed. Treatment included topical steroids and avoidance of nonsteroidal antiinflammatory drugs. Resolution occurred within three weeks with no further episodes.

Given the rare presentation of fixed drug eruption with ocular, oral, and cutaneous findings in our case, it is important for dermatologists and ophthalmologists to be familiar with this unusual presentation for a classic diagnosis.

Commercial support: None identified.

Not infectious venereal acute genital ulcer
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Introduction: Lipschitz ulcer (LU) is an uncommon condition that usually affects prepubertal and pubertal girls. Also called acute vulvar ulcer or ulcus vulvae acutum, LU is characterized by a sudden onset of single or multiple necrotic and painful genital ulcerations, usually affecting non-sexually active young women. The vast majority of patients affected with nevoid HNA are young women. Although nevoid HNA is a benign condition, it is a diagnosis of exclusion and should be evaluated with scrutiny, especially in males in whom it is exceedingly uncommon. Mycosis fungoides has been reported to mimic nevoid HNA, and medications, including estrogens and mitogen-activated protein kinase pathway inhibitors, can induce HNA. Biopsy of nevoid HNA is nonspecific but useful to help exclude conditions with more distinctive pathologic findings. Interestingly, several cases of HNA have been demonstrated to demonstrate Mib1+ and responded rapidly and favorably to antieast therapy. In cases without an identifiable cause, treatment varies and includes topical keratolytics, steroids, or retinoids, and destructive measures.

Conclusion: Nevoid HNA is a rare condition with an undetermined etiology. Presentation in men is an even more uncommon occurrence and should be evaluated closely.

Commercial support: None identified.

Omalizumab normalizes gene expression in lesional skin of patients with chronic spontaneous urticaria: Results from a randomized, double-blind, placebo-controlled study
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Introduction and objectives: Chronic spontaneous urticaria (CSU), including severe disease refractory to current therapy, shows a strong response to omalizumab, a humanized recombinant monoclonal anti IgE antibody. The effect of omalizumab on gene expression was assessed in skin biopsies from CSU patients enrolled in a double-blind placebo-controlled study (ClinicalTrials.gov identifier: NCT01599637).

Methods: Patients with CSU (18–75 years) were randomized to either 300 mg omalizumab (n = 20) or placebo (n = 10) administered s.c. every 4 weeks for 12 weeks. Lesional and nonlesional skin biopsies were collected from the same body area of consenting subjects and assessed at baseline and on Day 85. Skin biopsies from the same area of 10 untreated healthy volunteers were also processed as reference. Gene expression data were generated using Affymetrix Human Genome U133 Plus 2.0 Arrays. All statistical analyses were performed using R suite statistical software. In brief, after normalization, low-intensity transcripts (ie, probesets with intensities less than 100 in ≥50% of the samples) were filtered out. To identify transcriptional changes, linear models were constructed taking into account the type of biopsy (lesional or nonlesional), the study visit and the treatment for each patient. Thresholds for statistical significance and minimal fold change (FC) were defined as P ≤ .05 (no multiple testing correction) and absolute FC ≥1.5, respectively.

Results: At baseline, 63 transcripts were differentially expressed between lesional (n = 28) and nonlesional (n = 27) skin. Two thirds of this “lesional signature” was also differentially expressed between lesional and healthy volunteer skin. Upon treatment with omalizumab, over 75% of this lesional signature changed to reflect nonlesional expression levels (different to placebo, P < 0.01). Transcripts upregulated in lesional skin (compared to nonlesional and/or healthy volunteer skin) suggest increased mast cell/leukocyte infiltration (FCER1G, C3AR1, CD93, S100A8 and S100A9), increased oxidative stress (SOD2), vascularity (C1R3) and more severe immune reactions (KLRK1, IRF7, IL36RN). The remaining 20% of differentially expressed genes (10 up and 10 down) remained similar across treatment groups.

Conclusions: Omalizumab reversed transcriptional signatures associated with the CSU lesion phenotype to reflect nonlesional/healthy volunteer expression levels. This result is consistent with observed omalizumab-mediated clinical improvement observed in patients with CSU.

This study was funded by Novartis Pharma AG, Basel, Switzerland. Medical writing and editorial support in the development of this abstract was provided by Novartis. Editorial assistance was provided by Katy Tucker at Fishbats Communications Ltd, Oxford.
Paraneoplastic Sweet's syndrome in a pediatric patient with myeloid philic dermatosis, and leukemia cutis. Histopathology and laboratory studies considered infectious etiologies, Langerhans cell histiocytosis, neutrophilic dermatosis, and chronic dermatitis. We describe a case of myeloid philic dermatosis and leukemia cutis (PPP syndrome) with well-documented evidence of joint involvement, subcutaneous fat necrosis, and chronic pancreatitis and review the relevant literature associated with this rare clinical syndrome.

Observations: In addition to our case, there are currently only 26 reported cases of PPP syndrome. After extensive literature review, we report a case of PPP syndrome in a 69-year-old man who presented with numerous lower extremity subcutaneous nodules on the bilateral lower legs with coexisting joint swelling and pancreatitis. We confirmed the diagnosis of pancreatic panniculitis histopathologically, Laboratory and imaging data confirmed joint and pancreatic involvement. Based on the triad of findings in this case, we made a diagnosis of PPP syndrome.

Conclusion: PPP syndrome is an extremely rare diagnosis composed of a triad of pancreatic panniculitis, pancreatitis, and polyarthritis. Adjuvant therapies for PPP syndrome, such as NSAIDs, plasmapheresis and octreotide, have been used, but definitive treatment requires correction of the primary pancreatic disorder. More importantly, the diagnosis of pancreatic panniculitis could be an early indicator of an occult pancreatic malignancy and should prompt early evaluation with a multidisciplinary approach.

Commercial support: None identified.

Paraneoplastic Sweet's syndrome in a pediatric patient with recurrent acute myeloid leukemia
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Sweet's syndrome, also known as acute febrile neutrophilic dermatosis, is an uncommon skin condition, which typically presents as an eruption of violaceous, tender, nonpruritic plaques, papules, nodules, or macules on the upper body of a febrile, adult patient. It can be idiopathic in origin or associated with infectious, neoplastic, or pharmacologic etiologies. Sweet's syndrome is an exceptionally rare diagnosis in pediatric patients. We describe a case of a 14-month-old female who presented with a febrile eruption of diffuse papules and pustules in conjunction with a relapse of myeloid sarcoma and initiation of chemotherapy. Differential considerations included infectious etiologies, Langerhans cell histiocytosis, neutrophilic dermatosis, and leukemia cutis. Histopathology and laboratory studies established the diagnosis of Sweet's syndrome. This case represents a rare presentation of paraneoplastic Sweet's syndrome in a pediatric patient with myeloid sarcoma.

Commercial support: None identified.
3125

Patient factors associated with positive response to first line medical therapy in hidradenitis suppurativa

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Importance: HS (hidradenitis suppurativa) is a debilitating chronic cutaneous condition of unknown etiology characterized by recurrent painful nodules, abscesses, sinus tracts, and scarring. It is estimated to occur in 1-4% of the general population, is associated with many predisposing factors and diseases, and the treatment is often empiric and inadequate.

Objective: The purpose of this study was to determine which patient factors are associated with a positive response to first-line medical therapy.

Setting: Large tertiary medical center in the Midwest.

Participants: All HS patients seen at our institution between 1/1/1992 and 10/1/2014. All patients must have had a dermatologist confirmed diagnosis of HS, been treated with first-line medical therapy at their initial visit, and been seen for follow-up within 6 months.

Exposure: First-line medical therapy, defined as oral/topical antibiotics, antimicrobial washes, and intralesional corticosteroids.

Outcomes and measures: Response to treatment at follow-up, graded as improved vs. no improvement/worsening. A multivariate binary logistic regression model was built examining the interplay of age, race, sex, BMI, smoking status, medical comorbidities, family history, disease severity, and therapy initiated at the initial visit.

Results: A total of 945 patients with HS were seen, 246 meet inclusion criteria, and 198 patients were included in the final model. After controlling for all variables in the model, nonsmokers (OR = 2.614, 95% CI = 1.297-5.267), those with no previous diagnosis of HS (OR = 2.118, 95% CI = 1.080-4.152), and older individuals (OR = 1.046 for each additional year, 95% CI = 1.021-1.072) were much more likely to have noted improvement at follow-up. Additionally, current smokers were significantly more likely to be older, nonwhite, have a history of an autoimmune condition, have inflammatory HS disease, and less likely to have a positive family history of HS.

Conclusion and relevance: The results of this study suggest that we may be able to more accurately predict which patients with HS will respond to first-line medical therapy, and which patients may require therapy escalation. Additionally, this study provides further evidence that smoking, a modifiable factor, is associated with a poorer response to treatment. Overall, the results of this study could prove to be highly important for both patient education and guiding treatment.

Commercial support: None identified.

2489

Patient’s perspective of black salve use

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Background: Black salve containing zinc chloride or blood root is used by patients to treat a variety of skin lesions and conditions, of which 61% were painful and 65% were growing or changing. Interviews of 18 users revealed four distinct experiential themes: (1) motivations for use included concern for surgery and cost, (2) understanding of black salve as a nonharmful/selective treatment, (3) positive reported experience using black salve, (4) importance of interactions with physicians when discussing black salve.

Limitations: We sought a small number of black salve users and relied on reported participant data.

Conclusions: Knowledge of patient’s perception of black salve allows health care providers to better educate and counsel patients on black salve’s potential side effects and the lack of objective data about its effectiveness.

Commercial support: None identified.

2862

Patient-reported impact of hirsutism on health-related quality of life, mood and self-esteem in women with polycystic ovary syndrome (PCOS)

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Background: Hirsutism is a frequent endocrinologic complaint found in patients with polycystic ovary syndrome (PCOS). The degree of hirsutism is commonly quantified by clinicians using the modified Ferriman-Gallwey (mFG) scoring system, which is a clinical measure of degree; but not overall impact, of hirsutism in patients. There are few existing studies evaluating the subjective impact of hirsutism on overall quality of life and psychological impact using validated measures.

Objective: This study used highly validated measures to (1) quantify the subjective impact of hirsutism in a large, ethnically diverse cohort of PCOS patients, and (2) evaluate how the severity of hirsutism as assessed by both patient self-ratings and clinician ratings corresponds to overall patient health-related quality of life (HRQOL), mood, and self-esteem.

Methods: A cross-sectional study consecutively recruited 276 patients from the multidisciplinary PCOS clinic at the University of California, San Francisco (UCSF) over 6 years (2006-2012). Hirsutism was assessed by a dermatologist using the mFG scoring system, a scale widely used to assess androgen-dependent hair growth in nine areas of the body. Patient quality of life was evaluated using the highly validated Skindex-16 instrument. Patient depression was assessed using the Beck Depression Inventory: Fast Screen (BDI-FS). Patient self-esteem was assessed using the Rosenberg self-esteem scale (RSES). Descriptive statistics were used to summarize overall characteristics of the study population. The strength of association between variables was assessed using Pearson’s correlation coefficient. The McNemar’s test was used to compare correlation proportion results of patient self-rated degree of hirsutism and clinician-assessed degree of hirsutism in our study cohort. All statistical significance parameters were defined by two-sided P values < .05.

Results: A total of 276 patients diagnosed with PCOS per Rotterdam criteria were included in the study with a mean (SD) patient age of 27.9 (6.0). The degree of hirsutism ascertained by patient self-report was significantly higher than that ascertained by a clinician in our study cohort (P < .001, McNemar’s test). Results from overall hirsutism assessment demonstrated that the mean (SD) self-rated total mFG score was 15.3 (7.5), while the clinician-assessed total mFG was 8.6 (6.3). Greater mFG interrater disagreement between patient and clinician ratings was also observed for particular areas of the body (upper lip > chin > chest). Individual patient self-assessment of mFG was measured by the mean (SD) RSES score of 58 (0.77), which is correlated with high self-esteem. Overall patient mood assessment as measured by the mean (SD) BDIF-S was 4.3 (4.1), which is categorized as minimal depressive symptoms. Self-rated mFG had a positive, moderate and significant correlation with the total Skindex score (Pearson correlation coefficient 0.44, P < .01). Self-rated mFG was also significantly correlated with each individual subgroup of the Skindex: emotions (0.46, P < .01), function (0.45, P < .01), and symptoms (0.19 P = 0.01). Clinician-assessed mFG had a weaker but significant correlation with total Skindex score (0.31, P < .01). Patient self-rated mFG had a weakly positive and significant correlation with the BDIF-S (0.14, P = .047). The mean (SD) total Skindex was 45 ± 25.5. The mean (SD) BDI-FS was 4.3 (2.9). Moderate positive and significant correlation was observed between patient self-rated mFG and the total Skindex score (0.43, P < .01), function (0.43, P < .01), and symptoms (0.42, P < .01) subdomains.

Conclusions: Hirsutism patients reported higher degrees of negative emotional impacts on social embarrassment, frustration, annoyance and concern over appearance than actual skin symptoms or impact on daily functioning. Quality of life effects of hirsutism are consistent with, or even more severe than, that reported for other serious skin conditions and treatment recommendations should be guided largely by patient distress with hair growth and subjective perceptions as opposed to only degree.

Commercial support: None identified.

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Plasma cell cheilitis mimicking a Melkersson–Rosenthal syndrome

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Introduction: Plasma cell cheilitis is a benign inflammatory disease that belongs to the group of plasma cell orificial mucositis whose first case was described in the genital male area by Zoon in the 50s.

Clinical case: A 72-year-old male was referred to the Dermatology Department because of discomfort on his lips, tongue and oral mucosa. The physical examination revealed swelling of the lower lip, a scrotal tongue and whitish plaques on the oral mucosa. He also brought a biopsy inform performed by the Maxillofacial Department on his lower lip that showed a plasma cell chronic cheilitis without features of Melkersson–Rosenthal syndrome. The patient was treated with topical corticosteroids, tacrolimus and oral tetracyclines without benefit. So he started treatment with oral Fluconazole after the group of plasma cell orificial mucositis whose first case was described in the genital male area by Zoon in the 50s.

Discussion: Plasma cell cheilitis is an idiopathic inflammatory disease that usually affects the lower lip of elderly people and it consists of circumscribed patches of erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseofulvin. On the other hand, erythema with plasma cell infiltrates. Usually responds to powerful topical corticosteroids or to systemic griseoful

Conclusion: Despite a suggestive clinical diagnosis of Melkersson–Rosenthal syndrome, with swelling of the lower lip and scrotal tongue, the histology rejects that possibility and guides us into a plasma cell cheilitis. Analogous conditions have been reported to affect the penis, vulva, larynx and other parts of the body.

Commercial support: None identified.
Potential influence of bacterial biofilm formation on scalp folliculitis treatment.

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Scalp folliculitis is considered to be an inflammatory reaction of the hair follicle, whose cause has not been elucidated. Several studies have demonstrated, however, that bacterial colonization is associated with this disease, although, in some cases, S aureus seems to be predominant. The treatment of folliculitis can be performed by the use of topical or oral antibiotics such as tetracycline, with the latter being used only in more severe cases. The general consensus that involves time taken to treat severe infections is associated with bacterial biofilm formation, since one characteristic of the biofilm is to decrease the pathogen susceptibility to antibiotics. Based on the premise that bacterial biofilm can influence the outcome of infections, we investigated whether biofilm-forming bacteria could be associated with scalp folliculitis. Accordingly, biopsies of the hair follicle of eight patients with scalp folliculitis were teased apart in PBS and incubated aerobically at 37°C for 24 hours in both TSB medium and TSA plates. Subsequently, the isolates were spread in TSA and the colonies were identified by API Staph (BioMerieux). To determine the level of bacterial proliferation, four microliters of each isolate, previously grown in TSB overnight at 37°C, were added to triplicate to 96 well culture plates containing TSB at different pHs, or TSB diluted in the culture supernatant of S aureus or S lugdunensis (200 µL/well). The plate was then incubated at 37°C for 18h and proliferation was determined by reading the plate at 595 nm on a Multiskan EX plate reader. In order to measure the same production, the same plate used for proliferation was subsequently washed with PBS, fixed with 75% ethanol and the remaining bacteria contained therein were stained with crystal violet solution. The crystal violet retained was solubilized with 95% ethanol and the optical density read at 595nm. The results showed the presence of S aureus, S lugdunensis, S epidermidis, S warneri, and a mixture of S aureus and S lugdunensis in two samples. All the isolates were able to produce biofilm and were resistant to erythromycin (81.8%). They were also able to proliferate and form biofilm at different pHs. It was also observed that S aureus can decrease the biofilm of S lugdunensis in mixed cultures. In contrast, the presence of S lugdunensis seems to increase the proliferation and the biofilm production of S aureus. In summary, the data obtained in this study suggest that opportunistic biofilm-forming bacteria such as S lugdunensis and S epidermidis can contribute to the development of scalp folliculitis. Also, biofilm formation and resistance to the antibiotics that are most commonly used in therapy can be involved in the prolongation of the disease. Finally, the presence of mixed infections with S lugdunensis and S warneri can worsen the prognosis.

Commercial support: None identified.

Progression of hiedradenitis suppurativa: Outcomes of placebo-treated patients in a phase 3, randomized, double-blind trial.

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Introduction: Hidradenitis suppurativa (HS) is a chronic, painful skin disorder characterized by inflammatory skin lesions. This prespecified analysis evaluated progression of untreated HS among patients (pts) receiving placebo (PBO) in a phase 3 trial (BRI012; NCT01467937).

Methods: PIONEER II was a phase 3, multicenter, randomized, double-blind trial that enrolled adults with at least 1 year history of moderate-to-severe HS. Pts were randomized to adalimumab (ADA) 40 mg weekly or PBO for 12 weeks, and ADA pts were rerandomized to ADA weekly, ADA every other week, or PBO, while PBO pts received PBO, from weeks 12 up to 36. Use of a concomitant stable dose of doxycycline or minocycline was permitted. Primary efficacy endpoint was proportion of pts who achieved HS clinical response (HSCR; ≥50% reduction in inflammatory lesion count (total abscesses and inflammatory nodules [AN] counts) with no increase in abscess/draining fistulas counts relative to baseline [BL]) at 12 weeks. Pts who achieved HSCR at week 12 and experienced a loss of response (LOR; loss of 50% of improvement from BL to week 12) after week 12 and pts who failed to achieve HSCR at week 12 and experienced worsening or absence of improvement (WOAI, AN count ≥ AN count at BL on 2 consecutive visits) after week 12 were discontinued from study and could enter an open-label extension study to receive ADA 40 mg weekly. This prespecified analysis reports the rates of LOR and WOAI.

Results: Discontinuation rates for pts randomized to weekly ADA were 4.9% (8/163) at 12 weeks and 45.1% (25/56) at 36 weeks, and for PBO 7.6% (14/186) at 12 week and 73.5% (111/151) at Week 36. Most frequently reported reason for discontinuation was LOR or WOAI. At week 12, 27.6% (45/163) of pts in PBO group achieved HSCR. This rate decreased to 15.9% (24/151) at week 36. 32 pts randomized to PBO continued with concomitant BL antibiotics in first 12 weeks, of which 7 (21.9%) achieved HSCR. AN counts increased for a substantial proportion of PBO-treated pts during weeks 12 to 36; subsequently, rates of LOR and WOAI increased with each visit after week 12 to 36. PBO pts generally experienced improvement (WOAI; AN count at BL on 2 consecutive visits) after week 12 to 36; subsequently, rates of LOR and WOAI increased with each visit after week 12 to 36.

Conclusion: Pts who received PBO during this 36-week study experienced progression of HS, as indicated by increased AN counts and high rates of LOR and WOAI. Without early study discontinuation and receiving active treatment, further progression may have been reported.

AbbVie Inc participated in the study design, study research, collection, analysis and interpretation of data, and in drafting, reviewing, and approving the manuscript. All authors had access to the data, and participated in the development and review.

Prospective study of cutaneous adverse effects associated with BRAF inhibitor dabrafenib and MEK inhibitor trametinib: A study of 12 patients Jean-Philip Lacronix, MD, McGill University, Montreal, Quebec, Canada; Beatrice Wang, MD, McGill University, Montreal, Quebec, Canada; Catalin Mihalciouiu, MD, McGill University, Royal Victoria Hospital, Montreal, Quebec, Canada

Background: Dabrafenib, a novel selective small molecule inhibitor of BRAF has been shown to increase progression-free survival compared to treatment with vemurafenib, an oral inhibitor of unselective BRAF, in patients with unresectable metastatic melanoma harboring the BRFV600E mutation. The development of resistance has led to the combination therapy with selective MEK inhibitor trametinib. These novel small molecule inhibitors are associated with adverse cutaneous side effects. Compared to vemurafenib, dabrafenib is a more recent BRAF inhibitor FDA approved in May 2013 for metastatic melanoma. lesst data is available in the current literature regarding cutaneous toxicity, mainly because of its more recent use.

Objective: We sought to present additional cutaneous side effects of dabrafenib and trametinib, follow their evolution and management.

Methods: We carried out a prospective study of 12 patients treated with dabrafenib alone or in combination with trametinib. Patients were followed every 4 weeks and systematically collected detailed dermatologic symptoms, photos and biopsy specimens, which enabled us to classify the cutaneous side effects.

Results: All patients presented with at least one adverse skin reaction. The mean duration of treatment was 24 weeks. The most common adverse effect was verrucous keratosis (6/12), followed by palmarplanter keratosis (5/12) and actinic keratoses (3/12). Two patients developed a seborrheic keratosis (2/12). Two patients who received dabrafenib and trametinib developed an acneiform eruption (2/3). One patient developed a keratoacanthoma-like squamous cell carcinoma (1/36). We report no pathologic malignancy and no nonmelanoma skin cancer in this cohort. Side effects presented as early as 2 weeks after starting therapy, with a mean time of onset of 8 weeks.

Conclusion: Selective BRAF inhibitor dabrafenib and MEK inhibitor trametinib are associated with multiple skin adverse effects that have an impact on patient’s quality of life. Given their recent approval, the potential for overtreatment in patients may be high, it is of great importance to follow up patients on treatment, awareness of potential adverse effects and their management is necessary.

Commercial support: None identified.
Objectives: Identify the most common psychiatric disorders in patients with skin disease. Identify the age groups in which it is more frequent. Identify the existence of current psychiatric comorbidity in patients with skin disease. Identify the most common dermatological diseases related to mental illness. Identify the most common psychiatric disorders in patients with skin disease. Identify the groups in which more frequent the presence of psychiatric illness.

Methodology: It is an descriptive, transversal, observational, single-center study. As part of the procedure the Structured Clinical Interview of DSM-IV was applied to the patients attending the outpatient department of dermatology, after signing informed consent, the application of the interview was conducted only once for every patient, and all the patients were undertaken by liaison psychiatrists who attended the consultation of dermatology. The variables to be measured are demographics (sex, age, marital status, education and occupation), psychiatric diagnosis, dermatological diagnosis, and comorbidities.

Preliminary results: In the period from June to October 2014, a sample of 114 patients was obtained, of whom 37 (32.5%) were men and 77 (67.5%) were women. 55.3% of these patients did not present any psychiatric illness and 44.7% did present.

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Commercial support: None identified.
Rapid onset of efficacy in patients with psoriasis treated with ixekizumab: A post hoc analysis from two phase 3 randomized clinical trials (UNCOVER-2 and UNCOVER-3)

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Background and objectives: For patients with psoriasis, rapid onset of clinical improvement is one of the most important attributes of treatment success. In addition, it has been demonstrated that clinical improvement observed early during treatment has predictive value for subsequent clinical response at later time points. In this analysis, we evaluated the speed of onset of clinical improvement in psoriasis patients treated with ixekizumab (anti-IL-17A IgG4 monoclonal antibody with high binding affinity, IXE) compared with placebo and the active comparator, etanercept (ETN).

Methods: Combining data from the 12-week Induction Phase of UNCOVER-2 and UNCOVER-3, patients with moderate-to-severe plaque psoriasis were randomized to receive placebo (PBO, n = 361), high-dose ETN (50 mg bi-weekly; n = 740), or a single 80 mg subcutaneous injection of IXE once every 2 weeks (IXE Q2W; n = 756) or every 4 weeks (IXE Q4W; n = 753) after receiving a 160-mg initial dose at Week 0. Mean percentage improvement was analyzed by MMRM and response rates (90% certain to experience at least 50% reduction in the lesion count). Higher LSRs predicted greater rates of response. At low scores, the LSR had no predictive value, i.e., neither predicted treatment success nor treatment failure.

Results: At high composite LSR scores assessed on day 4, LSRs were predictive of efficacy at high LSR scores and had little predictive power at low LSR scores.

Conclusion: LSRs were predictive of efficacy at high LSR scores and had little predictive power at low LSR scores.

Supported 25% by LEO Pharma Inc.

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Regression analysis of local skin responses to predict clearance of actinic keratoses on the face in patients treated with ingenol mebutate gel

Shelli Jim On, MD, Mount Sinai School of Medicine, New York, NY, United States; Kim Mark Knudsen, PhD, LEO Pharma A/S, Ballerup, Denmark; Torsten Skov, MD, PhD, LEO Pharma A/S, Ballerup, Denmark; Mark Lebwohl, MD, Mount Sinai School of Medicine, New York, NY, United States

Introduction: Ingenol mebutate gel is a topical field-treatment for actinic keratoses (AK). The treatment elicits application site reactions in most patients. The relationship between the severity of reactions and speed of resolution has not previously been explored in detail.

Materials and methods: The analysis included 220 subjects from two of the pivotal phase 3 trials with ingenol mebutate gel. 0.015% who were treated for AK on the face. Subjects had 4-8 AKs within a 25 cm² area and were treated with ingenol mebutate gel, 0.015%, once daily for 3 days. Severity of LSRs was assessed on days 4, 8, 15, 29, and 57. Efficacy was assessed on day 57. Erthymia, flaking/scaling, crusting, swelling, pustulation/vesiculation, and erosion/ulceration (LSRs) were assessed on a 5-point scale from 0 to 4 yielding a maximum composite score of 24. A simple regression model was used to predict the week 1, 2, 4, and 8 composite LSR values from the composite LSR value the day after the last administration.

Conclusion: The absolute reduction in LSR score is proportional to the composite LSR score on the day after the last administration. A brisk initial reaction is followed by rapid healing, so that at two weeks all patients are expected to have minimal LSR scores.

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3276

Relationship between severity of the local skin response (LSR) and the rate of LSR resolution in patients treated with ingenol mebutate gel

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Supported 25% by LEO Pharma Inc.

3845

Reading the signs of Reed syndrome and the need to screen for renal cancer

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Cutaneous leiomyomas are uncommon benign tumors of smooth muscle derived from the arrector pili muscle which often coexist with uterine leiomyomas. This well-recognized phenomenon exists under multiple eponyms, including Reed syndrome, uterine leiomyomas with an aggressive form of renal cell cancer due to inherited renal cancers. The lifetime renal cancer risk in HLRCC is approximately 4 weeks of IXE treatment.

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Risk of flare in patients with hidradenitis suppurativa treated with adalimumab for 12 weeks during PIONEER I and PIONEER II: Two phase 3, randomized, placebo-controlled trials

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Introduction: Adalimumab (ADA) improves clinical response in patients (pts) with moderate-to-severe hidradenitis suppurativa (HS). However, the effect of ADA on preventing HS flares has not yet been fully reported. This prespecified analysis evaluated the incidence of HS flares and related outcomes in pts with moderate-to-severe HS treated with ADA.

Methods: Two randomized, double-blind, placebo (PBO)-controlled, phase 3 trials (PIONEER I and PIONEER II), recruited adults with long-term, stable, moderate-to-severe HS. Pts were randomized (1:1) to receive ADA 40 mg or PBO weekly during the first 12 weeks. A prespecified analysis was performed using integrated data from both trials to evaluate the proportion of pts who experienced flare (prespecified as ≥25% increase in the total count of abscesses and inflammatory nodules with an increase of ≥2 relative to baseline [BL]; the proportion of pts who experienced ≥25% increase in abscess, inflammatory nodule, or draining fistula count with an increase of ≥2 relative to BL, the number of days on flare; and the proportion of pts who reported adverse event [AE] of worsening HS). P values were calculated using the Cochran-Mantel-Haenszel test for flare rate, analysis of covariance for the number of days on flare, and Fisher’s exact test for AEs of worsening HS.

Results: A total of 655 pts were included in combined data set (ADA, n = 316, PBO, n = 317); 300 and 296 pts in the ADA and PBO groups, respectively, completed the first 12 weeks of the studies. Compared with PBO, a significantly lower proportion of pts treated with ADA experienced flare (P < 0.001), or increases in the number of abscesses, inflammatory nodules, or draining fistulas during period A (all P < 0.05). Pts treated with ADA also experienced flares with significantly shorter duration (least squares mean ± standard error: 16 ± 4.53 days) than pts in PBO group (29 ± 2.81 days; P < 0.001). In addition, analysis of integrated safety data indicated that a lower proportion of pts in the ADA group reported worsening of HS than did pts in the PBO group (6.6% vs 15.0%; P = 0.008), analogous to the flare response data.

Conclusion: Weekly ADA 40-mg subcutaneous injections among pts with moderate-to-severe HS resulted in fewer HS flares, fewer lesion exacerbations, and flares of shorter duration compared with PBO during the first 12 weeks of therapy.

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Salivary duct carcinoma metastatic to the skin

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A 60-year-old female presented with a three week history of a pruritic erythematous eruption involving the left pinna and neck that restricted the neck’s extension and flexion. The patients past medical history is significant for ductal carcinoma of the left parotid gland status post parotidectomy and radiotherapy, which was completed 4 months prior to her visit to dermatology. Physical examination revealed an erythematous, indurated plaque extending from the post auricular space to the midline of the neck with erythema and edema of the left pinna. Clinically, the differential diagnosis included radiation-induced morphea versus chronic radiation dermatitis. A punch biopsy showed multiple nests of atypical epithelial cells indicating malignancy admixed with an acute and chronic inflammatory infiltrate. The atypical cells were also present within dilated lymphatic spaces and surrounding nerves. The atypical cells were positive for cytokeratin 7 and CDP and negative for mammaglobin. The overall morphologic and immunohistochemical features along with the patient’s history and clinical presentation were consistent with salivary duct carcinoma metastatic to the skin. The patient is currently undergoing palliative chemotherapy. Salivary duct carcinoma of the parotid gland is an uncommon tumor with a highly aggressive behavior manifested by early regional and distant metastasis. Cutaneous metastases of salivary duct carcinoma are extremely rare, with only five reported cases in the literature. We report this interesting and rare case to emphasize the differential diagnosis of an erythematous indurated plaque located within a radiation field and stress the importance of clinicopathological correlation to establish the correct diagnosis and management of the patient.

Commercial support: None identified.

2358
Segmental lichen aureus responsive to oral pentoxifylline monotherapy:

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Introduction: Lichen aureus is a rare variant of pigmented purpuric dermatosis, with a highly chronic and persistent clinical course. Herein, we report an uncommon segmental presentation of lichen aureus in an unusual location: finger and palm.

Case report: A 50-year-old healthy man presented to our clinic with progressively enlarging, asymptomatic golden lesions on his left 4th finger and palm. These lesions started to develop as a pea-sized, honey-colored macule at the proximal 4th finger since 6 months ago and enlarged gradually. In recent 2 months, the similar lesions spread to the left distal 4th finger and the distal palmar crease. He denied history of any trauma or drugs prior to the onset of skin lesions. On physical examination, one bean-sized irregular-shaped golden brown patch was located at the medial aspect of left proximal 4th finger and the left palm periphery. The lesion of left distal 4th finger and from volar aspect of palm form the left 4th proximal interphangeal joint to the distal palmar crease. All these lesions were in a linear fashion, following the venous drainage. A skin specimen was obtained from the left proximal 4th finger. Histopathologic findings were compatible with features of lichen aureus. Pentoxifylline 400 mg twice daily was given. These lesions started to improve after 2 weeks and then resolved a lot with postinflammatory hyperpigmentation after 16 weeks.

Discussion: To date, only 10 patients with lichen aureus in a segmental or zosteriform pattern were reported. Including the present case, total 4 cases of segmental lichen aureus follows venous drainage, suggesting that segmental lichen aureus is a hemosiderin tattoo, resulting from leakage of blood by the sudden increase in venous pressure. The treatment of segmental lichen aureus can be challenging. Without treatment, it is considered to a highly chronic dermatosis; only 2 cases showed partial spontaneous resolution. In general, potent oral and topical corticosteroid is ineffective. Pulsed-dye laser and oral pentoxifylline in combination with prostacyclin have showed variable success. In our case, pentoxifylline monotherapy also reached a good response. In conclusion, we present a case of segmental lichen aureus in the acral part, which shows good response to pentoxifylline monotherapy. This case also supports the hypothesis that the possible pathomechanism of segmental lichen aureus is due to incompetence of perforator vein.

Commercial support: None identified.
Skin fragility, diffuse ecchymosis and blisters on a yellowish waxy base
Chia-Yu Chou, MD, Cathay General Hospital, Taipei, Taiwan

Skin fragility, diffuse ecchymosis and blisters on a yellowish waxy base
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Dermatofibrosarcoma protuberosa and leiomyosarcoma should be ruled out in this scenario. A skin biopsy was performed, and the histopathologic examination revealed typical features of dermatofibrosarcoma protuberosa. Unfortunately, the patient died from sepsis 2 weeks later. In conclusion, our case highlights the importance of obtaining a detailed history and performing a comprehensive physical examination in patients with systemic AL amyloidosis. A thorough examination can help in the diagnosis and management of this condition.
Staphylococcal scalded skin syndrome in an adult during infliximab therapy for psoriasis

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Introduction: Staphylococcal scalded skin syndrome (SSSS) is a toxin-mediated type of exfoliative dermatitis typically occurring in pediatric setting. Children younger than 5 years, particularly newborns, are at highest risk of developing SSSS due to low renal clearance and lack of specific antibodies against the staphylococcal epidermolytic toxins. The occurrence of SSSS is extraordinarily rare in adults, in which cases it is usually associated with a predisposing condition such as renal insufficiency and severe immune deficiency. Herein we report a case of SSSS in a young adult during the course of infliximab therapy for psoriasis.

Case report: A 25-year-old man with a 17-year history of chronic plaque psoriasis and psoriatic arthritis had been successfully treated with a combination of infliximab and low-dose of methotrexate for a period of 5 years, with excellent response (completely clear of skin and joint symptoms) and no prior significant side effects. Apart from psoriatic disease, he had no other medical condition. The patient presented 2 weeks before a regularly scheduled dose of infliximab due to abrupt appearance of generalized tender erythema accompanied by low-grade fever and malaise. He denied any other symptoms, acute illnesses or introduction of new drugs. He also admitted that he had stopped taking the prescribed 7.5 mg dose of methotrexate for months, since his psoriasis was completely clear for years. At physical exam, a generalized, diffuse, faint erythema involving his face, trunk and extremities was observed. On the face, there was purulent conjunctivitis along with delicate fissuring on cheeks and periorificially. Accentuation of erythema with tissue paper wrinkles was noticed and initial slight desquamation was observed in both axillary regions, on patient’s neck and earlobes. Oral mucosa was not involved. Within next 3 days, a complete desquamation of the whole body followed with detachment of large, dry epidermal sheets. Patient was treated with intravenous antibiotic, fluids and vaseline-impregnated gauze dressings. Staphylococcus aureus was cultured from conjunctival swabs, blood cultures were negative and all other routine laboratory analyses were within normal range. By the end of the second week since appearance, patient’s skin healed completely from SSSS, but on his lower legs and abdominal wall, there were discrete erythematous, slightly squamous papules typical of psoriasis. Since there was no evidence of any complication of SSSS, infliximab was administered, however without any effect. In the following week, psoriasis continued to worsen, along with reactivation of polyarthritus and development of acute enterocolitis. Stool samples were negative for infectious agents and biopsy was consistent with Crohn’s disease. Due to complete loss of efficacy, the patient was switched to adalimumab with excellent response of all symptoms during a 2-year follow up to present day.

Conclusion: This is the first described case of SSSS occurring during biologic therapy for psoriasis in otherwise healthy adult patient. Therefore, biologics might present an additional item to be added to the list of risk factors for the development of SSSS in adults, along with renal insufficiency, cancer, HIV and other causes of immune deficiency.

Successful treatment of granuloma annulare with amoxicillin-clavulanic acid

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Introduction: Granuloma annulare (GA) is a benign granulomatous skin disease that usually resolves within two years, but can occasionally be widespread. Generalized granuloma annulare (GGA) is a less common variant that consists of greater than ten annular plaques throughout the body.

Case report: A 55-year-old female presented with a 9-month history of scattered and enlarging skin-colored and erythematous annular thin plaques involving her trunk and extremities. Laboratory testing was unremarkable. A biopsy was performed and histology showed superficial and mid-dermal interstitial granuloma formation with mucin and interstitial and perivascular lymphocytes, which was consistent with interstitial type generalized GA. The patient was initially started on pentoxyfylline 400 mg three times a day for 6 months with moderate improvement. One month later, the patient returned with marked improvement after finishing a course of amoxicillin-clavulanic acid (875/125 mg (ACA) twice daily for 10 days for the treatment of an upper respiratory infection. She was no longer taking pentoxyfylline at that time. Treatment was then started with ritampin, ofloxacin and minocycline (ROM), with ACA replacing ofloxacin as the patient had an allergy to this medication, which was partially successful. Due to her previous success, a trial of ACA twice a day for 10 days was initiated. The patient noted marked improvement in the skin lesions one month later and was switched to a modified regimen consisting of ACA twice a day for one week every month. In the following two years, apart from flare-ups caused by missed doses, she had noted dramatic improvement and sustained control of her disease using the monthly regimen of ACA twice a day for one week.

Discussion: While different therapeutic approaches to GGA have been attempted, definitive treatment for this disease remains elusive. Studies have shown that antibiotic combinations can help clear GA, including the rifampin, ofloxacin, and minocycline (ROM) therapy. It is unknown if the antibacterial properties of the antibiotics have any function in this granulomatous disorder, or if the immune modulating properties are solely responsible for the clinical improvement. To the authors’ knowledge, this is the first reported case of successful treatment of GGA with amoxicillin-clavulanic acid. Our patient tolerated the treatment well and continues to have clearance of her GGA with this regimen.

Successful use of cyclosporine to treat acute generalized exanthematous pustulosis

Molly Plovanich, MD, Massachusetts General Hospital, Boston, MA, United States; Ryan Trowbridge, MD, Massachusetts General Hospital, Boston, MA, United States; Daniela Kroshinsky, MD, MPH, Massachusetts General Hospital, Boston, MA, United States

Acute generalized exanthematous pustulosis (AGEP) is an acute eruption of nonfollicular, sterile pustules on a background of edematous erythema, which is often triggered by an antecedent drug exposure. In many cases, AGEP will respond to discontinuation of the offending drug and supportive care. However, in severe eruptions with end-organ dysfunction, systemic immunosuppression is warranted. While there are numerous case reports highlighting the role of systemic cytotoxic-oids in AGEP, relatively little is known about cyclosporine as a therapeutic option. Here, we present two cases of AGEP treated successfully with cyclosporine. First, we describe an 80-year-old man with chronic lymphocytic leukemia who developed AGEP in the setting of numerous medication exposures (omeprazole, Tylenol and IV contrast) and 2 weeks of a viral prodrome. Within 24 hours of a superficial pustular eruption, he developed diffuse erythema and circulatory shock requiring admission to the intensive care unit for central line placement and aggressive resuscitation. Despite high-potency topical steroids for 2 days, his eruption and circulatory shock persisted. After negative infectious testing, his circulatory shock was felt to reflect immune-mediated injury rather than sepsis. Therefore, he was started on cyclosporine 1.5 mg/kg divided BID, which resulted in dramatic improvement in his eruption and hemodynamics within 24 hours. His cyclosporine was tapered over 2 weeks without recrudescence of his rash. Secondly, we describe a 50-year-old man who developed AGEP secondary to celecoxib exposure. Given systemic inflammatory response syndrome (SIRS) that persisted despite high-potency topical steroids, he was started on cyclosporine at 3 mg/kg divided BID, which resulted in a rapid improvement in his rash and resolution of SIRS. Cyclosporine was tapered over 1 week without recrudescence of his rash. This small case series emphasizes the importance of systemic therapy for a subset of patients with AGEP, particularly those with end-organ dysfunction. Additionally, it is notable that cyclosporine is a suitable therapeutic option, which may be preferable over corticosteroids for patient with chronic wounds, recent surgery or mental health issues.

Commercial support: None identified.

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Commercial support: None identified.
Sweet syndrome: A lush case report
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Sweet syndrome (SS) is an acute, febrile neutrophilic dermatosis, first described by Robert Douglass Sweet in 1964, as a report of eight cases of women presenting with fever, leukocytosis with a predominance of polymorphonuclear forms, and painful erythematous plaques of rapid onset mainly distributed on the head, neck, and extensor surfaces of upper and lower extremities. Histopathologic examination is compatible with a dense dermal neutrophilic infiltrate. Its etiology is unknown, and has been associated with autoimmune process, malignancies (most commonly acute myelogenous leukemia, but also solid organs cancers), infections, drugs, and gastrointestinal disorders such as inflammatory bowel disease. The standard therapy for SS is systemic corticosteroid. In this article, we report a case of a 68-year-old woman with complaint of daily fever and inexplicable weight loss for the last 4 months, associated with erythematous and edematous plaques, with serous and hemorrhagic blisters, ulcerations and crusts, affecting the entire body surface, except the head. Histopathologic examination showed a neutrophilic infiltrate, compatible with SS. Additional systemic examination showed no alterations. Due to the extensive skin lesions with secondary infection, the patient developed a refractory septic shock and death. Although SS is an uncommon disease in our daily practice, mainly as a hush case as reported in this article, clinical dermatologists should draw attention for the correct diagnosis and appropriate investigation of associated diseases, establishing the correct syndrome in a timely manner.

Commercial support: None identified.

Sweet syndrome: Retrospective study of 83 patients, emphasizing clinical and histopathologic features and associations
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Background: Sweet’s syndrome (SS) is an infrequent skin disease characterized by sudden onset of fever, leukocytosis, neutrophilia and tender erythematous plaques infiltrated by neutrophil. Multiple conditions have been associated with this syndrome, such as infections, drugs, pregnancy and malignancy. The aim of this study was to evaluate the clinical, epidemiological, laboratorial and histopathologic findings of patients with SS, and to access the association between these alterations and other conditions.

Methods: We conducted a retrospective study of 83 patients with SS followed between January 1st, 2006 and January 31st, 2015. Patient data were analyzed for clinical, epidemiological, laboratorial and histopathologic aspects.

Results: 82% were female; the mean age at onset was 48 years. Clinical presentation was mainly characterized by erythematous and edematous plaques, mostly on upper extremities and trunk. Fever was observed in 32% of patients; 60% presented leukocytosis and 39% neutrophilia. On histopathologic exam, neutrophilic and vascular infiltrates were observed. Fever was observed in 32% of patients; 60% presented leukocytosis with a predominance of polymorphonuclear forms, and painful erythematous plaques of rapid onset mainly distributed on the head, neck, and extensor surfaces of upper and lower extremities. Histopathologic examination is compatible with a dense dermal neutrophilic infiltrate. Its etiology is unknown, and has been associated with autoimmune process, malignancies (most commonly acute myelogenous leukemia, but also solid organs cancers), infections, drugs, and gastrointestinal disorders such as inflammatory bowel disease. The standard therapy for SS is systemic corticosteroid. In this article, we report a case of a 68-year-old woman with complaint of daily fever and inexplicable weight loss for the last 4 months, associated with erythematous and edematous plaques, with serous and hemorrhagic blisters, ulcerations and crusts, affecting the entire body surface, except the head. Histopathologic examination showed a neutrophilic infiltrate, compatible with SS. Additional systemic examination showed no alterations. Due to the extensive skin lesions with secondary infection, the patient developed a refractory septic shock and death. Although SS is an uncommon disease in our daily practice, mainly as a hush case as reported in this article, clinical dermatologists should draw attention for the correct diagnosis and appropriate investigation of associated diseases, establishing the correct syndrome in a timely manner.

Commercial support: None identified.

The clinical features of Korean hidradenitis suppurativa
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Hidradenitis suppurativa (HS) is a chronic, recurrent, debilitating inflammatory disease characterized by tender subcutaneous nodules, painful deep dermal abscesses and sinus tracts. However, there have been few data regarding HS epidemiology in Asian patients. We investigated the clinical features including clinical stage associated diseases, and the treatment of Korean HS patients. 67 HS patients who visited CNH from 2005 to 2014 were included. Onset age, distributions, Hurley stage, associated diseases including metabolic disorder, treatment modalities were evaluated. In result, mean onset age was 23.7 ± 11.9 with male predominance (male 77.6%, female 22.4%). Lesions occur most frequently in the buttck (62.7%), followed by axilla, inguinal area, scalp, and perianal area. In clinical stage, it showed 28.6% in stage I, 49% in stage II, and 22.4% in stage III by Hurley staging system. 57.3% of the patients were obese and current or exsmokers occupied 68% of the patients. In associated diseases, 25.8% were hypertension and 32.3% were diabetes mellitus. And also, 7.5% of the patients had diabetes mellitus (DM), 3% had hypertension, and 3% had dyslipidemia. Most patients were treated by systemic antibiotics (89.5%), followed by retinoids, incisions and drainage, wide excision, and steroid injection. Multidisciplinary treatment with incisions and drainage or excision. To date, this is the first epidemiology report of HS in Korea. There is male predominance in Korea, which is different from other previous studies. Korean HS is sometimes accompanied by hypertension, DM and dyslipidemia. The association between HS and metabolic syndrome were not influenced by the degree of HS severity. And the proportion of obese patients and smokers were high when compared with Koran population as control.

Commercial support: None identified.

The health care burden of misdiagnosed cellulitis: An inpatient analysis
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Noninfectious inflammatory dermatoses of the skin ("pseudocellulitis") can mimic cellulitis and are often misdiagnosed. The purpose of this study was to analyze the health care burden of inappropriate treatment of pseudocellulitis in patients who were admitted from the emergency room to the hospital for treatment of lower extremity cellulitis. We performed a retrospective chart review at a large urban hospital to determine lengths of stay, antibiotic use, and complication rate among 877 patients admitted from June 1, 2010 to December 31, 2012 with a presumed diagnosis of cellulitis of the lower extremity. Patients who were discharged with a diagnosis of cellulitis were considered to have true cellulitis, while those who were referred for alternative diagnosis during their hospitalization or within 30 days of discharge were considered to have pseudocellulitis. We found that 30.8% of patients admitted with cellulitis were ultimately found to have pseudocellulitis. There was no difference in median days hospitalized between pseudocellulitis and cellulitis patients (4 days, pseudocellulitis interquartile range [IQR] 6, cellulitis IQR 5, P = 0.23). During inpatient treatment, both pseudocellulitis patients and cellulitis patients received at least one IV antibiotic (100%). We performed a planned subgroup analysis on pseudocellulitis patients whose primary indication for admission was cellulitis (65.8%) in order to determine the attributable cost of misdiagnosis. In this group, the median days of hospitalization for pseudocellulitis patients was 3 days (IQR 5.5), and 57.7% of patients received either IV or oral antibiotics on discharge. Finally, 31.8% of pseudocellulitis patients had complications within 30 days postdischarge, including rash, GI upset, diarrhea, and readmission. Our findings highlight the significant and potentially avoidable healthcare consequences resulting from the misdiagnosis and inappropriate treatment of pseudocellulitis patients. Improved diagnostic techniques, clinical decision support, and early consultation of dermatology may reduce this burden.

Commercial support: None identified.
Time to response in patients with moderate-to-severe hidradenitis suppurativa who were treated with adalimumab: Results from PIONEER I and PIONEER II

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Introduction: Adalimumab (ADA) has demonstrated efficacy in patients (pts) with moderate-to-severe hidradenitis suppurativa (HS) in 2 phase 3 randomized, double-blind, placebo (PBO)-controlled trials (PIONEER I/PIONEER II). This post hoc analysis evaluated time to response for ADA compared with PBO in these pts.

Methods: Adults with at least 1-year history of moderate-to-severe HS were enrolled in the 2 studies. For the first 12 weeks (wks) of each study, patients were randomized (1:1) to receive ADA (100 mg wk 0, 80 mg wk 2, and 40 mg weekly from week 4) or PBO. A post hoc analysis was performed on integrated data from the 2 trials to investigate effects of ADA or PBO on median time to achieve HS clinical response (HiSCR), defined as ≥50% reduction in total abscess and inflammatory nodule (AN) count with no increase in abscess or draining fistula counts relative to baseline (BL); median time to achieve AN count reductions of ≥25%, 50%, 75%, and 100%; and median time to disease flare (predefined as ≥25% increase in AN counts with a minimum increase of 2 relative to BL). Time to response was calculated using Kaplan-Meier method; pts were censored at date of study discontinuation or last efficacy measurement. Treatment difference was analyzed using a stratified log-rank test ($\alpha = .05$), with pts stratified by study, BL Hurley stage, and antibiotic use.

Results: Combined analysis included 635 pts (ADA, $n = 316$; PBO, $n = 319$); 596 pts completed the first 12 wks of the study (ADA, $n = 300$; PBO, $n = 296$). Data were missing for 4 pts in PBO group. ADA group demonstrated a significantly shorter median time to HiSCR than did PBO group (31 days [range, 29-57] vs 92 days [range, 87-97; not reached]). HR, 2.437; 95% CI, 1.959-3.031; $P < .001$). ADA group also demonstrated shorter median time to achieve AN count reductions of ≥25% (10 v 52 days), 50% (29 v 86 days), and 75% (87 v 119 days) compared with the PBO group, respectively (each $P < .001$). A 100% reduction in AN count was achieved by 25.3% and 12.8% of ADA and PBO pts, respectively (HR, 2.120; 95% CI, 1.449-3.100; $P < .001$); median time to 100% reduction of AN count could not be calculated. Fewer pts in ADA group experienced flares compared with the PBO group during 12-week period (12.3% v 35.8%; HR, 0.283; 95% CI, 0.196-0.410; $P < .001$); median time to flare could not be calculated.

Conclusions: Pts with moderate-to-severe HS experienced faster clinical response times and fewer flares after treatment with ADA compared with PBO.

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Commercial support: None identified.
Two cases of ophthalmic trigeminal trophic syndrome
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Trigeminal trophic syndrome (TTS) is a rare cause of ulcers secondary to skin excoriation due to trigeminal nerve (CN V) anesthesia and paresthesia. TTS typically affects the nasal ala within the maxillary distribution and results from trigeminal ablation and strokes. We report two cases of TTS within the ophthalmic distribution associated with herpes zoster. A 73-year-old man had a herpes zoster outbreak within the left ophthalmic distribution. He was started on acyclovir and also developed a gram negative infection managed with antibiotics. After 10 days, postherpetic neuralgia was noted. He was given 900 mg of gabapentin daily but switched to 150 mg of pregabalin daily at 1 month due to drowsiness. After 7.5 months, left nasal ala ulcer developed (negative for HSV1/2 and VZV by DFA). At 8.5 months, a biopsy of the 10-cm ulcer showed lichen simplex chronicus with erosion, ulceration, and mild atypia but no viral cytopathology and no evidence of malignancy. He reported picking the ulcer due to the sensation of a ‘hair under it’ and pain similar to ‘hairs being pulled by the root.’ He was restarted on 900 mg of gabapentin daily. At 14 months, the 9-cm ulcer showed slow healing with silverced treatment. An 82-year-old man had a herpes zoster outbreak on his left face and scalp, in V1 distribution. He was admitted to the hospital 2.5 weeks later due to malaise, chills, headache, and bilaterally blurred vision. His left eye was swollen by suppurative cellulitis extending from the left orbit to the left occipital scalp, which spread to his right eyelid and scalp. He developed sepsis and respiratory failure. Once recovered, he developed a large scalp ulcer in the V1 distribution. He was started on 600 mg of gabapentin daily. At discharge, the wound was mostly granulated, but after 2 months, a large left scalp ulcer remained and was associated with burning and itching. His left eye visual impairment remained. While gabapentin and other drugs may decrease TTS ulcer inducing paresthesias, management remains challenging. Early detection is critical for patient education and the reduced prescription of self-manipulating ulcer. However, the ulcers in the current cases showed slow healing despite gabapentin use. While infrequent, postzoster TTS of ophthalmic CN V can occur and should be included in the differential diagnosis of nonhealing ulcers.

Commercial support: None identified.

Ultrasound-assisted intraleisonal corticosteroids injection in hidradenitis suppurativa
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Background: Hidradenitis suppurativa (HS) is a chronic inflammatory disease of the follicular unit characterized by recurrent, painful, deep-seated skin lesions including inflammatory nodules, abscesses, fistulas and mutilating scarring. Intraleisonal corticosteroids injection (ICI) for HS references are only mentioned in textbooks or in journal articles. High frequency ultrasound (HFUS) is employed in-depth characterization and staging of HS.

Objectives: To evaluate the clinical response of ICI in HS. To identify new applications of HFUS in HS management.

Methods: An observational, retrospective, multicenter study of HS patients treated with ICI was conducted in the last year. The data on their management were obtained from their medical records. In this study participated dermatologists specialized in HS and cutaneous HFUS from 8 hospitals in Spain. We considered: complete response (CR) in case of significant clinical improvement or sonographic clearance after 3 months of follow-up, partial response (PR) in case of relapse after clinical improvement within 3 months and null response (NR) if there was worsening or absence of response after the third CR.

Results: We collected 300 HS patients, 49 (16.3%) of which received treatment with ICI. 32 (65%) females and 17 (35%) males. Age range from 12 to 66 y.o. 65 individual lesions were infiltrated, of which 4 (6.2%) were noninflammatory nodules, 24 (36.9%) inflammatory nodules, 28 (43.1%) abscesses and 9 (13.8%) fistulas. The most frequently involved areas were inguinal (32.3%) and axillary (30.8%) regions. Most patients were classified as Hurley stage II (55.8%) and as HS/PGA stage 3 (50%). Prednisolone (40 mg/ml) was employed in 55 lesions and betamethasone (3 mg/ml) in 10 lesions. Dose most commonly applied range from 0.5 to 1 ml (67.7%). Ca and asesthetics, such as meipaciva (70.8%) or lidocaine (31%) were employed in 92.8% of patients. CR was achieved in 46 lesions (70.8%), 16 showed PR (24.6%) and only 3 (4.6%) presented NR. 51 individual lesions underwent HFUS examination before ICI. Association between HFUS and CR showed statistically significant relevance (P=0.024).

Conclusion: Ultrasound-assisted ICI for HS showed statistically significant relevance in all types of lesions in HS and response improves significantly if lesions are previously evaluated with an HFUS.

Commercial support: None identified.

2015 Unilateral, perioral Favre-Racouchot syndrome associated with cigarette smoking: case and discussion
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Introduction: Favre-Racouchot syndrome (FRS) classically appears as multiple open comedones with solar elastosis in a lateral periorbital distribution. The condition, typically bilateral, is well-described in the literature with a strong association to chronic sun exposure. Descriptions of FRS, however, infrequently recognize another potential risk factor: tobacco use. We highlight the association of FRS and tobacco use through a patient’s peculiar habit of holding a cigarette on one side of her mouth with development of an ipsilateral, periorbital comedonal plaque.

Case report: A 66-year-old African American female with a 58-year history of cigarette use presented with an asymptomatic eruption beneath the right side of her mouth for 8 months. She denied extensive sun exposure but admitted to a remarkable habit of preferentially placing cigarettes on the right side of her mouth. Inspection of the right lower cutaneous lip revealed small cysts and open comedones in an anagminate arrangement. Histopathologic analysis demonstrated several mildly inflamed comedonal cysts embedded in a dermis with extensive nodular solar elastosis. Despite the unusual location and lack of historical actinic damage, a diagnosis of FRS was made.

Discussion: FRS affects up to 6% of individuals over age 50, most commonly white males. Its association with severe solar damage is well-established. While cigarette smoke is known to accelerate photoaging through impaired collagen production and increased matrix metalloproteinase activity, few publications have noted tobacco use as an etiologic factor in FRS. One retrospective study found that the likelihood of developing FRS was dose-dependent when comparing heavy versus light smokers. Our case illustrated an exceptional relationship between unilateral cigarette consumption and an ipsilateral FRS-like comedonal plaque. It also led to our hypothesis that chronic thermal damage, as from a lit cigarette, may induce skin changes histologically similar to severe solar elastosis.

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2621 Ultrasound-assisted intralesional corticosteroids injection in hidradenitis suppurativa
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Vitamin C deficiency, also known as scurvy, is a historically significant disease that continues to be relevant in the current era of medicine. Without corrective treatment, scurvy is invariably fatal. This makes early recognition and supplemental treatment critical, especially in cases with atypical presentations. In this case, a male patient in his 50s with a history of polycythemia vera and recent onset acute myelogenous leukemia developed a new bliphasic rash. On his legs, it was a red punctate macular eruption with perifollicular petechiae and keratotic spines. On his abdomen and chest, his rash appeared as light pink macules that occasionally coalesced into patches without overlying scale. No gingival changes were appreciated on exam. Punch skin biopsies and vitamin C levels confirmed a diagnosis of scurvy and oral vitamin C replacements steadily improved the patient’s condition. Our ultrasound-assisted injection of a new onset vitamin C deficiency in a patient with myelodysplastic disease that has transformed into acute myelogenous leukemia. This case adds to those previously reported and reinforces the need for suspicion of scurvy in modern times.

Commercial support: None identified.

2982 Unique presentation: Scurvy as a new rash in a patient with hematologic malignancy
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Discussion: Vitamin C deficiency, also known as scurvy, is a historically significant disease that continues to be relevant in the current era of medicine. Without corrective treatment, scurvy is invariably fatal. This makes early recognition and supplemental treatment critical, especially in cases with atypical presentations. In this case, a male patient in his 50s with a history of polycythemia vera and recent onset acute myelogenous leukemia developed a new bliphasic rash. On his legs, it was a red punctate macular eruption with perifollicular petechiae and keratotic spines. On his abdomen and chest, his rash appeared as light pink macules that occasionally coalesced into patches without overlying scale. No gingival changes were appreciated on exam. Punch skin biopsies and vitamin C levels confirmed a diagnosis of scurvy and oral vitamin C replacements steadily improved the patient’s condition. Our ultrasound-assisted injection of a new onset vitamin C deficiency in a patient with myelodysplastic disease that has transformed into acute myelogenous leukemia. This case adds to those previously reported and reinforces the need for suspicion of scurvy in modern times.

Commercial support: None identified.
Vancomycin-induced linear IgA bullous dermatosis
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Introduction: Linear IgA bullous dermatosis (LABD) is a autoimmune bullous disease characterized by linear IgA deposition at the basement membrane zone. It is defined histopathologically by the finding of subepidermal vesicles or bullae with neutrophilic infiltration and linear IgA deposits at the basement membrane zone, on immunofluorescence. In adults, LABD can present with a variety of skin manifestations ranging from vesicles resembling dermatitis herpetiformis to bullae mimicking bullous pemphigoid or rarely, toxic epidermal necrolysis (TEN). Many drugs can induce LABD with vancomycin being the most common one. The incidence of LABD in the US (Utah) is 0.6 in 100 000 population per year.

Case presentation: An 81-year-old male was referred to dermatology with a rapidly progressive bullous eruption 8 days postoperatively. He had been admitted for the treatment of an infected total knee replacement and underwent total knee revision. Microbiology swabs and tissue samples from the knee revealed Streptococcus anginosus, which was treated with intravenous vancomycin 1g twice a day. On day 8 of treatment with vancomycin, the patient developed multiple, tense bullae on the palms and soles. Further bullae appeared rapidly over his limbs, body, face and mucous membranes in the next 24 hours. Some became confluent and hemorrhagic.

Intervention: Histologic examination of one of this bulla confirmed a subepidermal blister with a rich neutrophilic infiltrate. A perilesional biopsy for direct immunofluorescence revealed linear deposition of IgA at the basement membrane. All blisters resolved with conservative treatment 14 days after stopping vancomycin.

Discussion: LABD can be idiopathic or induced by drugs such as vancomycin (like in our case), rifampicin, penicillin, cephalosporin and amoxicillin. Usually, vancomycin-induced LABD blisters develop between 1 to 14 days after the initiation of treatment and resolve slowly on cessation.

Commercial support: None identified.

Wells syndrome in a patient with porphyria cutanea tarda using chloroquine: A diagnostic challenge
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Background: Wells syndrome (WS) is a rare inflammatory dermatosis described by George Wells in 1971. Its etiology remains unknown. Although it has been reported associated to different systemic diseases, in most cases it occurs on its own.

Case report: We report a 62-year-old man with a two-week history of erythematous and asymptomatic nodules on the penis and left thigh. He denied fever or systemic symptoms. He had a history of porphyria cutanea tarda and was being managed with chloroquine.

Discussion: WS can be idiopathic or induced by drugs such as chloroquine. Usually, WS blisters develop between 1 to 14 days after the initiation of treatment and resolve slowly on cessation.

Commercial support: None identified.

Xanthoma disseminatum with koebnerization and severe mucosal involvement in an adult
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Introduction: Xanthoma disseminatum (XD) is a rare subtype of cutaneous non-Langerhans cell histiocytosis. We present a case of XD with koebnerization and severe mucous membrane involvement.

Case report: A 34-year-old male, farmer by occupation, presented with asymptomatic skin lesions of 2 months’ duration and hoarseness of voice for the past 2 weeks. Cutaneous examination revealed numerous yellow papulonodules over the face, trunk and extremities, with a flexural and intertrigenous predilection. Koebnerization was seen over the chest at the sites of contact with straps of insecticide tank (he used to spray insecticides on his farm carrying the tank on his back). Similar lesions were seen on the conjunctival and oral mucosae. Indirect laryngoscopy revealed xanthomatous papulonodules in the larynx and vocal cords.

A diagnosis of XD was made based on clinical, histological, and immunohistochemical criteria.

Conclusion: Close follow up of patients with XD is essential because mucosal and internal organ involvement can result in significant morbidity and mortality. To our knowledge, extensive koebnerization in XD has never been reported in the literature before.

Commercial support: None identified.
A case of morphea in a 22-year-old Filipino female
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Introduction: Morphea is a rare fibrosing disorder of the skin and underlying tissues. Reported incidence is 0.4 to 2.7 per 100,000. It is a well-defined entity but has few published studies. Diagnosis is made clinicohistopathologically of a well-defined, irregularly shaped, elevated, centrally shiny white and peripherally violaceous colored plaque with no systemic involvement. Biopsy will show densely packed collagen bundles in the dermis. There are various therapeutic modalities but reports are usually based on limited observations.

Case summary: D.O., a 22 year old female student from Manila sought consult due to a 5-month history of violaceous colored plaques over the dorsum of both feet. Lesions gradually increased in size and appearance of new lesions over both lower extremities and the abdomen were noted with accompanying tightening of the skin and muscle weakness. An oil-based medication was applied but provided no relief. Progression and persistence were noted. Skin punch biopsy showed closely packed collagen bundles throughout the dermis that appear hyalinized due to loss of interbundle space consistent with morphea. Clobetasol propionate ointment, Methotrexate and UVA phototherapy were given. After a few months of treatment, improvement of lesions was noted.

Conclusion: Few cases are reported regarding the treatment of morphea. Some treatments are well established and effective in most patients while some are only effective on small number of patients. Lack of standardized outcome measures for assessing the efficacy of various therapies for morphea has become a major problem but in our patient, the chosen treatment were effective.

Commercial support: None identified.

A case of paraneoplastic subacute cutaneous lupus erythematosus
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A 39-year-old woman with a one-month history of dysfunctional uterine bleeding presented with a two-week history of a rash on her face, chest, back, lips and mouth. The rash was associated with marked pruritis, facial swelling, and painful oral lesions. She also complained of recent memory loss. Physical examination revealed multiple 2-5 mm crusted erosions on the forehead, malar cheeks, left lower lip and multiple 2-5 mm crusted erosions on the back and right lower eyelid. She had erythematous papules and plaques on the back and lower extremities and the abdomen were noted with accompanying tightening of the skin and muscle weakness. An oil-based medication was applied but provided no relief. Progression and persistence were noted. Skin punch biopsy showed closely packed collagen bundles throughout the dermis that appear hyalinized due to loss of interbundle space consistent with morphea. Clobetasol propionate ointment, Methotrexate and UVA phototherapy were given. After a few months of treatment, improvement of lesions was noted.

Conclusion: Few cases are reported regarding the treatment of morphea. Some treatments are well established and effective in most patients while some are only effective on small number of patients. Lack of standardized outcome measures for assessing the efficacy of various therapies for morphea has become a major problem but in our patient, the chosen treatment were effective.

Commercial support: None identified.

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A case of thyroiditis, rash and polyadenopathy: A golden case
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Introduction: Lupus erythematosus is a great mimicker. Cutaneous eruption and polyadenopathy’s differential diagnosis includes infections, sarcoidosis, drug reactions, adult Still disease, Castleman disease, Kikuchi-Fujimoto disease, Rosai Dorfman, hyper IgG4, POEMS, metastatic carcinomas, Kimura disease, and lymphoma.

Observations: We report a case of a 22-year-old man presenting with numerous 1-2 mm perifollicular skin-colored papules on his back for a few months. The patient presented with goiter, paresthesia, and thoracic pain. An exhaustive review of systems was otherwise negative. Investigations revealed hypothyroidism with positive antithyroid peroxidase, proteinuria, decreased complement, positive anti-cardiolipin antibody, anti-DSP-DNA, anti-Ro, and antinuclear antibodies (1: > 2560 speckled and 1: 520 homogenous). RF, ANA, ANCA, hepatitis, HLV, EBV, CMV, EBV, and hepatitis were negative. The scan showed cervical, axillary, mediastinal and retroperitoneal polyadenopathies, a thyroid capping and a significant splenomegaly. Echocardiography showed a small pericardial effusion. The axillary node demonstrated a follicular hyperplasia with foci of vasculitis consistent with lymphoma. Electromyogram was compatible with demyelinating polyneuropathy. Hydroxychloroquine, prednisone, mycophenolate mofetil and synthroid were then started.

Discussion: The diagnosis was systemic lupus erythematosus with thyroiditis, pericarditis, nephritis, polyadenopathy and papulonodular dermal mucinosis. This rare skin disease was first described by Gold and is primarily associated with systemic lupus with joint and renal involvement. Histologic features include diffuse dermal mucin deposition and a scanty lymphocytic infiltrate without the typical dense lymphocytic infiltrate lesions at the dermoepidermal junction. Lesions are usually based on limited observations. The scan showed cervical, axillary, mediastinal and retroperitoneal polyadenopathies, a thyroid capping and a significant splenomegaly. Echocardiography showed a small pericardial effusion. The axillary node demonstrated a follicular hyperplasia with foci of vasculitis consistent with lymphoma. Electromyogram was compatible with demyelinating polyneuropathy. Hydroxychloroquine, prednisone, mycophenolate mofetil and synthroid were then started.

Conclusion: We report an unusual presentation of systemic lupus with lymphadenopathy and papulonodular dermal mucinosis as the only cutaneous sign.

Commercial support: None identified.

A model to predict malignancy risk and guide malignancy screening intensity in dermatomyositis patients from a distinct, tertiary care center cohort
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Background: Multiple studies have confirmed an association between dermatomyositis (DM) and malignancy, particularly ovarian, breast, lung, colorectal, cervical, and bladder cancer. Currently, there are no guidelines for screening newly diagnosed DM patients for malignancy. Thus, screening for malignancy in DM patients ranges from history and physical examination to full body imaging.

Objective: Characterize clinical features and risk factors of malignancy among DM patients and build a model to identify DM patients at higher risk of malignancy.

Methods: Retrospective review of 225 DM patients with clinical and serologic data prior to onset of treatment available. A predictive model was derived using multivariable logistic regression.

Results: 38 of 225 DM patients were diagnosed with malignancy within 5 years of DM diagnosis. Univariate logistic regression showed a significant association between malignancy and weight loss (P = 0.01), Gottron papules (P = 0.02), older age (P = 0.03), monocular (P = 0.02), and mechanics' hand (P = 0.04). Multivariate linear analysis showed that older age (P = 0.04), weight loss (P < 0.01), presence of Gottron papules (P = 0.045), and mechanic's hand (P = 0.02) were positively associated with presence of malignancy, whereas arthralgia (P = 0.04) was negatively associated with malignancy. No interaction terms were found to be significant. The model's performance measures were adjusted for optimism by internal validation using bootstrap resampling of 1000 repetitions. Model discrimination was represented by the c-statistic (0.7618) and bootstrap-adjusted c-statistic (0.7618), indicating that the model may be able to separate those who do and do not develop malignancy. For example, applying the model to a 40-year-old female with Gottron papule, arthralgia, no mechanic's hand, and no weight loss, yields a 5% risk of a malignancy associated with DM. Alternatively, applying the model to a 65-year-old male with Gottron papule, mechanic's hand, weight loss, but no arthralgia yields a 53% risk of a malignancy associated with DM.

Conclusions: A significant subset of DM patients has an associated malignancy. Here we propose a model to identify DM patients at higher risk of malignancy based on clinical findings at time of DM diagnosis. This tool may be useful to guide malignancy screening for DM patients at higher risk for malignancy while lessening intensity of screening for DM patients at lower risk.

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Adult dermatomyositis complicated with diffuse calcinosis: Report of a case
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Introduction: Calciosis is a recognized complication of diverse connective tissue diseases, especially juvenile dermatomyositis, but it is exceptional in adult dermatomyositis. This event has been related with delayed or inadequate treatment. We present a case of dermatomyositis with a torpid evolution complicated with an extensive calcinosis.

Case report: A 59-year-old obese and hypertensive woman was diagnosed of dermatomyositis in our department 10 years ago, not associated with neoplasia or myopathy. Since the diagnosis, the control of their disease has been difficult despite the use of multiple therapies, among these, corticosteroids and immunosuppressive drugs. A few months ago the patient reported new lesions, consisting of a hard nodules in subcutaneous and periartricular regions, which were asymptomatic, located bilaterally and symmetrically on the shoulders, arms and hips. A total body TAC and a skin biopsy were compatible with calcinosis. Serum calcium and phosphate levels were normal. In agreement with rheumatology department, a treatment with diltiazem, myophenolate mofetil and intravenous immunoglobulin has been started.

Discussion: Calciosis is characterized by an abnormal deposition of calcium salts in affected skin, subcutaneous tissues, and muscles or tendons. It is a rare finding in adult dermatomyositis, affecting only 10% of these patients. In dermatomyositis it has been associated with an early age diagnosis and, especially, with a torpid evolution of the underlying disease. Clinically, it can cause functional disability, weakness, ulcers or joint contractions, impacting seriously on quality of life; therefore an early and aggressive treatment of disease activity is essential in calcinosis prevention. When calciosis is established the most important is to change therapy or use more aggressive therapy for the dermatomyositis. Treatment of calcinosis is challenging. There are published reports of the use of various therapies, but none of these has been universally accepted. Among these, colchicine, warfarin, prednisolone, diltiazem or intravenous bisphosphonates, all of them with variable results.

Commercial support: None identified.

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An alarming presentation of neurocutaneous sarcoidosis
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Background: Sarcoidosis is a granulomatous disease of uncertain etiology. Cutaneous sarcoid can present in a variety of forms, including papulonodular, plaque, and atrophic presentations. Extracutaneous manifestations typically include pulmonary involvement, and lymph node involvement, but a minority of patients can present with neuroophthalmologic symptoms.

Case report: We present a 44-year-old black male who presented to the inpatient service with sudden onset left monocular vision loss and left-sided facial palsy of one month’s duration. The patient denied any history of eye disease, or rash. Examination revealed the patient to have a left homonymous hemianopsia. A chest X-ray showed bilateral hilar lymphadenopathy, and a chest CT confirmed stage I pulmonary sarcoidosis. An MRI brain with/without contrast was unremarkable. A temporal puncture revealed xanthogranulomatous material. Serum calcium and phosphate levels were normal.

Histology: A temporal sample revealed non-caseating epithelioid granulomas surrounding the granulomas. PAS stain, acid fast, Fite, gram stains, and pneumococcal antibodies were negative. A biopsy of the temporal sample revealed non-caseating epithelioid granulomas surrounding the granulomas. The patient was started on high-dose IV methylprednisolone with mild improvement in visual loss, but did not reach statistical significance (P = 0.08). Those that suffered from itch had a total QoL score of 58 ± 18.4, which had a significant correlation coefficient (r = -0.8) and high correlation coefficients (P < 0.05); however, none of the remaining serologic markers associated with SS (ANA, SSA, SSB) were significantly associated with pruritus.

Conclusions: Primary SS patients have a high prevalence of chronic itch, negatively affecting sleep and quality of life.

Commercial support: None identified.

3527
Chronic pruritus in primary Sjogren syndrome: Characteristics and effect on quality of life
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Background: Chronic pruritus in primary Sjogren syndrome (SS) has been previously reported as a common symptom; however, the prevalence and characteristics of pruritus has not been previously reported.

Objectives: We assessed the prevalence, characteristics, and effect of chronic itch on quality of life in patients with primary SS.

Methods: Eighteen patients diagnosed with primary SS were recruited to participate in the study out of a total of 20 patients screened. All subjects were diagnosed with primary SS using the American College of Rheumatology Classification criteria. All patients underwent both rheumatologic and dermatologic evaluations between February 2014 and March 2015. All participants were asked if they suffer from chronic itch, and those that suffered from chronic itch were asked to fill out a questionnaire for the assessment of pruritus, as well as a quality of life questionnaire (IitchQol).

Results: The mean age was 55 (range 30-74), 17 (94%) of the participants were female, and 1 (6%) was male. Nine of the 18 subjects (50%) reported suffering from chronic itch. The mean duration of itch was 56 months (range 12-144). The mean intensity of itch severity was 7 ± 1.9. Six patients considered scratching to be pleasurable with a mean score of 2.4 ± 3.4 on the Likert scale. Seven subjects reported itch to interfere with their sleep, with itch intensity reported worst during the evening and least during the morning. The most common locations for pruritus were the forearms and shins. Xerosis was more severe in patients that suffered from chronic itch, but did not reach statistical significance (P = 0.08). Those that suffered from itch had a total Qol score of 58 ± 18.4, which had a significant correlation coefficient (r = -0.8) and high correlation coefficients (P < 0.05); however, none of the remaining serologic markers associated with SS (ANA, SSA, SSB) were significantly associated with pruritus.

Conclusions: Primary SS patients have a high prevalence of chronic itch, negatively affecting sleep and quality of life.

Commercial support: None identified.

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Clinical aspects of chronic pruritus and impact on quality of life in patients with scleroderma
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Introduction: Scleroderma has been reported to have a high prevalence of chronic itch, but no study has assessed the impact of pruritus and its impact on quality of life have not been previously assessed.

Objectives: We assessed the prevalence, characteristics, and effect of chronic itch on quality of life in patients with scleroderma.

Methods: Twenty-six patients diagnosed with scleroderma were recruited to participate in the study out of a total of 35 patients screened. All subjects were diagnosed with scleroderma using the American College of Rheumatology Classification criteria. All patients underwent both rheumatologic and dermatologic evaluations between February 2014 and March 2015. All participants were asked if they suffer from chronic itch, and those that suffered from chronic itch were asked to fill out a validated questionnaire for the assessment of pruritus, as well as a quality of life questionnaire (IitchQol).

Results: The mean age was 58 ± 15 (range 41-85), 25 (96%) of the participants were females. Twenty-one patients were diagnosed with systemic sclerosis, and 4 patients were diagnosed with limited scleroderma. Ten of the 26 subjects (38.5%) reported suffering from chronic itch, all of whom had systemic sclerosis. The mean VAS itch intensity was significantly high (8 ± 2, 1, scale 0-10). The mean duration of itch was 9 ± 11 months (range 10-660). Eight subjects (40%) reported that itch interfered with their sleep, and 7 subjects (70%) reported that itch restricted their life. Itch intensity was reported to be worst at night and least severe during the day. The most common locations for pruritus were the scalp and arms. All ten patients (100%) reported exacerbation of their itch by dry skin, and itch was reported to be worst during the winter. Those that suffered from itch had a total Qol score of 67 ± 19.7 (scale 21-105), which correlated significantly with VAS itch intensity (r = 0.68, P < 0.001). Levels of Anti-Scl-70 (anti-topoisomerase 1) antibodies did not correlate significantly with itch intensity.

Conclusions: Chronic itch in scleroderma patients is prevalent, highly associated with dry skin, and adversely affects quality of life.

Commercial support: None identified.
Clinically amyopathic dermatomyositis: Clinical features, response to medications, and malignancy-associated risk factors in a specific tertiary care center cohort

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Background: Clinically amyopathic dermatomyositis (CADM) is a subset of DM characterized by the typical DM cutaneous manifestations but without myositis. Only few studies have characterized CADM cases.

Objective: Characterize clinical features, response to medications, and malignancy-associated risk factors of CADM patients with available baseline data seen at a single, tertiary care center.

Methods: Retrospective review of 44 CADM patients with clinical and serologic data prior to onset of treatment available.

Results: CADM patients comprised 18% of total DM patients with baseline data available at our institution. Six of 44 patients had an associated malignancy (melanoma, lymphoma, bladder, gastric, tonsillar, and Merkel cell carcinoma). Photosensitivity and periangual erythema were found to be associated with absence of malignancy ($P = 0.05$ and $P = 0.02$, respectively). Initial treatment typically consisted of monotherapy with either corticosteroids or hydroxychloroquine. Although most patients (29 of 44) showed improved skin with these initial treatments at the first follow-up visit, only 30% (90%) patients with follow-up available for longer than 2 years, 27% (90%) required additional steroid-sparing medications for control of their CADM. Intriguingly, malignancy-associated CADM patients were found to be more likely to have cutaneous response with first prescribed treatment than CADM patients without malignancy ($P = 0.04$).

Conclusions: CADM represents a significant subset of DM cases. Similarly to classic DM, cutaneous manifestations of CADM often represent a therapeutic challenge. A subset of CADM patients has underlying malignancies and these may differ from those typically associated with classic DM. Differences in serologic abnormalities, cutaneous manifestations, and response to first treatment among CADM patients with and without malignancy were found and suggest distinct pathophysiologies among CADM subsets. Characterization of this cohort expands knowledge about this unique DM subset.

Commercial support: None identified.

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Dermatomyositis presenting as unilateral palpebral edema in an adult patient with Sturge-Weber syndrome on the contralateral side

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Dermatomyositis (DM) is a relatively rare autoimmune connective tissue disease. The heliotrope rash is a highly characteristic presenting sign of DM and is often associated with mild to severe edema involving the eyelids and periorbital skin, but it can easily be missed. On the other hand, Sturge–Weber syndrome (SWS) is a rare sporadic neurologic disorder characterized by a typical segmental port wine stain involving at least the V1 region in addition to ipsilateral ocular and leptomeningeal anomalies. This report highlights the importance for dermatologists to be aware that the heliotrope rash can be atypical in patients with periorbital vascular malformation. We report a case of classic DM that presented first as an atypical heliotrope rash. A 72-year-old white woman initially presented with a one-month history of unilateral palpebral and periorbital edema of the left side refractory to erythromycin 0.5% ointment, cefadroxil and flunisolide. Initial treatment with latanoprost and dorzolamide-timolol eye drops in her right eye for glaucoma secondary to a SWS. At presentation, the medical history and physical examination were unremarkable except for the left palpebral edema with a violet hue. Over a period of one month, the patient developed classic cutaneous manifestations of DM, severe fatigue, pain and weakness in the proximal extensor muscles with serum creatinine kinase elevation. The electromyography and biopsy of the deltoid muscle showed signs of myositis and there was histopathologic evidence of interface dermatitis and mucin in the skin biopsy specimen confirming the diagnosis of dermatomyositis. Little is known about the pathogenesis of the heliotrope rash. To our knowledge, this is the first report of DM presenting with unilateral eyelid edema secondary to the contralateral periorbital region where capillary malformation of SWS is not located. We formulate two hypotheses to explain this unique presentation. First, latanoprost and dorzolamide-timolol eye drops both have vasoconstrictive effects on smooth muscles of blood vessels. The local effect of these ophthalmic solutions could have prevented the advent of edema on the right side. Second, port wine stains result from progressive ectasia of the superficial cutaneous vascular plexus. The heliotrope rash can be atypical in patients with periorbital vascular malformation. In our case, the heliotrope rash could be explained by an abnormal regulation of neural blood flow. We wonder if abnormal response of blood vessels in the capillary malformation could explain the absence of edema.

Commercial support: None identified.

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CREST-morphea overlap

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Case description: A 51-year-old female presented in dermatology clinic for evaluation of diffuse hyperpigmentation. She notes a “black and blue” discoloration all over her body developing over the past year. Physical examination indicates diffuse hyperpigmented indurated plaques on the chest, abdomen, and lower extremities. Small hyperpigmented plaques were present on the face. Mat telangiectasias were incidentally noted on the forehead and bilateral cheeks. Patient had a past medical history of Raynaud phenomenon and dysphagia of the esophagus. Further lab workup, however, revealed positive rheumatoid factor, anti-centromere antibody, and antinuclear antibodies (1:80 nucleolar and 1:1280 smooth muscles of blood vessels). The local effect of these ophthalmic solutions could have prevented the advent of edema on the right side. Second, port wine stains result from progressive ectasia of the superficial cutaneous vascular plexus. The heliotrope rash can be atypical in patients with periorbital vascular malformation. In our case, the heliotrope rash could be explained by an abnormal regulation of neural blood flow. We wonder if abnormal response of blood vessels in the capillary malformation could explain the absence of edema.

Commercial support: None identified.

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Do collaborative clinics work? Patient satisfaction in a combined dermatology/rheumatology clinic

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Objectives: The Dermatology and Rheumatology Treatment Clinic (DART Clinic) in Vancouver is a novel multidisciplinary clinic, where patients with both skin and rheumatologic issues are concurrently assessed by a rheumatologist and dermatologist. The purpose of this study is to determine if patients are finding the combined clinic beneficial to them, and if they are satisfied with their care. The information that we gain will be used to correct any deficits identified and to improve the quality of care the clinic provides.

Method: We distributed 100 surveys to DART Clinic patients. Patients were asked to complete the survey if they were a new or follow-up patient, and then completed 23 questions regarding their overall care and opinion of the DART clinic. Participation in the survey was voluntary and anonymous, and the form was filled out just after the clinic appointment.

Results: 88% of our patients found it beneficial to see both a rheumatologist and dermatologist at a combined clinic (56% strongly agreed, and 32% agreed). 86% felt that they were given adequate information regarding medications and treatment (56% strongly agreed, and 50% agreed). 88% of patients also felt they were given time for their consultation (45% strongly agreed, 45% agreed). 89% agreed that they had more knowledge about their condition after attending the DART clinic (59% strongly agreed, 50% agreed). 15% of patients felt that they had to wait a long time in the waiting area prior to their appointment.

Conclusions: Overall the preliminary results of our patient satisfaction survey are very positive. Patients find it beneficial to see both a dermatologist and rheumatologist concomitantly. Even though our teaching clinic is very busy with many patients and multiple learners, patients still feel that they are given an adequate amount of time for the consultation and counseling. Time management is a particular challenge in this environment, and we will explore ways to reduce or best utilize the patients’ time wait time prior to the appointment.

Commercial support: None identified.

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CREST-morphea overlap

Sphoorthi Jina, MD, MS, University of Connecticut Health Center, Farmington, CT, United States; Kristjansson T.C., University of Connecticut Health Center, Farmington, CT, United States

Case description: A 51-year-old female presented in dermatology clinic for evaluation of diffuse hyperpigmentation. She notes a “black and blue” discoloration all over her body developing over the past year. Physical examination indicates diffuse hyperpigmented indurated plaques on the chest, abdomen, and lower extremities. Small hyperpigmented plaques were present on the face. Mat telangiectasias were incidentally noted on the forehead and bilateral cheeks. Patient had a past medical history of Raynaud phenomenon and dysphagia of the esophagus. Further lab workup, however, revealed positive rheumatoid factor, anti-centromere antibody, and antinuclear antibodies (1:80 nucleolar and 1:1280 smooth muscles of blood vessels). The local effect of these ophthalmic solutions could have prevented the advent of edema on the right side. Second, port wine stains result from progressive ectasia of the superficial cutaneous vascular plexus. The heliotrope rash can be atypical in patients with periorbital vascular malformation. In our case, the heliotrope rash could be explained by an abnormal regulation of neural blood flow. We wonder if abnormal response of blood vessels in the capillary malformation could explain the absence of edema.

Commercial support: None identified.
Eosinophilic fasciitis: A case series with an emphasis on therapy and induction of remission

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Importance: Eosinophilic fasciitis is an uncommon connective tissue disorder that affects patients of all ages, often resulting in significant morbidity. Systemic corticosteroids can induce remission of the disease. However, there is no universally accepted treatment ladder in the literature for eosinophilic fasciitis. This case series retrospectively evaluates the efficacy of our institutional regimen in patients with eosinophilic fasciitis.

Observation: Patient charts were screened using ICD-9 diagnosis code 710.9 (unspecified diffuse connective tissue disease) to identify ten patients with eosinophilic fasciitis seen at Wake Forest University Department of Dermatology outpatient clinics. Patients were treated for an average of 24 months with a combination of methotrexate and prednisone therapy, unless one or both were contraindicated, with each medication tapered conservatively to prevent disease flares. Remission of cases off therapy and on low-dose therapy was 66% and 70%, respectively.

Conclusion and relevance: Using a 24 month (average) combination therapy of prednisone and methotrexate, tapering as tolerated, the eosinophilic fasciitis remission rate was greater than or equal to other studies. This case series has a scope of study limited to retrospective cases. The treatment ladder implemented in our clinic is well-tolerated and effective for managing patients with eosinophilic fasciitis.

Commercial support: None identified.

3659
Epidemiology and treatment of postirradiation morphea: A retrospective analysis from a large tertiary care center

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Postirradiation morphea (PIM) is a rare and potentially disabling cutaneous complication of radiotherapy, affecting approximately 2 in every 1000 patients treated with radiotherapy. Only 67 cases are reported in the literature to date, and treatment data is reported in only roughly half of cases. The objective of this retrospective cohort study was to characterize the nature and treatment of patients with PIM. Using two medical record databases at New York University, we reviewed charts with ICD-9 code 701.0 to identify all patients with PIM at a large tertiary care center from 2007 to 2015. Nine patients with PIM were identified. All were female and had a history of radiotherapy for breast cancer. Mean age of onset was 58 years. Where data were available, 40% (n = 2) developed PIM within 1 year of first radiation exposure; 40% (n = 2) within 1-5 years, and 20% (n = 1) after 5 years. Sixty-seven percent (n = 6) had PIM extending beyond the irradiation field to sites including the contralateral breast, abdomen, back, groin, and extremities. Fifty-six percent (n = 5) were asymptomatic, 33% (n = 5) had pruritus, and 11% (n = 1) had pain. One patient had a history of radiation dermatitis. None had a history of connective tissue disease. All were referred to a dermatologist. Where treatment data was reported, cutaneous corticosteroids, calcipotriol, azelaic acid, and tacrolimus. Only 1 patient had substantial improvement with topical therapy alone (dapsone), the remainder had no or partial improvement. The majority of patients (n = 5) required systemic agents including methotrexate, etanercept, dapsone, colchicine, calcitriol, pentoxifylline, and/or phototherapy. MTX, although only utilized in 2 patients, led to substantial improvement in both. Overall, PIM was treatment refractory with 50% (n = 4) of patients requiring trials of three or more treatment regimens and the majority (n = 5) requiring treatment for greater than six months. In conclusion, this study represents the largest PIM cohort since 1989 and the largest study to date to report on PIM therapy. This study highlights the recalcitrant and potentially chronic nature of PIM, as well as the diverse nature of PIM in terms of symptoms, latency period from radiotherapy, and areas of involvement. Additional study is needed to further characterize PIM.

Commercial support: None identified.

2837
IgG4-related skin disease has distinct systemic manifestations: A systematic review

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IgG4-related disease is an increasingly prevalent protean multisystem disorder characterized by single or multorgan infiltration of IgG4-bearing plasma cells. It can be difficult to diagnose, responsive to treatment, and potentially morbid. Skin involvement has been recognized and is relevant to proper diagnosis. We present a systematic literature review of IgG4-related disease involving the skin, comprising 50 cases. This reveals that patients with IgG4-related disease with skin lesions, which are known to favor the head and neck, have a distinct pattern of systemic involvement, also favoring the head and neck—lymphatics, orbit, salivary, and lacrimal glands—but generally lacking pancreaticobiliary involvement (16% of cases), which by contrast is a predominant manifestation in systemic IgG4-related disease (60% with pancreaticobiliary involvement). This suggests that skin disease is a contributory factor relevant to proper diagnosis. We propose this may be related to perineural spread of disease. We summarize clinical and pathologic descriptive data from the systematic review, elaborating on background and history, epidemiology, cutaneous and extracutaneous clinical manifestations, workup, differential diagnosis, etiopathogenesis, and treatment. We propose a diagnostic scheme for stratifying probability of disease based upon comprehensive integration of clinical, histopathologic, and laboratory data. Plasmacyte infiltration and storiform fibrosis are prominent in IgG4-related skin disease, but obliterative venulitis is less common than in the prototypical IgG4-related disease manifestation of autoimmune pancreatitis. IgG4 tissue and serum values, with a mean (±95% CI) of 31.3 ± 9.5 mg/dL, respectively, are incorporated into the suggested criteria. The distinct set of manifestations identified in this systematic review, their potential mechanism, and the proposed diagnostic considerations, while requiring further validation in prospective studies, highlight the need to consider that IgG4-related skin disease is a pathophysiologically distinct entity that currently defies definitive nosology.

Commercial support: None identified.

2747
Intravenous immunoglobulin for treatment of refractory cutaneous manifestations of dermatomyositis

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Background: Dermatomyositis (DM) is an autoimmune conditions characterized by muscle disease and cutaneous findings. Cutaneous DM manifestations are often more refractory to treatment than myositis.

Objective: Investigate the effects of intravenous immunoglobulin (IVIG) on refractory cutaneous DM.

Methods: Retrospective review of 50 DM cases treated with IVIG for refractory cutaneous DM findings.

Results: IVIG was initiated specifically for refractory cutaneous disease in 16 of 50 (32%) and for treatment of refractory muscle and skin disease in 54 of 50 patients (68%). Twenty-eight of 50 patients were evaluated by both dermatologists and rheumatologists whereas 21 were seen only by rheumatologists and 1 only by dermatologists. Overall, treatment resulted in improved skin in 40 of 50 patients (80%), 14 patients with improved skin and 26 patients with improved muscle and skin. Notably, 14 of 16 patients (88%) treated specifically for refractory cutaneous disease showed improvement with IVIG. Similarly, all (5 of 5) patients with amyopathic DM improved with IVIG. Heliotrope rash was the most common skin finding at time of IVIG initiation (34 of 50 patients, 68%), followed by Gottron papules (34 patients, 68%) and ulcerations (29 patients, 58%). On average, cutaneous improvement was observed after 1.77 ± 1.31 cycles of IVIG (range 1 to 6). In comparison, patients who did not show cutaneous improvement with IVIG required 5.1 ± 4.1 cycles (range 1 to 12) prior to stopping the treatment. A statistically significant association was found between age, smoking status, subtype of DM, reason for IVIG initiation, diagnosis from DM to IVIG initiation, specific skin manifestations, intravenous immunoglobulin dose, medications prior to IVIG, or other factors and IVIG findings and treatment response. Intriguingly, female sex was associated with increased likelihood of cutaneous improvement with IVIG (P = .04) in univariate analysis, but no statistically significant association was found in multivariable analysis.

Conclusion: IVIG may be an effective treatment for DM with refractory cutaneous disease. Prospective studies to investigate use of IVIG for refractory cutaneous DM are required to confirm these results.

Commercial support: None identified.

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2941
Keloildal scleoderma: Case report and review
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Objective: To contribute a rare case of keloidal scleoderma and provide an analysis of similar rare cases.

Method: Case description of a patient presenting to a university-based dermatology practice and literature review of previously reported cases using keywords, which have been used to describe similar clinical presentations, including keloidal morphea, keloidal scleoderma, nodular morphea, and nodular scleoderma. All cases where the clinical presentation was confirmed by a histopathologic diagnosis were included, with 43 patients from 29 different publications.

Results: A 41 yearold African American woman presented with dark brown, indurated, exophytic nodules over the chest and breasts along with smaller hyperpigmented plaques scattered over the abdomen, with concomitant scleodactyly. The clinical, laboratory and pathological findings were consistent with a diagnosis of keloidal scleoderma. The patient was treated with metrotrexate (17.5 mg/week) resulting in reduced firmness of her plaques and no new lesions. In our case series review, the majority of patients were African American and female. 91% of cases had nodular lesions with distribution on the trunk. The majority of patients presented with scleodactyly as well as extracutaneous manifestations of systemic scleoderma. Pulmonary involvement was reported in 28% and renal involvement in 5%. Ten percent of cases noted an external trigger prior to the onset of keloidal plaques, including infection, D-penicillamine, tetanus vaccine, and environmental exposures. Laboratory values demonstrated the majority of patients were ANA positive (65%) and only 10% demonstrated anti-SCL-70 positivity.

Conclusion: Keloidal scleoderma is a rare presentation, which can often be clinically confused with keloid and scar formation. Current treatments for cutaneous and systemic scleodermic include topical or intralesional corticosteroids, a topical vitamin D analog, topical tacrolimus or imiquimod, UV light therapy, metotrexate, and systemic steroids. Due to this being a rare variant, our knowledge of treatment options and efficacy is limited. Methotrexate could be considered as an initial treatment option for patients with progressive keloidal scleoderma.

Commercial support: None identified.

2973
Sweet syndrome–like neutrophilic dermatoses revealing underlying lupus erythematosus: A rare presentation
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Introduction: Sweet syndrome (SS), a prototypic neutrophilic dermatosis, is characterized by an abrupt onset of tender erythematous papules, plaques or nodules, often along with fever, myalgias and general malaise. Although the syndrome frequently presents in idiopathic fashion, it can be induced by medications or has been found to be associated with malignancies particularly hematological and myelodysplastic disorders. There are only few case reports and series of its association with autoimmune disorders like lupus erythematosus (LE) appearing either as an initial manifestation or occurring during its course.

Report of a case: A 38-year-old woman presented with cutaneous manifestations resembling SS predominantly over photoexposed areas and upon further investigations, was diagnosed as a case of LE. Histopathologic examination of her skin biopsy revealed neutrophilic infiltration in the dermis and simultaneously, she fulfilled 5 out of the 11 American College for Rheumatology (ACR) criteria for the diagnoses of Systemic Lupus Erythematosus (SLE) which included photosensitivity, oral ulcerations, proteinuria, positive antinuclear antibodies (ANA) and anti—double stranded DNA (dsDNA) antibodies, thereby, confirming the final diagnosis of SS-like neutrophilic dermatoses having underlying LE. An additional finding of localization of erythematous plaques exclusively over photoexposed areas, which prompted us for assessment of LE, was also found in this case.

Conclusion: The possibility of underlying LE should be considered in a patient presenting with SS-like lesions over photoexposed areas after excluding other causes of photosensitivity, particularly drugs. As histopathologic appearance of neutrophilic infiltrate during LE has been considered as an indicator of systemic disease, it requires prompt and robust management to improve the prognosis. It is therefore prudent to do periodical histopathologic assessments to ascertain whether these cases exhibit histopathologic changes of LE in later phase of disease or they are just a different histopathologic variant of LE which do not show characteristic changes but may be an indicator of systemic involvement right from the beginning, prompting early and aggressive management.

Commercial support: None identified.

2842
Linear childhood cutaneous lupus erythematosus following Blaschko’s lines
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A 15-year-old girl developed an acute asymptomatic hyperpigmented linear scaly rash on her right flank. It extended from the midline of her abdomen to the midline of her back on the right side in a curvy linear distribution similar to Blaschko’s lines. She had a known history of chronic discoid lupus erythematosus (CDLE) affecting her face and ears for more than a year and was receiving treatment with hydroxychloroquine 200mg daily and beclomethasone propionate ointment topically. Investigations revealed a positive smooth muscle antibody at a low titer of 1:180 and a weakly positive ANCA with a perinuclear pattern. Histopathology shows some epidermal atrophy with a diffuse interface inflammation with multiple collagen bodies and a perivascular inflammatory cell infiltrate composed of lymphocytes and histiocytes. Direct immunofluorescence shows a strong linear staining along the basement membrane. A diagnosis of linear cutaneous lupus erythematosus (LCLE) following Blaschko’s lines was made. LCLE is a rare subtype of cutaneous lupus erythematosus. There are more than a dozen cases reported in the literature and the age of onset is usually in childhood. There is a female predominance, without ethnic preference. It is commonly on the face, however cases of LCLE on extremities have been reported. ANA is usually negative or weakly positive and histological findings are compatible with DLE. Neither photosensitivity nor progression to SLE was observed in any of these cases. It is assumed that affected keratinocyte cell lines have acquired a somatic mutation, which makes them more susceptible to autoimmune reaction. Whether DLE emerges after this antigenic alteration alone or requires an acquired a somatic mutation, which makes them more susceptible to autoimmune disease, it requires prompt and robust management to improve the prognosis. It is therefore prudent to do periodical histopathologic assessments to ascertain whether these cases exhibit histopathologic changes of LE in later phase of disease or they are just a different histopathologic variant of LE which do not show characteristic changes but may be an indicator of systemic involvement right from the beginning, prompting early and aggressive management.

Commercial support: None identified.

3837
Treatment of localized morphea in face and body using carboxytherapy, case report
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Introduction: Localized body morphea and en-Coup de Sabre are dermatological disorders resistant to most lines of treatment. They markedly affect the quality of life of patients negatively. Carboxytherapy is used commonly in cosmetic procedures like cellulite treatment and periorbital hyperpigmentation with variable degrees of success. It is also used in in treating localized patches of psoriasis.

Aim of the study: Carboxytherapy was used to treat localized body morphea and en-Coup de Sabre with adjacent cicatrical alopecia.

Patients and methods: Two patients with localized morphea and one patient with en-Coup de Sabre with adjacent patch of cicatrical alopecia of the scalp were treated with localized injection of carboxytherapy. Injections were done intradermally and subcutaneously. Each patient received ten sessions weekly apart. Clinical, histopathologic and immunohistochemical evaluation was done by blind dermatopathologist.

Results: Clinical improvement was markedly noticed proved by patient satisfactory scale. Histopathologic and immunohistochemical studies before and after treatment showed remarkable improvement in dermal components.

Conclusion: Carboxytherapy is an effective method to improve skin texture, volume and patient satisfaction in localized morphea.

Commercial support: None identified.
A novel in vivo bioassay of topical drug potency and stability: An effective correlate to clinical SCORAD in atopic dermatitis

Dermatologist, Atopic

A novel, topical nonsteroidal acetylsaccharide cream demonstrates comparable effects to the topical lower midpotency steroid desonide cream on adult atopic dermatitis/eczema

3296

Adults with atopic dermatitis have a large burden of sleep disturbance and fatigue

3007

A novel, topical nonsteroidal acetylsaccharide cream demonstrates comparable effects to the topical lower midpotency steroid desonide cream on adult atopic dermatitis/eczema

3854

A novel in vivo bioassay of topical drug potency and stability: An effective correlate to clinical SCORAD in atopic dermatitis

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Adults with atopic dermatitis have high rates of depression in the United States

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Background: Atopic dermatitis (AD) is associated with stigma, poorer health outcomes, increased health care utilization and poor quality of life. Psychological distress is a comorbidity often linked to AD. However, the prevalence of depression in adults with AD is unknown.

Objective: To determine the prevalence of depression in US adults with AD.

Methods: Two cross-sectional US population-based studies, including 5555 adults from 2005-2006 NHANES and 5465 adults from NHIS 2012. Respondents in NHANES were asked questions from the Patient Health Questionnaire (PHQ). A validated self-reported assessment based on the nine DSM-IV symptoms for depression. NHIS asked about history of healthcare diagnosed depression. Multivariate models controlling for age, gender, race/ethnicity, education, household income, history of asthma and hay fever were constructed.

Results: In NHANES, 31.0% of adults with AD reported at least one symptom of depression. The prevalence of depression by SiGECAPS criteria was higher in adults with AD compared to controls without eczema (17.5% vs 10.5%, adjusted odds ratio [aOR] 95% confidence interval [CI]: 1.89 [1.28-2.77]). Adults with AD also had higher odds of moderate (2.24 [1.20-4.17]) and severe (5.64 [2.88-11.07]) depression based on PHQ9 score. In NHIS, adults with AD compared with no AD had higher odds of ever being diagnosed with depression (26.9% vs 13.1%, adjusted OR [95% CI]: 2.29 [2.02-2.61]) and having depression in the past year (2.31 [2.00-2.66]).

Conclusions: Approximately 1 in 5 adults with AD report recent depressive symptoms and 1 in 5 adults with AD meet diagnostic criteria for major depressive disorder. Greater surveillance and treatment of mental health disturbances in adults with AD is warranted.

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Assessing in vivo impact of cleansers on skin barrier quality

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Background and objective: Maintaining a healthy skin barrier is vital for skin condition, appearance, and to limit water and low molecular weight linear, and to limit water and low molecular weight linear.

Near-infrared water loss (TEWL) and erythema from industry standardized controlled application in vivo mildness tests. The objective of this research was to determine if the methodology can be further extended to assess the quality of the stratum corneum (SC) from in vivo controlled application studies under normal use conditions.

Methods: 67 healthy male and female subjects ages 18-65 provided informed consent to participate in an IRB-approved 13-day controlled arm wash test, followed by 7 days of regression. Subject enrollment was balanced between gender and age groups (18-34 yrs, 35-49 yrs, 50-65yrs). D-squame samples were collected by 5 mm x 5 mm tape strips. Additional assessments included visual assessment of dryness and erythema as well as transdermal water loss (TEWL) at baseline, after product application, and after regression. The study included a range of body wash products including some containing occlusive moisturizers.

Results: CIM scores showed good correlation to clinical evaluation of TEWL and erythema. In addition, by calculating CIM by layer some products showed much greater damage at the surface layer, which then propagated down to deeper layers in a progressive manner. Importantly, these were seen in systems with high level of occlusive moisturizers, the presence of which often masks the underlying damage to the SC. In contrast, systems with milder surfactants were found to be mild to both the surface and deeper layers. The product differences were evident in all 3 age groups and both male and female subjects.

Conclusions: Corneosurfametry analysis of d-squame samples from sequential tape-stripping after typical controlled application wash off studies can provide information on the quality of different layers of the corneum. This is particularly useful when systems contain occlusive moisturizers that have a tendency to mask underlying damage when assessed by conventional measures such as TEWL and visual dryness. Results show that cleansers with milder surfactants can prevent damage to both surface and deeper layers.

Supported 100% by Unilever R&D.

Atopic dermatitis and race: Investigating correlations in children

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Background: While atopic dermatitis (AD) affects all children with features of pruritus and chronic, relapsing course, some clinical manifestations do vary. However, there is a lack of data on the distribution and characteristics of AD across different skin types and ethnic backgrounds, particularly in minority populations. The current study was designed to systematically examine these features.

Methods: Subjects age ≤10 years were recruited, with a focus on enrolling patients with active inflammatory lesions and minimal to no prior/recent treatment. Ethnicity, race, skin type, medical and family history, disease severity, aggravating factors, and life quality index were recorded. A systematic assessment examined lesional morphology, location, and distribution, along with presence of secondary findings such as Hanifin and Rajka’s major and minor diagnostic criteria.

Results: This is an interim assessment of the first 55 subjects enrolled (median age 2.1 years). They included 18 Hispanic whites (HW), 12 non-Hispanic whites (W), 11 Asians (A), 5 Pacific Islanders (PI), 5 non-Hispanic Blacks (B), 4 Hispanic Blacks (HB), 3 Asian/whites (AW), and 1 child of multiple racial backgrounds. Median Rajka Langeland score was 6.0. Most cases were chronic and persistent (61.8%) or worsening (36.9%), as compared to intermittent. Among comorbidities, allergic rhinitis was most common in all races. Food allergies were also common, except in PI and B. The weather (85.5%) and skin irritants (45.5%) were the most prevalent aggravating factors. PI had the highest median % body surface area involved (38%) and duration, and the lowest visual dryness, erythema and transdermal water loss. While AD of A and HW was most affected by other nonskin infections. The face was the most common site of involvement for all subjects, with less erythema noted in darker skin types. Orbital darkening was common throughout, while infraorbital folds were less common in A and PI. White dermatoglyphics was only noted in W and “dirty neck” only in PI (67%). Popular lesions tended to be below the ear, above the knee, and below the elbow. Peri-orificial accentuation and postinflammatory pigmentary changes were mainly in darker skin types.

Conclusion: This investigation confirms some AD clinical features as universal, while others are predilection for particular skin types and racial and ethnic backgrounds. Recognizing shared and unique features of AD may also aid/implement management.
Atopic dermatitis proresolving mediators: In vitro modulation
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Background: Resolvins, maresins and lipoxins are lipid mediators issued from essential polyunsaturated fatty acids that are part of antiinflammatory signals in atopic dermatitis (AD).

Objectives: To assess the activity of an aminopropanediol amide on resolvins, maresins and lipoxins in an in vitro model of inflammation.

Methods: A component of borage oil was modified by biotechnology in order to obtain an aminopropanediol amide compound (AAC) structurally related to a polyunsaturated fatty acid. In cocultures of normal human dendritic cells and keratinocytes, inflammatory mediators were induced by the addition of PMA and calcium ionophore A23187. The AAC effects on the expression of proinflammatory cytokines (IL-1β, IL-6, IL-8, PGE2) and on antiinflammatory mediators (resolvin D2, maresin 1 and lipoxins A4/B4) were evaluated on antiinflammatory mediators (resolvin D2, maresin 1 and lipoxins A4/B4) were significantly upregulated.

Results: AAC significantly downregulated the expression of IL-1β, IL-6, IL-8 and PGE2 induced by the PMA and the calcium ionophore A23187 in the cocultured cells. The expression of resolvin D2, maresin 1 and lipoxins A4/B4 were significantly upregulated.

Conclusions: In this in vitro cocultured human dendritic cells and keratinocytes stimulated by proinflammatory actives, amniopropenediol amide upregulated proresolving lipid mediators resolvin D2, maresin 1 and lipoxins A4/B4.

Study funded by Laboratoires Dermatologiques d’Uriage

3089
Burden of atopic dermatitis: A claims-based analysis
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The burden of atopic dermatitis (AD), a chronic, relapsing skin disease with an onset that usually occurs during childhood, has not been well characterized in adults. This retrospective analysis used deidentified administrative medical and pharmacy claims from Truven Health Analytics MarketScan commercial and Medicare databases for 2009 to characterize comorbidity and direct medical costs associated with AD. These databases are representative of the US population, HIPAA compliant, and include longitudinal records of inpatient and outpatient services, long-term care, and prescription drug claims covered under several health benefit plans. Inclusion criteria were age ≥18 years; ≥2 AD claims (ICD-9 code 691.8) during 2009 (first claim = index date); and ≥1 year continuous enrollment postindex. Adults with AD were matched (age and gender) in a 1:3 ratio to controls without AD. AD patients were further stratified by severity using treatment as surrogate: topical agents alone vs systemic agents or phototherapy. All-cause direct costs were estimated using paid claims for outpatient, ambulatory, inpatient, emergency room visits, and outpatient pharmacy services. 16,403 AD patients were matched to 49,209 controls (mean age 48 years; 59% male; all geographic regions represented). Significantly more AD patients vs controls had skin infections (7.2% vs 28.8%, asthma (10.6% vs 5.9%), depression (7.9% vs 5.1%), and prescription drug claims covered under several health benefit plans. Inclusion criteria were age ≥18 years; ≥2 AD claims (ICD-9 code 691.8) during 2009 (first claim = index date); and ≥1 year continuous enrollment postindex. Adults with AD were matched (age and gender) in a 1:3 ratio to controls without AD. AD patients were further stratified by severity using treatment as surrogate: topical agents alone vs systemic agents or phototherapy. 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All-cause direct costs were estimated using paid claims for outpatient, ambulatory, inpatient, emergency room visits, and outpatient pharmacy services. 16,403 AD patients were matched to 49,209 controls (mean age 48 years; 59% male; all geographic regions represented).
Introduction: Educational interventions in atopic dermatitis (AD) such as live sessions and videos may lead to improvements in disease severity, quality of life, and treatment adherence. Topical steroid application causes anxiety for patients and providers due to nonadherence and fear of side effects. We constructed and evaluated the efficacy of a video on proper topical steroid use for AD.

Methods: A high-definition video on topical steroid use for AD was created with the National Eczema Association’s (NEA) Scientific Advisory Board. Content included application method, side effects, formulations, and steroid mechanisms. The video was placed on NEA websites and advertised to eczema patients and their caretakers. Viewers completed pre- and postvideo surveys on basic eczema knowledge, topical steroid video content, and demographics. Pre- and postvideo knowledge and satisfaction were assessed using two-sample Z tests.

Results: 412 viewers completed the survey; 71% were female and 76% had eczema. 73% were between ages 25-54 and most had post graduate education. 52% had “no knowledge” of topical steroid therapy, 58% were “somewhat knowledgeable” and 8% were “very knowledgeable” at baseline. Topical steroid therapy knowledge significantly improved after the video for questions of “steroids should be applied to rashy and normal appearing skin?” and “applied/topical steroids have fewer side effects than steroids taken by mouth”. Nonsignificant improvement was noted regarding “steroids reduce itch and redness in eczema,” “steroid should be used indefinitely for eczema,” and “steroids are only available in cream and ointment form.” Subgroup analyses based on having eczema, having a healthcare professional, caring for someone with eczema, gender, age, knowledge of eczema, and education did not show a significant trends. Pre-video, 18% were “not comfortable,” 57% were “somewhat comfortable,” and 24% were “very comfortable.” Post-video, the proportions changed to 5%, 40%, and 54% respectively. 93% would recommend the video to others; 86% wished for another video.

Discussion: Our study shows the positive impact of online video education on patient comfort and knowledge of topical steroid use for AD. The video created a significant difference in patient comfort with topical steroids. Content viewing may be related to the time spent on each topic. Similar videos targeting young adults for further AD educational initiatives are warranted.

Commercial support: None identified.

Crisaborole topical ointment, 2%

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Objective: To evaluate the efficacy and safety of crisaborole topical ointment 2% in children and adults with mild to moderate atopic dermatitis (AD) in 2 phase 3 clinical studies (NCT02118766, NCT02118792).

Background: AD is an inflammatory skin disease affecting children and adults, and up to 90% of patients present with mild to moderate AD. Crisaborole topical ointment 2% (Anacor Pharmaceuticals, Palo Alto, CA) is an investigational nonsteroidal, topical, antiinflammatory inhibitor of phosphodiesterase 4.

Method: Patients 2 years old with mild to moderate AD affecting ≥5% of body surface area (BSA) were enrolled in 2 multicenter, double-blind, vehicle (V)-controlled studies of identical design. Patients were randomized 1:1:2 to receive crisaborole or V twice daily for 28 days and evaluated on days 8, 15, 22, and 29. The primary outcome was defined as success in the Investigator’s Global Assessment (IGA) as “clear/0” or “almost clear/1” with ≥2% improvement from baseline at day 29. Secondary endpoints measured the percentage of patients achieving “clear/0” or “almost clear/1” on IGA and time to success in IGA.

Results: Studies 1 and 2 enrolled 505:256 and 513:250 patients in crisaborole:V, respectively. There were no significant differences in key baseline characteristics across all groups/studies (pooled data: mean age 12 years, mean BSA 18%, IGA 60% “moderate” and 40% “mild/2”). More patients achieved success in IGA with crisaborole compared to V at day 29 (Study 1: 52.8% vs 25.4%, P=0.008; Study 2: 51.4% vs 18.0%, P<0.001), with a greater percentage of “clear/0” or “almost clear/1” IGA scores (51.7% vs 40.6%, P=0.005; 48.5 vs 29.7%, P<0.001). Patients achieved higher success in IGA earlier when treated with crisaborole than V (P<0.001). Treatment-related adverse events (AE) were mostly mild and included application site pain (pooled data, crisaborole vs V: 4.4% vs 1.2%) and upper respiratory tract infections (3.0% vs 3.0%). Discontinuation rates due to AEs were 1.2% for both crisaborole and V.

Conclusion: Crisaborole topical ointment 2% demonstrated favorable efficacy and safety in patients as young as 2 years old with mild to moderate AD in 2 large Phase 3 studies. Crisaborole may represent a safe and efficacious treatment for AD in children and adults.

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Current trends in the use of disease severity and quality of life measures for atopic dermatitis: A systematic review

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Background: Over the past two decades, there has been a proliferation of available instruments for quantifying atopic dermatitis (AD) outcomes. Behl and Armstrong identified by systematic review a total of 14 quality of life (QoL) indices and 20 disease severity scales used in 382 randomized controlled trials (RCTs) on AD treatment between 1985 and July 2010. To our knowledge, no systematic review has assessed trends in the use of outcome measures by AD studies published since July 2010.

Objective: The purpose of this study was to systematically review the use of QoL and disease severity outcomes instruments in RCTs on AD between July 2010 and July 2015.

Methods: Studies were identified through Scopus and Ovid MEDLINE using variations of the terms “atopic dermatitis,” “randomized controlled trial,” “quality of life,” and “severity of illness index.” A total of 540 nonduplicate records were identified. Studies were excluded if they were published prior to July 2010 (n=53), not RCTs (n=195), not on AD (n=58), not on humans (n=39), not in English (n=16), and if they did not report QoL and/or disease severity outcome measures (n=43).

Results: All of the 136 included studies assessed disease severity, while only 46 studies reported QoL outcomes. Sixty-seven included studies used more than one disease severity scale, and fifteen studies used more than one QoL measure. A total of 61 disease severity scales and 29 QoL measures were identified. The most frequently used disease severity scale was the Scoring Atopic Dermatitis tool (n=79, 58%), followed by the Visual Analog Scale for pruritus (n=50, 22%) and the Investigator’s Global Assessment (n=50, 22%). The most common QoL instrument, the Dermatology Life Quality Index, was used in 20 RCTs (15%), whereas the next most common measure, the Infant’s Dermatology Quality of Life Index, was used in only eight RCTs (6%). Forty-four of the identified disease severity scales and 25 identified QoL instruments were used only once.

Conclusion: The number of different QoL and disease severity scales used in AD studies has grown since 2010. This systematic review highlights the increasing heterogeneity of reported outcomes in AD research. Knowledge of such trends in utilized outcome instruments offers insight into the field’s quality of research evidence.

Commercial support: None identified.
2903

Effect of Cetaphil RestoraDerm skin care regimen on sleep quality in patients with atopic dermatitis: A pilot study

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Pediatric atopic dermatitis (AD) is a chronic skin condition characterized by xerosis, pruritic outbreaks and eczematous lesions, which can lead to sleep disturbances that affect quality of life and family dynamics. A pilot study was conducted to evaluate the effect of a skin care regimen, specifically formulated for AD (Cetaphil RestoraDerm Body Wash [CRW] and Moisturizer [CRM]), on quality of sleep and signs/symptoms of AD. Pediatric subjects with AD and their caregivers wore an actigraphy device for 5 weeks to assess sleep patterns. Baseline sleep patterns in the actigraphy recordings were measured for a full week. On day 1,8, and 25, actigraphy data indicated a trend toward improved sleep quality in pediatric subjects. Interestingly, caregiver data did not follow the same trend, and tended to slightly decrease in sleep quality. Pediatric skin dryness and pruritus was improved at day 23, relative to baseline. Although sleep patterns did not show any strong trends, DFI responses indicated improved quality of life at the end of the study. The results of this pilot study suggest that a skin care regimen of CRW and CRM may improve sleep quality in pediatric AD subjects and improve family-related dynamics, however further studies are necessary to validate this trend.

Supported by Galderma Laboratories, LP.

2875

High-resolution actigraphy and advanced signal processing objectively quantifies nocturnal scratching events in patients with atopic dermatitis

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Atopic dermatitis is a chronic inflammatory skin condition affecting both children and adults and is associated with pruritus. A method for objectively quantifying nocturnal scratching events could aid in the development of therapies for atopic dermatitis and other pruritic disorders. Objective: To assess the accuracy of an objective, noninvasive method to quantify nocturnal scratching events in patients with atopic dermatitis using high-resolution actigraphy.

Methods: Nine adults who fulfilled Hanifin/Rajka diagnostic criteria for atopic dermatitis, and three healthy adults were enrolled in the study. High-resolution actigraphy devices were placed on both wrists and worn for one night at home and during one night in a sleep lab that included video recording. Time, duration, and intensity of scratching events were recorded by a trained medical observer watching the video. The subjects also completed scratching questionnaires in the morning. The actigraphy devices captured three-dimensional acceleration data 100 times per second. A combined neural networks and features analysis algorithm was used to distinguish scratching episodes from all other movements using data acquired by the device. Algorithm-detected scratching data was then compared to scratching data obtained visually from video recordings.

Results: Total nighttime scratching events detected by the wrist-worn actigraphy device data had a correlation of 0.96 (P = 0.01) when compared to total nighttime scratching events determined by scoring the videos. Among the subjective assessments, the visual analog scale provided the closest correlation with the video scoring but it was not very strong (r = 0.77, P < 0.01). The number of scratching events during the home night also correlated well with the number measured during the sleep lab night (r = 0.90, P < 0.01). Conclusion: In this initial study, nocturnal scratching determined by high-resolution and advanced signal processing strongly correlated with scratching episodes identified visually. Additional data is needed to confirm the validity of this approach. The use of actigraphy use in a home setting makes it a potentially useful tool in the management of atopic dermatitis, and in clinical trials to evaluate new therapies for atopic dermatitis.

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3690

IL-4 and IL-13 inhibition in atopic dermatitis, a review

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Atopic dermatitis (AD) is a chronic, prevalent, multifactorial condition that affects infants, children, and adults. Beyond topical therapy, a variety of systemic agents such as steroids, methotrexate, cyclosporine, azathioprine, mycophenolic acid, and other agents are utilized to treat moderate to severe AD. However, these agents are associated with potential side effects, the most common of which is infection. There is an unmet need for a safer, long-term systemic agent to adequately control moderate to severe AD. The role of the Th2 cytokines, IL-4 and IL-13 in AD has led to the development of biologic agents to treat AD. The aim of this poster is to review the role of IL-4 and IL-13 in the pathogenesis of AD and to discuss some of the clinical trial data that target and inhibit IL-4 and IL-13 to positively alter the course and outcome of AD.

Commercial support: None identified.

2818

Impact of atopic dermatitis on patient self-reported quality of life, productivity loss, and activity impairment: An analysis using the National Health and Wellness Survey

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Atopic dermatitis (AD) is an immune-mediated inflammatory skin disease associated with chronic, severe itch and poor quality of life (QoL). This study characterized the self-reported impact of AD on QoL, work productivity, and daily activities in an adult US population. Data were obtained from the 2013 US National Health and Wellness Survey (NHWS), a large general population survey. Adults (≥18 years) who self-reported a diagnosis of AD and experienced symptoms in the past 12 months were propensity-score matched (1:2) to non-AD controls based on age, gender, ethnicity, education, income, insurance status, alcohol consumption, exercise behavior, and Charlson Comorbidity Index (CCI). QoL (past 4 weeks) and work productivity/daily activities (past 7 days) were evaluated using the SF-6 b Short Form Health Survey (SF-6v2), and the Work Productivity and Activity Impairment (WPAI) questionnaire, respectively. The SF-6v2 was used to derive SF-6H health utility scores. Mood and sleep disorders were compared as they are not included in CCI. Outcomes were also stratified by self-reported AD severity (mild, moderate/severe). Chi-square and t-tests compared differences between AD and non-AD patients, and between AD severity strata. A total of 349 AD patients were matched to 698 controls. Overall mean age was 46.1 yrs, 68.3% female, and 66.8% white. Relative to controls, AD patients reported reduced QoL on the SF-6v2 Physical Component (PCS: 47.6 vs 49.5; P = 0.04) and Mental Component (44.5 vs 48.0; P < 0.01) summary scores; SF-6H health utility scores were significantly lower in AD patients (0.67 vs 0.72; P < 0.01). Employed AD patients (n = 195) reported significantly greater overall percent impairment at work than employed controls (n = 408; 21.1% vs 16.1%; P = 0.027) and all AD patients reported greater impairment in daily activities (53.6% vs 25.2%; P < 0.001). Relative to controls, significantly higher proportions of AD patients self-reported a diagnosis of depression (31.2% vs 17.5%), anxiety (29.8% vs 16.1%), and sleep disorders (33.2% vs 19.2%); all P < 0.01. Within the AD cohort, patients who reported moderate/severe disease reported significantly worse PCS and PF scores and greater activity impairment relative to mild AD; all P < 0.05. In summary, AD patients reported worse QoL and greater impairment in work and daily activities compared with matched non-AD patients; these burdens were generally greater in patients with moderate/severe AD relative to mild disease.

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Improving skin barrier quality with a cosmetic lotion alleviates dry skin–related itch

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Background and objectives: Both environmental factors such as exposure to extreme weather conditions, UV, and low relative humidity as well as consumer habits such as excessive cleansing with harsh surfactants can damage to the skin's outermost layer, the stratum corneum (SC). These same factors can also lead to pruritus (itch) suggesting a causal link between the condition of the skin's SC barrier and the perception of itch. Here we tested the hypothesis that improving SC quality with a high humectant lotion would lead to decreased perception of itch in consumers with cosmetic dry skin.

Methods: A four-week JAB-approved home-use study was conducted on white women who were self-perceived "itchers" with moderately dry (cosmetic) skin on their lower legs. Subjects were categorized as an "itcher" if they reported the intensity of "itchiness" on their lower legs as 5 or higher on a 1–10 scale, three times prior to inclusion in the study and had at least two episodes of itching over the two days prior to the start of the study. Subjects were divided into two treatment groups, one group receiving a mild cleansing bar with no moisturizer (N = 28) and the second group receiving the same cleansing bar with a high glycerin moisturizer (N = 31). All subjects were asked to use the cleansing bar and moisturizer (if provided) at least once per day. Skin barrier condition was assessed clinically by expert visual assessment and instrumental measurements of skin hydration, transdermal water loss, pH, roughness and redness were taken. Additionally, subjects completed questionnaires and diaries during the study period.

Results: The use of high glycerin moisturizer for four weeks significantly improved overall skin hydration, pH, surface appearance and function, as expected. Furthermore, the perception of itch intensity, reported number of itch episodes, and length of time each itch episode lasted, were reduced in the group receiving high glycerin moisturizer. The group of “itchers” with no moisturizer use showed little change from baseline for all measures.

Conclusions: These data clearly demonstrate that topical use of a cosmetic lotion containing high levels of humectants can both improve the quality of the skin barrier and alleviate dry skin-related itch, suggesting a causal relationship between SC quality and pruritus.

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Polymeric cleansing: Advanced gentle cleansing technologies for enhanced skin compatibility to improve patient outcomes and satisfaction

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Surfactants are the principal ingredients in cleansing products, which provide the benefit of removing germs, dirt, sebum, and other undesirable substances from the skin's surface. However, these molecules can also penetrate into the skin barrier, disrupting its normal structure and function, leading to inflammation, dryness, and irritation. Therefore a key approach to gentler cleansing is to minimize surfactant interaction with the skin barrier. The development of polymeric cleansing technologies has provided a means to improve mildness of cleansing products without sacrificing performance attributes desired by patients. Due to their large molecular size, polymers can be used to minimize surfactant penetration into skin and keep surfactants at the skin surface where they can still provide the desirable benefits of cleansing and foaming. Two breakthrough polymer technologies, hydrophilically-modified polymer (HMP) and NATRASURF, a starch-based polymeric surfactant, have been developed to minimize irritation potential while providing superior cleansing performance. The first, HMP, effectively manages the concentration of free surfactant species that are potential skin irritants via a polymer-surfactant association mechanism. For the NATRASURF the polymer is a surfactant and achieves its extraordinary mildness via a hydrodynamic size exclusion mechanism, yet it still delivers the benefits of traditional surfactants. This polymer was developed using green chemistry principles to ensure minimal environmental impact throughout its lifecycle. Surfactant-based cleansing systems containing HMP and NATRASURF were prepared and evaluated in a series of in vitro tests and in vivo clinical studies on human subjects to assess the effects of each technology on measures of skin health. The polymer-based cleansing systems demonstrate less irritation potential than traditional surfactant systems due to the lower concentrations of free surfactant species, decreased surfactant penetration into the stratum corneum, and reduced propensity for inflammatory response. Polymeric cleansing technology enables the development of new cleansing formulations to improve mildness and skin health without sacrificing the performance associated with traditional cleansers. These technologies offer new and attractive cleansing options for individuals with sensitive or compromised skin.

Supported by Johnson & Johnson Consumer Inc
Treatment of atopic dermatitis in the United States: Analysis of data from the National Ambulatory Medical Care Survey

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Background: Atopic dermatitis (AD) affects both adult and pediatric patients, and multiple practitioners encounter and manage AD. However, differences with regard to the treatment of AD between specialties are not well characterized.

Objective: The primary objective of this study was to determine if there is a difference between dermatologists and nondermatologist specialists with regard to treatment strategies for AD and to describe those differences.

Methods: Data from the 1993-2010 National Ambulatory Medical Care (NAMCS) and National Hospital Ambulatory Care (NHAMCS) Surveys were used to characterize outpatient visits made for AD. Differences in demographic, geographic and seasonal characteristics were obtained and compared. Additionally, the frequency of medications prescribed at dermatologist visits were compared to other specialties.

Results: An estimated 5.7 million visits for AD were made to outpatient offices and hospital departments from 1993 to 2010. The rates per capita of visits for atopic dermatitis were similar when evaluated by gender and season. However, whites were almost 50% less likely than African Americans or individuals of other minority races to have visits for AD. Topical corticosteroids (TCS) were mentioned at 52% of visits, and dermatologists were more likely than nondermatologists to prescribe TCS, emollients, and topical calcineurin inhibitors.

Limitations: Limitations of this study include no direct measure of AD severity and the potential for selection bias.

Conclusion: Dermatologists were more likely to recommend TCS, emollients, and topical calcineurin inhibitors for the treatment of AD. Dermatologists were also more likely to prescribe higher potency TCS in comparison to nondermatology specialties, and these differences may ultimately affect patient care.

Commercial support: None identified.

A case of lichen planus in a 32-year-old Filipino male

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Introduction: Lichen planus is a rare, papulosquamous, inflammatory disease that may involve the skin, mucous membrane, nails and hair. Overall prevalence in the general population is said to be 1%. Diagnosis is based on the clinical appearance of the lesion and through histopathology. Dermoscopy is a noninvasive method that allows proper evaluation of colors and microstructures of the lesion, most commonly used for skin tumors but its applicability extends also to the field of inflammatory skin disorders.

Case summary: B.B., a 32-year-old male, married, from Quezon City sought consult due to an eight week history of erythematous papules with accompanying pruritus over both upper extremities. Lesions were noted to increase in number and size while pruritus was also noted to increase in intensity. Change in color from erythematous to violaceous papules were observed. Patient self-medicating by taking oral antibiotics and topical antifungals but provided no improvement, hence consult in our institution. Dermoscopy findings showed fine, pearly whitish, reticulated networks also known as Wickham striae. Due to dermoscopic findings, initial impression was lichen planus. Patient was then started with clobetasol propionate ointment, antihistamines and emollients at once. He noted improvement of some lesions and was also less pruritic, while still awaiting laboratory and skin punch biopsy results. Histopathology results was consistent with lichen planus.

Conclusion: Dermoscopy is useful in assisting in the evaluation of lesions. This equipment gives a more accurate assessment than the clinical evaluation by the naked eye due to the identification of specific diagnostic patterns. Hence, as clinicians we may give a prompt diagnosis, avoid delay and may start proper treatment at once which is beneficial for the patient.

Commercial support: None identified.
and the wound area was 1-2 cm² for 28%, 3-10 cm² for 44% and
therapy, laser, peeling
by external factors (fissures, burns
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emulsion containing the association the association of panthenol, madecassoside
to demonstrate on a large cohort the tolerance and satisfaction afford by a healing
practice allowed to better know the management of epidermal wound healing and
sensations, pain or pruritus) were significantly reduced after treatment.
(erythema, desquamation, cracks) and subjective symptoms (burning and tingling
during 16 days. The tolerance was “excellent” to “good” for 97% of the patients and
madecassoside and copper/zinc/manganese salts was in average applied twice a day
presented an erythema. The emulsion containing the association of panthenol,
skin (cheilitis, rough patches...). for skin trauma caused by external factors (fissures, burns...) or after dermatological procedure (cryo-
therapy, laser, peeling...). The location of the lesion was mainly on the face (49%)
and the wound area was 1-2 cm² for 28%, >10 cm² for 44% and >10 cm² for 28% of
patients. Symptoms evaluated before any treatment indicated that 76% of patients
presented an erythema. The emulsion containing the association of panthenol,
emulsion containing the association the association of panthenol, madecassoside and copper/zinc/manganese salts in a balm texture.

Supported by L’Oreal.

Results: Among the 10,000 patients included in this study (35% male and 67%
female, mean age 31 years (from 1 week to 97 years old), some were included for
constitutionally fragilized skin (cheilitis, rough patches...). Skin trauma caused by external factors (fissures, burns...) or after dermatological procedure (cryotherap,
therapy, laser, peeling...). The location of the lesion was mainly on the face (49%)
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Supported by L’Oreal.

Conclusions: This observational study performed with dermatologists in private
practice allowed to better know the management of epidermal wound healing and to
demonstrate on a large cohort the tolerance and satisfaction afford by a healing
emulsion containing the association the association of panthenol, madecassoside and copper/zinc/manganese salts in a balm texture.


An unusual reaction after radiation therapy

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A 61-year-old female with a history of moderately differentiated in situ
carcinoma, status post—right mastectomy with implant reconstruction and auxiliary
dissection, presented with a 7-day history of red, itchy rash on the right breast and
chest. At the time of evaluation, she was only receiving anastrozole as therapy;
however past treatments included radiation therapy completed in November 2014
and docetaxel and cyclophosphamide from June–October 2014. On exam, she had
thin erythematous plaques mainly limited to the previously radiated skin but also
with some involvement on the neck and thorax outside of the radiated areas. A
punch biopsy from the right chest revealed acute spongiotic dermatitis; however,
there were unusual findings of focal cosinophilic spongiosis, and a mixed inflamm-
atory cell infiltrate that extended deep into the reticular dermis, which, taken
together with the clinical history and presentation, prompted a diagnosis of
cosinophilic, polymorphic, and pruritic eruption of radiotherapy (EPPER).
EPPER is a rare condition that occurs in patients receiving radiotherapy, most commonly
presenting with cervical and breast cancers. There are 11 previous case reports with
EPPER described in a total of 43 patients. Reported treatments include topical or
oral corticosteroids, antihistamines, and narrowband UVB with varied levels of
success.

Commercial support: None identified.


Chinese herbal medicine for chronic urticaria: A systematic review of randomized controlled trials

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Background: Chronic urticaria (CU) affects 0.5%-5% of the global population.
Second generation H1-antihistamines are effective in relieving symptoms of CU,
although recurrence remains a challenge. Chinese herbal medicine (CHM) has a long
history of use for dermatological conditions, however, comprehensive evaluation of
the evidence for CHM in CU is lacking.

Objective: This review evaluates the efficacy and safety of CHM for CU.

Methods: Five English databases (PubMed, Embase, AMED, CINAHL and Cochrane
CENTRAL) and four Chinese databases (CNKI, CBM, Wanfang and CQVIP) were
searched from inception to July 2015. Randomized controlled trials (RCTs)
comparing CHM alone to second generation antihistamines for CU were included.
The primary outcome was Urticaria Activity Score (UAS) and Secondary outcomes
included health-related quality of life (CU-Q2oL, DLQI), effective rate (the number of
people achieving a 50% or greater improvement in symptoms of wheals and
pruritus), relapse rate and adverse events. Data extraction, assessment of method-
ological quality, and analysis were conducted according to the Cochrane Handbook.

Results: Twenty-eight RCTs (2878 participants) met the inclusion criteria. The
methodological quality of included studies was low to moderate. One study found
no statistical difference between CHM and antihistamines in UAS score posttreat-
ment (MD-0.13 points; 95% CI 0.84-0.58). Studies reported effective rate according
to criteria in Chinese guidelines, or based on change from baseline score. Compared
to antihistamines, CHM was more effective in improving CU symptoms based on
Chinese guidelines (RR 1.22; 95% CI 1.16, 1.30; I²=0). Data for effective rate based
on change from baseline were not pooled due to high heterogeneity (I² = 72%),
likely caused by variation in effect size. None of the included studies reported on
quality of life. Among participants who achieved a complete resolution of
symptoms, CHM reduced the chance of relapse compared to antihistamines (RR
0.31; 95% CI 0.16, 0.63; I² = 22%). Adverse events were mild and resolved
spontaneously or after stopping treatment.

Conclusions: CHM for CU showed superior efficacy and lower relapse rate
compared to second generation antihistamines. However, the findings should be
interpreted with caution due to the lack of a validated outcome and poor
methodological quality of the studies. More rigorous clinical trials using validated
outcome measures are needed.

Commercial support: None identified.
Costs, outcomes, and work-related factors of occupational contact dermatitis in British Columbia, Canada (1990-2014)

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Background: Occupational dermatitis detracts significantly from worker productivity and results in disability and necessitates vocational rehabilitation for many workers. Occupational skin diseases account for 15 to 20 percent of all occupation illnesses, with the majority of these in many surveys from dermatitis.

Objectives: To describe trends in work-related factors, outcomes and economic impact of contact dermatitis among workers in British Columbia, Canada over a 25-year period.

Design: Retrospective analysis of accepted contact dermatitis worker’s compensation claims from British Columbia (1990-2013).

Methods: Claims Management Solutions database contains claims data from Workers Compensation Board of BC offices. The database was searched by ICD-9 codes of known occupation-related dermatoses. Accepted dermatologic claims between 1990 to 2014, inclusively were analyzed. Demographics, ICD-9 diagnosis, occupational exposure, occupation, and monetary amount of claim were collected for each accepted claim. Claim amount is broken down into amount accepted for short- and long-term disability, and vocational rehabilitation. Data were analyzed with SPSS Statistics 16.0.

Results: Of 4442 dermatology claims accepted and analyzed, 3670 (82.6%) were for contact dermatitis. 42.9% of claimants were women and the median age was 36.6 years. The data show a progressive decline in accepted contact dermatitis claims from 1990 - 2014, inclusively were analyzed. Demographics, ICD-9 diagnosis, occupational exposure, occupation, and monetary amount of claim were collected for each accepted claim. Claim amount is broken down into amount accepted for short- and long-term disability, and vocational rehabilitation. Data were analyzed with SPSS Statistics 16.0.

Conclusions: Contact dermatitis is the most prevalent work-related dermatosis in BC and is slightly disproportionally increased in claim costs. It is the major contributor to short-term disability costs and days off of work among occupational dermatosis in British Columbia.

Commercial support: None identified.
Hypersensitivity reaction to vegan tattoo ink and successful treatment with intraläsional and topical steroid therapy

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Hypersensitivity reactions to tattoos can pose significant diagnostic and treatment difficulties. Patients often present with swelling, erythema, ulceration, and other findings that can obscure the distinction between infection and inflammation. Clues to a diagnosis of tattoo reaction include inflammation confined to a tattoo, or a certain color within a tattoo. Tattoo reactions are most commonly seen against red pigment (cinnabar or mercuric sulfide) or yellow pigment in the setting of phototoxic reactions (cadmium sulfide). Herein, we present a case of a reaction to a new phenomenon, vegan tattoo ink. To our knowledge, this is the first report of a reaction to a vegan tattoo. Our patient had multiple tattoos with traditional ink in the past, which were well-tolerated. He recently became a vegan and developed tattooing on the right calf with vegan tattoo ink. Approximately one week later, he developed pain, erythema and ulceration limited to the black portion of vegan tattoo ink. He was treated initially with oral antibiotics for presumed cellulitis without significant improvement. He was subsequently hospitalized for intravascular antibiotic therapy. A biopsy specimen from the right calf showed tattoo pigment with sparse inflammation, consistent with a tattoo reaction. Special stains and tissue culture were negative for fungi, bacteria, and mycobacteria. The patient was treated with monthly injections of intraläsional triamcinolone (10 mg/ml) and topical clotetasol with great improvement. The phenomenon of vegan tattoo ink is relatively new, and there have been no reports of a hypersensitivity reaction to this ink. The tattoo ink used in our patient’s tattoo was manufactured by “[Derma-Go]” and “Eternal” ink, both containing several heavy metals including Aluminum, Arsenic, Beryllium, Cobalt, Chromium, Nickel, Lead, Selenium, Titanium and Mercury. However, the full list of ingredients was not disclosed by the manufacturers. In our patient, patch testing using the TRUE Test was negative, including paraphenylenediamine, and the inciting allergen was not specifically identified. Herein, we report what is, to our knowledge, the first case of a hypersensitivity reaction to vegan tattoo ink and successful treatment with both intraläsional and topical steroid therapy.

Commercial support: None identified.

Commercial support: None identified.
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Management of radiation dermatitis

Soham Chaudhari, DO, Palisades Medical Center, North Bergen, NJ, United States; Patrick Chapple, MD, Albert Einstein College of Medicine, Bronx, NY, United States; Loren Gorcery, MD, New York University, New York, NY, United States; Sravanna Chemupati, MD, Diablo Valley Oncology and Hematology Medical Group, Pleasant Hill, CA, United States; Shalom Kalnicki, MD, Albert Einstein College of Medicine, Bronx, NY, United States; Beth McLellan, MD, Albert Einstein College of Medicine, Bronx, NY, United States

Background: Acute radiation dermatitis (RD) is a potentially distressing adverse event resulting from radiation therapy. RD significantly impacts patient quality of life and can lead to interruption in treatment. While several topical agents and dressings are used to treat RD, there is great variation in management among practitioners due to limited evidence-based recommendations. We aim to define the common prophylaxis and treatment patterns for RD in the United States (US) to recognize if these patterns are associated with evidence-based guidelines.

Methods: A Patterns of Care Survey of the current management of radiation dermatitis was conducted from August 2014 to December 2014 across the United States. The results were compared with the Multinational Association for Supportive Care in Cancer (MASCC) guidelines. The questions were designed to evaluate demographics of respondents, their training and comfort in the management of radiation dermatitis, and their patterns of care regarding treatment.

Results: The MASCC panel strongly recommends the prophylactic use of gentle washing with water which 53.25% of participants encouraged. However, practitioners also recommended the use of aloe vera prophylactically (53.97%) and for grade 1 RD (47.26%), both strongly discouraged by the panel because of several trials suggesting no benefit. While 60.14% of respondents used emollients, they are utilized to treat grade 1 RD by 74.25% of practitioners. The prophylactic use of topical steroids is strongly recommended by the MASCC, although only 30.14% of surveyed practitioners utilize them for this purpose, while 30.41% using them to treat grade 1. The panel makes a weak recommendation for the prophylactic use of silver sulfadiazine cream which is used by 72.35% of participants for grade 2 and 5 RD.

Conclusions: There is a wide disparity between evidenced-based guidelines for radiation dermatitis prophylaxis and its practice in the US. Better education of the oncology and dermatology community and adherence to evidence-based guidelines may improve patient compliance and quality of life.

Commercial support: None identified.

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Oak bark extract/salicic acid/benzoic acid ointment attenuates the inflammatory response in a murine model of hair shaving associated dermatitis

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Shaving is a widespread practice, with both men and women shaving daily or several times per week. Hence, it is not surprising that cutaneous irritation associated with this practice is a common problem, which can be worsened by underlying skin conditions and poor hair removal techniques. Moisturizing shaving creams and aftershaves are available to help maintain or restore the epidermal barrier; however, many continue to suffer from postshave redness, itching and pain. Furthermore, these sequelae are heightened in those with a pre disposition for pseudo folliculitis barbae resulting from sharpened hair that curves into the follicular skin or pierces the follicle wall, causing an inflammatory foreign body reaction. To reduce postshave inflammation, some products have included botanical and other natural ingredients, which are often favored by consumers. We evaluated an ointment containing 3% oak bark extract, 3% salicylic acid, and 6% benzoic acid (BHP), which has documented antiinflammatory and antimicrobial properties, in an animal model of hair shaving associated dermatitis.

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Management of radiation dermatitis

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Management of radiation dermatitis

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Conclusions: There is a wide disparity between evidenced-based guidelines for radiation dermatitis prophylaxis and its practice in the US. Better education of the oncology and dermatology community and adherence to evidence-based guidelines may improve patient compliance and quality of life.

Commercial support: None identified.

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Methotrexate use in allergic contact dermatitis: The Saint Louis University experience

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Background: Methotrexate (MTX) is an antimetabolite, immunomodulatory medication commonly used for inflammatory skin conditions such as atopic dermatitis and psoriasis. Its therapeutic efficacy for atopic dermatitis is well established in the literature, however, there are no previous studies establishing the usefulness of MTX for allergic contact dermatitis. The aim of this study was to evaluate our experience using MTX with allergic contact dermatitis to assess its tolerability profile for this patient demographic, as well as to identify patient characteristics and disease-specific scenarios in which MTX may be most beneficial.

Methods: We performed a retrospective chart review of patients with AC, confirmed by patch testing, who received treatment with MTX. The study period was defined as from January 1, 2016 to December 31, 2016. Demographic as well as medical associated data was collected from electronic medical records, including age, sex, ethnicity, AC distribution, occupation, previous treatments, disease severity, MTX dose, and current MTX regimen. MTX treatment, tolerability of MTX tapering, reasons for discontinuation, MTX side effects, allergen avoidance, among others.

Results: 45 patients with AC were treated with MTX during the study period. Four patients were excluded for insufficient data and 1 patient was excluded from efficacy assessments due to minimal exposure to MTX (<5 months). 95% of MTX treated patients found it tolerable. 30 of 40 (75%) patients showed clinical response (<3 months). 93% of MTX treated patients found it tolerable. 30 of 40 (75%) patients showed clinical response (<3 months). 93% of MTX treated patients found it tolerable. 30 of 40 (75%) patients showed clinical response (<3 months). 93% of MTX treated patients found it tolerable. 30 of 40 (75%) patients showed clinical response (<3 months). 93% of MTX treated patients found it tolerable. 30 of 40 (75%) patients showed clinical response (<3 months).

Conclusion: We conclude that MTX is well tolerated and effective for ACD. The results of our study show that MTX has comparable efficacy with other immunomodulatory agents such as cyclosporine and azathioprine. MTX showed robust efficacy despite persistent allergen exposure. It was not as effective, however, in the setting of severe disease, particularly in patients with concomitant atopic dermatitis.

Commercial support: None identified.
Specific guidelines for optimized assessment of cosmetic products dedicated to children under 3 years old.

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Background and objectives: Our previous investigations demonstrated that neonates and young children skin is particularly vulnerable and needs high-tolerated specific skin care products. That's why we developed an innovative approach for safety evaluation including a modified stinging test and the use of our patented model of infants' epidemics. Here, we present results obtained on 5 representative products: skin cares (face hydrating ointment and cream, body hydrating lotion) and rinse and no-rinse cleansing products.

Methods: In order to specifically evaluate sensory irritation potentials of our baby products, we developed a modified stinging test with increased ambient temperature (100°F), relative humidity (80%) and earlier time measurements (10 s + 1 min). Three independent studies were conducted, with fifteen stinger volunteers in each study, and total cumulative stinging scores were calculated at 10 s + 1 min, and 2.5 ± 5 min < 10 very slight, 11-24 slight, > 25 strong. A total cumulative stinging score of less than 10 was needed to validate the product. In vitro tolerance was evaluated using our age-specific infant epidemoid model (Stelaskin). The tested products were topically applied on 1 month-aged reconstructed epidermis. After 10h of incubation, tolerance was evaluated by analyzing 3 parameters: epidermis viability assessment by MTT test; IL-1alpha measurement into the supernatants by ELISA assay; and histology analysis by hematoxylin/eosin coloration of the paraffin-embedded tissue.

Results: All products tested obtained global stinging scores inferior to 10: mean 4.4 (mean early score 2.4 and late score 6.4). Thus stinging propensity was considered as 'very slight' for all of them and validated their high sensory tolerance in vivo. The treatment of the 1 month-aged reconstructed epidermis with the baby products did not induce any significant increase of IL-1 alpha release (50% to 15% vs control) nor decrease of viability (95% to 104% vs control). Histology analysis didn’t reveal any signs of toxicity, revealing the good tolerance of the products.

Conclusion: In order to respect baby’s skin, it is important to use specific skin care products which have been formulated but also assessed under specific conditions. This new specific process for safety evaluation allows a very strict selection of formulas and ensures highly-tolerated products on the market.

Commercial support: None identified.

The face of airborne contact dermatitis (ABCD): The first step in an algorithmic approach to examination, diagnosis, and management

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Background: Airborne contact dermatitis (ABCD) can be misdiagnosed without proper clinical awareness. The variety of overlapping clinical presentations in cases of airborne dermatoses complicates diagnosis, and the multitude of potential airborne agents makes identification of the inciting exposure a challenge. We present the patients treated at our institution in order to identify the clinical characteristics suggestive of ABCD and to propose an algorithmic approach to these patients.

Methods: We identified 16 patients with ABCD treated at our institution. Clinical presentation, diagnostics, and disease course were obtained by a retrospective review of the medical records.

Results: ABCD patients were 56% female (n = 9). Patient age ranged from 5 to 89 years. Although each patient presented with a different cutaneous eruption that was consistent with ABCD, 100% (16/16) of the patients demonstrated the pathognomonic sparing of the nasal tip, called ‘the beak sign’. Twenty five percent (4/16) of patients described exposure environments where they could identify odors or vapors in the air. Seven (44%) patients described domestic exposures. Patch testing was performed in 13 of 16 patients with 46% positivity (6/13). Treatments included avoidance of exposure environments, application of topical steroids, and, rarely, systemic immunosuppression.

Discussion: The variety of presentations makes diagnosing ABCD difficult. While classic exam findings such as involvement of Wilkinson triangle, submental area, and skin folds are important, sparing of the nasal tip is equally significant. Patient education and a careful history are crucial in identifying a causative allergen. Pertinent clinical questions include whether they are exposed to environments where they can see or smell anything in the air. In addition, domestic, occupational, and recreational exposures must be evaluated. At times, patch testing may be necessary to validate clinical suspicion, though diagnosis can often be made on history alone. The mainstay of treatment is allergen avoidance, which often requires total abstinence from an exposure environment. Additional treatment is variable.

Conclusion: Although ABCD is relatively uncommon, increased awareness to the variety of overlapping clinical presentations in cases of airborne dermatoses complicates diagnosis, and the multitude of potential airborne agents makes identification of the inciting exposure a challenge. We present the patients treated at our institution in order to identify the clinical characteristics suggestive of ABCD and to propose an algorithmic approach to these patients.
A case of a cutaneous folliculotropic Langerhans cell histiocytosis

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Lichen planopilaris is a rare follicular variant of lichen planus, usually appearing during the course of typical lichen planus. It is generally considered to be a disease of the scalp, trunk and extremities. Pseudoeoophiemahtinous hyperplasia is a reactive hyperplasia of the epidermis, which is clinically suggestive and a histological mimic of well-differentiated squamous cell carcinoma, but lacking significant cellular atypia or nuclear hyperchromasia. We present a case of lichen planopilaris with pseudoeoophiemahtinous hyperplasia confined to the vulva. A 43-year-old South Asian woman with a family history of vulval cancer presented with a history of longstanding vulval itch and raised, hypopigmented and hyperkeratotic plaques on the labia majora. There was no rash elsewhere, no scarring alopecia and no oral signs. Initial vulval biopsy showed lichen planus/lichen planus-like keratosis, with no evidence of malignancy. However, treatment with topical and intralesional steroids proved ineffective and over an eight year period symptoms continued and a series of recurrent hyperkeratotic plaques were biopsied or excised from the patient due to concerns of malignant transformation. On review of all slides from the case, three particularly pertinent findings were highlighted. First, an intense lichenoid inflammation was centered on the lower part of the hair follicles with significantly less inflammation of the interfollicular epithelium. Second, there were elongated, thick downward projections of the epithelium with jagged borders. Third, the epidermis showed a spectrum of cytopathic changes and mitotic figures were not numerous or atypical. Sections from one specimen included a focus of differentiated vulval intraepithelial neoplasia, with hypergranulosis, pointed rete ridges, some basal atypia and mitotic activity, low down keratinization and ectatic vessels in the superficial dermis. Despite these concerning features there was no convincing evidence of invasive disease and the consensus diagnosis was of a florid lichen planopilaris with pseudoeoophiemahtinous hyperplasia. The authors advise that patients such as this should have regular long term follow-up with a dermatologist but should not be subjected to radical vulvectomy unless they develop clinical and pathological signs of invasive disease. Suspicious lesions should be excised and examined by a dermatopathologist.

Commercial support: None identified.

2953
A case of recurrent lichen planopilaris of the vulva with pseudoeoophiemahtinous hyperplasia: Clinicopathological correlation

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Commercial support: None identified.
An unusual case of metastatic cervical cancer resembling granuloma annulare

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A 71-year-old woman was referred to dermatology due to a rash noted during routine oncology follow-up. Three years earlier she was treated for squamous cell cervical carcinoma with and radiotherapy for which she was in remission. On examination there was a pruritic, erythematous, annular rash starting on the right leg which had spread over two weeks to the flank and abdomen. Clinical appearance suggested an atypical granuloma annulare. Due to the atypical nature of the rash a skin biopsy was performed. This showed a piece of skin containing within the dermis what looks like lymphatic spaces containing clusters of pleomorphic and necrotic squamous cells in keeping with squamous cell carcinoma. The appearances were suggestive of dermal lymphatic involvement by a metastatic squamous cell carcinoma. CT chest abdomen and pelvis showed local disease recurrence with no evidence of metastatic disease. She underwent palliative chemotherapy with paclitaxel and carboplatin with a good response of the local, nodal and skin disease to chemotherapy. She died 25 months later from a primary upper gastrointestinal adenocarcinoma. Previous reports have suggested that development of skin involvement from cervical cancer is a late event heralding the onset of widespread metastatic spread with an average survival of three months. Skin involvement does not normally occur without disease at other sites. Sites of skin involvement are usually in close proximity to the primary tumor. Cancer spread is usually via the lymphatic route or direct local invasion, hematogenous spread is infrequent. As in this case, histologic invasion of dermal lymphatics and inflammatory skin changes are found in carcinoma erysipeloides. This is most commonly reported in patients with breast cancer. Most commonly skin lesions are nodules often occurring at surgical scar and laparoscopic port sites. Plaques and inflammatory telangiectatic lesions have also been described. Two similar cases to the case described have been identified in the literature both presenting with an erythematous rash involving the trunk and extremities. This case highlights that skin metastases from cervical may present in an unusual way and do not necessarily carry a poor prognosis. The method of disease spread in this case is obscure, but given the lack of metastatic disease at other sites and absence of further disease spread, the presentation is felt to represent local lymphatic from hematogenous spread.

Commercial support: None identified.

2870

Bortezomib-induced histiocytoid Sweet syndrome resembling rosacea

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Introduction: Histiocytoid Sweet syndrome (ISS) is a rare variant of Sweet syndrome. Only three prior cases have been reported as attributable to the chemotherapy agent bortezomib. The diagnosis is suspected clinically and confirmed with skin histopathology and immunohistochemistry. We report a unique case of bortezomib-induced histiocytoid Sweet syndrome in which the lesions were limited to the face, initially resembling rosacea, but failing routine rosacea therapy.

Methods: Patient information was obtained from electronic medical record files, which included pathology reports and clinical notes from outpatient encounters.

Case Report: A 70-year-old woman with a history of multiple myeloma presented initially with a pruritic facial eruption following the start of her first cycle of chemotherapy with bortezomib dosed at 1.3 mg/m² intravenous. With each subsequent administration the rash and pruritus worsened and she was referred to dermatology. On exam, she was noted to have many 2-3 mm, erythematous papules involving primarily the bilateral checks, nose, with scattered lesions on the conjunctival margins and eyelids. Rosacea was suspected; however, the patient failed topical metronidazole cream. At the next visit, a 3-mm punch biopsy showed was performed which showed a dense neutrophilic infiltrate primarily epidermis and dermoepidermal junction. The infiltrate was positive for CD68, CD15, and myeloperoxidase, and negative for CD3 and CD20 by immunohistochemistry. We report a unique case of bortezomib-induced histiocytoid Sweet syndrome in which the lesions were limited to the face, initially resembling rosacea, but failing routine rosacea therapy.

Commercial support: None identified.

2840

Cutaneous malakoplakia in an immunosuppressed patient

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Malakoplakia is a rare granulomatous disease caused by impaired macrophage response to a bacterial infection. We report a 48-year-old male presenting with a 3-week history of nonhealing abscesses in the inguinal area. He had no fever or systemic symptoms. He had a renal transplant 8 months ago and immunosuppression included cyclosporin and prednisolone. Clinical examination revealed mucosal ulcerated nodules in the anal region bilaterally. The histology showed intracytoplasmic basophilic inclusion bodies with concentric laminations of calcium (Michaelis-Gutmann bodies) and a Von Kossa stain for calcium was positive. These were consistent with malakoplakia. Tissue culture revealed heavy growth of Escherichia coli and the patient was started on a prolonged course of ciprofloxacin. The term malakoplakia was coined by von Hansemann in 1903 meaning ‘soft plaque’. Malakoplakia is most commonly found in the urinary tract, but has also been reported to affect lungs, brain, vagina, testes, pancreas, tonsils, adrenal gland, bone, and skin. The perianal area is the most frequently reported cutaneous site. It can present as papules, nodules, ulcers, and intertriginous plaques. Microscopically, malakoplakia consists predominantly of sheets of foamy macrophages, known as von Hanneleman cells, with scattered targetoid intracytoplasmic inclusions called Michaelis-Gutmann bodies. It is thought to be due to an acquired bacteriadic effect in macrophages. The most commonly isolated organism is E. coli. Treatment includes reducing immunosuppression, a prolonged course of antibiotics and surgical excision. Malakoplakia should be considered in immunocompromised patients where there are ulcerating lesions and a suspicion of chronic infection.

Commercial support: None identified.

2810

BAFF and BAFF receptors expression in patients with mycosis fungoides

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Background: B-cell activation factor (BAFF), belonging to the tumor necrosis factor family, is known to play crucial roles in the viability, proliferation, and maturation of malignant B cell lymphoma cells. Few studies had recently suggested that BAFF might also play a role in the development of thymoma-mediated disease. Limited information exists regarding expression of BAFF and its receptors: BAFF-R and TACI in mycosis fungoides.

Objective: To investigate the role of BAFF in mycosis fungoides.

Methods: Paraffin-embedded specimens from 50 patients of mycosis fungoides of different stages: patch, plaque and tumor were immunohistochemically examined for BAFF and its receptors BAFF-R and TACI. The degrees of positive staining for BAFF and its receptors were dichotomized into low versus high.

Results: BAFF-R and TACI were expressed in 85% of the cases (42 out of 50). BAFF expression in mycosis fungoides is significantly increased with the severity of the disease. These results suggest that BAFF may play a role in development of mycosis fungoides. Moreover, this may also suggest that the anti-BAFF or the anti-BAFF monoclonal abs may be a new class of targeted therapeutic potential for treatment of mycosis fungoides.

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2847
Cutaneous sarcoid with necrobiosis lipoidica—like histology
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Background: Fewer than 15 cases have been reported which show sarcoid skin lesions with concurrent histologic findings suggestive of necrobiosis lipoidica (NL). Most reported cases were of female patients. Case report: A 57-year-old healthy white man presented with a one year history of red-brown papules on his lower extremities and violaceous macules of his back. Punch biopsies of one lesion on his right leg and one of his lower back revealed granulomatous dermatitis with subtly different histologic patterns. The histopathologic pattern of his right leg lesion was reminiscent of necrobiosis lipoidica (NL) given the involvement of the dermis and upper subcutaneous fat with broad swaths of epithelioid histiocytes arranged in a layered fashion and admixed with lymphocytes and rare plasma cells. Additionally, small well-formed epithelioid granulomas suggestive of sarcoidosis were also present in the subcutaneous fat. In contrast, the specimen on lower back showed full thickness involvement of the dermis by small epithelioid granulomas without necrobiotic infiltrate. Initial workup was significant for abnormal renal function (creatinine of 1.5 mg/dL). Negative studies included a chest radiograph and serum studies (hemoglobin A1C, cryoglobulins, and antinuclear antibodies). Given the pattern of distribution over his legs and back and his possible renal involvement with sarcoid, he was started on trimcinolone 0.1% cream twice daily. He referred to ophthalmology for ocular evaluation and to his primary care for investigation of his renal function. Discussion: Sarcoid skin lesions have been reported to present with necrobiosis lipoidica (NL) histology and the converse is also true. This case demonstrates that unless the patient clinically presents with systemic findings, it is difficult to discern which of the pathologic entities is prime. Correlation with hemoglobin A1C can help with diagnosis of NL, however most reported cases of concurrent NL and sarcoidal lesions did not have diabetes or glucose intolerance.

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3806
Cytokines expression in cutaneous lupus erythematosus subsets
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Low, recalcitrant cutaneous LE (LE) is an autoimmune disease that results from genetic and environmental interactions (such as UV radiation or infections) acting under a loss of tolerance towards self-antigens by the innate and adaptive immune systems. Skin is the organ most commonly affected and there is evidence of a complex interplay between cytokines, chemokines and adhesion molecules acting in the cutaneous lesions pathogenesis. To evaluate the participation of cytokines in different subtypes of cutaneous LE, 59 subjects (subacute LE = 17; discoid LE = 21; LE tumidus = 17) were included in this study. Twenty patients with cutaneous LE also fulfilled American College of Rheumatology criteria for systemic LE (CLE+/SLE+) and 39 did not (CLE+/-SLE-). 70.5% of subacute and 19% of discoid and 19% of tumidus patients had systemic LE. The LE skin specimens were immunohistochemically targeted with the following monoclonal antibodies: IL-1β, IL-18, IL-19, IL-20, IL-8, TNF-α. Subacute LE patients showed increased IL-1β, IL-19, TNF-α compared with discoid and tumidus subtypes. Epidermal IL-17 was higher, but dermal IL-17 immunoreactivity was lower in discoid and tumidus LE groups. CLE+/SLE+ patients also presented higher IL-1 and lower dermal expression of IL-17 than CLE+/-SLE- patients. We also found positive correlation between TNF-α and IL-1 expression in discoid and tumidus lesions, and also in CLE+/SLE- skin specimens. There was no difference between cutaneous LE groups regarding immunorepression of IL-10 and IL-6. Most of the current knowledge about cytokines in LE comes from the study of the systemic form. The role of the cytokines may be different in the various subtypes of cutaneous LE, but there are no data comparing them to each other. The ultraviolet (UV) light is a well-known trigger of systemic LE and cutaneous LE, inducing keratinocyte apoptosis and a proinflammatory response. In our study, with synthesis of IFN-γ, TNF-α, TGF-β, IL-1β/IL-6, IL-8, IL-10 and IL-17. Notably, IL-1β and TNF-α act synergistically and are capable of triggering the expression of adhesion molecules and other inflammatory cytokines and chemokines. Leukocytes and connective tissue intradermal lymphocytes and TNF-α are involved in B cell activation and also increase the expression of nuclear antigens on the keratinocytes, with both inflammatory and immunomodulatory possible roles in cutaneous LE. IL-17 is a pleiotropic cytokine, mainly produced by Th17 cells that enhance the synthesis of proinflammatory cytokines but there are no data comparing them to each other. In contrast, IL-10 may downregulate the production of proinflammatory cytokines and chemokines, as well as the activity of immune cells. IL-10 is the best known regulatory cytokine, and has a crucial role in maintaining immune homeostasis.

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3006
Desmoplastic trichilemmoma arising on scrotum of patient with suspected Muir–Torre syndrome
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Background: Muir–Torre syndrome, a subset of hereditary nonpolyposis colorectal cancer (Lynch) syndrome, is a rare germline mutation. Caused by mutation in mismatch repair genes (MLH1, MSH2, MSH6), Muir–Torre has autosomal dominant inheritance and is characterized by cutaneous sebaceous neoplasms (sebaceous adenomas, sebaceomas, sebaceous carcinomas), multiple keratoacanthomas, and associated with internal malignancies. Desmoplastic trichilemmoma (DT) is a rare variant of trichilemmoma, a benign neoplasm of the outer root sheath of the pilosebaceous unit that is characterized by a prominent central area of desmoplasia. DT most commonly presents in men during the fifth and sixth decades of life, and has a no racial predilection. It generally presents as an asymptomatic, slow-growing small papule or nodule on the face, though few have been reported in extrafacial locations. DT rarely present in genital locations with one previous report of a DT presenting in the vulva. Clinically and histologically, DT can simulate invasive carcinoma. The differential diagnosis includes desmoplastic squamous cell carcinoma, squamous cell carcinoma, and trichilemmal carcinoma.

Case report: We present an unusual case of desmoplastic trichilemmoma arising on the scrotum of a 52-year-old male renal transplant patient with a history of sebaceous carcinoma (with loss of MSH2 on immunohistochemistry) and suspected Muir–Torre syndrome. Histologically, the tumor showed a characteristic biphasic cell population with central eosinophilic necrosis. Additional staining with CD34, PAS, Melan-A and MSH-1 were also performed. This is the second case of DT reported in the genitalia and represents a rare presentation of this unusual tumor. This also highlights a new association between desmoplastic trichilemmoma and Muir–Torre syndrome, not previously noted in the medical literature.

Commercial support: None identified.
Emerging use of skin biopsies in the diagnosis of neuronal ceroid lipofuscinosis

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Neuronal ceroid lipofuscinosis (NCL) are a group of severe inherited neurodegenerative lysosomal storage disorders that affect children and young adults. There are six distinct entities that demonstrate characteristic eosinophilic intracytoplasmic inclusions within the excitable tissues. These inclusions may also be highlighted on periodic acid–Schiff stain (PAS). Thus, skin biopsies with H&E and PAS staining may become a useful diagnostic tool in the diagnosis of NCL. Awareness of this entity is necessary for accurate diagnosis of this pathology.

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Expression of fascin, p53, and CD31 in inflammatory dermatoses with Langerhans cell hyperplasia and Langerhans cell histiocytosis

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Background: Langerhans cell histiocytosis (LCH) is a proliferative disorder of Langerhans cells, and diagnosis is challenging both clinically and histologically. A potential diagnostic pitfall is distinguishing LCH from Langerhans cell hyperplasia, which is a benign reactive process that can occur in a variety of inflammatory skin disorders. Currently CD1a and S100 are considered specific markers of Langerhans cell histiocytosis, but these markers are positive in both cases of LCH and Langerhans cell hyperplasia. Prior studies have demonstrated positive staining of Fascin, p53, and CD31 in cases of LCH, but not in Langerhans cell hyperplasia. Further studies of these immunohistochemical markers between these two entities are needed.

Materials and methods: Cases of LCH and Langerhans cell hyperplasia were obtained from Saint Louis University and Washington University in Saint Louis, Missouri. CD1a, Fascin, CD31, and p53 immunohistochemical stains were completed on all cases. The stained specimens were then reviewed and interpreted by two board certified dermatopathologists (Y.H. and C.V.). Fascin, CD31, p53 were graded as a percentage of CD1a staining cells in the epidermis and dermis.

Results: 15 cases of LCH and 15 cases of Langerhans cell hyperplasia were included in the study. Fascin showed significant Ganc, N in staining between the two entities. CD31 was positive in the dermal infiltrate in 40% of cases of Langerhans cell histiocytosis and negative in all cases of Langerhans cell hyperplasia. P53 was positive in the epidermal infiltrate in 50% of cases of LCH, and positive in the dermal infiltrate in 50% of cases of LCH, while negative in all cases of Langerhans cell hyperplasia.

Conclusions: Fascin was not a helpful marker in distinguishing Langerhans cell histiocytosis from Langerhans cell hyperplasia. CD31, if positive in the dermal infiltrate is suggestive of a diagnosis of LCH, but exhibits a relatively lower percentage of cases (50%) for this purpose. P53 proved to be a helpful and accurate diagnostic immunohistochemical stain when distinguishing between LCH and Langerhans cell hyperplasia.

Commercial support: None identified.

Extraocular sebaceous carcinoma: A clinicopathologic reassessment

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Extraocular sebaceous carcinoma is an aggressive adnexal neoplasm with sebaceous differentiation. Risk factors for its development include advancing age, Asian ethnicity, history of irradiation to the head and neck region, Muir–Torre syndrome, and immunosuppression. Ocular sebaceous carcinomas refer to those neoplasms situated in the eyelid, and extraocular sebaceous carcinomas to those occurring extraocularly. Hereby, we present the results of a retrospective study where the clinicopathologic characteristics of extraocular sebaceous carcinoma were evaluated. Methods: Seventy-two cases of extraocular sebaceous carcinoma were identified from the database of a dermatopathology laboratory from January 1, 2007 to May 31, 2013. Histopathologic features were studied by analyzing the architectural pattern and cytologic attributes, namely the degree of cellular differentiation, cellular growth pattern, presence or absence of necrosis, ulceration, and pagetoid spread of neoplastic cells in the epidermis. The cellular growth pattern was classified as squamoid or basoloid. Results: More cases occurred in men (60%), with a mean age at diagnosis of 65.8 years (range 39-99 years). The majority of the tumors affected the head and neck areas (65%). Other affected areas included the back (19%), chest (7%), upper extremities (14%), lower extremities (5%), and the abdomen (1%). The neoplasms were histopathologically classified as well-differentiated (22%), moderately differentiated (67%), and poorly differentiated (11%). Sixty-seven percent (67%) of cases demonstrated a squamoid growth pattern and thirty-three percent (33%) demonstrated a basoloid growth pattern. A majority of the neoplasms histopathologically classified as well-differentiated (94%) and moderately differentiated (6%) demonstrated a squamoid growth pattern. Ten percent (10%) of cases exhibited cystic histiocytic changes and three of these cases had a confirmed diagnosis of Muir–Torre syndrome.

Conclusions: When compared with ocular sebaceous carcinoma, extraocular sebaceous carcinoma can be considered as a distinct clinicopathologic entity.
Globomiosisarcoma on hand mimicking a fibromatosis

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Introduction: Globus tumors (GT) are very uncommon, with an estimated incidence of 1.6% of soft tissue tumors. They are composed of cells similar to the glomus body, mostly located in the dermis of the extremities. The malignant GT or glomangiosarcomas (GS) are extremely rare. We report a case of GS with atypical histological features leading to a diagnosis of fibromatosis.

Case report: A 72-year-old white woman presented with a painful skin tumor on the second finger of her right hand. Histopathology revealed a proliferation of spindle cells in dermis with myxohistioclastic features and no malignancy, rendering a diagnosis of benign fibromatosis. Months later, the lesion recurred at the same location. Histopathologic study showed a neoplasia in dermis of atypical spindle cells arranged in a sarcomatous manner, with occasional mitosis. There were focal areas of myxoid change GT in the periphery of the tumor. The cells were positive for smooth muscle actin, EMA and vimentin, and negative for AE1-3, HMB-45, Melan A, S-100, CD31, CD34, Factor XIII, calcitonin and desmin. It was similar in the first biopsy. Based on these findings we made the diagnosis of GS. MRI revealed a deep proliferation affecting tendons, muscles and bone, and whole body PET scan showed no metastatic disease. We referred our patient to a plastic surgery clinic for wide excision of the tumor, and she is undergoing clinical follow-up.

Discussion: Histologically, GT show three components: glomus cells resembling the modified smooth muscle cells of the glomus body, smooth muscle cells and blood vessels. Glomocytes are uniform round cells, with oval nuclei, forming a collar around the vessels. GS are extremely rare, less than 3% of all GT. The diagnostic criteria are deep location, size larger than 2 cm, and presence of moderate to high nuclear atypia and frequent mitotic figures. We report a case of GS diagnosed as fibromatosis in the first biopsy. Fibromatoses are a group of conditions of unknown etiology, consisting in a fibroblastic proliferation that replaces or infiltrates the soft tissues, without authentic neoplasia. The diagnostic difficulties in this case were the absence of both benign glomus tumor and vascular component, and poor differentiated spindle cells in the first biopsy. IHC is essential for definitive diagnosis; however we did not perform it because of the absence of malignancy features. This case report can help to a better knowledge of this extremely rare tumor.

3152
Intraepidermal nerve fiber density in the assessment of peripheral and central neuropathic pain

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Background: Neuropathic pain is defined as “pain arising as a direct result of an injury or disease affecting the somatosensory system.” The pathology may lie in the central (CNS) or peripheral (PNS) nervous system. The reduction of intraepidermal nerve fibers density (IENFD) in skin biopsy has proved to be an early clinical indicator in “small diameter nerve fiber neuropathy” with predominant or selective involvement of small-caliber afferent fibers (Aδ) (myelinated) and C (unmyelinated). There are few studies that have compared IENFD in patients with PNS and CNS diseases with and without neuropathic pain and with controls.

Methods: Punch biopsies of 3 mm were performed 10 cm above the lateral malleolus. 5 sections of 50-µm were analyzed with immunohistochemistry using monoclonal antibody PGP 9.5 (UltraClone Ltd, UK). Nerve fibers crossing the dermoepidermal junction were counted and expressed as IENFD/mm by two different observers. The study recruited 22 healthy control subjects (C), 40 patients with PNS disease: 31 with neuropathic pain (PNS+), 8 without neuropathic pain (PNS-), 20 patients with CNS disease: 13 with central neuropathic pain (CNS+), 7 without neuropathic pain (CNS-). Statistical analysis with T-test was performed using Stata 12.0. The study was set at P<0.05. To assess interobserver agreement the Bland-Altman method was used.

Results: IENFD C: 6.89 ± 2.14, PNS: 4.32 ± 2.93, PNS+: 5.73 ± 2.81, PNS-: 6.4 ± 2.5, CNS: 4.52 ± 2.21, CNS+: 4.73 ± 2.62, CNS-: 4.84 ± 1.36. We observed significant and lower mean IENFD in CNS and PNS groups compared with the C group (P<0.001). There were no significant differences between patients with neuropathic pain compared to those without pain in peripheral disease: PNS+ vs PNS- (P=0.18) and central disease CNS+ vs CNS- (P=0.14).

Conclusion: Mean IENFD was reduced in patients with peripheral and central nervous system diseases compared to controls but no differences between those with and without neuropathic pain were found. A larger number of healthy controls is needed to compare values by gender and age.
Necrotizing cosinophilic folliculitis: A new manifestation of the atopic diathesis?

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A 49-year-old man with longstanding severe atopic eczema presented with a 6-year history of recurrent painful nodules affecting his face and limbs associated with lichenification and resolving spontaneously. He had an extensive travel history with recent travel to Africa. Clinical examination revealed widespread chronic atopic eczema and also tender subcutaneous 5 cm nodules on his forehead and upper limbs. A previous biopsy from a thigh nodule showed marked neutrophilia with abscess formation and cosinophilia mainly in the subcutaneous tissue. This was regarded as neutrophilic panniculitis. Given this inflammatory pattern, he was thoroughly investigated for any underlying infectious etiology, however, none was found. Subsequently he presented with an acute flare of his symptoms and had further biopsies taken from the left cheek and forehead. Both biopsies demonstrated a striking pattern of necrotizing folliculitis with pyodermatitis alteration of the dermis. A mixed perifollicular infiltrate was noted with small numbers of cosinophils. Gram-positive cocci were also identified but were thought to represent commensal bacteria. On this basis, a diagnosis of necrotizing cosinophilic folliculitis was proposed. Cosinophilic folliculitis (EF) is frequently seen in HIV-positive patients, however, Magro et al proposed a new pustular variant of EF termed ‘necrotizing cosinophilic folliculitis’ (NEF) reported in a case series of 10 HIV-negative atopic patients and diagnosed based on clinical and histopathologic findings. In EF antibody formation and creation of immune complexes are believed to mediate clinical manifestations. These antibodies are directed to the intercellular substance of the lower epidermis and outer root sheath of the hair follicle. An abnormal Th2-type immune response to a follicular antigen (ie, Demodex species) may be responsible for HIV-associated EF. However, in NEF it has been suggested that severe atopy creates Th1/2 dysregulation. The interplay between an innocent trigger (ie, commensal bacteria), and T cell dysregulation in atopic dermatitis is thought to lead to the destructive folliculo-centric process which is pathognomonic of this condition. This is an unusual and important diagnosis to consider in patients with atopic dermatitis presenting with these symptoms.

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Peristomal intestinal metaplasia: A case report

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Peristomal intestinal metaplasia (PIM) of ileostomies has been rarely reported. We present the third case known to the authors. A 62-year-old female underwent a right hemi-colectomy and ileostomy as she had a history of ulcerative colitis and 55-year ileostomy presented with a 5-year history of peristomal skin irritation worsening over 2 years after the development of a ileostomy stoma. It was associated with appliance leakage and a well-developed peristomal skin ulcer. It was initially seen in a specialised stoma clinic and treated with Kenacomb and Aquacel dressings and a new convex ostomy bag. It did not resolve and it was referred to a dermatologist. On presentation a 5 cm x 4 cm eroded, granulomatous papulonodular friable plaque was noted from 2 o’clock to 7 o’clock of the ileostomy mucosa-cutaneous junction extending inferomedially onto the abdomen. Two shave biopsies showed mild papillomatosis, hyperkeratosis, and a mixed perifollicular inflammatory infiltrate with a striking pattern of necrotizing eosinophils. There were no signs resembling colonic epithelium, mixed with squamous epithelium indicating cutaneous PIM. The glandular epithelium showed mild reactive, nonlymphoplastic, nonmalignant changes. Initial treatment with silver nitrate was unsuccessful. Subsequently, electrocautery under local anaesthetic was performed in the dermatologist’s rooms after an initial test patch. Three treatments using low setting on a 40W high frequency desiccator were performed. The eroded plaque completely reepithelialised. However, 4 months later some small recurrences were noted and treated with higher setting electrocautery. The range of reported peristomal dermatoses is wide, the most common precipitant being effluent leakage and maceration. The biological piping of the peristomal skin, de Nava, Navarra, Spain. Strach et al, J Am Coll Surg 2007, found in an in vitro study that bile salt exposure increases intestinal epithelial cell migration after wounding, hypothesizing this as a cause of PIM. Another hypothesis of Ono et al, BJID 2012, asserts metastatic tubular gland secretions destroy the follicular epithelium thus destroying the epidermal structure that allow for reepithelialization. Finally, peristomal overgranulation with intestinal metaplasia has been known to undergo malignant transformation. We could find no reports reflecting such sequelae of PIM but given the few known cases the possibility should not be discounted. We therefore recommend patients with PIM be monitored for recurrence and suspicious lesions biopsied.

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Plasma cell reactive benign proliferations (Plasmacytosis). Report of three typical cases and review of the literature

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Introduction: Plasmacytosis is characterized by benign reactive proliferations of plasma cells, secondary to an unknown exogenous agent and was first described by Zoon in 1952 in gland mucosa. Since then, several authors have described similar lesions with different presentations appearing in both mucous membranes or skin. The classification of the disorder has been not well defined to date but recently a new classification has been proposed by Senol et al. We present 3 typical cases of plasmacytosis located in periorificial areas.

Case reports: The first patient was a 76-year-old liver transplanted man who presented with erythematous overgrowth tissue and fissures in both angles of the mouth which had appeared 1 year previously. The second patient, a 52-year-old man had a red, papular lesion at the entrance of the right nostril which had appeared 2 months previously with no known triggering factor. The third patient, a 46-year-old man, on chlordipropionate, presented with a little central crust on the tip of his nose which had appeared 2 months previously. Histopathologically all of the lesions presented a dense infiltrate of plasma cells. CD38+ Immunohistochemical staining for kappa and lambda was revealed polyclonal. A biopsy from the first patient also showed acanthosis and was thus classified as plasmoacanthoma. The other patients were classified as mucocutaneous and cutaneous plasmacytosis respectively because of the location of the lesions. A serologic test for syphilis and immunohistologic stain analysis for spirochetes were negative in all patients.

Discussion: We present 3 typical cases of plasmacytosis located in periorificial areas and describe the associated clinical features and histopathologic findings. We categorize the cases using the new classification. We also perform a review of the literature describing how the heterogeneous presentations of this disease have been progressively described in the literature, and how it has been concluded that, given the common histopathologic findings, it represents one single entity.

Conclusions: At present, the nomenclature of this multiformal, reactive and inflammatory disorder is not well defined and as a result of reviewing such of PIM but given the fact that it is an underdiagnosed disease. It is important to clarify that it represents a single entity with various forms of presentation. The new classification appears to be a good option for the rigorous classification of this heterogeneous entity.
Prevalence of hormonal and endocrine dysfunction in lichen planopilaris patients: a retrospective data analysis of 413 patients

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Studies on the pathophysiology and comorbidities associated with lichen planopilaris (LPP) and frontal fibrosing alopecia (FFA) are limited. The purpose of this study was to determine the prevalence of androgen excess in the postmenopausal LPP population, in relation to demographics and comorbidities. Medical records of 413 LPP, FFA, and LPP/FFA patients seen in the Department of Dermatology at the Cleveland Clinic Foundation in Ohio between 2005 and 2015 were reviewed. Out of this cohort, 168 patients met the inclusion criteria. There is evidence that LPP patients had significantly greater prevalence of androgen excess than the general population (P < 0.001). Androgen excess was identified in 31.5% (n = 53) of the 168 patients with LPP and all subtypes (P < 0.001). Androgen deficiency was identified in 32.1% (n = 17) of the 53 patients with FFA (P < 0.001). The androgen excess group was significantly more likely to present with hirsutism, seborrhea dermatitis, PCOS, and/or ovarian cysts (P < 0.001). This study was limited by being retrospective. Our study demonstrated that LPP is associated with androgen excess, and FFA is associated with androgen deficiency.

Commercial support: None identified.
Background: Fibrous papules (FPs) are benign lesions usually found on the face, especially the nose. Clinically they present as dome-shaped, skin-colored papules in adult patients. Histologically they are characterized by a fibrotic stroma, a proliferation of blood vessels, plump fibroblasts, and occasionally perifollicular fibrosis. Most FPs are easily recognized and diagnosed, however, certain infrequent variants such as the granular variant show distinct histological features that could be misinterpreted, potentially leading to an erroneous diagnosis. Granular fibrous papules (GFPs) are distinguished from other variants by the presence of distinct granules in the cytoplasm of the stromal cells, resembling the granules seen in granulomatous diseases.

Objective: We report clinical-pathologic features of five fibrous papules that were diagnosed as the granular type, in order to bring better awareness of this unusual variant.

Methods: Granular cell fibrous papules were retrieved from the archives of the Ackerman Academy of Dermatopathology from 2013 to 2015. Results: The age range of the patients was from 34 to 78 years old. Three of the patients were male and two were female. The patients had GFPs on the lateral nose bridge, nasal side wall, ala of the nose mid glabella, and left cheek. Slides could only be obtained from three of the five cases.

Discussion: The review of our cases revealed a spectrum of possible histological presentations of GFP which include the following patterns: (a) diffuse looking granules with no apparent intercellular demarcation; (b) very well demarcated cytoplasm and granules; (c) delineated cells with granular cytoplasm and clear spaces; (d) mostly clear cytoplasm and few granules; and (e) interstitial amphiphilic granules. The interstitial type and the clear type overlap with previously described hypercellular and clear cell fibrous papule respectively.
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Accuracy and usefulness of mobile phone images in the diagnosis of leprosy
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Background: Mobile phones may be used to capture and send images and allow health care services to be delivered more efficiently, especially to underserved communities where leprosy remains to be endemic.

Objective: To determine the accuracy and usefulness of images from a mobile phone camera in the diagnosis of leprosy compared to a face-to-face (FTF) examination, with and without a clinical history, and using a combination of clinical history, physical examination and histopathologic findings as the reference standard.

Methods: This is a cross-sectional validation study. Forty-two suspected leprosy patients underwent a FTF examination with one dermatologist, while their skin images were independently viewed by two other dermatologists. Each dermatologist wrote their diagnoses based on the skin lesions or skin images, and then their second set of diagnoses after a standard clinical history was provided. The concordance, sensitivity (Sn), specificity (Sp), predictive values (PPV, NPV), and likelihood ratios (LR+, LR-) of the mobile phone images in the diagnosis of leprosy using a combination of clinical history, physical examination, and histopathologic findings as the reference standard were computed and compared to a FTF examination.

Results: Half of the 42 suspected leprosy patients were confirmed to have leprosy. Concordance between diagnosis based on images alone and reference standard is high (88.10%-90.48%) and increases when a clinical history was also provided (97.62%). Concordance between reference standard and diagnosis based on images is equivalent to the concordance between reference standard and diagnosis based on a FTF examination. Mobile phone images have high sensitivity (76.19.85%51) and specificity (95.24.100), high predictive values (PPV 94.74.100, NPV 80.77.86.69) and useful likelihood ratios (LR+ 18.Finity, LR- 0.15-0.24). When a clinical history was also provided, all the above mentioned measures improved (Sn 95.24, Sp100, PPV 100, NPV 95.45, LR+ Infinity, LR- 0.05) and became equal to a FTF examination with clinical history.

Conclusion: Mobile phone images are accurate and useful tools in the diagnosis of leprosy. They have the same diagnostic value as a FTF examination, especially when provided with a clinical history.

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3324
Application of analytic technique using green light parallel-polarized light images in atopic dermatitis
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Background: Parallel-polarized light (PPL) photography is a method that can evaluate objectively the skin surface. The analysis using green light-emitting diode (LED) PPL images show quantitative and more significant differences than those taken with white LED in atopic dermatitis patients.

Objective: To devise a method to evaluate the severity of atopic dermatitis using green PPL images.

Methods: A total of 49 patients with atopic dermatitis were selected. The PPL images were taken with both green and white LEDs on all atopic lesional and normal skin. The PPL images were converted to CIELAB coordinates, L*, a*, and b*. The severity of atopic dermatitis was evaluated using both the IGA and the SCORAD. The dryness of skin was assessed with the xerotic severity scale.

Results: The severity of atopic dermatitis using IGA score had significant positive correlations with both SCORAD (r = 0.82721, P = 0.001) and xerotic severity scale (r = 0.63872, P = 0.001). A negative correlation was found between SCORAD and b* (r = -0.30841, P = 0.011) using the green PPL images. Although no significant correlations were found between the SCORAD and L* or a*, the L* trend to decrease (r = -0.26465, P = 0.061) while the a* showed a trend of increasing (r = 0.20892, P = 0.0617). On the normal skin area, the SCORAD had negative correlations with L* (r = -0.37776, P = 0.0075) and b* (r = -0.39117, P = 0.0108) and a positive correlation with a* (r = 0.29872, P = 0.0371) using green PPL images. The xerotic severity scale of atopic skin lesion also showed negative correlations with L* (r = -0.37776, P = 0.0075) and b* (r = -0.39117, P = 0.0108) and a positive correlation with a* (r = 0.37353, P = 0.0082) of the green PPL images.

Conclusion: In the lesional skin of patients with atopic dermatitis, the SCORAD had a significant correlation with the b* of the green PPL images, while the xerotic severity scale showed significant relationships with all L*, a* and b* using the green PPL images. Also, CIELAB values obtained by using the green LEDs had more significant results than those obtained by the white LEDs. The results showed that the normal skin area also had significant relationships with both SCORAD and CIELAB values. Based on the results, the PPL images taken with green LED can evaluate and analyze characteristics of atopic dermatitis, and may be applied to devise a new measuring instrument that can be used in the clinical setting.

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Analysis of patient-provider interaction through the OpenNotes system in dermatology
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Background: In the United States, the Beth Israel Deaconess Medical Center (BIDMC) implemented OpenNotes (ON), an online system allowing patients to directly access their clinicians’ notes, with the aim of increasing transparency between patients and providers and improving health care outcomes. Evaluation of the ON system specifically within the field of dermatology has not yet been performed. We evaluated the BIDMC dermatology patient experience with ON to determine the extent of usage, the characteristics of patients opting to use and not to use the technology resource, and whether patient outcomes are influenced by ON.

Methods: A 24-question survey was developed to assess dermatology outpatient interaction with ON and its effects on patient-perceived health improvements. Questions were based on a Likert scale where applicable, and included reasons for ON access, impacts on health pursuits, and patient demographic information.

Results: Preliminary respondents totaled 62. Mean age was 52, with 58% of respondents female. Of the 62 respondents, 42 (68%) accessed ON. Of those patients who accessed ON, 52% sought greater health knowledge, 52% were curious, and 50% sought diagnosis confirmation; 45% wanted to confirm provider notes accurately reflected their visit, while 36% wanted to understand their doctor’s thoughts on their care. 81% of patients accessing ON agreed accessing ON made them feel better care of their skin. 67% of those accessing ON reported that ON access made them more confident in their dermatologist. When asked to rate the statement, “I am concerned about the privacy of my visit on OpenNotes,” 35 of 62 (56%) disagreed, 12 (19%) agreed, 9 (15%) were unsure and 6 (10%) did not respond.

Discussion: Preliminary data suggest strong patient satisfaction with ON. Patients utilize this system for confirmatory information, behavior modification, as well as evaluation of their provider’s services. A majority of patients accessing ON reported increased confidence in their dermatologist which suggests that increased transparency and patient access to electronic medical records might enhance patient-physician trust and adherence to treatment regimens. Some security concerns existed with 19% concerned and 15% unsure about potential privacy violations through OpenNotes. A strongly positive patient experience with the ON system evidenced in this qualitative study suggests that engagement with additional health information may improve outcomes.

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Association of socioeconomic and geographic factors with Google Trends for skin protective behaviors

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Objectives: Internet search trends are a unique representation of health information seeking behaviors. They have been used to track infectious diseases, such as influenza, and more recently, for noncommunicable conditions. Here, we sought to observe the internet search trends for skin protective behaviors and skin risk behaviors.

Methods: Google Trends search value index (SVI) data was used to study searches for skin protective behaviors ("sunscreen") and skin risk factors ("tanning salon" and "tan bed/hot lamp"), from 2010 to 2015. SVI provides search frequency data relative to total search volume. Data were categorized by season (winter, spring, summer, and fall) and by state. Seasonal variations in SVI for these terms were assessed using ANOVA. Univariate and multivariate analyses were performed to determine the association of state-level SVI with state latitudes and census data on education attainment, average income, and percent white by state.

Results: There were statistically significant differences between seasonal SVI for skin protective behaviors and skin risk factors (P < 0.01). A Tukey multiple comparison of means revealed statistically significant differences in skin protective SVI between fall/spring, winter/spring, fall/summer, and winter/summer. For skin risk SVI, there were statistically significant differences between all seasons. Hawaii had the highest SVI for skin protective behaviors (i.e., sunscreen), while Alaska had the lowest. West Virginia had the highest SVI for skin risk factors (i.e., tanning bed and tanning salon), while Hawaii had the lowest. There was a moderate positive association between skin protective SVI by state and average income (r = 0.48, P < 0.05) and a moderate negative association between sun protective SVI by state and latitude (r = -0.45, P < 0.05) and percent white (r = -0.43, P < 0.05). Skin protective behavior SVI by state correlated significantly with average income, latitude, and percent white in an univariate model, while it correlated significantly with educational attainment, average income, and latitude (P < 0.05) in a multivariate model. There was a weak negative association between skin risk SVI by state and educational attainment (r = -0.41, P < 0.05) and average income (r = -0.34, P < 0.05). There was no association between skin risk SVI by state and latitude or between skin risk SVI and percent white. In the multivariate model for skin risk behaviors by state, skin risk behavior SVI was correlated with educational attainment, average income, and latitude (P < 0.05).

Conclusions: There are seasonal differences in Internet search trends for skin protective behaviors and skin risk behaviors. Additionally, search trends for skin protective behaviors and skin risk behaviors by state are impacted by socioeconomic and geographic factors. Internet search trends data could have applications in skin-related public health.

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2893 Bandwidth needs for dermatology imaging systems

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Determining the bandwidth needs for your dermatology imaging storage and retrieval system can be difficult. There are many variables starting with the estimated file size (or image size). There is not a direct relationship between the megapixels of your camera and the estimated file size. For instance a 20 megapixel camera might only be a 5.12 megapixel photo depending on your camera settings. The formula for file size or image size is typically going to be 3X the megapixels with a reduction if you are using a compression format like jpg. The number of bytes required to store a pixel is 3X when using 24 bits true color. jpg can compress the image down to 20% of the original size. Example: 20 megapixel image X 3 x 60 megapixel X 0.2 = 12 MB file size. The next step would be to estimate how many images your practice is going to upload and download per hour. This would need to include the number of images times the number of devices. One provider could easily download 10 photos on each of 5 patients per hour and upload another 5 photos on each of 5 patients per hour. This would add up to 75 photos on just one device. If photos were brought up on both an iPad and a desktop then that doubles to 150 photos per hour. If there were 4 providers it is easy to see how numbers add up quickly—in this case, 600 photos per hour. However it is unlikely the need would be spread out evenly over the hour. Quick estimate: iPhone: 0.1 MB/pixel, 2974 photos within the same 1 minute period. In addition there could be another 18 photos uploaded in that same minute. To calculate rough bandwidth needs you could use the formula: upload total MBs = image size (file size) X number of images per device divided by 5600 (seconds per hour). Example: total MBs = 12 MB X 600 (photos per hour) divided by 5600 = 2 MBps. However if you look at concentrated times, the needs could expand significantly with the equivalent of 96-100 MBps. Example: 12 MB X 48 (photos per minute) divided by 60 seconds (per minute) = 96 MBps. In addition to dermatology imaging needs there would be the usual demands on bandwidth including email, EMR, file sharing, guest Internet, and web browsing. Adding to the equation is the fact that camera megapixels seem to increase yearly and imaging resolution is likely to increase as well. In a new imaging system, your practice would need to make certain it has enough bandwidth.

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Computer tomography imaging of hidradenitis suppurativa

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Background: Brimodine is a highly selective α2-adrenergic receptor agonist with potent vasoconstrictive activity that has recently been approved for the topical treatment of erythematotelangiectatic rosacea (ETR) and acne vulgaris. Ex).^ Two randomized, double-blind, placebo-controlled studies have evaluated the efficacy and safety of two different concentrations of brimonidine in the treatment of ETR. This study aimed to evaluate if noninvasive techniques such as erythema-directed digital photography and videodermatoscopy (VD) may be useful to identify those patients who may be ideal responders to such treatment.

Methods: Ten consecutive untreated patients (6 M, 4 F; age range 18-65 years) with ETR were enrolled. The degree of severity was rated as mild in 4 patients (stage I Hurley), moderate in 4 (stage II Hurley), and severe in the remaining 2 (stage III Hurley). All patients were evaluated by CT imaging (including thorax, abdomen and pelvis) using a 64 layers multidetector spiral device; intravenous contrast medium was used in selected cases.

Results: CT demonstrated reactive lymphadenopathy and skin thickening of the whole area affected by HS in all cases. Sacrococcygeal fistulas in 7 (3 stage I, 3 stage II, 1 stage III Hurley), increased density of the adipose tissue of the affected areas in 3 (2 stage II, 1 stage III Hurley), fistulas in 1 (1 stage II, 2 stage III Hurley), and abscesses in 1 patient only (stage III Hurley). Interestingly, most of these CT findings were not evident at clinical inspection. CT also highlighted collateral findings such as cardiac disease in 4 patients, diverticular disease in 4, thickening of the dorsal skin in 3, and increased cardiac chambers size in 2 cases.

Conclusions. CT, by providing objective and reproducible images with limited dose of radiations, may allow the detection of subclinical manifestations (reactive lymphadenopathy, skin thickening, increased density of the adipose tissue, fistulas and abscesses) helpful for a more precise staging of the disease and for a more accurate planning of medical and/or surgical management. Moreover, it may disclose previously undetected collateral findings useful for a global patient assessment, but whether these associated findings are merely coincidental or not should be investigated by case-control studies on larger series.

Commercial support: None identified.

Dermoscopic features of aqauigenic palmar keratoderma

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Introduction: Aquagenic syringal acrokeratoderma, also called aquagenic palmar keratoderma (APK), is a misdiagnosed non inherited transient acquired keratoderma. Although useful for a more precise staging of the disease and for a more accurate planning of medical and/or surgical management.

Commercial support: None identified.

Implementation of automated and standardized total body digital imaging in dermatology practice

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Introduction: The dermatology field is primed to incorporate advances in imaging technology by standardizing acquisition, processing, storage, and visualization of high-resolution skin images. DermisSpectra is an automated total body digital imaging (ATDI) system designed to meet these requirements.

Methods: A clinical study evaluating the efficiency, patient and provider attitude, impact in decision-making, and level of acceptance of ATDI.

Commercial support: None identified.
Implementation of Stanford Health Care direct-care teledermatology program

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Background: Dermatology is well-suited to telemedicine and evidence suggests that telemedicine can improve care in certain settings. However, telemedicine for dermatology has largely focused on models in which patients interact with a primary care provider who then refers the patient to a dermatologist. There is now growing interest in patient-initiated, direct-care teledermatology, in which a patient can directly connect with a specialist. Stanford Hospital piloted one of the first direct-care teledermatology services to appear in an academic hospital.

Methods: Beginning in October 2014, patients enrolled in Stanford Care Alliance Health Plans were given the opportunity to seek remote dermatologic care from Stanford Dermatology. Patients submitted pictures of skin lesions and accompanying information through their online MyHealth accounts. A dermatologist evaluated the patient’s complaint and offered medical guidance through the online system, or asked the patient to come in for an in-person visit if necessary. We analyzed utilization of care, clinical effectiveness, patient satisfaction, and willingness to pay for the service.

Results: Between October 2014 and February 2015, 38 patients sought care through the program. A dermatologist was able to make a diagnosis in 36 cases (95%). Patients were an average of 39.3 years old (±12.2), and were 84% female. The most common chief complaint was a “ rash” (28%), while the second most common was “ acne” (19%). A dermatologist was able to make a diagnosis for 36 out of the 38 evaluated patients (95%), with an average confidence level of 7/10 (±1.8). The average time to initial consultation was 0.8 days (~1). The dermatologist was able to manage the patient remotely in 75% of cases, and requested an in-person follow-up visit for 25%. Patient survey results indicate satisfaction with the service. Overall satisfaction was approximately 4/5, and 100% of survey respondents indicated a willingness to pay for the service.

Conclusions: Preliminary results suggest that direct-care teledermatology can increase access to dermatologic care without compromising quality in an academic hospital setting. Further, it is needed in rural settings to improve patient satisfaction and accessibility. This program may serve as an intellectual foundation and proof-of-concept model for the expansion of teledermatology services to other hospitals and specialties.

Commercial support: None identified.

3871 Improving clinical imaging and detection of wrinkles, fine lines, and pigmented spots with a novel, software-driven, open-air, overhead light-imaging environment


Visualization and measurement of facial skin aging attributes require images captured using specific lighting modes with directional and uniform illumination. Historically, facial skin imaging is accomplished using closed imaging environments for illuminating the subject with uniform diffused lighting, while eliminating unwanted effects of ambient light. However, natural lighting under which a subject’s face is typically perceived is overhead and directional. To fill the unmet need for a portable and application-driven open imaging environment that is optimally tuned for visualization and measurement of facial skin aging attributes, we present OLE Imager: An Overhead Lighting Environment (OLE) imaging system. The OLE Imager combines a high-resolution digital color camera with application-controlled Xenon flash sources for standardized facial imaging. The imaging system canopy provides overhead lighting that illuminates the subject’s face with vertical and oblique raked light that mimics natural lighting environment and enhances topographical skin attributes (eg, fine lines, wrinkles, and texture). With no secondary reflections, the OLE Imager also provides better axis-based polarized lighting used for analysis of sub-dermal skin attributes (eg, pigmented spots).

Industry standard perspectives of the face (frontal and oblique views) are captured by rotating the canopy around a stationary subject. Software analysis, developed by the OLE Imager presents a protocol-specific, wizard-driven workflow, and locks all capture settings on the imaging system to support repeatable performance for clinical trial imaging. Real-time color and intensity analysis of the captured images ensures the highest level of consistency in image quality. Measurement of facial skin aging attributes is achieved postcapture with an integrated and scripted image analysis application enabling the combination of novel design, advanced system control application, and image analysis algorithms. The OLE Imager will provide improved clinical imaging and assessment of facial skin attributes in clinical studies.

Commercial support: None identified.

3859 Mobile device use in direct patient care

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Eighty percent of clinicians use electronic mobile devices in their daily workflow, and soon the same amount will be using multiple mobile devices. Rapidly evolving technology, improved mobile device optics, and the uniquely visual nature of dermatology mean that all lend themselves to the use of mobile device in the clinic. This paper examines current literature regarding how dermatologists use mobile device technology in direct patient care. Greater than 50% dermatology apps appeal not only to dermatologists, but also to patients. Most obvious are apps assisting as a clinical reference, but technology continues to increase regarding apps for analysis of pigmented lesions and also for integrating clinical pictures into a patient’s electronic health record (EHR). On the other hand, patients are using mobile apps for documentation of lesions, self-monitoring for changing lesions and even for checking the daily UV index. Furthermore, teledermatology has rapidly increased access to a dermatologist’s expertise in many rural areas. This technology allows closer monitoring of patients who previously had poor access to dermatology while at the same time potentially decreasing healthcare costs. Additionally, residents and students strongly agree that teledermatology is an important part of dermatology training and education. Dermoscopy documentation has previously been limited to a written description, but now improved mobile device optics allow a recorded image which can be used to supplement a teledermatologist consult or easily document lesion evolution. However, technological barriers and lack of time may prevent primary care physicians from adopting this technology as a part of teledermatology consults. Additionally, high dynamic range images on mobile devices may improve dermatoscopic accuracy when evaluating hypopigmented lesions. Finally, patient perception of mobile device use is often forgotten. The majority of most patients widely accept a hospital-owned digital camera for lesion documentation, significantly fewer are comfortable with a physician using their own private mobile device. Disabling cloud-based storage or using apps that upload directly to an electronic health record may improve patient perception of mobile device use. Dermatology will likely remain an evolving field regarding mobile device use in direct patient care.

Commercial support: None identified.
Personal burden of isotretinoin therapy and willingness to pay for electronic follow-up visits

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Background: The time and financial burden of follow-up appointments on patients treated with isotretinoin and/or their caregivers has not been characterized. Electronic visits (e-visits) allowing patients to complete follow-up visits at home could reduce this personal burden, but their financial feasibility for the dermatologist needs evaluation.

Objective: To measure the perceived burden on patients and/or caregivers of follow-up appointments for isotretinoin therapy and determine their willingness to pay for an e-visit alternative.

Methods: We surveyed 62 adult patients and 43 caregivers of pediatric patients who had been treated with isotretinoin for at least three months at three academically-affiliated practice sites in western Pennsylvania between 2014 and 2015. Self-reported measures included the perceived burden of follow-up visits, such as travel time and missed school or work, as well as interest in, perceived safety of and willingness to pay for e-visits. We calculated the proportion of respondents with specific demographic traits and used chi-squared tests to compare respondents with specific traits and their willingness to pay for e-visits.

Results: Most respondents reported follow-up appointments led to missed work or school and were interested in e-visits as an alternative to office visits. Most adult patients (69%) and caregivers (58%) reported no concerns with the safety of an e-visit compared to an in-office visit. e-Visits were estimated to save a median of two hours of missed work and three hours of missed school monthly. Sixty-one percent of respondents expressed willingness to pay for e-visits, with a median out-of-pocket expense of $25, compared to the median copay for a clinic visit of $10. Respondent characteristics associated with willingness to pay for e-visits included having an annual income greater than $50,000 (P = .02), having a copay for office visits (P < .01), and adult patients missing work or school (P = .04). Travel time and missing work or school among caregivers or pediatric patients were not significantly associated with willingness to pay.

Conclusion: Follow-up appointments for isotretinoin therapy lead patients and caregivers to miss work and school, creating an opportunity for e-visits. Most respondents were willing to pay for e-visits at a median out-of-pocket expense greater than their copay for an office visit, but it is unclear whether they will be feasible without further support from third-party payers.

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Qualification of a new digital imaging system for the assessment of facial aging attributes

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Background: Digital imaging is an effective tool for detecting and assessing facial aging attributes such as wrinkles and hyperpigmentation. As such, it can be a valuable methodology for determining and quantifying the effectiveness of facial antiaging treatments at improving these attributes. A newly developed digital imaging system combining a high resolution camera, an open lighting environment utilizing Xenon flash sources which are optimized to enhance targeted skin attributes, and advanced software for precise control of the camera and lighting, was used in conjunction with advanced image analysis algorithms to assess the efficacy of products designed to improve the appearance of facial wrinkles and hyperpigmented spots.

Materials and methods: The ability of the new imaging system to detect changes in the appearance of facial fine lines, wrinkles, and hyperpigmented spots was shown to detect antiaging treatment related improvements in the appearance of facial attributes such as wrinkles and hyperpigmented spots. This imaging system will have great utility in the clinical testing of cosmetic antiaging products.

Conclusions: Through rigorous qualification testing, a new digital imaging system was shown to detect antiaging treatment related improvements in the appearance of facial attributes such as wrinkles and hyperpigmented spots. This imaging system will have great utility in the clinical testing of cosmetic antiaging products.

Commercial support: None identified.

Tele-Derm National: A series of unusual teledermatology cases from Australia

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The Australian College of Rural and Remote Medicine (ACRRM) is responsible for administering Tele-Derm National, an online teledermatology consultation service open for access by Australian doctors. Although enrolment is available to all Australian practitioners, the majority of participants are located in rural and remote communities where there is extremely limited access to face-to-face specialist advice. Tele-Derm National employs the ‘store and forward’ method of telehealthcare delivery, allowing clinical information to be transmitted and reviewed at times convenient to both the rural doctor, and teledermatologist. The majority of cases submitted for dermatologic advice over the last decade have been for dermatoses. Periodically however, more uncommon dermatologic conditions present to the Australian rural primary health care. This poses a challenge in both diagnosis and management for the isolated doctor. We present a series of case snapshots that illustrate some of the more unusual presentations submitted to the Tele-Derm National service over the past decade. These cases highlight that even for uncommon conditions, the Australian Tele-Derm National service has the power to provide specialist input rapidly, and potentially avoids the need for either party travel.

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Tele-Derm National: Integrating Australian teledermatology with ongoing clinical education
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The Australian College of Rural and Remote Medicine (ACRRM) is responsible for administering Tele-Derm National, an online teledermatology consultation service open for access by Australian doctors. It has been available now for over a decade and to date has received in excess of 3000 requests for a dermatologic opinion. The service has helped overcome the challenge of isolation experienced by both rural primary care practitioners and their patients. Tele-Derm National represents one of a number of variants of 'store-and-forward' tele-dermatology currently implemented worldwide. Uniquely, however, the service also places a large emphasis on providing clinical education for its enrollee. Conditions managed through the secure forum are open to be viewed by peer practitioners, and an ever-growing catalogue of dermatological conditions has been built over time using material submitted to the site. A separate library of 'question and answer' case vignettes is available to practitioners who want to test their knowledge. Subscribers can also participate in 'Question of the Week' discussions, and also access relevant journal article appraisals provided by the Tele-Derm National dermatologists. Video tutorials are also available that cover procedural skills and provide guidance regarding basic clinical photography. We provide an illustration of these various educational components of the Tele-Derm National teledermatology program. We will also present data describing the uptake and ongoing participation in these aspects of the service.

Commercial support: None identified.

Teledermatology in the emergency department: Real-time remote consultations
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Introduction/background: Dermatology, the most visual medical specialty, is suited for telemedicine. Teledermatology offers a convenient and rapidly advancing platform for improving specialist access and reducing medical costs. Many centers worldwide including the United Kingdom and Australia are starting to adopt this method of care. Often, diagnostic dilemmas in the ED have led to either unnecessary admission, or a premature delay in obtaining a specialist review. Advancement in technology has provided avenues where we may obtain a dermatologist’s opinion more easily.

Objective: To introduce a form of teledermatology currently practiced within our institution that allows for real-time remote consultations (RRCs), assisting in the diagnosis and management of skin conditions of patients seen in ED.

Methodology: This is a case series of adults who presented at the ED of a tertiary hospital with a primary dermatologic condition. A ‘store-and-forward’ system was utilized, where digital photos of the skin lesions are uploaded onto the hospital’s patient management system, together with a concise clinical history. A specialist consultation with a dermatologist was made within an hour, and a diagnosis and management plan then provided to the emergency physician. This electronic system is password controlled and accessible only by hospital staff. Patient consent for photography and storage of information was also obtained.

Results: During the 2-month trial period (May-June 2015), 3 patients who presented to ED with a primary dermatologic issue agreed to a teledermatology consultation. The diagnoses of these patients were: chronic plaque psoriasis, oral lichen planus, and pemphigus. All 3 were able to avoid hospitalization and were discharged from the ED with an early dermatologic outpatient review within 3 days.

Conclusion: Teledermatology allows for quicker diagnosis of dermatologic conditions and has potential in reducing unnecessary admissions based on our preliminary findings. It also allows for early identification of potentially dangerous skin conditions. We aim to continue close monitoring of the uptake and usability of RRC in our center to further evaluate its feasibility. We feel that RRC could indeed be the way forward. For the newer generation of physicians and patients, this form of telemedicine would become increasingly acceptable since high quality digital images allow for accurate diagnoses, while preserving patient confidentiality.

Commercial support: None identified.

Teledermatology: Efficiency to reduce face-to-face visits according to the group of disease
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Introduction: Teledermatology was initially considered useful and cost effective, especially when distances to the reference hospital were significant. At present, it is gaining importance as a more specific tool that can evaluate the need for a rapid referral or diminish medical costs. Our objective consisted of assessing the resolution capacity of teledermatology for different groups of disease.

Methods: Teleconsultations received in our Department of Dermatology between May 2011 and April 2014 were evaluated according to the virtual diagnosis, the indication given by the dermatologist who evaluated the teleconsultation (discharge/referral), reasons for attending to hospital, reasons for more than one virtual consultation, final face-to-face diagnosis and diagnosis agreement between the virtual and face-to-face diagnoses.

Results: We assessed 1163 virtual consultations. Inflammatory diseases were the most frequent diagnosis group (45%). A total of 50.8% of virtual consultations were discharged. The highest resolution rate was achieved by the infectious diseases group, followed by inflammatory diseases (78.4% and 62.8%, respectively). Malignant lesions were referred in nearly all cases (96.7%). The main reason for a referral was the necessity of diagnostic confirmation or complementary studies (59.8% of all cases). A total of 102 patients received more than one teleconsultation, principally due to incomplete clinical data or poor-quality images. The agreement rate between virtual and face-to-face diagnoses was 88.95%.

Conclusion: Teledermatology avoids half of the primary care referrals. The highest resolution rate is achieved in the infectious diseases group, followed by the groups of inflammatory diseases and, secondly, by benign tumors and benign melanocytic lesions.

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Use of low cost videomicroscopy vs standard videodermatoscopy in the evaluation of hair and scalp disorders by videodermatoscopy (VD) has recently been defined as trichoscopy. In general, the magnification needed to perform a trichoscopy examination ranges from X10 to X20. Affordable (~US$40) handheld USB digital microscopes, or videomicroscopes (VMs) that provide X10- X200 magnification are available on the web for nonmedical use, such as in botany, entomology, microelectronics or, recently, for hair/scale evaluation. Based on these considerations, we performed a clinical study aimed to compare the reliability of low-cost VMs versus traditional face-to-face evaluation.

Methods: Twenty-five patients (8M, 17F; age range: 18-64 years) affected by different types of hair loss (10 cases of alopecia areata, 8 of androgenetic alopecia, 5, respectively of lichen planopilaris and frontal fibrosing alopecia, and 1 of trichotillomania) were enrolled in a controlled, blinded, noninferiority clinical trial. All patients underwent examination by two low-cost VMs (VM 1, VM 2) as well as by standard VD in order to evaluate any variability in the detection of common trichoscopy features of hair shaft (hair diameter diversity, miniaturized hairs, exclamation-mark hairs, and broken hairs), and follicular (yellow dots, white dots, black dots) and perifollicular (perifollicular scales) area. Three different fields were examined for each patient. Images obtained by the three systems (X30 magnification) were independently evaluated by three blinded dermatologists.

Results: The two low-cost VMs enabled a correct identification of all hair shaft alterations, as regards follicular and/or perifollicular examination. Black dots were easily recognized by both equipments, but other follicular features, such as yellow dots with VM 2, white dots and perifollicular scales with both VM 1 and 2, were not adequately visualized because of low color quality and/or reduced brightness and/or resolution.

Conclusions: Although limited to two VMs only, our study suggests that the potential accuracy of low-cost VMs in the evaluation of hair and scalp disorders may have some pitfalls. Therefore, a low-cost VM should not be routinely used for reliable scalp trichoscopy, unless supported by individual controlled noninferiority trials.

Use of smartphones in telemedicine: Comparative study between standard and teledermatological evaluation of high-complex care hospital inpatients

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Background: It is estimated that there are around 7 billion mobile phone subscriptions worldwide. Considering its availability and convenience, it appears to be a suitable device to be used in store and forward (SF) consultations.

Introduction: Although teledermatology has been suggested as an effective way of reducing costs and providing otherwise inaccessible expert evaluation, most studies relied on high cost and high technological means. Materials and methods: We conducted a study with inpatients that required dermatological evaluation in a high complexity university hospital, accessing the correlation between traditional face to face evaluation and store and forward teledermatology, with data and pictures collected by medical students using smartphones and then sent to teledermatologists by email.

Results: For two months, we evaluated 100 patients and, as result, the total agreement between both consultations modalities was 54%, the partial agreement was 27% and the disagreement was 19%.

Discussion: This study points out that store and forward teledermatology with the use of mobile phone is comparable to traditional face to face evaluation. Furthermore, most of the disagreements were probably related to the inexperience of the medical residents.

Conclusion: Our study suggests that a smartphone-based teledermatology inpatient consultation model could be a reasonable option for hospitals lacking dermatological services. Also, it suggests that it may be more effective than face to face consultations, if performed by a more experienced dermatologist. When feasible, photographing training should be performed.

Commercial support: None identified.

A national survey of teledermatology education in United States residency programs

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Teledermatology (TD) is an emerging modality in providing remote dermatologic care with high diagnostic and management concordance compared to face-to-face clinic dermatology. As consultation volume for teledermatology continues to rise, TD is increasingly likely to be part of current residents’ future practice. TD training among dermatology residency programs in the United States has not been characterized. We disseminated a survey to all dermatology residents at ACGME-accredited programs in the United States to explore the prevalence and distribution of TD training and trainee perceptions of TD. 100 responses (RR 8.5%) were collected from residents in every geographic location from all years in training. TD was practiced at 67% of institutions, while at these sites only 21% residents participated in clinical sessions. Residents with TD exposure were more likely to feel comfortable managing a TD consult after residency (P < .001), but were not more likely to incorporate teledermatology into their future plans (P = .581). Survey responses from trainees with and without formal education in TD showed no difference in comfort level with managing consultations for rashes. Results of this study provide insight into resident perceptions of TD based on experiences from their training and demonstrate the need for expanding TD training across all dermatology residency programs.

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An empirical analysis of indoor tanners: Implications for audience segmentation in campaigns

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Background: Many individuals continue to tan indoors despite knowledge of the adverse health effects of exposure to ultraviolet (UV) radiation. In order to develop more effective skin cancer prevention messaging, a more comprehensive understanding of the beliefs that motivate this behavior is required.

Objective: The aims of this study were to advance the understanding of audience segmentation for indoor tanning and to identify unique psychosocial variables that underlie behavior within each subgroup, thus informing interventions to prevent and reduce indoor tanning.

Methods: Panhellenic sorority systems at two universities in the southeastern United States participated in this study. A total of N = 1481 young women took the online survey between June and July 2014. Three indoor tanning categories were defined: before event, irregularly, occasionally—regularly, and regularly—year round. Our analyses focused on how various psychosocial variables operated across these possible subtypes of indoor tanners.

Results: Preliminary analyses resulted in dropping “regularly—year round” from further analysis due to small sample size (n = 8). Such analyses also found no significant differences among “before event,” “irregular,” and “occasional” classifications. Instead, our results suggested the existence of two tanner types—termed regular (N = 60) and irregular tanners (N = 353). Relative to irregular tanners, regular tanners reported greater indoor tanning behavior (P < .001) as well as significantly higher positive (P < .001) and significantly lower negative outcome expectations (P < .01) on the previously validated Comprehensive Indoor Tanning Expectations Scale (CIITE). Hierarchical logistic regression analysis predicting tanner type revealed several (P < .05) significant differences among “before event,” “irregular,” and “occasional” classification. Furthermore, emerging as the strongest predictor of regular tanner classification (OR = 2.25).

Conclusion: Our results provide support for two distinct types of indoor tanners (regular and irregular). Relative to irregular tanners, regular tanners tan more frequently, have a number of reasons to construct and maintain their unique demographic characteristics. Health communications should be uniquely targeted to each of these groups and regular tanners may need more intensive clinical interventions given their apparent dependence on UV light via indoor tanning.

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2400 Changes in self-perceptions of photoaging severity and skin cancer risk after objective facial skin quality analysis

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There are an estimated 3.5 million cases of nonmelanoma skin cancer (NMSC), and over 100,000 new cases of malignant melanoma (MM) in the United States each year. The incidence of skin cancer is still on the rise, and the great majority of these cases are potentially preventable by reducing ultraviolet (UV) exposure in at risk populations. However, despite extensive public health campaigns and recent advances in legislation regulating indoor tanning for minors, it remains difficult to influence the attitudes and behaviors of individuals toward sun protective behaviors. A VISIA Scan (Canfield Scientific, Fairfield, NJ) may be used to assess the various parameters of skin quality and photoaging. We hypothesized that by sharing the objective results of the scan with study subjects, we could motivate them to improve sun protection practices and potentially alter their risk for skin cancer. We further hypothesized that subjects age, sex, complexion and personal history of skin cancer might influence their response to the intervention. Using the VISIA Scan, our study sought to evaluate the effect of an objective facial skin quality analysis on participant perception of skin cancer risk and their intention to engage in primary preventative behaviors. In line with our hypothesis, after the VISIA Scan, study participants reported an increased intent to use sun protective measures from rarely and never to often and always (all P < 0.1). Interestingly, while they scored themselves as having worse photoaging, none of the participants reported feeling at higher risk for skin cancer development. It is tempting to conclude that these intended improvements in sun protective habits were motivated solely by concern for appearance. Perhaps these survey responses would have differed had we offered a full body skin cancer screening as part of the study and been able to report suspicious or premalignant lesions. Alternatively, the majority of our participants may have felt that skin cancer is preventable, and therefore reported an increase in their intent to better protect themselves from the sun without changing their perception of personal risk.

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2913 Comprehensive outreach, prevention education, and skin cancer screening for Utah ski resorts

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Skin cancer incidence in the United States continues to climb. Utah leads the nation for new melanoma cases and is among the top ten states for rates of all skin cancer diagnoses. Many factors contribute to this, including a predominantly fair-skinned population, high altitude, and an active outdoor year-round lifestyle. Outdoor recreation is a substantial source of sun exposure, but of greater concern are those whose employment necessitates extended time in the sun with amplified cumulativa exposure to ultraviolet radiation. Ski resort employees, often experiencing sun exposure during peak hours at high altitudes and reflection from the snow, have a greater risk of skin cancer. Huntsman Cancer Institute and the Utah Cancer Action Network partnered with local ski resorts to provide comprehensive outreach, prevention education, and skin cancer screening to their employees through the program “Sun Safe on the Slopes.” This program includes: employee sun safety training; access to sunscreen for employees and guests; ski school sun safety curriculum; posters about sun safety; skin cancer prevention information at employee health fairs; and free skin cancer screenings. University of Utah dermatology faculty and residents volunteered to conduct full-body skin cancer screenings at two large local ski resorts. Seven skin cancer screenings were held from August 2015 to July 2016, following American Academy of Dermatology SPOTime screening guidelines. A total of 262 persons (54.9% female, 96% white) were screened, resulting in the presumptive diagnosis of 21 skin cancers (15 basal cell carcinoma, 2 squamous cell carcinoma, 4 melanoma). A total of 58 actinic keratoses and 22 dysplastic nevi were also identified. Biopsies were recommended for 48 (18%) individuals and 89 (34%) were referred for further evaluation. Twenty-eight (11%) individuals reported a previous skin cancer diagnosis. The Sun Safe on the Slopes program started with 60 employees and shared biopsies (n = 15) were the most common procedures with predominant basal (n = 9, 29%) and squamous cell carcinomas (n = 6, 19%) on pathology. Pharmacological and other therapies were provided to 74 patients.

Commercial support: None identified.

2846 Dermatology in the underserved community

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Background: Tulsa, Oklahoma’s Bedlam Clinics are supervised student-run programs designed to provide free medical services for uninsured adults in the community. As such, they provide a sample of the unique and rarely reported dermatological needs of underserved populations.

Objectives: To analyze patient demographics, diagnoses, and therapeutic interventions of those seeking care at Bedlam-Specialty Dermatology. The resultant data will be used to tailor medical student education toward the most clinically pertinent aspects of dermatology.

Methods: A retrospective chart review was performed for all patients seen in Bedlam-Specialty Dermatology July 2015 to July 2016, encompassing 12 clinic sessions. Each patient’s age, gender, race, employment and smoking status was recorded. Encounter notes were used to document diagnoses, treatments, procedures, and pathology results. All data was sorted and analyzed categorically. Diagnoses were further grouped by etiology (malignancy, benign growths, infectious, autoimmune, etc.). Results were then compared to previously published data on disease incidence in other populations.

Results: 135 patients were seen in over the year, comprised of 95 new patient and 40 return visits. Females accounted for 63.2% (n = 60) and males 36.8% (n = 30), ranging from 20 to 72 years old; white (n = 66, 69.4%) and Hispanic (n = 17; 17.9%) were the most prominent races. There were equal numbers of employed and unemployed individuals (n = 45; 45.3%), but nonsmokers (n = 57; 58.9%) were more common than smokers (n = 30; 30.5%). Of the 56 diagnoses made, actinic keratosis (10.2%), basal cell carcinoma (10.2%), and seborrheic keratosis (7.8%) were most common. The largest etiology was malignant/premalignant growths (n = 39; 45.5%). Of the 67 procedures, cryotherapy (n = 59) and biopsies (n = 15) were the most common procedures with predominant basal (n = 9, 29%) and squamous cell carcinomas (n = 6, 19.4%) on pathology. Pharmacological and other therapies were provided to 74 patients.

Conclusions: There is a higher incidence of nonmelanoma skin cancer (16.5%) seen in the underserved populations than reported in ambulatory dermatology clinics (7%). The most common diagnosis in ambulatory settings, acne (18%), was rare in our sample (1.6%). These discrepancies may be influenced by socioeconomic factors, poor access to care, or patient age. Until further research is performed, these results will be used to create tutorial sessions on diagnostic features and management of these conditions.

Commercial support: None identified.

3059 Dermoscopy use by Canadian dermatologists and dermatology residents: A cross-sectional nationwide survey

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Background: Dermoscopy is a noninvasive imaging technique that has been shown to improve the diagnostic accuracy of melanoma through several meta-analyses. It is also used to diagnose other skin cancers, inflammatory lesions, and diseases of the hair and nails. Prior studies in Europe, America, and Australia demonstrate varying prevalence of clinical dermoscopy use by country. There are no published studies on this topic for Canadian dermatologists and dermatology residents.

Objectives: To describe and analyze the prevalence of use and learning of dermoscopy among Canadian dermatologists and within Canadian residency training programs.

Methods: A cross-sectional online questionnaire was distributed to all practicing physician and resident members of the Canadian Dermatology Association.

Results: A response rate of 55% for dermatologists and 47% for dermatology residents was achieved. Of responding physicians, 87% of dermatologists and 100% of residents use dermoscopy in a clinical setting. Lack of training (53%) and perceived lack of clinical utility (41%) were major reasons for not using dermoscopy among practicing physicians. Practicing physicians gained their experience in dermoscopy through formal dermoscopy courses (67%) and informal clinical experience (60%), while residents gain the majority of their dermoscopy training through their current level of training, 54% of practicing physicians and 28% of residents are confident in their ability to correctly diagnose pigmented lesions with dermoscopy. Both residents (89%) and dermatologists (93%) feel they would benefit from increased dermoscopy teaching in their residency training programs.

Conclusions: There is a high prevalence of dermoscopy use by Canadian physicians and residents. However, this is coupled with a low prevalence of formal training in the technique, a general lack of confidence in its use, and a desire for additional formal training. A lack of training is still felt to be a barrier to those who do not use dermoscopy in practice. This study identifies an unmet need for dermoscopy training within Canadian dermatology residency programs and for practicing Canadian dermatologists.

Commercial support: None identified.
Effects of a communication lecture given to residents on patient satisfaction in a Philadelphia-based dermatology office

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We performed a study last year in which we determined that a communication lecture given to the residents was beneficial in improving patient satisfaction. This new study was meant to determine whether another communication lecture a year later would continue to increase the residents’ scores and also those of new residents. Patients at the Jefferson Dermatology office during a three-month period were given a survey to rate one of the twelve residents they were treated by that day. We used the top box method, in which we only looked at the percent of highest scores given by patients, because this is the national standard used to grade patient satisfaction. This same survey was given again to patients over another three-month period, after the residents had been lectured on communication. The survey included seven categories to rank the resident on a scale of one to five. 422 patients were surveyed in the prelecture stage and 131 were surveyed in the postlecture stage. Of the twelve residents, 25% showed no improvement; the other 75% increased their score in at least one category. For the eight residents who received this lecture already, their overall percent of 5s stayed the same before and after the second lecture. For the four new residents, these overall scores also remained the same, but their initial scores started in the 90% range in the prelecture stage. Based on these data, it does not seem worthwhile to give a lecture to the same residents two years in a row. It is also suggested that once the residents are already at high scores in the 90s, it is difficult to improve this further. This study may help us identify those who would benefit most from communication education.

Commercial support: None identified.
3804
Multistrategic therapy for hypertrophic burn scars in Mexican children
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Michou y Mau, I.A.P. is a nonprofit organization devoted to the prevention and assistance of Mexican children who suffer burn injury. Nowadays it treats about 8000 patients with burn injury sequelae. Assist the pediatric patient with burn injury sequelae, so that we can provide a better quality of life for them and their families. Our mission is to provide a multidisciplinary treatment with the highest standard of quality, ethic and responsibility, giving our patients the most effective and scientific proved treatments, no matter their economic situation.

Vision: To expand our program so that more children and teenagers can benefit a multistrategic treatment nonprofit clinic which provides the state of the art treatment for burns. Our main purpose is to improve children’s quality of life. We have made a commitment with the children suffering burn sequelae in our country.

Specific objectives: Reduce the height, pigmentation, and erythema of the hypertrophic scars, reduce the pain and itching, and improve pliability of scars and mainly the contracture of the involved areas.

Intervention: We treat children between 6 and 18 years old who suffer from hypertrophic burn scars. Our intervention consist in pressure garments, ultrasounds, intralesional dexamethasone and 5-flourouracil, pulsed dye laser, erbium fractional laser and CO2 fractional laser as well as plastic and reconstructive surgery. This project started in 2010 and today we have treated 197 children. We perform 6 session a year. We also provide make-up workshops to teach children how to cover these scars. This clinic is formed by specialized dermatologists, plastic surgeons, pediatricians, and anesthesiologist.

Cases: A 9-year-old female with an hypertrophic burn scar. Initial Vancouver scar scale: 11 points. After 9 sessions with intralesional triamcinolone, pulsed dye laser and erbium fractional laser, she got a Vancouver scar score of 4 points. A 14-year-old male with an initial Vancouver scar scale of 7 points. After 5 sessions with pulsed dye laser and triamcinolone he got a Vancouver scar score of 4.

Commercial support: None identified.

3880
Resident-driven educational videos in patient counseling
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Patient counseling outside of the brief patient encounter is helpful to emphasize important points that can help manage chronic skin conditions. We have found at follow-up encounters that patients often do not recall significant details of counseling for conditions such as dry skin care and proper application of topical retinoids. This makes compliance more difficult and often delays improvement given that there are often large intervals between follow-up visits. Patients are increasingly able to access information through online sources. Having a video reference allows patients to have access to counseling tips at any time from any device. This has become especially important and unique in our resident-run clinics as the clinicians in the videos are the same providers they encounter in our clinic.

Commercial support: None identified.
Ten-year review of inpatient consultations at St. Paul's Hospital in Vancouver, BC

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Background: Current literature demonstrates increasing interest in assessing inpatient dermatology consult services to determine commonly referred conditions, and evaluate the utilization of dermatology services. St. Paul’s Hospital is a quaternary care hospital in downtown Vancouver, BC. A review was conducted of the St. Paul’s Hospital dermatology service inpatient consultation data from July 2001-June 2010.

Objective: The primary purpose of this study is quality assurance. The results will be used to inform efforts to maximize the efficiency of delivery of dermatology care to inpatients and to target topics for continuing medical education offered to other services.

Methods: Historically, for each completed consult, residents have recorded in hardcopy format the diagnosis, attending physician, and date. That information was transcribed into a database and interrogated for trends in most common diagnoses and temporal patterns. The results were then compared with a literature search exploring similar reviews of dermatology inpatient consultations at other institutions.

Observations: The two thousand discrete consultation records from 2001-2010 demonstrated a predominant overall diagnosis of drug eruption (12.3%), followed by psoriasis (6.0%), eczematous dermatitis (4.6%), and vasculitis (4.5%). The average monthly number of consultations per year has been decreasing from 2001 to 2010. Psoriasis and drug eruption were more prevalent at our institution than others.

Conclusions: The St. Paul’s Hospital inpatient dermatology service provides diagnosis and management of a broad range of dermatological conditions, with an overall diagnostic predominance of drug eruption, psoriasis, and eczematous dermatitis. The cause of the steadily decreasing number of consultations per year is likely multifactorial. The St. Paul’s Hospital Rapid Access Clinic may have reduced the number of consults assessed in the emergency department. Inpatients may now have better outpatient access to dermatologists compared to 2001. The referring services may also be increasingly comfortable managing dermatological conditions or may favor outpatient referrals. These results will guide future opportunities for knowledge transfer via continuing medical education. For example, the dermatology service delivers lectures to the St. Paul’s Hospital Clinical Teaching Unit several times a year, and these can now be focused on commonly referred inpatient conditions.

Commercial support: None identified.
Addictive behaviors for tanning related to skin type in a Philadelphia-based location

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Addictive sun behavior has been explored in other studies. Multiple states have passed legislation to try to limit exposure and potentially addiction by limiting indoor tanning, especially in minors. We designed a study to assess addictive behaviors related to tanning. Over two consecutive summers at the Jefferson Dermatology office, patients were asked to complete one of two surveys aimed to determine tanning behaviors, exposure, SPF use and beliefs about sun. The surveys asked questions including each participant’s skin type and their thoughts on how pleasurable and addictive the sun is. The survey included modified CAGE questions, modifications of standard alcoholism screening questions, to determine each patient’s level of tanning addiction. We aimed to find a connection between skin type and tanning behaviors. 200 people participated in the shorter survey and 75 in the long survey, which included the CAGE questions. 35 patients reported that the sun is more pleasurable when not wearing sunscreen. Of these people, 42.9% identified their skin to rarely burn and always tan. 34 people agreed with at least one CAGE question. Of these people, 44.1% identified their skin to sometimes burn and often tan. The data suggest that people who more often tan than burn are more likely to answer yes to a tanning addiction screening question. Based on our data, it seems beneficial to modify how we speak to patients about tanning based on their skin type. A larger study should be undertaken in multiple locales to identify whether these populations are truly at an increased risk for tanning addiction.

Commercial support: None identified.

Analysis of general population interest in inflammatory disorders

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Background: Prevalence, quality of life, and economic cost are different methods of assessing the overall burden of different chronic inflammatory disorders. In addition, internet search queries is a novel method to determine the interest of different medical conditions and can be used to assess burden. This study explores longitudinal trends in general public’s interest in eczema, psoriasis, vitiligo, and psoriatic arthritis.

Objective: To determine the longitudinal and seasonal effects on interest in eczema, psoriasis, vitiligo and psoriatic arthritis.

Methods: Internet search query data were obtained from Google. Monthly normalized search volumes (NSVs) were determined for terms: eczema, psoriasis, vitiligo, and psoriatic arthritis from January 2004 to 2015 for Canada, United States and Australia. Using cosine analysis, seasonal and geographic effects were tested for data from Canada and United States. Volume searches were used to analyze the trends in popularity of search terms.

Results: Time series revealed eczema to have the highest NSVs. Psoriasis, rheumatoid arthritis and vitiligo were followed in descending order. A continuous increasing trend in NSVs was observed for eczema over the last 2 years as compared to psoriasis, vitiligo and psoriatic arthritis.

Conclusion: Internet search queries revealed search queries to be highest for eczema demonstrating strongest interest by the general public. These findings support that eczema, as well as other immunologic conditions have a significant burden. Further studies are needed to confirm these findings.

Design, study conduct, and financial support for the study were provided by AbbVie Inc. AbbVie participated in the interpretation of data, review, and approval of the abstract; all authors contributed to the development of the publication.
Cutaneous lymphoma in Korea: A nationwide retrospective study
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The epidemiologic and clinicopathologic features of cutaneous lymphoma (CL) may vary according to geographic area. Until now, a few large-scale epidemiologic studies of CL have been performed mainly in the USA and Europe. The aim of this study is to demonstrate the recent epidemiology and clinicopathologic characteristics of CL in Korea according to the WHO and the EORTC classification.

The patients newly diagnosed as CL from January 2009 to December 2013 at 32 tertiary institutes were enrolled and retrospectively reviewed. Total 422 cases had been diagnosed as CL from 355 cases of primary CL and 89 cases of secondary CL. Among primary CL, 293 cases (88%) were mature T-cell and natural killer (NK)-cell lymphoma, and mycosis fungoides was the most prevalent subtype. Diffuse large B-cell lymphoma (DLBCL) was most common among cases (11%) of mature B-cell lymphoma. The incidence of mature B-cell lymphoma in Korea was lower than in Europe and USA. DLBCL was more prevalent subtype of mature B-cell lymphoma in Korea than in Western countries. In addition, the incidence of extranodal NK/T-cell lymphoma, nasal type was higher than in Western countries, and even Japan, although it has been decreased during recent 10 years.

Commercial support: None identified.

3065
Dermatologic adverse events during treatment with anti-PD1 inhibitors
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Background: Nivolumab and pembrolizumab are next generation immune checkpoint inhibitors of the PD-1 receptor, currently approved in the treatment of melanoma and other advanced malignancies. There are limited data on the frequency and severity of dermatologic adverse events (AEs) associated with these agents.

Methods: A review of medical records of patients treated with either nivolumab or pembrolizumab at Memorial Sloan-Kettering Cancer Center for cutaneous adverse events (AEs).

Results: A total of 223 patients were evaluated, of which 195 patients had cutaneous AEs (96%). The most common AEs with both drugs included rash, pruritus, and pigmentary disorders—the former in particular can lead to alterations in dosing and impairment of health-related quality of life.

Conclusion: Dermatologic adverse events (AEs) can occur with high frequency with both nivolumab and pembrolizumab, and dermatologists should be aware of the possible appearance of dermatologic AEs in these patients.

Commercial support: None identified.

3024
Estimating the cost of Mohs micrographic surgery
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Objective: To determine patients’ perception of the cost of Mohs micrographic surgery (MMS) and to compare these perceptions to the estimated cost of administering MMS.

Design: A six month cost survey of consecutive MMS patients.

Setting: Academic dermatologic surgery center.

Participants: A cost survey was distributed to consecutive MMS patients at their first post-surgery. The cost of performing a MMS case was calculated for four U.S. geographic regions based on average cost of office space in that region, staff salaries, and cost of supplies. The annual total cost was divided by number of MMS cases for average cost per case.

Main outcomes and measures: Patients’ perception of the cost of MMS, a fair price for insurers to pay for MMS, and a fair out-of-pocket price for MMS.

Results: A total of 125 patients completed the cost survey. Of the respondents, 66%, 18%, and 16% estimated the cost of MMS to be $2000, $1000-$2000, and $500-$1000, respectively. This represents a 50% drop in patients willing to pay $2000 for MMS. Responses did not differ by income level. The estimated cost of performing a MMS case ranged from $1662 to $2218, with variance primarily due to differing case volumes.

Conclusions and relevance: There is discord between patients’ cost estimate of MMS and the amount they are willing to pay out-of-pocket. Given that the cost of MMS varies by case volume, it may be difficult for patients to accurately assess the cost of MMS. Further study is needed to determine how patients contribute more out-of-pocket, and how to better understand both the need for deliverable care and the amount patients are willing to spend.

Further studies assessing both variables will improve access to care and patient satisfaction.

Commercial support: None identified.

3749
Dermatology interconsultations in a hospital setting for a 3-year period of time
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Introduction: Patients are admitted to the hospital due to diverse conditions, most of these are seen by our dermatology department are inpatients due to systemic disease and not due to dermatologic conditions. However there is limited literature reporting main dermatologic hospital consultations. We aim to determine the most frequent dermatologic conditions presenting in inpatients.

Methods: This is a retrospective study from the period of March 2012 to March 2015 in the University Hospital “Dr Jose Eleuterio Gonzalez”, a public hospital in the northeast region of Mexico. All dermatologic consultations from the ER and other hospital departments (surgery, internal medicine, gynecology, and orthopedics) were collected from the dermatology consultations database a total of 1061. All of the consultations are evaluated within the first 24 hours upon request, and the patients were followed up in the hospital setting until resolution of the skin lesions, diagnosis establishment, or if needed, afterward in the outpatient dermatology clinic.

Results: A total of 1061 consultations were required. There was a male predominance pattern with 601 vs 460 females. Diagnoses were confirmed with histopathologic study. Tzanck testing, KOH scrapings, or based on clinical grounds according to dermatosis. The most frequent consultations were drug eruptions with 132 patients: morbilliform exanthema 72%, erythema multiforme major and minor 17%, Stevens—Johnson syndrome 6%, fixed drug eruption and drug reaction with eosinophilia and systemic symptoms 2.6% each, AGEP 1.4%, and toxic epidermal necrolysis 0.5% each. The second in order of frequency place in number were the viral infections with 106 patients (herpes 60%, varicella zoster 9.4%, human papillomavirus 9.4% and poxvirus 20%). The third in frequency were superficial fungal infections with 85 patients dermatomycosis 40.5%, tinea versicolor 28.2%.

Concerning infections, 62% were attributed to other departments. However there is limited literature concerning dermatologic inpatient consultations different from the outpatient setting.

Conclusion: Dermatologic inpatient consultations differ in number and condition upon the hospital level of care and country. Our study can provide a frame of reference for dermatologist and nondermatologist practitioners in this area, to reinforce the knowledge and expertise in those entities. It is fundamental to know what we are most likely to encounter in a clinical setting, in order to give the best medical care.

Commercial support: None identified.
Evaluating dermatology residency program websites
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Background: With a growing trend in popularity of web-based resources for residency applicants, evaluation of residency program websites is becoming more important. This study assesses dermatology residency websites (DRWSs), which have not yet been evaluated.

Material and methods: Using the Fellowship and Residency Electronic Interactive Database (FRIEDA) online database, authors searched for all accredited DRWSs. Eligible programs were identified through the FRIEDA online database and had a functioning website. Two authors independently extracted data with consensus or third researcher resolution of differences. These data were accessed and archived from July 15th to July 17th. Primary outcomes measured were presence of content on education, resident and faculty information, program environment, applicant recruitment, schedule and website quality evaluated using an online tool (WoolRank.com). For overall quality, programs received either a letter grade (A-E) if the DRWS was an internal page to the affiliated hospital’s main website or a number grade 0-100 if the DRWS was the main homepage of the website.

Results: There were 117 total accredited dermatology programs, but two programs did not have websites (Virginia Commonwealth University the University of Buffalo). Of the remaining 115 programs, 76.5% (75) had direct links found on the FRIEDA online database. Of 115 DRWSs evaluated, 20% (23) of DRWSs were the main homepage of the website with the average grade being 56.8 out of 100, ranging from 54.9 (Harbor/UCLA) to 91.7 (Stanford). The other 80% (92) of DRWSs were internal pages of the main hospital website. Of these, 11% (11) received an A+, 23.9% (22) received an A, 42.4% (39) received a B, 18.5% (17) received a C, and 3.3% (3) received a D (National Capital Consortium, New York Medical College, and Penn State). Most programs contained adequate information with respect to our primary outcomes; however, website quality was highly variable. Also, additional information on current residents and about away rotations were lacking from most websites, with only 52.2% (60) and 41.7% (48) of programs providing this content.

Conclusions: Though a majority of DRWSs contained information important to prospective applicants, many were also lacking in areas that matter to applicants as outlined above. We recommend that programs with poor content and website quality focus on updating their webpages using our primary outcomes as a guide.

Commercial support: None identified.

Evaluation of health-related questionnaire among Mycosis Fungoides and Lymphomatoid papulosis
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Introduction and objectives: Mycosis fungoides (MF) and lymphomatoid papulosis (LyP) are relatively rare and itchy skin disorders. The cosmetic disfigurement and severe pruritus dramatically affect a patient’s quality of life. The focus is to examine the validity and reliability of the Skindex-29, MD Anderson symptom inventory (MDASI) and itch-related quality of life (IQOL) questionnaire in 62 patients in a phase II trial of brentuximab vedotin.

Materials and methods: Patients completed survey questionnaires related to symptoms and quality-of-life several times over the course of brentuximab vedotin. We compared patients’ baseline scores to their end-of-study (EOS) scores. Patients were grouped by diagnosis into mycosis fungoides and lymphomatoid papulosis group. Questionnaires included Skindex-29, focusing on the skin conditions the patient was bothered the most. MDASI for patients with cancer and following the symptoms of cancer and the quality of life (QoL) questionnaire was developed to measure the symptoms associated with cancer therapeutic agents and their effect on daily activities. Scoring for the Skindex-29, MD Anderson Symptom Inventory (MDASI) and the Quality of Life (QOL) survey were done according to the questionnaire specific scoring guide. Responses were compared between 2 groups using the Wilcoxon rank-sum test.

Results: Questionnaires from 62 patients (23 LyP and 39 MF) were studied at baseline and end of study. Patients were 35 males and 29 females with median age of 60 years (range: 27-86 years). The median overall survival (OS) was significant P = 0.041, when comparing patients with MF to LyP. The median survival time for patients from time of diagnosis with MF was 14.66 years and LyP was not reached. There was no significant difference in progression free survival (PFS) between MF and LyP. The median number of brentuximab vedotin cycles was 7 (1-19). Skindex-29 scales, showed change in emotion scale and function scale from baseline to EOS. Both groups showed a decrease in the LyP group had a larger difference in emotion score (P = 0.040). LyP patients had a larger decrease in function score from baseline to EOS. When comparing patients with MF to those with LyP for MDASI, there is no evidence of a difference, from baseline to EOS, in either symptom severity or symptom interference in daily life. In the IQOL when comparing the LyP patients’ QOL responses from baseline to EOS, did not show significant difference.

Conclusions: A significant improvement in emotions and functional part of Skindex-29 was observed when comparing patients with MF to patients with LyP. While both groups had a decrease, the patients with LyP had a larger decrease in emotion and function score over the course of the study.

Commercial support: None identified.

Glycemic control in patients with psoriasis and concomitant diabetes
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Background: Glycemic control among patients with psoriasis and diabetes has been given little attention to date. Objective: To investigate the quality of glycemic control in a cohort of patients with psoriasis and concomitant diabetes.

Methods: A cross-sectional study was performed using the computerized medical database of Clalit Health Services. The study included a cohort of patients with psoriasis and diabetes, and age- and gender-matched controls with diabetes without psoriasis. HbA1C level measurements were used to assess the quality of glycemic control. Comparative multivariate analysis was performed, adjusted to age and sex and other interaction variable.

Results: The study included 3612 patients with psoriasis and diabetes and 4573 controls. Psoriasis was associated with well-controlled diabetes in a univariate analysis (OR 1.28; CI 95% 1.15-1.42) and in a multivariate analysis (OR 1.22; CI 95% 1.15-1.42) adjusted for age, gender, socioeconomic status, marital status, ethnicity, Charlson comorbidity index, and the number of annual visits to the primary care physician.

Conclusions: Glycemic control is better in diabetic patients with psoriasis compared to patients without psoriasis.
2619 Human papillomavirus vaccine initiation and completion among heterosexual and sexual minority young adult women (18-26 years) in the United States, 2013-2014
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Background: Lesbian women have lower rates of routine Pap smear screening and an increased risk of cervical cancer. A recent study suggested human papillomavirus (HPV) vaccination rates may also be lower among lesbian women, further increasing their risk of developing cervical cancer and genital warts.

Methods: We used publicly available, cross-sectional data from the 2013 and 2014 National Health Interview Surveys to assess HPV vaccination among heterosexual, lesbian, and bisexual women who were born July 1, 1979 or later and were thus eligible to receive the HPV vaccine within Advisory Committee on Immunization Practices (ACIP) guidelines since its June 2006 Food and Drug Administration (FDA) approval (n = 9155). We calculated the unadjusted prevalence and multivariate adjusted odds ratio of HPV vaccine initiation by age 26 years and vaccine completion (3-dose series) by sexual orientation. Analyses were weighted and performed using STATA version 13.1.

Results: HPV vaccine initiation rates were similar between heterosexual (27.1% ± 0.7%; adjusted odds ratio [aOR] = 1.0, reference) and lesbian (26.5 ± 4.5%; aOR = 0.99; 95% CI: 0.90-1.04, P = .97) women, but higher among bisexual women (42.2 ± 5.0%; aOR = 2.09; 95% CI: 1.73-2.54, P < .001). Independently associated barriers to vaccination included older age, non-Hispanic Asian race, lack of health insurance, lack of an usual source of care, lower health care utilization, living in the northern United States, and being married to or living with a partner. Among those that initiated vaccination, age at vaccination did not differ significantly between heterosexual (17.8 ± 0.1 years, reference group) and either lesbian (18.4 ± 0.8 years, P = .41) or bisexual (17.7 ± 0.8 years, P = .91) women. Among those that initiated vaccination, HPV vaccine completion rates (3-dose series) compared to heterosexual women (64.4 ± 15.7%; aOR = 1.0, reference) were similar among bisexual women (67.7 ± 7.4%; aOR = 1.11, 95% CI: 0.53-2.34, P = .78) but lower among lesbian women (41.6 ± 9.1%; aOR = 0.44, 95% CI: 0.24-0.81, P < .05).

Conclusions: HPV vaccination initiation rates do not differ significantly between heterosexual and lesbian women, but bisexual women have higher vaccination rates. Lesbian women who initiate vaccination are much less likely to complete the full 3-course series. Public health efforts should concentrate on increasing HPV vaccination completion among lesbian women to help prevent cervical cancer and genital warts.

Commercial support: None identified.

2616 Impact of nonmedically switching on health care costs: A claims database analysis
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Objectives: This analysis evaluated the impact of nonmedically switching (for a reason that is not medically related such as due to costs) from adalimumab (ADA) to another injectable anti-TNF agent (certolizumab, golimumab, etanercept, or ustekinumab) on health care costs in patients with rheumatoid arthritis, psoriasis, psoriatic arthritis, ankylosing spondylitis, or Crohn’s disease following a formulary mandated switch change by large pharmacy benefit managers.

Methods: Medically stable adult patients with ≥90 days continuous ADA use were identified in OptumInsight database (07/01/2012-06/30/2013). Patients who sub- sequently switched to another biologic (index date) following a payer formulary change and for no apparent medical reason between 01/01/2013-06/30/2013 were defined as nonmedically switchers. Patients who remained on ADA therapy during this period were defined as maintainers and their index dates were chosen randomly. Patients with hospitalizations, emergency department (ED) visits, or substantial increases in ADA dose 6 months preindex (baseline) were excluded to ensure medical stability. Outcomes included all-cause and indication-related medical (hospitalizations, ED visits, and outpatient visits) and total (medical and pharmacy) costs. Tests and multivariate regression analyses were used to compare cohorts in costs incurred during the 6 months postindex (follow-up) and in costs differed from baseline to follow-up.

Results: Mean age was 46 and 48 years, respectively, for maintainers (n = 2093) and switchers (n = 985). Switchers incurred significantly higher all-cause medical costs ($5170, P = .004) and total costs ($22,006 vs $17,797, P < .0001) during follow-up vs maintainers. Differences from baseline to follow-up were significantly greater for nonmedical switchers compared to maintainers in all cause medical costs ($4176, P < .0001) and total costs ($36,555, P < .0001). Adjusted regression analyses and indication-specific results yielded consistent findings.

Conclusions: These real-world analyses of patients stabilized on ADA demonstrated that maintaining therapy with ADA was associated with significantly less healthcare expenditures compared to switching to another anti-TNF for a nonmedical reason.

Design, study conduct, and financial support for the study were provided by Abbott Inc. AbbVie participated in the interpretation of data, review, and approval of the abstract; all authors contributed to the development of the publication.
Incidental skin cancer findings from total body skin examinations

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Introduction: Dermatologists are routinely faced with the option of performing a total body skin examination (TBSE) versus taking a targeted approach with a site-specific skin complaint found by the patient or referred by the primary care physician (PCP). While examining an at-risk patient may take extra time, its merits is the potential early detection of skin cancer or other important signs. This study evaluated the detection of previously unidentified (by patient or PCP) skin cancers found on dermatologist-performed TBSE.

Methods: Review of dermatology medical records of patients who were found to have biopsy-proven skin cancer between 2011 and 2015. Results: The 1044 patients who met inclusion criteria had a total of 1581 biopsy-proven skin cancers. 813 (51.3%) of these biopsy-proven tumors were found on TBSE, with 1.9% of tumors detected by TBSE being melanoma. 62.4% being basal cell carcinoma (BCC) and 32.9% squamous cell carcinoma (SCC). Melanoma—Of 51 biopsy-proven melanomas, 16 were found on TBSE. The melanomas found on TBSE had an average Breslow depth of 0.5 mm (0.2 mm-1.0 mm). When patients referred to dermatology for an identified potential melanoma were found to have such a tumor, mean Breslow depth was 1.04 mm (0.2 mm-6.9 mm) (P < .001). Basal cell carcinoma—Of 199 biopsy-proven BCCs, 553 (55%) were found on TBSE. BCC was 1.63 (95% CI 1.33-2.00) times more to be detected on TBSE, with 1.9% of tumors detected by TBSE being melanoma, 62.4% being basal cell carcinoma and 32.9% squamous cell carcinoma. Methods: The size of the tumor was 5 cm in 82% of the cases. The majority of the tumors (91%) had no known lymphatic spread and only a few patients had confirmed distant metastases (5%) when diagnosed.

Conclusions: TBSEs are highly sensitive for skin cancer when performed by trained dermatologists. Such a tumor, mean Breslow depth was 1.04 mm (0.2 mm-6.9 mm) (P < .001) were found on TBSE. Patients were more likely to identify SCCs versus other types of skin cancer as potential malignancies on presentation.

Commercial support: None identified.

2412 Increasing incidence of Merkel cell cancer in Sweden

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Background: Merkel cell carcinoma (MCC) is a rare aggressive neuroendocrine skin cancer with a high recurrence rate and a high mortality rate. Risk factors for MCC are reported to include high age, UV-exposure, white skin type and immunosuppression, among others. In the USA and some European countries, the purpose of this study was to calculate the incidence of MCC in Sweden.

Methods: The study design is a retrospective cohort study of population-based data for MCC collected by the Swedish Cancer Registry (SCR) to determine the incidence of MCC in Sweden and the clinical characteristics of these tumors including demographics, TNM classification, body part distribution, and overall survival after diagnosis. Anonymous data were collected from all registered cases between 1995 and 2012 using both systematized nomenclature of medicine (SNOMED) and International Classification of Diseases for Oncology (ICD), thus ensuring both the clinician’s and the pathologist’s classifications. The study obtained approval from the regional ethical review board.

Results: A total of 606 cases of MCC were identified during the 20-year study period. The median age of the patients was 81 years (range 21-99) and a majority, 54 %, were women but age-adjusted incidence was higher in men. The incidence per 100,000 of MCC in Sweden in 1995-2012 increased from 0.99 to 2.09 and for men (P < .005) and 0.12-0.17 for women (P = .091), age-adjusted for the world standard population. For both sexes, the increase was from 0.11 to 0.19, an increase of 73 % (P < .001). The most common site of the primary tumor was the head and neck with 52 % of the cases. The percentage of cases 1 cm in 82 % of the tumors (91%) had no known lymphatic spread and only a few patients had confirmed distant metastases (5%) when diagnosed.

Conclusions: MCC is a rare disease in Sweden, but the incidence is increasing. Incidence rates are higher than those in other Nordic countries and the rate at which incidence is increasing is slightly higher. This study supports the findings that high age, race and sex are risk factors for MCCs. Interventions are required to increase awareness of MCC among clinicians and the general population.

Commercial support: None identified.

3870 Investigating the potential correlation between sunscreen use and indoor tanning device use among American high school students

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Skin cancer, one of the most common cancers in the United States, has shown no decline in incidence in the last few years. Two drivers of high skin cancer incidence are poor sunscreen use and the popularity of indoor tanning. Recently, there has been a push for skin cancer education for high school students to decrease the risk of skin cancer. Yet there has been no increase in the number of students wearing sunscreen in the last few years, although indoor tanning use has significantly declined. To better understand the trend, this study investigated the proportions of high school students using sunscreen and using indoor tanning devices to analyze if there was any correlation between the two variables. The study sought to determine whether poor sunscreen use was associated with frequent indoor tanning. Data were collected from 13,585 questionnaires given to high school students as part of the National Youth Risk Behavior Survey run by the Centers for Disease Control and Prevention. The students’ responses to two questions (one about sunscreen use and one about the use of an indoor tanning device), as well as demographic information such as sex, grade, and race/ethnicity, were analyzed to calculate whether the percentages of students who never or often used an indoor tanning device differed according to their sunscreen use. Overall, there was a positive and statistically significant (P < .05) association with sunscreen use and indoor tanning use, especially among male, black/ African American, and ninth-grade students. There was no statistically significant correlation between the two variables for white students and female students. The study’s findings can ultimately help tailor educational tools for high school students to ensure that both sunscreen use and indoor tanning avoidance will reduce their risk of skin cancer.

Commercial support: None identified.

3843 Measuring the costs of shave and punch biopsy techniques using time-driven activity based costing

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Background: Implementing value-based health systems will require restructuring delivery models and physician reimbursement. Outpatient reimbursements are largely based on Current Procedural Terminology (CPT) codes derived from relative value units accounting for training length and time estimates, and practice costs. Despite the same payment, many dermatologic procedures are performed using techniques that vary in time and direct costs. We used time-driven activity based costing (TDABC) to calculate the true costs of shave and punch biopsies, which share a CPT code and Medicare reimbursement of $104.93. Furthermore, we examined variations in true costs to understand factors not reflected in CPT.

Methods: The TDABC method approximates procedure costs by multiplying the quantity and cost per resource, both human and material. Two independent observers selected eligible patients seen by dermatologists at an academic practice in Boston from Dec 2014 to Aug 2015. Biopsies were timed, and materials used were recorded on custom-designed process maps for each biopsy type. TDABC financial models were constructed using these process maps. Statistical analyses were conducted using 2-tailed t-tests.

Results: 46 biopsies (29 shave, 17 punch) were observed. Shave biopsies cost $54.71 to perform; $26.45 for physician time (PT), $4.01 for nurse time (NT), $25.19 for materials, and $1.06 for space and equipment costs (SEC). Punch biopsies cost $78.91, significantly more across each category (P < .002): $42.70 for PT, $0.42 for NT, $28.10 for materials, and $1.69 for SEC. PT made up 48% and 54%, and materials made up 42% and 36% of total costs for shave and punch biopsies respectively. Given the Medicare reimbursement of $104.93, practices could earn an average of $50.22 per biopsy. Despite the same payment, many dermatologic procedures are performed using techniques shared a CPT code and Medicare reimbursement of $104.93. Furthermore, we examined variations in true costs to understand factors not reflected in CPT.

Discussion: The data show TDABC’s feasibility for calculating dermatology service costs. Physician time and material costs are the major cost drivers of both punch and shave biopsies, which independently vary significantly in cost. Especially for punch biopsies, management of planning and reimbursement is needed to assess TDABC’s feasibility to measure biopsy follow-up and out-of-pocket patient costs. Innovative specialist reimbursement systems will require additional identification of major cost factors for practice sustainability.

Commercial support: None identified.
Melanoma incidence from 2001-2011 and predictors of stage at diagnosis

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It is estimated that over 7,000 new cases of melanoma will be diagnosed this year. While melanoma accounts for less than 2% of skin cancer cases, it will account for most skin cancer related deaths. Early detection of this highly aggressive cancer is the cornerstone of treatment.

Methods: A cross-sectional study was conducted using data from 18 registries reporting to the Surveillance, Epidemiology, and End Results (SEER) program from 2001-2011. Multivariate logistic regression was performed in order to obtain the unadjusted and adjusted associations between year of diagnosis and stage at time of diagnosis (in situ/localized versus regional/distant). Variables used as predictors included: demographic traits, age at diagnosis, primary site, laterality, histologic subtype, and tumor size.

Results: There were 115,913 cases identified with melanoma from 2001-2011 in SEER-Medicare constituted 46.6%. The age at diagnosis was evenly split between 40-64 year olds (45.4%) and those >65 (43.4%). Primary site was distributed as follows: head and face 28.1%, upper limb 25.0%, trunk 29.8%, and lower limb 17.0%. More regional and distant melanomas.

Commercial support: None identified.

3884

Racial disparities in chronic pruritus quality of life and resource Utilization

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Racial disparities in chronic pruritus have previously been reported. We investigated potential racial differences in quality of life impact and resource utilization using data from our US Veterans Pruritus Study. Race was self-reported and categorized as ‘white’, ‘Black/African American’ or ‘Other’. Quality of life impact was measured using ItchQoL, a 22-item self-reported survey on itch-specific quality of life impact for the preceding week. Medical resource utilization referred to the preceding 5 months and included physicians visits, medications, alternative therapies, and loss of time or income due to symptoms. Of the 405 patients with chronic pruritus, blacks constituted 18% of the sample and had a significantly higher quality of life impact, even after adjusting for sociodemographic variables and itch severity. Individual ItchQoL items reveal sources of these differences (all P < .05) to be the use of special soaps and clothes, scars, burning and multiple emotional items. Blacks were also significantly more likely to visit their primary care provider for pruritus (P = .05). Yet had similar numbers of specialty care visits. Additionally, Blacks more frequently required extra help for daily tasks (P = .05). The data indicate a racial disparity in pruritus for both quality of life impact and resource utilization. These findings merit further exploration into explanations such as access, communication, trust of the medical system, and biological differences.

Commercial support: None identified.
Skin biopsy practices of dermatologists and nondermatologists

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Background: While skin biopsy is a useful diagnostic and therapeutic technique commonly used by dermatologists and family practitioners (FPs), there is associated cost and morbidity.

Objective: This retrospective study is designed to assess and compare the skin biopsy practices of dermatologists and nondermatologists to determine the frequency and characteristics of potentially avoidable skin biopsies.

Methods: We reviewed all 822 pathology reports for biopsies submitted to Vancouver Coastal Health (VCH) and reported by dermatopathologists in a two-week period (June 8-21, 2014). Biopsies were categorized by specialty of submitting physician and further classified based on diagnostic confidence. If biopsy was deemed unnecessary, a diagnosis was medically indicated if a clinician experienced in the care of skin diseases would typically be unable to make the diagnosis clinically without biopsy confirmation, or if surgical treatment was medically indicated for the condition in most cases. Any diagnostic biopsy not meeting either criterion was classified as optional.

Results: Basal cell carcinoma was the most commonly biopsied condition by dermatologists (20% of all dermatologist-conducted biopsies), and seborrheic keratosis by FPs (17% of all FP-conducted biopsies). The percentage of optional biopsies conducted by FPs (61%) was significantly higher than that of dermatologists (46%; P = 0.0006). Therefore, if FPs performed as well as dermatologists, this would result in a 24.6% reduction in optional skin biopsies. Using $129.18 as the estimated total technical and professional cost per FP-conducted biopsy, elimination of these potentially avoidable biopsies would result in an estimated cost savings of $185,108 per year in VCH.

Conclusion: FPs conduct a significantly higher proportion of potentially avoidable skin biopsies than dermatologists, representing a target for continuing education to improve patient care and optimize use of health care resources.

Commercial support: None identified.

Skin cancer disparities: Identifying trends in tumor location and type in a low-income, uninsured minority population

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Background: Skin cancer is increasingly being recognized as a problem in darker skinned, minority populations. The incidence of melanoma in minority populations is noted to be rising, and nonwhites are more likely to have thicker melanomas at diagnosis than the poorest amongst phototypes III and IV, highlighting the finding that social influences. Sun protection was the highest amongst skin phototypes I and II, and was related to outdoor activity, with skin phototypes III and IV being at the highest risk for all skin types.
2557

Survey of dermoscopy use by Taiwanese and Chinese dermatologists

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Background: Dermoscopy is a useful technique for improving the diagnostic accuracy of various types of skin disorders. Although the technique has been widely adopted by European and United States dermatologists, only limited information is available on the prevalence of dermoscopy use in Taiwan and China.

Objectives: We assessed the use and barriers to adoption of dermoscopy among Taiwanese and Chinese dermatologists to determine the relationship between dermoscopy use and the characteristics of dermoscopy users.

Methods: A questionnaire of 20 items regarding demographic characteristics, dermoscopy training, and application was mailed to 950 dermatologists listed in the 2013 Taiwanese Dermatological Association registry. The same questionnaire was sent to 40 dermatologists who had attended the dermoscopy training course held in Beijing, China, in October 2014.

Results: Of the 950 mailed questionnaires, 202 were returned and 195 were identified to be eligible. Of the valid respondents, 51.8% used dermoscopy and 62.1% had attended courses for dermoscopy training. Dermoscopy use was significantly associated with women (P = .018), residents (P < .001), young age (P < .001), dermoscopy training (P < .001), and owning dermoscopy books (P < .001).

In addition, the price of a dermatoscope was lowered (64.9%), and free trials were offered by dermatoscope vendors (58.5%). Dermoscopy nonusers might be willing to use this technique. Among the 57 respondents of Chinese dermatologists, 27% used dermoscopy and 19% had attended training courses. Dermoscopy use was associated with attending training courses (P < .001) and owning dermoscopy books (P = .002). Lack of training (70.4%) was the main factor limiting dermoscopy use.

Conclusion: This is the first published survey on the application of dermoscopy in Taiwan and China. Despite a low response rate and potential selection bias, our study revealed that dermoscopy is increasingly being accepted by Taiwanese dermatologists, and is still required popularization in China. In addition, the study offers an opportunity to introduce all dermatologists to this technique.

Commercial support: None identified.

2548

The current and projected dermatology workforce in the United States

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Background: Expansion of health insurance coverage under the Affordable Care Act (ACA) is expected to increase demand for dermatologists. The objective of this analysis is to determine the capacity of the dermatologic workforce to meet future demands for care.

Methods: Projections of dermatologists (MD and DO), nurse practitioners (NPs), and physician assistants (PAs) were constructed up to the year 2050 using growth trends of training positions for each profession over the past two decades. Attrition was accounted for by stratifying each profession into decadal age groups and applying 2011-2013 data. Professional organizations (PSO’s) projected physician (PS) demand from 2013 to 2050. The Cooper Demand Model is also used by the Council on Graduate Medical Education (CoGME) and the Association of American Medical Colleges (AAMC) for workforce projections. The World Bank and Organization for Economic Cooperation and Development (OECD) economic forecasts were used to predict future economic growth of 2-3% annually compared to the historic growth rate of 3.4% from 1920-2014.

Results: With projected GDP growth of 5% annually, the supply of dermatologists will be 24% short of the estimated demand for dermatologic care assuming current trends in dermatology resident training continue. This shortage decreases to 9.7% with more modest GDP growth of 2% annually. Shortages of dermatologists may gradually disappear over the next two decades if current trends in training for NPs and PAs remain stable. Alternatively, increasing the growth of PGY-1 dermatology residents by 50 annually over the previous year’s total will gradually eliminate shortages with 2% annual GDP growth, but not under the scenario of 5% growth.

Conclusion: The United States faces a substantial shortage of dermatologists in the next 30 years, which may reach 25% of anticipated demand. Growth in the NP and PA workforce may help to partially alleviate the severity of these workforce shortages.

Commercial support: None identified.

3651

The hidden costs of systemic dermatologic medications

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Background: Although topical medications make up a large part of dermatologic therapies, there are various systemic medications frequently used to treat common dermatologic diseases such as acne, atopic dermatitis, and psoriasis. Over the last decade, the use of systemic medications has increased. In the era of emphasizing cost efficacy in clinical practice, this study was conducted to determine the costs associated with systemic medications in dermatology.

Methods: One-year treatment paradigms were constructed for the treatment of chronic diseases such as psoriasis and atopic dermatitis. Medications studied included methotrexate, cyclosporine, mycophenolate mofetil, azathioprine, and acitretin. The expenses associated with treatment paradigms were determined from the third-party payer perspective. Expenses associated with physician visits and laboratory tests were determined using the mean US reimbursement rates for the Medicare physician reimbursement schedule and clinical laboratory fee schedule.

Results: All drugs required baseline monitoring which included baseline monitoring to monthly monitoring of electrolytes, liver function, and/or lipid profile. The systemic medication that was associated with the highest cost due to monitoring was mycophenolate mofetil, which required monthly lab data for close monitoring while on this medication, accruing an additional $800 to $1000 USD over 1 year of treatment. The second-highest associated costs were seen in the use of mycophenolate mofetil, due to guidelines recommending monthly monitoring of both complete blood counts and comprehensive metabolic panels. The lowest cost was observed with cyclosporine and methotrexate, ranging from $500 to 400 USD.

Conclusion: The least expensive systemic drug studied was methotrexate, followed by cyclosporine. For patients with chronic diseases requiring systemic medications, the hidden costs associated with treatment should also be considered. Apart from cost, there are potential benefits from using medications that require frequent monitoring. As a result of the laboratory monitoring, regularly scheduled follow-up clinic visits can have a positive influence on patients’ care and outcome, by promoting improved adherence to medication and encouraging the physician-patient relationship.

Commercial support: None identified.

3079

The inpatient burden of pemphigus: A nationwide analysis

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Background: Pemphigus is a debilitating autoimmune blistering disorder affecting the skin and mucous membranes. The disease is associated with severe flares and complications that may increase hospitalization rates. However, few studies have evaluated pemphigus in the inpatient setting. We sought to determine the inpatient burden of pemphigus in the US.

Methods: We analyzed data from the 2002-2012 Nationwide Inpatient Sample, containing a representative 20% stratified sample of all inpatient hospitalization in the US. Demographic information, inflation-adjusted cost, and length of stay were analyzed using descriptive statistics and regression analysis.

Results: There were 5647 and 24,880 weighted admissions with a primary or secondary diagnosis of pemphigus from 2002 to 2012. The incidence of primary and secondary hospitalization for pemphigus ranged from 1.74 per 58 and 4.77 per 53 per million patients per year, respectively. In bivariate logistic regression models, patients admitted for a primary diagnosis of pemphigus were more likely to be Hispanic (3.04 [2.63-3.54]), black (1.97 [1.66-2.34]), Asian (2.50 [1.83-3.42]), or Native American (2.08 [1.07-4.03]), and less likely to be insured (0.50 [0.42-0.62]). Among those with insurance, patients were more likely to have Medicaid (1.78 [1.55-2.07]) or Medicare (1.59 [1.35-1.89]) as compared to private insurance. Length of stay was longer for patients with a primary (mean ± SD: 7.42 ± 16.7 days) or secondary (7.27 ± 25.9 days) diagnosis of pemphigus compared with non-pemphigus patients (4.56 ± 14.6 days). The total annual inpatient cost-of-care for patients admitted with a primary diagnosis of pemphigus was $74,466,305 with a mean annual cost of $14,520.93 ± $52,013.

Discussion: Nonwhite race, uninsured and underinsured status were significantly associated with higher incidence of hospitalization for pemphigus. The financial burden of pemphigus is substantial and patients admitted for pemphigus had costs of care that were significantly higher than patients without pemphigus. Future studies are needed to develop clinical and public-health interventions to reduce hospitalization rates for pemphigus patients.

Commercial support: None identified.
sunscreen to their dorsal feet. Current skin cancer epidemiology pairs the foot with
attended an average of 2.7 applications per person; feet; applications of sunscreen per person to the dorsal feet was less than other anatomic

Methods: We performed a retrospective chart review of all new patients presenting to the KBTH Dermatology Clinic over a 1-year time period in 2014. Patient charts were reviewed for basic demographic data and clinical information such as referral diagnosis, diagnostic tests, diagnoses, treatments and number of follow-up visits. Ethical clearance was obtained from the local and US partner IRBs.

Results: 652 new patients who were seen at the KBTH dermatology clinic met criteria for inclusion, and 529 had medical records available for review. The majority of the 529 patients studied were female (56.6%) and the mean age was 32.1 ± 23.5 years. In total, 678 discrete diagnoses were made. The most commonly diagnosed skin conditions were infections (24.6%) and dermatitis/eczema (24.4%). 18 biopsies were performed. The treatments most commonly prescribed to patients were antihistamines (44.2%), topical steroids (38.0%), and keratolytics (26.8%). Patients showed that biopsies were infrequent, likely due to the lack of local dermatology resources. Local affordable formulary was limited, but generally adequate.

Conclusions: Our results are in agreement with earlier studies from Ghana and other developing countries. A 1995 study of skin disease in Kumasi, a central Ghanaian city, showed infectious etiologies and dermatitis to be common. Our study also showed that biopsies were infrequent, likely due to the lack of local dermatology resources. Local affordable formulary was limited, but generally adequate.

Limitations: Frequency data were obtained retrospectively from a single outpatient clinic; therefore, results are subject to a selection bias and may not be generalizable to the general population.

Commercial support: None identified.

2555
Understanding ultraviolet radiation dorsal foot injury at the beach

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Background: The dorsal feet can be protected from ultraviolet radiation (UVR) injury at the beach by using shade, shoes, and sunscreen. However, efforts made to protect the dorsal aspect of the foot are currently unknown.

Objective: The primary goal of the study was to determine if beachgoers protected the dorsal aspect of their feet as frequently as other anatomic sites. Additional information collected included subject demographics and general knowledge about skin cancer to determine if these variables were significantly correlated with dorsal foot protection from UVR injury.

Methods: A convenience sample of 216 Galveston beachgoers completed anonymous surveys to assess whether the dorsal foot was at risk for UVR injury.

Results: 112 of 215 participants (52.1%) did not apply sunscreen to their dorsal feet. 78% of nonusers explained, “I didn’t think about it.” The average number of applications of sunscreen per person to the dorsal feet was less than other anatomic sites (0-2 vs 3-10 applications, and 0 vs 5 average dorsal feet applications per person; P < .0001). Of 142 beachgoers using sunscreen on the lower extremity, 34.5% applied sunscreen to only the leg or dorsal foot. Additionally, 58% of females applied sunscreen to the top of their feet, compared to only 35% of men (P = .001). Furthermore, individuals who characterized themselves as Fitzpatrick skin types (FST) 5-6 did not apply sunscreen to the dorsal foot as regularly as individuals with FST 1-4 (84.6% of FST 5-6 did not apply vs. 47.6% of FST 1-4; P < .0001).

Discussion: In this population of beachgoers, only 47.9% used a topical UVR barrier on their dorsal feet. Men and subjects with higher FST were less likely to apply sunscreen to their dorsal feet. Current skin cancer epidemiology pairs the foot with the leg together as “lower extremity.” However, we found that 34.5% of beachgoers using sunscreen on the lower extremity only applied sunscreen to either the leg or foot. For epidemiologic purposes in UVR research, feet and legs should be considered to be distinct areas since they may differ in photoprotection strategies.

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3797
A case of multiple skin cancers in a patient with ocouloocutaneous albinism type 2

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A 60-year-old woman with history of ocouloocutaneous albinism (OCA) type 2 presented with multiple nonmelanoma skin cancers. Patient was originally from Liberia and was treated as a child for her albinism with daily sun exposure. As an adult, she subsequently developed multiple skin cancers (four squamous cell carcinomas and three basal cell carcinomas have been diagnosed). OCA type 2 is caused by mutations in the OCA2 gene, also known as the Pgene, at chromosome 15q11-q13. OCA type 2 is the most common type of albinism, with high frequency in equatorial Africa. This case illustrates the importance of sun protection and proper sunscreen application in individuals with albinism. In addition, it also illustrates the importance of frequent screening skin exams for these patients as they are at higher risk of developing skin cancer.

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c.1279_1290del12 in the SLCO2A1 gene. Result of serum and urinary prostaglandin


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A diagnosis of pachydermoperiostosis (PDP, MIM 167100) is usually made in patients aged >20 years. Here, we report a case of PDP diagnosed at puberty. A 15-year-old Japanese boy was referred to our hospital. His symptoms included clubbing of the fingers and toes, and greasiness of the facial skin, although only faint pachydermia was noted. His sibling and parents did not display associated symptoms. He started to notice enlargement of his fingers and toes at the age of 12 years. Subsequently, he experienced pain in his shoulder and knee joints. Endocrinological examinations showed no notable evidence of acromegaly. Radiological examination showed periostosis of the diaphysis in the radius, ulna, fibula, and tibia. Marked thickening of the scalp was also evident. Biopsy of the skin from the forehead showed the dermis thickened. Interwoven collagen bundles, hypertrophic sebaceous glands, and increased density of sweat glands were detected in the dermis. These observations are common pathological features of PDP. We identified compound heterozygous mutations at c.940+1G > A and c.1279_1290del12 in the SLCO2A1 gene. Result of serum and urinary prostaglandin E2 (PG(E2)) levels were high, which were 940.99 pg/ml and 159 pg/mmol creatinine, respectively. These observations confirmed the PDP diagnosis; moreover, both mutations have been reported in Japanese patients with PDP. The c.940+1G > A splice site mutation is located in the splice donor site on intron 7 and results in the loss of exon 7 along with truncation of the PGT protein. This mutation has been identified in six Japanese, two Chinese, and one African patients, all of which were unrelated cases. The amino acid sequence containing the p.E427_P430del mutation is located in the extracellular region between the 9th and 10th transmembrane domains. This mutation could have a less severe effect on PG transport activity, which might be consistent with the faint pachydermia in the present case. The initial diagnosis of the other two cases with an identical SLCO2A1 genotype was an incomplete form of PDP. Phenotypes of PDP are not simply determined by SLCO2A1 genotypes and accompanying phenotypes.

Commercial support: None identified.
Commercial support: None identified.

3389
Adult-onset congenital erythropoietic porphyria
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Congenital erythropoietic porphyria (CEP) is a rare autosomal recessive porphyria resulting in deficient uroporphyrinogen III synthase and classically presents with severe photosensitivity in early infancy. We report a 74-year-old male with a 30-year history of a nonpruritic vesiculobullous eruption limited to the dorsal hands with a several month history of new-onset bullae of the face and scalp. Bullae self-resolve within days leaving crusted erosions and hyperpigmentation. The diagnosis of porphyria cutanea tarda (PCT) was considered. Despite normal liver function studies and negative porphyrin levels, the patient continues to suffer from chronic pruritus of the unique mucocutaneous vascular lesions of both CREST and HHT syndrome. The diagnosis of HHT eluded physicians for over 20 years. This previously untreated patient was referred for treatment with pulsed dye laser for her mucocutaneous AVMs. In conclusion, this is the first report of HHT in this patient with previously diagnosed CREST. She was referred to otolaryngology. This detailed history and careful physical exam revealed a clinical picture consistent with HHT. The presence of mucocutaneous vascular lesions admixed with atrophic cicatrices scattered about the scalp, face, and dorsal hands. Oral mucosa and teeth were unremarkable. Ten fingernails displayed variable degrees of onycholysis. Onychomatrix biopsy and intact vessel biopsy demonstrate subperiosteal and follicular fibrosis with variable acantholysis. PAS staining was unremarkable. Direct immunofluorescence of perilesional skin demonstrated patchy dermal fibrinogen deposition. Serologies including indirect immunofluorescence, bullous pemphigoid 180 and 230 antibodies, desmoglein 1 and 3 antibodies and serum ANA were negative. Liver enzymes, serum ferritin, HIV and hepatitis C serologies were unrevealing. Porphyria studies showed marked elevation of plasma and urine uroporphyrin I and coproporphyrin I, fecal coproporphyrin I and erythrocyte protoporphyrin. This biochemical analysis is consistent with CEP. CEP may rarely present in adulthood as a result of delayed phenotypic expression or can be acquired in association with an underlying blood dyscrasia. In this case, considering the chronicity of his skin disease, the significance of his underlying chronic leukemia is unknown. Uniquely, this patient presented with prominent nail dystrophy which is not a prototypic finding of CEP in addition to cutaneous manifestations mimicking PCT. While the urine porphyrin profile is similar between these two entities, the presence of coproporphyrin I in the stool and elevated erythrocyte porphyrins distinguishes the diagnosis of CEP. Accurate diagnosis of adult-onset CEP is imperative to prevent unnecessary phlebotomies and should prompt investigation to rule out an underlying hematologic malignancy.

Commercial support: None identified.

3569
An inexplicito presentation of hereditary hemorrhagic telangiectasia concealed by CREST syndrome
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Hereditary hemorrhagic telangiectasia (HHT) is a genodermatosis that primarily affects vascular structures. It has an autosomal dominant inheritance pattern with variable penetration. Patients present most commonly with mucocutaneous AVMs, which can mimic many other common vascular lesions, and impede medical and surgical decision-making. Diagnosis is based on the presence of at least two criteria AVMs and two additional criteria. The differential diagnosis includes other forms of telangiectasia such as Osler–Weber–Rendu syndrome. Cutaneous AVMs can affect any site from the scalp to the nail beds. They may present in childhood or adulthood as a result of delayed phenotypic expression or can be acquired with atherosclerotic disease. Patients with CREST syndrome (Raynaud phenomenon, esophageal dysmotility, sclerodactyly and telangiectasia) also have cutaneous vascular complications, including telangiectasias, onychodystrophy and impotence. Our patient’s presentation, diagnosis and treatment are described.

Commercial support: None identified.

3929
An unexpected rash in a man with congenital ichthyosiform erythroderma
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Nonbullous congenital ichthyosiform erythroderma (CIE) is an autosomal recessive disease caused by a mutation in one of several known genes and affecting around 1 in 200,000 people. It typically presents at birth with a collodion membrane and develops into scaling erythroderma present throughout life. Patients often develop extensive macules and plaques and papules and nodules distributed over the developing skin. The differential diagnosis is usually limited to acute and chronic ichthyosiform disorders of infancy, as cases are usually not diagnosed prenatally. We present a case of CIE presenting as a 29-year-old black male with history of CIE and chronic widespread eczema. The patient presented with a 30-year history of scaly skin, pruritus and focal erythematous eruption of the face. We present the case history, clinical presentation, histopathological evaluation and literature review for this rare entity.

Commercial support: None identified.

3620
An undiagnosed Brooke–Spiegler case in a 58-year-old woman
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Brooke–Spiegler syndrome (BSS) is a rare autosomal dominant genodermatosis that results in a predisposition to cutaneous tumors derived from hair follicles or sweat glands. The hallmark of the disease is the presence of cutaneous tumors, which are highly variable in appearance and number. The clinical presentation of BSS includes a variety of lesions, ranging from papules to large nodules and tumors. Diagnosis of BSS is usually made based on clinical and histopathologic findings. Treatment of BSS is primarily based on surgical excision of tumors, but there is limited evidence to support the effectiveness of other treatments. The goal of management is to prevent the development of malignant tumors. We report a case of BSS and review its clinical presentation and genetic cause. A 58-year-old female, with a history of multiple basal cell carcinomas (BCC) and a biopsy proven trichoepithelioma, was referred for evaluation of a suspected BCC on her nose. Greater than 100 lesions were visible on her face and body, which reportedly appeared when she was 7-8 years old and increased in number and size over the years. Progressive tumor growth near her eyes and ears had led to impairment of her vision and hearing. She reported 2 children (son, 27 and daughter, 33) and 2 grandchildren (ages 9 and 12) were also showing signs of cutaneous growths. Her face consisted of greater than 50 individual, clustered, and coalescing flesh-colored to hyperpigmented papules concentrated around the nose, mouth, and cheeks. A large scar from previous surgical interventions and grafting was present on her glabella and bilateral eyebrows. Other notable tumors included: a 3-cm tumor on the posterior crown of the scalp and a 1.5-cm pink nodule on the left arm that were biopsied. Pathology confirmed she had a cylindroma (scaly) and another trichoepithelioma on her left arm and right lateral nose. The composite history, clinical, and histopathologic diagnoses were consistent with BSS. BSS is the result of a mutation in the CYLD gene found on chromosome 16q12. The protein from this gene results in regulation of nuclear factor kappa B that protects the cell from apoptosis. Despite the atypical appearance of our patient and her steady development of tumors, she had never been referred to genetics, an important step in those with a suspected genetic disorder. Another important facet of BSS follow-up is regular dermatologic examination to monitor for development of malignancy such as BCCs from malignant degeneration of trichoepitheliomas or the development of malignant salivary gland tumors. We report a case of a 58-year-old female with a history of multiple basal cell carcinomas (BCC) and a biopsy proven trichoepithelioma, was referred for evaluation of a suspected BCC on her nose. Greater than 100 lesions were visible on her face and body, which reportedly appeared when she was 7-8 years old and increased in number and size over the years. Progressive tumor growth near her eyes and ears had led to impairment of her vision and hearing. She reported 2 children (son, 27 and daughter, 33) and 2 grandchildren (ages 9 and 12) were also showing signs of cutaneous growths. Her face consisted of greater than 50 individual, clustered, and coalescing flesh-colored to hyperpigmented papules concentrated around the nose, mouth, and cheeks. A large scar from previous surgical interventions and grafting was present on her glabella and bilateral eyebrows. Other notable tumors included: a 3-cm tumor on the posterior crown of the scalp and a 1.5-cm pink nodule on the left arm that were biopsied. Pathology confirmed she had a cylindroma (scaly) and another trichoepithelioma on her left arm and right lateral nose. The composite history, clinical, and histopathologic diagnoses were consistent with BSS. BSS is the result of a mutation in the CYLD gene found on chromosome 16q12. The protein from this gene results in regulation of nuclear factor kappa B that protects the cell from apoptosis. Despite the atypical appearance of our patient and her steady development of tumors, she had never been referred to genetics, an important step in those with a suspected genetic disorder. Another important facet of BSS follow-up is regular dermatologic examination to monitor for development of malignancy such as BCCs from malignant degeneration of trichoepitheliomas or the development of malignant salivary gland tumors. The heavy cutaneous load of tumors leading to disfigurement and impairment of senses (as seen in our patient) may lead to psychological symptoms. Strong psychological support is important for these patients. Dermatologists must ensure that BSS patients and their families are cared for by a multidisciplinary team to help them manage this complex, rare genetic condition.

Commercial support: None identified.
Anatomic location of connective tissue nevi in patients with tuberous sclerosis complex

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Background: Nearly all patients with tuberous sclerosis complex (TSC) develop dermato logic manifestations, including angiofibromas, fibrous cephalic plaques (forehead plaques), hypomelanotic macules, ungual fibromas and shagreen patches. The shagreen patch is a type of connective tissue nevus that is a major feature for the clinical diagnosis of TSC. It is typically located on the lower back; however, some patients have plaques elsewhere on the body or only manifest small collagenomas. The ability to recognize these variable presentations can be important for the diagnosis of TSC.

Objective: To describe the clinical and histologic characteristics of connective tissue nevi in the trunk and extremities of TSC patients.

Method: 104 adult patients with TSC were enrolled in an observational cohort study that was enriched for those with pulmonary lymphangiomyomatosis (LAM), and was therefore composed mostly of women (99 women, 5 men). A retrospective analysis of patient medical records, including skin photography, was performed to delineate the clinical and histopathologic features of TSC-related connective tissue nevi. Connective tissue nevi were categorized according to anatomical location and size: Lesions less than 1 cm in size were called collagenomas. Shagreen patches were characterized as small (<1 cm), medium (1 to <4 cm), large (4 to <8 cm), and large (>8 cm).

Results: Overall, 56% (58/104) of TSC patients had at least one connective tissue nevus; of these, 47% (27/58) had a solitary lesion and 53% (30/58) had two or more. A total of 120 lesions from 55 patients were classified by size: 38% collagenomas, 35% shagreen patches, 18% macules, and 12% large shagreen patches. The distribution of lesions was 9% upper back, 51% middle back, 50% lower back, and 9% other locations, mostly buttocks and thighs. All 26 shagreen patches that were sent for histopathology had coarse collagen fibers and 15/17 had decreased elastic fibers.

Conclusion: Connective tissue nevi in those with TSC appear at highest frequency on the lower back, but may be observed anywhere on the back, buttocks or thighs. Histopathology demonstrates coarse collagen fibers and usually decreased elastic fibers. This characteristic distribution and pathology help distinguish the shagreen patch and collagenomas in TSC patients from connective tissue nevi associated with other disorders.

Commercial support: None identified.

3841 Beauty and the beast: A case of plexiform neurofibroma in a 16-year-old Filipino female

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Introduction: Neurofibromatosis type 1 is an autosomal dominant characteristic specified by specific dermatologic, ophthalmologic, and osseous findings. The characteristic distribution of neurofibromatosis type 1 relies on the presence of two or more of the following: café au lait macules, neurofibromas or plexiform neurofibroma, axillary or inguinal freckling, optic glioma, Lisch nodules, sphenoid dysplasia or exophthalmos. The diagnosis of neurofibromatosis type 1 depends on the presence of two or more of the following: café au lait macules, neurofibromas or plexiform neurofibroma, axillary or inguinal freckling, optic glioma, Lisch nodules, sphenoid dysplasia or exophthalmos. The diagnosis of neurofibromatosis type 1 was confirmed by the presence of café au lait macules, neurofibromas, and propensity for malignant transformation. Affected patients experience anxiety and depression as well as quality of life issues.

Case summary: We report a 16-year-old Filipino female who presented with hyperpigmented macules over the trunk and both extremities since birth. At 5 years of age, she had a gradually enlarging hyperpigmented lesion on the left arm, which evolved into a large mass associated with occasional pain by 16 years of age. The lesion was therefore composed mostly of women (99 women, 5 men). A retrospective analysis of patient medical records, including skin photography, was performed to delineate the clinical and histopathologic features of TSC-related connective tissue nevi. Connective tissue nevi were categorized according to anatomical location and size: Lesions less than 1 cm in size were called collagenomas. Shagreen patches were characterized as small (<1 cm), medium (1 to <4 cm), large (4 to <8 cm), and large (>8 cm).

Results: Overall, 56% (58/104) of TSC patients had at least one connective tissue nevus; of these, 47% (27/58) had a solitary lesion and 53% (30/58) had two or more. A total of 120 lesions from 55 patients were classified by size: 38% collagenomas, 35% shagreen patches, 18% macules, and 12% large shagreen patches. The distribution of lesions was 9% upper back, 51% middle back, 50% lower back, and 9% other locations, mostly buttocks and thighs. All 26 shagreen patches that were sent for histopathology had coarse collagen fibers and 15/17 had decreased elastic fibers.

Conclusion: Connective tissue nevi in those with TSC appear at highest frequency on the lower back, but may be observed anywhere on the back, buttocks or thighs. Histopathology demonstrates coarse collagen fibers and usually decreased elastic fibers. This characteristic distribution and pathology help distinguish the shagreen patch and collagenomas in TSC patients from connective tissue nevi associated with other disorders.

Commercial support: None identified.

3158 Congenital plate-like osteoma cutis secondary to sporadic Albright's hereditary osteodystrophy

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A 6-year-old boy with a history of sleep apnea and mild language delay presented to the emergency room with several episodes of abrupt loss of consciousness, each lasting 10-15 seconds, over the previous week. No head trauma was noted and the family's medical history was unremarkable. Physical examination showed round, low-grade, brachydactyly (due to brachymetacarpalia), several hard 3-5 mm subcutaneous nodules on the scalp, and a hard, flat, 5 cm diameter, plate-like mass on his posterior left thigh. In addition, the patient's height was 5 standard deviations below normal for his age. Laboratory results in the ED showed critical hypocalcemia (6.8 mg/dL) and prolonged QT interval on EKG. Subsequent studies confirmed hypocalcemia, hyperphosphatemia, and extremely elevated parathyroid hormone (PTH) levels (507; normal 0-65). CT showed bilateral calcifications of basal ganglia and calcified densities of the scalp. The results of the physical, laboratory, and radiographic examinations led to the diagnosis of the pseudohypoparathyroidism type of Albright’s hereditary osteodystrophy (PHP1a). OMIM 105580. The patient was found to have a c.525, 526delT mutation in the GNAS gene (20q13.3), a 2-base pair deletion leading to a premature stop codon. Of interest, the flat, stone-hard, dermal ossification in his thigh was congenital. Congenital plate-like osteoma cutis is exceedingly rare, reported only in AHO and in a mild form of progressive osseous heteroplasia (POH, OMIM 166350). The patient’s family, including parents, grandparents, and siblings, showed no clinical findings of AHO, suggesting that his condition may be due to a de novo mutation. The incidence of de novo c.525, 526delT mutations in GNAS leading to PHP1a-type AHO is unreported. The patient and his family are undergoing genetic evaluation in order to identify the etiology of this mutation. AHO (PH1P1a) phenotype results from autosomal dominant inheritance of a loss-of-function mutation in the Gsalpha component of the GNAS1 gene, which leads to end-organ resistance to PTH and multiple endocrinopathies, as seen in our patient. In addition, this mutation leads to a variety of other features, also seen in our patient: round face, low nasal bridge, brachydactyly, cognitive deficits, basal ganglia calcification, and dermal ossification. Congenital plate-like osteoma cutis of this size is a rare, distinctive clinical finding that should immediately point to a diagnosis of either AHO or POH.

Commercial support: None identified.
Background. Darier’s disease is a rare genodermatosis caused by heterozygous mutations in the ATP2A2 gene, which has been associated previously with neuropsychiatric manifestations.

Objectives: To investigate the genetic basis of Israeli patients with Darier disease (DD), and its association with neuropsychiatric phenotype.

Methods: A cohort of 32 families comprising 74 affected individuals and 13 unaffected family members recruited from the Haemek dermatology department and other dermatology clinics in Israel were evaluated by detailed questionnaires, physical examination, and genetic analysis. Main outcome measures were genetic mutations, psychiatric profile and their association.

Results: 23 mutations in ATP2A2 gene were scattered over the entire gene, 14 of them novel. Two families shared the same mutation, p.N767S. Twenty-eight patients (37%) had, most of them mood disorders; 21 (27.6%) reported suicidal thoughts, 5 (6.6%) had attempted suicide, and 50 (69.4%) reported other nonpsychiatric neurological disorders. Psychiatric phenotype demonstrated inter and intrafamilial variability, and was not associated with disease severity, family history of psychiatric disease, or mutation location.

Conclusions: The cohort demonstrated genetic heterogeneity with no mutation cluster along the gene and high prevalence of psychiatric disorders. Although no clear genotype-phenotype correlation was found, the results point to a major effect of genetic background on psychiatric phenotype, along with other modifiers.

Commercial support: None identified.
Fibrous cephalic plaque: A presenting cutaneous manifestation of tuberous sclerosis complex

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Tuberous sclerosis complex (TSC) is a disease that affects multiple organs secondary to mutations in the TSC1 and TSC2 genes which code for the hamartin-tuberin protein complex, a tumor suppressor. Classic cutaneous markers of TSC include adenoma sebaceum, white macules, shagreen patch, and periungual fibromas. Some patients may present with a fibrous cephalic plaque, a fibromatos, soft, skin-colored or brown plaque that typically appears on the forehead or scalp. It is considered to be the most specific skin finding in TSC. A 55-year-old African female presented with a brown, ovoid, fibrotic plaque on the forehead and only a few flesh colored, shiny papules in the infra alar area. Coincidentally, she was being followed for nephrectomy for renal angiomyolipomas. Exam was negative for periungual fibromas, ash leaf macules, or dental pits. Histological examination of the forehead and infraal skin growths both revealed superficial dermal fibrosis with scattered interstitial plump multinucleated cells, increased numbers of mast cells, increased numbers of small blood vessels highlighted with CD31, and diminished elastic fibers. A clinical diagnosis of TSC was made and the patient was referred for genetic testing and counseling. In the absence of more prevalent and classic cutaneous markers of TSC, clinicians should be vigilant for the presence of the fibrous cephalic plaque when considering this diagnosis.

Commercial support: None identified.

Lipoid proteinosis

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A 21-year-old Somali male presented to dermatology clinic for evaluation of skin lesions which had been progressing since childhood. He termed his skin “sensitive and weak” with asymptomatic blister-like lesions which then broke open to form scars. On further questioning, he endorsed some thickening of his tongue and lips and a hoarse voice which was present since his teenage years. Furthermore, the patient had new onset seizures which began four years prior. Recent MRI and CT demonstrated bilateral symmetric calcification in the anteromesial temporal lobes. The patient had new onset seizures which began four years prior. Recent MRI and CT demonstrated bilateral symmetric calcification in the anteromesial temporal lobes. A 55-year-old African female presented with a brown, ovoid, fibrotic plaque on the forehead and only a few flesh colored, shiny papules in the infra alar area. Coincidentally, she was being followed for nephrectomy for renal angiomyolipomas. Exam was negative for periungual fibromas, ashe leaf macules, or dental pits. Histological examination of the forehead and infraal skin growths both revealed superficial dermal fibrosis with scattered interstitial plump multinucleated cells, increased numbers of mast cells, increased numbers of small blood vessels highlighted with CD31, and diminished elastic fibers. A clinical diagnosis of TSC was made and the patient was referred for genetic testing and counseling. In the absence of more prevalent and classic cutaneous markers of TSC, clinicians should be vigilant for the presence of the fibrous cephalic plaque when considering this diagnosis.

Commercial support: None identified.

Microphthalmia, dermal aplasia and sclerocornea (MiDAS) syndrome

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Introduction: In pediatric dermatology, congenital linear lesions are not uncommon. It can be an isolated finding, or an important piece of information when a genodermatosis is suspected.

Material and methods: The patient is a 6-day-old girl. Her parents deny any skin disease or inbreeding in the family. She was born prematurely, at gestational age. A midwife delivered her at home, but she was rushed to the hospital shortly after her birth because of breathing problems. She was diagnosed with a diaphragmatic hernia. A complete workup revealed additional anomalies such as agenesis of the corpus callosum, persistent ductus arteriosus, atrial and ventricular septal defects, malrotation, microphthalmia and sclerocornea. A dermatology consultation was requested to evaluate streaks present on the patient’s face, which was initially suspected to be caused by the bag-valve mask. However, the lesions were linear atrophy of the dermis along the nasolabial folds and horizontally under her chin. The rest of the skin examination was unremarkable. The differential diagnoses include but are not limited to incontinentia pigmenti (stage 4), morphea, lichen sclerosus and focal dermal hypoplasia (Goltz). Results: Considering the constellation of symptoms, a genetic study was requested. A de novo segmental monosomy in the locus Xp22.33p22.2 (HCCS gene) was found, which can explain the clinical picture. This syndrome is called microphthalmia, dermal aplasia and sclerocornea (MiDAS) or microphthalmia with linear skin defect (MLS). First described in the early 1990s, there are now about 64 reported cases.

Discussion: This condition is transmitted in an autosomal dominant fashion. It is lethal in boys and carries a wide phenotypic variability. In the literature, a mutation is described in one of these genes: HCCS, COX8B and NDPFB1. They encode proteins involved in the mitochondrial respiratory chain. Conclusion: Blaschko lines are believed to trace the migration pathway of embryonic cells. Skin mosaicism is expressed as lesions along those lines and the presentation can vary depending on the cell type and the timing of mosaicism. In this case, impairment of neural crest cells explains the particular distribution. Because of germline mosaicism, the risk of having another affected child is estimated at 1%. In a future pregnancy, prenatal diagnosis will be offered to the parents.

Multiple basal cell carcinomas on the scalp of an African American nevoid basal cell carcinoma syndrome patient

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Background: Nevoid basal cell carcinoma syndrome (NBCCS), also known as Gorlin syndrome, is an autosomal dominant disorder mainly caused by a loss of function mutation in PTCH1 gene, resulting in hyperactivated sonic hedgehog signaling. It results in a wide variety of abnormalities, as well as a predisposition to basal cell carcinomas (BCC). Compared to white patients with NBCCS, African American patients have a lower propensity of developing BCCs, and very few of those reported have more than 5 lesions.

Case report: A 48-year-old African American woman with no personal or family history of skin cancer presented to dermatology clinic with hair loss. On physical exam, the patient was noted to have multiple hyperpigmented plaques on the scalp and two pits on the plantar surface of the left foot. Pathology confirmed superficial basal cell carcinoma on a total of 6 lesions on the scalp during the subsequent seven months. The patient’s presentation was suspicious for NBCCS and further work-up of skull and mandible radiographs revealed no abnormalities. Although she did not meet the clinical criteria for NBCCS, genetic testing detected a pathogenic mutation at the p.R945* (C.2835C > T) in the PTCH1 gene. The diagnosis was confirmed and her daughter was suspected for genetic testing. The patient is currently followed in the clinic on a regular basis.

Discussion: NBCCS is predominant in the white population; however, there have been multiple reports of the syndrome in the African American population. In a study by Kimonis et al, it was found that African Americans with NBCCS have a 20% chance of developing BCCs by age 21.5 and a 40% chance by age 35 as opposed to whites with a 5% and 9% chance, respectively. Out of the 105 patients reviewed in this study, five of the thirteen African Americans developed BCCs. Only one of these patients with prior radiation exposure developed multiple BCCs. In a study by Kulkame et al, eleven African American patients were identified with NBCCS and BCC development. Out of these 11 patients, only three were described with multiple BCCs (>5). Out of the African American patients identified with multiple BCCs, our patient is the only one who developed all lesions in one anatomic location. It is important to consider this diagnosis when multiple hyperpigmented plaques are found on physical exam in African Americans even when other diagnostic criteria are not evident.

Commercial support: None identified.
An 8-year-old girl presented to our clinic with a recalcitrant dermatosis. The mother referred that she began at birth with scalp involvement. She later developed chronic, recurrent and pruritic skin lesions. On dermatologic examination the patient exhibited erythematous and squamous plaques with double-edged desquamation showing polycyclic and serpiginous borders. Loss of the lateral third of eyebrows was noted along with thin and brittle hair, predominantly on the occipital region. Dermoscopy of eyebrows revealed bamboo, golf tee, and matchstick hairs. Trichoscopy of occipital region showed trichorrhexis invaginata which was confirmed under light microscopy. A skin biopsy showed hyperkeratosis, acanthosis, focal hypergranulosis and superficial perivascular lymphocytic infiltrate. Laboratory results showed elevated IgE levels and eosinophilia. With these findings diagnosis of Netherton syndrome was made. Mild potency corticosteroids, oral antihistamines and emollients were indicated. Narrowband UVB phototherapy was considered, but the patient lived in a rural community and transportation to the hospital was troublesome. The patient was referred to the Allergy and Genetics Departments for consultation. Netherton syndrome (NS) is a rare genodermatosis, with estimated incidence of 1/200,000 newborns. The pattern of inheritance is autosomal recessive and its genetic defect is located in the SPINK5 gene that encodes a protein serase inhibitor LEKTI (luphioepithelial Kazal-type related inhibitor). The clinical presentation of Netherton syndrome is characterized by the triad of ichthyosis linearis circumflexa, hair shaft defects, particularly trichorrhexis invaginata, and atopic diathesis. Ichthyosis linearis circumflexa is the pathognomonic cutaneous finding; it usually develops in early childhood, and can be mistaken for atopic dermatitis, delaying diagnosis. These patients can present at birth congenital erythroderma and they may also develop frequent infections, food allergies, hypoalbuminemia, anaemia, and mental and growth retardation as well as intellectual disabilities, such as elevated IgE serum levels. Treatment represents a challenge due to percutaneous absorption of corticosteroids and calcineurin inhibitors secondary to alterations in skin barrier. Other available treatments are topical emollients, topical and systemic retinoids, keratolytics, and phototherapy.
Severe refractory Hailey-Hailey disease treated with electron beam radiotherapy and low level laser therapy
Brittany Dalmage, MD, University of Pittsburgh School of Medicine, Pittsburgh, PA, United States; Erica (Shareef) MD, West Virginia University, Department of Dermatology, Morgantown, WV, United States; John Vargo, MD, University of Pittsburgh Department of Radiation Oncology, Pittsburgh, PA, United States; Annette Quinn, RN, University of Pittsburgh, Department of Radiation Oncology, Pittsburgh, PA, United States; Timothy Patton, DO, University of Pittsburgh, Department of Dermatology, Pittsburgh, PA, United States; John Flickinger, MD, University of Pittsburgh, Department of Radiation Oncology, Pittsburgh, PA, United States

Hailey-Hailey disease or familial benign chronic pemphigus is a genetic disorder characterized by acantholytic suprabasilar epidermis resulting in chronic flaccid blisters and erosions, particularly in intertriginous areas. Therapeutic options are numerous, and many patients attempt a number of treatments before a benefit is observed. A 35-year-old female with a seven-year history of Hailey-Hailey disease presented with severe recalcitrant disease including extensive erosive patches and plaques in the intertriginous areas of the bilateral axillae, groin, and inframammary region. Her disease was recalcitrant to clobetasol cream, clindamycin gel, tacrolimus ointment, doxycycline, dapson, cyclosporine, metrotrexate, etanercept, isoretinoin, prednisone, and axillary abobotulinum toxin A injections. She was treated by various dermatologists. But her condition showed no sign of improvement. Dermatologic examination of the scalp revealed an irregular and papillated epidermal hyperplasia, anastomosis of rete, and over-proliferation of normal flora. Common symptoms may be masked, and treatment dilemma exists because absorption may be altered. Foul odor from bacterial infection can also add undue psychological burden.

Conclusion: Common presentation of scabies may not be apparent in a patient with extensive hyperkeratotic skin. Hypereosinophilia served as a clue, confirmed by visualization of the scabies mite on biopsy. Sufficient decrease in hyperkeratosis with the use of keratolytics is needed for better perfusion and efficacy of topical antiscabetic medications. In such cases, permethrin can be used to prevent further bacterial infection and avoid antibiotic resistance.

Commercial support: None identified.

Severely refractory Hailey-Hailey disease treated with electron beam radiotherapy and low level laser therapy
Brittany Dalmage, MD, University of Pittsburgh School of Medicine, Pittsburgh, PA, United States; Erica (Shareef) MD, West Virginia University, Department of Dermatology, Morgantown, WV, United States; John Vargo, MD, University of Pittsburgh Department of Radiation Oncology, Pittsburgh, PA, United States; Annette Quinn, RN, University of Pittsburgh, Department of Radiation Oncology, Pittsburgh, PA, United States; Timothy Patton, DO, University of Pittsburgh, Department of Dermatology, Pittsburgh, PA, United States; John Flickinger, MD, University of Pittsburgh, Department of Radiation Oncology, Pittsburgh, PA, United States

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Commercial support: None identified.

The use of dermoscopy in a case of nevus sebaceous misdiagnosed and treated as cicatricial alopecia
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Nevus sebaceous is a typical nevus on congenital malformation. The lesion is slightly swollen and vaguely shaped. But its color is variable. Usually, it occurs on the scalp or face. Alopecia occurs in scalp lesions. The lesions often have a yellow or orange hue, sometimes with an irregular or warty surface. Nevus sebaceous creates a suitable environment for the formation of secondary adnexal neoplasms that are mostly benign and rarely malignant. The most common benign neoplasm that develops in nevus sebaceous is trichoblastoma. Trichilemmoma, sebaceous adenoma, syringocystadenoma papilliferum, apocrine adenoma, and poroma can develop as well. It has been indicated that basal cell carcinoma might occur in less than 1% of cases. Sclerocellular carcinoma and apocrine carcinoma arise very rarely. Its histopathologic pattern is identical to that of an epidermal nevus. Papillated epidermal hyperplasia, anastomosis of rete, and a coarsely fibrotic papillary dermis are observed. For cosmetic reasons, as well as for the fact that some benign or malignant neoplasms might develop in nevus sebaceous, the preferred treatment is excision of lesion. To minimize scar formation, facial lesions must be excised during childhood, when verrucous transformation has not occurred yet. A twelve-year-old male patient admitted to our outpatient clinic with a complaint of hair loss which began two years ago following a posttraumatic swelling and discharge on his scalp. He had been diagnosed with cicatricial alopecia by various dermatologists. But his condition showed no sign of improvement. Dermatologic examination of the scalp revealed an irregular and partly warty area on his left temporoparietal region with a yellow/orange hue and alopecia, 10 cm in size. The preliminary diagnoses of the patient were nevus sebaceous and postradical cicatricial alopecia. Following histopathologic examination, the patient was reported as a case of nevus sebaceous. The diagnosis was confirmed by dermoscopy showing yellowish lobules, rounded, of uniform diameter, with a few thin hairs. We present this case to draw attention not only to the multiple faces of nevus sebaceous and its differential diagnosis, but also to the importance of follow-ups and dermoscopic examination.
Recognizing the usefulness of trichoscopy as a diagnostic test, are very limited, leading to frequent misdiagnosis. Awareness of this entity, with successful results. Mechanical removal of casts is also recommended. Little is known about this condition, with a mean age of 39 ± 0.1 years. Abnormal nails were observed in 4350 patients (15.5% of the sample). The prevalence of culture-confirmed toenail onychomycosis was estimated to be 6.7% (95% CI, 6.41-6.96%, 1393 males and 759 females). The sex- and age-adjusted estimated prevalence of toenail onychomycosis in Canada was 6.4% (95% CI, 6.12-6.65%). The distribution of causative organisms cultured from patients with onychomycosis was 71.9% dermatophytes, 20.5% NDMs, and 6% yeasts. Trichophyton rubrum was the most frequent organism in 51.7% of cases, while Aspergillus spp. (6.4%) and Scopulariopsis brevicaulis (5.9%) were the most frequently cultured NDMs. Toenail onychomycosis increased with age and was most prevalent in those 60 years of age and older (60-79: 16.0%, 80-94%, with a prevalence of 4.0% in those below 60 years of age. Conclusion: It is difficult to gauge the prevalence of onychomycosis in the general population using a clinic-based sample, as there are biases present. However, clinic-based samples do allow for accurate diagnoses and determination of the distribution of causative organisms. With an aging population, the present data highlight that toenail onychomycosis may be a growing medical concern among patients in the years to come.

HAIR AND NAIL DISORDERS

3756

White spots around the hair: Peripilar keratin casts, an underdiagnosed entity

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Peripilar keratin casts are white, asymptomatic cylindrical, nonadherent concretions that encircle the entire hair. Differential diagnosis is wide, and they can be associated with several diseases. Although they are not uncommon, they are infrequently reported in the literature. A 14-year-old, otherwise healthy female patient presented to our clinic reporting the appearance of "white spots" in her hair. She was referred for suspected onychomycosis with no improvement after 45 days of treatment the patient reported improvement in her symptoms and in her quality of life saying that the most important thing was to have a diagnosis after so many years. Conclusions: Trichomelanuria is a disorder that usually goes 10 to 15 years undiagnosed, causing suffering and isolation in the life of the patient. Despite having typical history and symptoms there is a lack of information about this condition delaying the right diagnosis, treatment, and improvement of quality of life.

Commercial support: None identified.

A Canadian survey of the prevalence of toenail onychomycosis among primary care patients

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Background and objective: Onychomycosis is difficult to treat and a concern for many patients, particularly in the elderly population. Estimates of the prevalence of onychomycosis in North American clinical samples have been higher than what the prevalence is thought to be in the general population. The purpose of the present work was to estimate an unadjusted and population-adjusted prevalence of toenail onychomycosis in a large multicenter survey of Canadian patients.

Method: Patients with normal and abnormal-looking nails were recruited from the offices of 3 dermatologists and 1 family physician in Ontario, Canada. Patients were excluded if referred for suspected onychomycosis. Regardless of nail appearance, nail samples for mycologic testing were obtained. The criterion for a diagnosis of onychomycosis was an abnormal toenail with a sample that was culture positive (KOH positive or negative). This sample of 32,193 patients includes our previous published sample of 15,000 patients (Gupta et al. JAAD 2000;45:244-8).

Results: The patient sample included 17,077 females (53%) and 15,116 males (47%), with a mean age of 59 ± 0.1 years. Abnormal nails were observed in 4350 patients (15.5% of the sample). The prevalence of culture-confirmed toenail onychomycosis was estimated to be 6.7% (95% CI, 6.41-6.96%, 1393 males and 759 females). The sex- and age-adjusted estimated prevalence of toenail onychomycosis in Canada was 6.4% (95% CI, 6.12-6.65%). The distribution of causative organisms cultured from patients with onychomycosis was 71.9% dermatophytes, 20.5% NDMs, and 6% yeasts. Trichophyton rubrum was the most frequent organism in 51.7% of cases, while Aspergillus spp. (6.4%) and Scopulariopsis brevicaulis (5.9%) were the most frequently cultured NDMs. Toenail onychomycosis increased with age and was most prevalent in those 60 years of age and older (60-79: 16.0%, 80-94%, with a prevalence of 4.0% in those below 60 years of age.

Conclusion: It is difficult to gauge the prevalence of onychomycosis in the general population using a clinic-based sample, as there are biases present. However, clinic-based samples do allow for accurate diagnoses and determination of the distribution of causative organisms. With an aging population, the present data highlight that toenail onychomycosis may be a growing medical concern among patients in the years to come.

Commercial support: None identified.

2478

A case of localized uncombable hair syndrome

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A 4-year-old girl presented with unruly, lusterless hair localized to a portion of the left scalp. The rest of her hair was straight and fine. Visualization of the hair via scanning electron microscopy showed morphologic characteristics consistent with pili trianguli et canaliculi. Uncombable hair syndrome, or pili trianguli et canaliculi, is a rare irregularity of the hair shaft giving rise to frizzy, unruly hair that tends to be unmanageable. While usually affecting hair of the entire scalp, there has been a single case report of a localized variant. Clinical suspicion for the diagnosis can be confirmed by microscopic examination of the hair demonstrating longitudinal grooves in the hair shaft as well as a triangulated appearance on cross-section. Recognition of the localized variant of uncombable hair syndrome may be beneficial when forming a differential diagnosis for localized pediatric hair disorders such as wooly hair nevi.

Commercial support: None identified.

2778

What’s that smell? Case report of trimethylaminuria

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Introduction: Trimethylaminuria (TMAU), also known as fish odor syndrome, is a rare inherited metabolic disorder. Patients have an inability to convert odorous dietary-derived trimethylamine (TMA) to non-odorous trimethylamine N-oxide (TMAO-NOx) due to defective flavin-containing monoxygenase 3 (FMO3). The disease is present at birth but usually becomes apparent when the child is no longer breastfed and gets worse during puberty and adulthood leading to a variety of problems with body odor. The patient will excrete a body odor similar to rotten fish as a result of excessive amounts of TMA excretion in sweat, saliva, urine, breath and vaginal secretions.

Case report: GRS, 21 years old, white, single, attended the dermatologic consulta- tion complaining of “smelling like rotten fish.” Before looking for dermatologic help, she attended a gynecologist and a psychiatrist for the same reason: her body odor. All previous doctors told her that she was completely healthy, but after years of been bullied and socially isolated she decided to keep looking for an answer. Patient reported that she first noticed her peculiar body odor at 9 years old and since then she usually takes 2 to 5 showers daily and avoids eating foods that make her body odor worse (she mentioned shellfish and red meat). Nevertheless, the strange smell was always around her, principally during her menstrual period and after physical exercise. During physical examination, everything was normal except for a subtle body odor that indeed resembled rotten fish. After excluding other causes of malodorous, primary trimethylaminuria was suspected, investigated and diagnosed after urine test of TMA and genotyping the FMO3 gene. First of all we educated the patient about the disease. Moreover, we started dietary restrictions of choline-rich type of foods and total restriction of seafood, changed the bath frequency to 1 bath daily, increased her hydration and referred her to counseling. After 45 days of treatment the patient reported improvement in her symptoms and in her quality of life saying that the most important thing was to have a diagnosis after so many years.

Conclusions: Trimethylaminuria is a disorder that usually goes 10 to 15 years undiagnosed, causing suffering and isolation in the life of the patient. Despite having typical history and symptoms there is a lack of information about this condition delaying the right diagnosis, treatment, and improvement of quality of life.

Commercial support: None identified.

3138

A 4-year-old girl presented with unruly, lusterless hair localized to a portion of the left scalp. The rest of her hair was straight and fine. Visualization of the hair via scanning electron microscopy showed morphologic characteristics consistent with pili trianguli et canaliculi. Uncombable hair syndrome, or pili trianguli et canaliculi, is a rare irregularity of the hair shaft giving rise to frizzy, unruly hair that tends to be unmanageable. While usually affecting hair of the entire scalp, there has been a single case report of a localized variant. Clinical suspicion for the diagnosis can be confirmed by microscopic examination of the hair demonstrating longitudinal grooves in the hair shaft as well as a triangulated appearance on cross-section. Recognition of the localized variant of uncombable hair syndrome may be beneficial when forming a differential diagnosis for localized pediatric hair disorders such as wooly hair nevi.

Commercial support: None identified.
A study of plasma zinc levels in Thais with androgenetic alopecia
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Background: Androgenetic alopecia (AGA) or pattern hair loss is a common problem in patients with hair loss. Zinc is a trace element found in the hair shaft. A few studies have shown a correlation between low plasma zinc levels and AGA, but there is no such data to support this finding in Thais.

Methods: A cross-sectional study of fifty-seven Thais with AGA (cases) and fifty-seven gender- and age-matched healthy subjects (control group). All participants underwent blood tests measuring plasma zinc and blood sugar levels, albumin, white blood cell counts, and hematological factors.

Results: Participants in both groups were the same median age, 35, and gender. 50 (52.6%) women and 27 (47.4%) men. The mean plasma zinc level in the cases was lower than in the control group with statistical significance (0.57 ± 0.11, 0.63 ± 0.11 mg/L, mean ± SD, respectively, P < .05). There was no statistically significant difference in blood sugar levels, albumin or white blood cell counts. In a multivariate analysis, the plasma zinc level between the groups showed an adjusted odd ratio of 286.77 (95% CI 6.5 52.6, 1945.69, P <.05).

Conclusion: The plasma zinc level in Thais with AGA is lower than in healthy subjects with statistical significance. A more in-depth study should be conducted to determine whether prescribing zinc supplementation would be of benefit to patients with AGA.

Commercial support: None identified.
3107  
Anagen effluvium in extracorporeal membrane oxygenation  
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Anagen effluvium (AE) is a type of alopecia consisting of widespread hair loss during the anagen growth phase due to abrupt cessation of growth of the hair matrix. We report a case of AE in a child undergoing extracorporeal membrane oxygenation (ECMO). A 2-year-old male was hospitalized after suffering a burn involving 8% body surface area. His hospital course was complicated by septic shock and hypoxic respiratory failure, requiring vasopressor support and treatment with ECMO. Following his recovery, dermatology was consulted for rapidly progressing hair loss. On exam, the patient had marked alopecia with numerous intact hairs covering his pillow. Hair pull test was positive. On light microscopy the hair bulbs demonstrated a “floppy sock” appearance with some hair bulbs at acute angles resembling a “mouse-tail” consistent with anagen hairs. A diagnosis of AE due to systemic illness and ECMO was made. AE is most often due to chemotherapy, but has also been associated with radiotherapy, heavy metal poisoning, medication, severe protein malnutrition, or systemic diseases. The pathogenesis involves any insult that causes abrupt cessation of mitotic activity in the hair matrix, leading to weakening and breakage within the hair canal. We postulate that the combination of hypotension and hypoxia requiring ECMO resulted in severe insult with subsequent cessation of hair matrix mitotic activity, leading to AE. While other case reports have documented alopecia following ECMO, the type of hair loss was not described. For example, in one case series, the hair loss occurred 2 weeks to 3 months after ECMO and lasted from 1 to 6 months. This description is consistent with telogen effluvium, with an earlier report of anagen effluvium following ECMO for respiratory failure. Our case is unique given the rapid, diffuse onset of hair loss, which we demonstrated was secondary to AE on light microscopy. AE in our patient reflects the severity of his systemic illness.

Commercial support: None identified.

3727  
Association of lichen planopilaris with seborrheic dermatitis: A retrospective case-control study  
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Background: Seborrheic dermatitis (SD) is commonly included in the differential diagnosis of lichen planopilaris (LPP), particularly in cases where patients also present with pruritis and erythematous scaly patches. Previous studies have alluded to the presence of SD/LPP patients with a longstanding history of SD prior to the diagnosis of LPP but the precise relationship between these entities remains unclear. The objective of this study was to determine the prevalence of SD in LPP patients seen at the Cleveland Clinic.  
Methods: An institutional review board-approved retrospective review of medical records of 246 LPP patients evaluated between 2004 and 2015 was conducted. Data collected included demographic information, associated symptoms, comorbidities, treatments, and age of onset and pattern of SD. Statistical relationships between study groups and associated factors were tested using Pearson χ² test, 2-sample t tests, or Wilcoxon rank sum tests as appropriate with statistical significance set as P < .05.  
Results: Between 43% to 64% of dermatologists answered 6 clinical decision assessment questions with comorbid diabetes (39% improvement), and treating with topical antifungal prophylactic application of a niacinamide-containing emollient for maintaining quality of life while undergoing cytostatic treatment.  
Conclusions: The results show for the first time a significant superiority of prophylactic application of a niacinamide-containing emollient for maintaining quality of life while undergoing cytostatic treatment. Limitations: The relatively small sample size and the higher than anticipated drop-out rate and the heterogeneity of chemotherapy regimens included in the trial.  
This study was funded by La Roche-Posay Dermatological Laboratories, France. S. Sei1 el is employee of La Roche-Posay Dermatological Laboratories.

3426  
Can online medical education improve management of challenging cases of onychomycosis?  
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Study objectives: This study assessed the effect of online continuing medical education (CME) with consequence-based feedback on improving knowledge/competence of physicians managing onychomycosis.  
Methods: Dermatologists and primary care physicians (PCPs) participated in an online CME activity, designed using consequence-based learning, centered on 2 treatment cases in onychomycosis, with a combination of clinical decision and knowledge assessment questions. Clinical decision questions provided feedback based on clinical consequences for poor initial choice, and allowed learners a second opportunity to answer if incorrect. Effect of education on clinical decisions was calculated using Cohen’s d. A paired 2-tailed t test (P < .05) and Pearson’s χ² statistic were used to assess differences in the knowledge questions pre- and post CME. The CME activity launched on March 26, 2015, and the data were collected for 91 days.  
Results: Between 43% to 64% of dermatologists answered 6 clinical decision questions correctly on first attempt, and improved between 12% to 45% after tailored feedback, (n = 478; d = 1.5, large effect), particularly in seeking laboratory-confirmed diagnoses of onychomycosis (44% improvement), managing patients with comorbid diabetes (39% improvement), and treating with topical antifungal agents (35% improvement). Pre-CME, 17% of dermatologists answered all 4 knowledge questions correctly; improving to 78% post CME (n = 478; P < .05; d = 1.2, large effect size), particularly on awareness that topical antifungals are appropriate first choice onychomycosis treatments (40% improvement). Between 36% to 43% of PCPs answered 6 clinical decision questions correctly on first attempt, and improved between 20% to 40% after tailored feedback, (n = 909; d = 1.3, large effect), particularly in monitoring and follow-up (40% improvement), seeking laboratory-confirmed diagnoses (36% improvement), and managing patients with comorbid diabetes (58% improvement). Pre-CME, 6% of PCPs answered all 4 knowledge questions correctly; improving to 75% post CME (n = 909; P < .05; d = 1.7, large effect), and increased awareness on use of topical antifungals as a first choice for onychomycosis (47% improvement).  
Conclusions: Online CME designed using problem- and consequence-based learning theories is effective in improving clinical decisions and knowledge/competence of physicians treating onychomycosis, which may translate into clinical practice.

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Commercial support: None identified.

which factors influence more in QoL of AGA and AA patients. In order to promote effective interventions in improving patient’s well-being, clinicians need to deepen the understating about dampening between two diseases exist. In order to promote effective interventions in improving patient’s well-being, clinicians need to deepen the understanding about dampening between two diseases.

Conclusion: This study proved that in certain aspects, differences in depth of QoL are observed in AGA and AA patients. In AGA patients, the factors that significantly influence QoL are onset age, disease duration, severity and differences between before and after treatment. In AA patients, the factors that significantly influence QoL are onset age, disease duration, severity and differences between before and after treatment.

Multiple previous studies on quality of life on each disease are reported, however, no study compared QoL between androgenetic alopecia and alopecia areata.

2884
Comparison of quality of life using hair-specific Skindex-29 between androgenetic alopecia and alopecia areata
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Background: Androgenetic alopecia (AGA) and alopecia areata (AA) are two common hair loss diseases that may significantly affect a variety of psychosocial and emotional aspects of one’s life and the individual’s overall quality of life (QoL). Multiple previous studies on quality of life on each disease are reported, however, comparison of QoL between two diseases has never been studied.

Objective: We aimed to compare QoL between androgenetic alopecia and alopecia areata.

Methods: The patients in each group were assessed using hair-specific Skindex-29 score. The data collected were analyzed with subdivided categories of age, sex, onset age, disease duration, severity and differences between before and after treatment.

Results: AGA patients had statistically significant higher scores in symptom scale than AA patients. QoL in AGA patients was more damaged if the patient had onset age of 20s, disease duration shorter than 6 months or longer than 5 years and mild severity. QoL in AA patients were more damaged if the patient had onset age of 30s and moderate severity.

Conclusion: This study proved that in certain aspects, differences in depth of QoL dampening between two diseases exist. In order to promote effective interventions in improving patient’s well-being, clinicians need to deepen the understating about which factors influence more in QoL of AGA and AA patients.

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Effects of an online educational curriculum on knowledge and competence in managing onychomycosis
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Objectives: To evaluate effects of multiple online continuing medical education (CME) activities on knowledge and competence of physicians managing onychomycosis.

Methods: Dermatologists and primary care physicians (PCPs) participated in at least 1 of 5 online CME formats: a text-based monograph, text-based expert commentary featuring video vignettes of physician-patient encounters, and a video panel discussion. Effect of each CME activity was assessed through multiple-choice questions pre- and immediately post-CME on linked participants who served as their own controls. Paired tailed t-tests and McNemar’s chi-squared tests set at P < .05 were used to calculate differences in pre- and post-CME answers.

Conclusions: Online CME improved knowledge and competence of dermatologists and PCPs managing onychomycosis.

This study was conducted by Medscape LLC and supported by an independent educational grant for Valeant Pharmaceuticals North America, LLC.
Eosinophilia versus atopy as a predictor of severe phenotypes in alopecia areata

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Background: Alopoeica areata (AA) is an autoimmune disease characterized by non-scarring hair loss of the scalp and/or body. Currently, patient management and clinical trials in AA are complicated by a dearth of reliable clinical indicators of more severe variants. Multiple studies have found an increased prevalence of atopy in AA, though investigation of the utility of atopy as a predictor of severe disease has yielded inconsistent results. Peribulbar eosinophilic infiltrate and elevated serum IgE levels have also been reported in AA with unclear diagnostic usefulness. The objective of this study was to investigate the prevalence of atopy and eosinophilia in AA and evaluate their relationship with disease severity.

Methods: An IRB-approved retrospective review of medical records from 205 AA patients seen at the Cleveland Clinic from 2004-2015 was conducted. Patients were classified as atopic if found to have a current or past diagnosis of asthma, allergic rhinitis, atopic dermatitis, or hyper IgE syndrome. Eosinophilic AA patients were defined as those with either two or more consecutive elevated serum eosinophil counts or a current or past diagnosis of eosinophilic disease. Statistical relationships between study groups and associated factors were tested using Pearson χ² test, 2-sample t-tests, Kendall’s tau rank sum tests, oneway ANOVA, or proportional odds regression as appropriate with statistical significance set as P < .05.

Results: 92 of 205 (44.9%) AA patients had concomitant atopy, and 38 (18.5%) patients were classified as eosinophilic. Eosinophilic patients had a 3.70 higher odds of more severe hair loss versus age- and gender-matched AA controls, and atopic patients had a 2.33 greater odds of severe disease (P < .001, P < 0.1 respectively). These relationships remained statistically significant even with adjustment for comorbid non-autoimmune disease and a family history of AA or autoimmune disease; though in the adjusted proportional odds model, patients with autoimmune disorders also had significantly greater AA severity (OR 2.33, P = .000). There was no statistically significant difference in terms of disease severity between atopic and eosinophilic patients.

Conclusions: In this study, concomitant atopy and eosinophilia were associated with more severe patterns of hair loss in AA patients. Further research is required to determine whether this represents an etiopathologic mechanism in severe AA or more severe patterns of hair loss in AA patients. Further research is required to determine whether this represents an etiopathologic mechanism in severe AA or more severe patterns of hair loss in AA patients.

Graft-versus-host disease with acute hair loss: A distinctive manifestation of chronic graft-versus-host disease

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Abstract: Parafollicular hair bulge is an early target of graft-vs-host disease (GVHD) and its involvement can cause hair disturbances as a manifestation of GVHD. These hair disturbances are insufficient alone to establish the diagnosis but with other features could signalized chronic GVHD activity. We report a patient with chronic GVHD after an allogeneic peripheral stem-cell transplantation who developed an extensive hair loss 5 years after the transplant as a manifestation of chronic GVHD activity.

Case report: 23-years-old female with chronic skin GVHD, keratosis pilaris-like, 3 years after an allogeneic peripheral stem-cell transplantation, secondary an acute lymphoid leukemia developed acute hair loss and aggravation of skin lesions during withdrawal of immunosuppression. On exam, diffuse hair loss, with short and thinning hair; the pull test was positive with telogen, poikiloderma, dyspigmentations, like on sun-exposed areas, keratosis pilaris like lesions at upper limbs. A scalp biopsy showed: basal-cell vacuolization of the follicular epithelium with lymphocytic exocytosis, the skin biopsy from right arm showed apoptotic keratinocytes with hydropic degeneration of the basal layer. Clobetasol propionate topical solution 0.05% was prescribed at night and 0.1% during the day. After a month, the hair has grown and the pull test was negative, five months later, she was recovered.

Discussion: Scaly and body hair can be affected in GVHD. Distinctive features of chronic GVHD include nonscarring alopecia, keratosis pilaris, and its involvement can cause hair disturbances as a manifestation of chronic GVHD activity.

Conclusion: We brought this case to highlight that the new one of nonscarring alopecia after transplantation could signalized chronic GVHD activity and as GVHD and its various presentations will be more common at clinical practice the dermatologists could play a major role in diagnosis and treatment.

Commercial support: None identified.

Hair and nail adverse events during treatment with target therapies for metastatic melanoma

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Background: Targeted therapies in melanoma, have shown clinical benefit in a growing number of metastatic patients. Cutaneous but also hair and nail adverse events have been frequently associated to these drugs.

Materials and methods: All patients treated with BRAF and MEK inhibitors for metastatic melanoma and participating to ongoing clinical trials at our institution, were included in this study. Adnexae adverse events (G1-G4) were evaluated with global photography and trichoscopy. Scaly biopsy for histopathologic examination was performed in patients showing diffuse alopecia. The latter included vertical and horizontal sections with standard hematoxylin and eosin staining and Weigert staining for elastic tissue. Global photography and dermatoscopy were performed for both hair and nails at the beginning of the treatment and repeated at every follow-up visit (every 4 weeks). Adnexae adverse events (G1-G4) were graded using the National Cancer Institute’s Common Terminology Criteria for Adverse Events, version 4.0.

Results: 28 patients were included. 16 patients underwent treatment with a selective BRAF inhibitor (dabrafenib or vemurafenib) and 12 patients received the combined treatment dabrafenib and trametinib (a MEK inhibitor). Adnexae adverse events (grade 1, but also grade 2) were commonly observed in the group of patients receiving vemurafenib, especially in the first months of treatment with respect to the groups of patients (23%) having received dabrafenib or the combined treatment of the latter with trametinib (grade 1 adverse events in 80% of cases). Hair disorders were classified as G2 (diffuse alopecia) in 6 patients receiving vemurafenib and G1 (telogen effluvium and mild alopecia) in 5 patients. The most commonly observed nail changes were onycholysis, paronychia and brittle nails. Nail fold inflammation was treated at the initial phase in all cases and no cases of pyogenic granuloma occurred. Our series Main nail adverse events were classified as G1, independently from the ongoing medication.

Conclusions: Our experience suggests that working in a multidisciplinary team and treating hair and nail adverse events at the initial stages of onset, could ameliorate the quality of life and the adherence to treatment of patients.
Historopathologic prognostic factors for alopecia areata treated by intrale- sional corticosteroid

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Introduction: Alopecia areata (AA) is a common distress skin condition. Successful treatments are associated with several factors. Although clinical prognostic factors have been reported, histopathologic prognostic factors have not been revealed in alopecia areata.

Objectives: The objectives of this study were to evaluate histopathologic prognosis factors for intraleisional corticosteroid treatment for alopecia areata.

Material and Methods: In a nested case-control study, all patients with less than 50% area involvement of AA were diagnosed as alopecia areata by clinical presentation and histopathologic study before they received monthly intraleisional corticosteroid injection for 6 months. Several histopathologic findings were compared between partial/complete responders and non-responders from intraleisional corticosteroid treatments. The response at 3 and 6 months were assessed using the Severity of Alopecia Tool (SART score) and categorized into three groups: non-response (<50% regrowth), partial response (50-89% regrowth) and complete response (>90% regrowth). Wilcoxon-rank sum test was performed to compare histopathologic prognostic factors between partial/complete responsive and non-responsive groups.

Results: Ninety-seven of 113 patients clinically diagnosed with alopecia areata were confirmed the diagnosis by histopathologic study. Only 73 patients could continue with the treatment until 6 month due to time constraint. At the end of the study, 65 of 73 patients were classified to be partial/full responsive group and 8 patients were in non-responsive group. The number of vellus hairs (P = 0.028), follicular streamers (P = 0.018), catagen hairs (P = 0.006), telogen hairs (P = 0.008) and terminal vellus ratio (P = 0.019) were significantly higher in partial/full responsive group at 3-month period than those in non-responder group. The number of lymphocyte infiltration around muscle (P = 0.004) and polymorphonuclear (P = 0.004) were significantly higher in non-responsive group at the 6-month period than those in partial/complete responsive group.

Conclusion: The presence of vellus hairs, follicular streamers, catagen and telogen hairs were associated with favorable results at early treatment of intraleisional corticosteroid. Lymphocyte infiltration around muscle and polymorphonuclear indicates poor prognosis of intraleisional corticosteroid treatments.

Commercial support: None identified.

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Interest of a vitamin and mineral supplement in the management of telogen effluvium: Clinical study on Brazilian women

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Introduction and objective: Telogen effluvium (TE) is a common scalp disorder, characterized by an increased transient shedding of telogen hairs by early entry of hair into the telogen phase. It mainly concerns women, mostly on the frontal-parietal area of the scalp and can have psychological effects by impairing self-esteem. Regrowth is spontaneous, can require one year for the hair’s volume to be restored. Vitamin or sulfur amino acid treatments can help faster regrowth, thus help patients feel better psychologically. We evaluated the effect of an oral supplement containing B vitamins and minerals on the management of TE in women, by a progressive and significant improvement over 12 weeks of clinical improvement observed by the dermatologist, reduction in telogen hair.

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2676 Paclitaxel-induced onycholysis: A case study

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Chemotherapeutic drugs are associated with a wide array of adverse effects. Nail changes occur commonly and can affect the nail matrix, nail plate, or surrounding soft tissues. The taxane family of drugs, including docetaxel and paclitaxel, is known to cause such nail changes. These occur much more commonly with docetaxel, however, and are only rarely seen with paclitaxel (11%-41% vs 2%). Changes seen with paclitaxel include hypopigmentation, Beau’s lines, onycholysis, subungual hemorhages, and subungual abscesses. Although uncommon, the nail changes range in severity and may warrant discontinuation from the drug. We describe the case of a 55-year-old woman treated with paclitaxel for breast carcinoma. After three weeks of therapy, she developed a severe peripheral neuropathy and subsequent hemorrhagic onycholysis. After discontinuation of the drug, she experienced complete remission and healing.

Commercial support: None identified.

3044 Longitudinal erythronychia: Retrospective single center study

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Longitudinal erythronychia (LE) is characterized by a linear red band that extends from the proximal nail fold or lunula to the distal tip of the nail. Accurate diagnosis often requires biopsy and clinicopathologic correlation. Most cases of LE feature a shared pathogenesis that affects the distal matrix, resulting in a nail plate that is grooved on the ventral surface. The nail bed swells into this space as the nail plate grows out, compressing the bed on the narrow sides of the groove and intensifying the normal pink-red erythema of the underlying nail bed. The differential diagnosis for LE is based on whether the presentation is limited to one nail ("localized") or on multiple nails ("polycyctalous" or "generalized"). Most cases of localized longitudinal erythronychia (LELE) represent local processes, while polycyctalous longitudi- nal erythronychia (PLE) cases are usually caused by inflammatory processes or simply idiopathic. Despite the well-established diagnostic criteria, large studies evaluating patients with erythropoiesis are lacking. Our study evaluated the prevalence of biopsy-proven diagnoses in patients presenting with nails with the predominant clinical sign of erythronychia.

Methods: This was a single center retrospective study over six years. All patients presenting with longitudinal erythronychia, either LLE or PLE, that had a nail biopsy of the band of erythronchia, were included. Patients were identified in the nail section of the dermatopathology database and the history, physical examination, clinical findings, clinicopathologic correlation through examination of the medical record and/or the histopathologic findings were analyzed. Results: 65 patients were identified who had biopsies of erythronychia. Overall, by far the most common diagnosis was onychopilomma (63%), followed by lichenoid inflammation (8%), glomus tumor (6%), wart (5%), and squamous cell carcinoma in situ (3%). Single cases of invasive melanoma and nevus with moderate to severe atypia were identified.

Conclusions: This study, the largest to date of which we are aware, demonstrates that most cases of LE represent benign diagnoses. Onychopilomma was the most common diagnosis (63%), with only 5% of biopsy cases malignancies. Limitations: This study was limited by its retrospective nature, the bias of including only those cases biopsied, and taking place over only a six-year period.

Commercial support: None identified.

2782 Phase-2 controlled study to assess the efficacy of two new nail solutions in the treatment of nail psoriasis

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At present there is no cure for nail psoriasis. No pharmaceutical product is approved for the treatment of this particular disorder. The objective of this study was the screening between two different antipsoriatic drugs formulated in nail solutions based on the patented chitosan technology. The study design was randomized, double blind, vehicle controlled, parallel groups. The two nail solutions contained as sole active ingredients cyclosporine 5% (P-3072) and calcipotriene 0.005% (P-3073), respectively. Placebo was the vehicle of P-3073. Randomization was 2:2:1. Main inclusion criteria were patients of both genders, aged ≥18 and ≤80 years with mild to moderate psoriasis (BSA ≤10% or PASI ≤14) with fingernail psoriasis of the nail matrix and/or the nail bed. P-3072, P-3073 or vehicle were randomly applied once daily for 24 weeks and were followed up for 12 weeks. The primary endpoint was the evaluation at end of treatment of total NAPSI score. Secondary endpoints included total NAPSI at different time points, as well as NAPSI matrix and NAPSI bed.

Commercial support: None identified.

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Randomized controlled evaluator blinded study of dutasteride versus finasteride in men with androgenetic alopecia

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Background: Dihydrotestosterone plays a key role in the causation of androgenetic alopecia (AGA). Finasteride, a type II 5-alpha reductase inhibitor, and dutasteride, a dual inhibitor of both type I and type II 5 alpha-reductase, inhibit the conversion of testosterone to dihydrotestosterone.

Objectives: To evaluate and compare the efficacy, safety and tolerability of dutasteride versus finasteride in men with AGA.

Methods: Men with AGA (18-40 years) were randomized to receive 0.5 mg dutasteride versus 1 mg finasteride for 24 weeks. Baseline and 24 weeks evaluation was done on the basis of hair count, global photographs and subjective assessment. Total, and thick hair count over 1 cm² area was done manually from the prints of phototrichogram captured using Heine delta 20 dermatoscope. Global photographs, taken on a specially designed stereotactic device, were assessed by a blinded and nonblinded investigator. Subjective assessment was done using a preset questionnaire. Patients were assessed at regular intervals for development of any side effects.

Results: Ninety men with AGA were recruited. Dutasteride showed a significantly greater increase in total and thick hair count, a decrease in the thin hair count over the target area at the end of 24 weeks. Global photographs assessed by the investigators also showed better improvement in the dutasteride group compared to finasteride group. Both the groups showed similar side effect profile with sexual dysfunction being the most common and reversible side effect. Inter investigator assessment was significant as per Kappa coefficient.

Conclusions: Dutasteride when compared to finasteride has proven to be more efficacious and have comparable have comparable adverse events.

Limitations: The study was limited to 6 months.

Commercial support: None identified.

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Relapsing nail fibrokeratoma: A case report on a teenager

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We report a case of a 14-year-old female patient, presenting with a painless lesion, which has evolved with progressive growth in the right toe nail over the last two years. There is no known history of previous trauma or manipulation with clippers. We present a case report with the differential diagnosis and management. The clinical presentation, histopathologic findings, and outcomes are discussed in this report.

Conclusions: SM04554 appears to be safe, well-tolerated, and potentially efficacious.

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Safety and efficacy of a topical treatment (SM04554) for androgenetic alopecia (AGA): Results from a phase 1 Trial

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Introduction. AGA, a form of hair loss impacting approximately 35 million men in the US, has received only two US drug approvals in the last 15 years. SM04554 is a novel small molecule, topical scalp treatment for AGA targeting the Wnt pathway, a novel, validated therapeutic target. This abstract summarizes the analysis of a randomized, double-blind, placebo-controlled, single-center trial assessing safety and efficacy of SM04554 in treating AGA.

Methods. Male subjects were treated topically once daily for 14 days with either 0.05%, 0.15% or 0.45% SM04554 solution or vehicle; subjects returned 14 days posttreatment for final evaluation. Safety data, including pharmacokinetics (PK), electrocardiogram (ECG), laboratory parameters, application site assessments and vital signs, were collected throughout treatment, with subject-reported efficacy outcomes collected at end of study.

Results. 29 subjects (0.05% n = 7, 0.15% n = 8, 0.25% n = 8, vehicle n = 6, average age 44.6) were enrolled; 13 (45%) had a Norwood-Hamilton score of 5 (range 4-7) 15 treatment-emergent adverse events (TEAEs) were reported by 11 (38%) subjects: 4 (67%) of the vehicle group reported TEAEs, compared to 1 (14%) in the 0.05% group, 4 (50%) in the 0.15% group, and 2 (25%) in the 0.45% group. The most frequently reported TEAE was eye irritation/hyperemia (N = 2 (7%)). ECGs, labs and vital signs were unremarkable with no clinically significant changes from baseline reported in any subject. One vehicle subject presented with minimal scalp erythema, no other subject reported application site irritation. No serious adverse events were reported. Day 14 PK was dose dependent. No subjects had detectable SM04554 concentration in the 0.05% group; 5 (38%) subjects had systemic exposure in 0.15% group (Tmax = 9 hours) and 7 (88%) had systemic exposure to 0.45% group (Tmax = 15 hours). In the 0.05% group, 4 (57%) reported slowing of hair loss and 2 (29%) reported hair growth; in the 0.15% group, 6 (75%) subjects reported slowing of hair loss and 5 (63%) reported hair growth; in the 0.45% group, 2 (25%) reported slowing of hair loss and 3 (37%) reported hair growth, compared to zero (P = 0.01 for 0.15% group) and 1 (17%) of vehicle subjects, respectively, at end of study.

Conclusions. SM04554 appears to be safe, well-tolerated, and potentially efficacious. These results will help guide future AGA trials using this treatment.

Several authors are employees of Samumed LLC.
Scalp ulceration in a pediatric patient after hair weave placement

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The use of sewn-in weaves (hair extensions, either artificial or real) is a common cosmetic practice in the United States, particularly among African American women. This hairstyle has been implicated as a risk factor for traction alopecia, hair loss due to prolonged tension on the hair. Less commonly, hair weaves and the tension that is placed on the hair follicles are concerning as a nidus for infection. In this case report, we describe a case of an adolescent patient who presented with significant open, purulent, and draining wounds on the scalp 3 weeks after her first weave placement. The patient was treated with antibiotics to cover MRSA and Pseudomonas infection as well as collagenase for wound care with narrowing to coverage of MRSA alone when culture results returned. Two weeks after the initial presentation and four days after discontinuation of levofloxacin, the patient was readmitted in the setting of high fever and cervical lymphadenopathy, despite evidence of clean granulation tissue and refollicularization at the wound sites. These symptoms resolved after additional treatment with ampicillin-sulbactam. The etiology of this patient’s scalp ulcers was ultimately determined to be traumatic from hair weave placement, allowing for inoculation of cutaneous tissue, superimposed polymicrobial bacterial infection, and subsequent lymphadenitis. This case highlights a serious complication to consider as hair weaves increase in prevalence. Finally, it is important to note that the use of hair weaves is often in conjunction with other hair care practices such as the use of chemical relaxers. This may contribute to the development of infection or other hair and scalp disorders, such as contact dermatitis and fungal infection, that must be ruled out by careful dermatologic evaluation.

Commercial support: None identified.

Topical minoxidil solution in stimulating nail growth: A pilot study

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Background: Topical minoxidil solution is widely used for stimulating hair growth. The solutions’ effectiveness appears to stem from its vasodilatory property. As hair and nail structures are similar, and perlingual blood flow is one of the factors affecting nail growth, our assumption is that minoxidil can help nails grow faster.

Objective: A pilot study to measure nail growth, comparing nails that have had a 5% topical minoxidil solution applied to them and those that have not.

Methods: Thirty-two Thai subjects were randomized into two groups, each characterized by the pattern of nails. A 5% topical minoxidil solution was applied twice daily. The first group was instructed to apply the solution on the right index and left ring fingers and the second group to apply the solution on the left index and right ring fingers. All subjects were followed weekly for a month and then every two weeks during the second month. On each visit, we measured the nail length of the 2nd, 3rd and 4th fingers of both hands with a digital caliper. The subjects’ blood pressure, pulse, and cutaneous complications were recorded as well.

Results: In our preliminary analysis of the twelve female subjects, the nail growth rate difference between nails that had been treated with the 5% topical minoxidil solution and those that had not was statistically significant within the first two weeks of the treatment. After the first week, the mean nail length of the nails that had been treated with the solution was 1.54 mm, compared to 1.21 mm on nails that had not been treated, with a P of .001. After the second week, the mean nail length of the treated nails and untreated nails were 0.94 mm and 0.69 mm, respectively, with a P of .046. The nail growth rate difference between the two groups after one month was also statistically significant, (with the mean length of 4.12 mm on treated nails and 3.44 mm on untreated nails with a P <.001). None of the subjects experienced cutaneous or systemic complications.

Conclusion: Nails grow faster with the application of 5% topical minoxidil solution in healthy Thai subjects. This information can be useful for determining treatment of a number of nail diseases as well as for stimulating nail growth thereby leading to better outcomes, such as onychomycosis. However, further studies should be conducted.

Commercial support: None identified.

Trachyonychia as first presentation in myeloma-associated amyloidosis

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Amyloid light-chain amyloidosis is the most common form of systemic amyloidosis caused by extracellular deposition of insoluble amyloid fibrils derived from monoclonal immunoglobulin light chains. Systemic amyloidosis presents with variable and nonspecific symptoms such as weight loss, fatigue, dyspnea, and edema, which are rarely helpful for the diagnosis. Mucocutaneous lesions, observed in 29% to 40% of the cases, can be the initial presenting signs of systemic amyloidosis and provide key clues for the diagnosis. Nail changes are rarely seen in systemic amyloidosis. To our knowledge, there are 9 patients who presented nail dystrophy as a first manifestation of systemic amyloidosis prior to diagnosis. Herein, we present a 64-year-old man who came to our clinic with trachyonychia of fingernails and toenails. Amyloid deposits were found in the nail matrix biopsy specimen. Further evaluation such as serum electrophoresis, immunofixation, and bone marrow examination revealed the diagnosis of amyloid light-chain amyloidosis. We suggest that clinicians should consider systemic amyloidosis as one of differential diagnosis when facing any patient with nail dystrophy who are refractory to recurrent therapy and perform nail biopsy to exclude this life-threatening disease.

Commercial support: None identified.

Trichomycosis as first presentation in myeloma-associated amyloidosis

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Trichomycosis is a fungal infection of the hair shafts. It can present as white, gray, or black spots on the scalp. This condition is usually associated with other skin disorders such as dandruff or seborrheic dermatitis. It is important to rule out other conditions that can mimic trichomycosis, such as drug eruptions, contact dermatitis, and psoriasis, among others. In this case report, we describe a case of an adolescent patient who presented with significant open, purulent, and draining wounds on the scalp 3 weeks after her first weave placement. The patient was treated with antibiotics to cover MRSA and Pseudomonas infection as well as collagenase for wound care with narrowing to coverage of MRSA alone when culture results returned. Two weeks after the initial presentation and four days after discontinuation of levofloxacin, the patient was readmitted in the setting of high fever and cervical lymphadenopathy, despite evidence of clean granulation tissue and refollicularization at the wound sites. These symptoms resolved after additional treatment with ampicillin-sulbactam. The etiology of this patient’s scalp ulcers was ultimately determined to be traumatic from hair weave placement, allowing for inoculation of cutaneous tissue, superimposed polymicrobial bacterial infection, and subsequent lymphadenitis. This case highlights a serious complication to consider as hair weaves increase in prevalence. Finally, it is important to note that the use of hair weaves is often in conjunction with other hair care practices such as the use of chemical relaxers. This may contribute to the development of infection or other hair and scalp disorders, such as contact dermatitis and fungal infection, that must be ruled out by careful dermatologic evaluation.

Commercial support: None identified.

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Trichomycosis as first presentation in myeloma-associated amyloidosis

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Amyloid light-chain amyloidosis is the most common form of systemic amyloidosis caused by extracellular deposition of insoluble amyloid fibrils derived from monoclonal immunoglobulin light chains. Systemic amyloidosis presents with variable and nonspecific symptoms such as weight loss, fatigue, dyspnea, and edema, which are rarely helpful for the diagnosis. Mucocutaneous lesions, observed in 29% to 40% of the cases, can be the initial presenting signs of systemic amyloidosis and provide key clues for the diagnosis. Nail changes are rarely seen in systemic amyloidosis. To our knowledge, there are 9 patients who presented nail dystrophy as a first manifestation of systemic amyloidosis prior to diagnosis. Herein, we present a 64-year-old man who came to our clinic with trachyonychia of fingernails and toenails. Amyloid deposits were found in the nail matrix biopsy specimen. Further evaluation such as serum electrophoresis, immunofixation, and bone marrow examination revealed the diagnosis of amyloid light-chain amyloidosis. We suggest that clinicians should consider systemic amyloidosis as one of differential diagnosis when facing any patient with nail dystrophy who are refractory to recurrent therapy and perform nail biopsy to exclude this life-threatening disease.

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Trichoscopic and clinical characteristics of temporal triangular alopecia. A multicenter study
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Temporal triangular alopecia (TTA) is an asymptomatic permanent circumscribed noncicatricial alopecia. It is usually confined to one frontotemporal region of the scalp without any underlying cutaneous alterations. TTA has been related to Down syndrome, leukonychia, sectorial hyperpigmentation of the iris and other malformations.

Method: Observational descriptive multicenter study including 31 patients with TTA attended at 6 hospitals from Spain during 2014. The variables collected were: demographics, clinical characteristics, comorbidities, trichoscopic features and treatment.

Results: 17 females and 14 males were included. Diagnostic mean age was 2.8 years of age for females and 0.9 for males making for an average of 1.9 for the total. More than half (19) were diagnosed at birth (mode). Triangular shape was the most prevalent (48.4%), followed by oval (38.7%) and lancet-shape (12.9%). 21 of 28 cases were on the left side. The rate of bilateral occurrence was 6.5% (2 cases). We measured 20 lesions and its maximum diameter mean was 3.67 cm. For the patients older than 16 years old was 3.9 cm. Only 5 cases presented nondermatologic comorbidities being prematurity at birth, Down syndrome and bronchial asthma. Trichoscopy was performed in 19 cases (64.5%); white hairs and diversity of diameter were the most frequent features found (18), followed by vellus hair (16), empty follicles (12), and white dots (10). We found pterygium in 3 cases, broken hairs in 2; black dots in one case with frontal fibrosing alopecia (FFA), cadaveric hairs in a 84-year-old woman with FFA and no one, exclamation hairs. The three patients with yellow dots also presented white dots and including those 4 with arboriform pattern were more than 30 years old and had androgenetic alopecia (AGA). The 19.4% presented other type of alopecia (3 with AFE, 2 with AGA and 1 with chronic effluvium telogen). No family history of TTA was referred. There were not any improvements with expectant treatment noticed with a mean of 81.96 months.

Conclusion: There is a slight predominance of female sex. Left side is the most prevalent but it can be bilateral. Most cases are sporadic and have a triangular shape of 3.6 cm, without any malformation associated. It is diagnosed during the two first years of life. Trichoscopy is a useful tool for diagnosis dubious cases and it shows white hairs, diversity of diameter and vellus hair. There are not any effective treatments except surgery.

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Trichoscopic features of folliculitis decalvans: A multicenter review
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Introduction: Folliculitis decalvans (FD) of Quinquaud is a rare form of neutrophilic cicatricial alopecia that presents with scarring alopecic patches with follicular pustules, crusts and tufted hairs.

Methods: We performed a descriptive, retrospective, observational and multicenter study including the digital trichoscopic images of 58 patients diagnosed with FD between 2001 and 2014 in 12 Spanish centers. The diagnosis of FD was established based on typical clinical and dermoscopic findings together with histopathologic confirmation. Two different dermatologists expert on dermoscopy evaluated all the cases. Clinical aspects and severity variables included were: FD severity (I-II: based on typical clinical and dermoscopic findings together with histopathologic regression were carried out. We found that 95.3 % of patients with mild severity presented tufted hairs, 86% perifollicular erythema and 69.8% follicular hyperkeratinization. On the other hand, 93.5 % of patients with severe FD presented perifollicular erythema, followed by tufted hairs in 86% of cases and follicular hyperkeratinosis in 80%. No statistical association was found between the disease severity and trichoscopic findings but was positive with the presence of pustules (confirmed in multivariate analysis). We also evidenced association with statistical significance (P < .05) between pruritus and those patients with a history of FD of more than 25 years of evolution (P = .01). Remarkably, we found that the presence of follicular hyperkeratinization and hair diameter diversity was statistically associated to trichodynia in multivariate test. The presence of yellow dots was related with statistical significance (P < .05) with pruritus and those patients with tufted hairs presented more frequently facial papules.

Conclusions: Tufted hairs, perifollicular erythema and follicular hyperkeratinosis are the hallmarks trichoscopic features of FD. Patients with trichodynia presented follicular hyperkeratinosis and hair diameter diversity while the presence of pustules could be a marker of severity and activity of FD.

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3838
Using automated microneedling with platelet rich plasma for treating cicatricial alopecia, recalcitrant alopecia areata and traction alopecia, case report
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Introduction: Alopeica due to different causes especially traction and cicatricial are recalcitrant to treatment. Also scalp alopecia areata may be resistant to treatment when affecting large areas and ignored by patients for months. Microneedling is an effective methods for treating telogen effluvium whether alone or when combined with platelet rich plasma or mesotherapy. It is thought to act by induction of neovascularization.

Aim of the study: Creation of a new method for scalp hair follicles stimulation and growth in cases of cicatricial alopecia, traction alopecia and alopecia areata.

Patients and methods: One case of cicatricial alopecia, another with traction alopecia and third with alopecia areata were treated by twenty sessions of automated microneedling combined with platelet rich plasma. Sessions were done every two weeks. Clinical improvement was done by a blind dermatologist and patient satisfactory scale at the end of sessions.

Results: The three cases showed marked clinical improvement with variable degrees of patient satisfaction.

Conclusion: Automated microneedling may provide a successful future procedure for treating cicatricial alopecia, traction alopecia and recalcitrant alopecia areata.

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3549  
A case of Senear-Usher syndrome treated with rituximab  
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When present in conjunction with other autoimmune diseases, pemphigus foliaceus (PF) is more commonly associated with rheumatoid arthritis or autoimmune thyroid disease. Senear-Usher syndrome, or comorbid PF and systemic lupus erythematosus (SLE) is relatively uncommon. We describe a case of treatment-resistant pemphigus/SLE overlap whose blistering condition improved dramatically with rituximab. A 47-year-old African American male presented with blisters that started on his feet and progressed to the chest, upper back and scalp. On exam, erosions and crust were present in a seborrheic distribution, including the malar region, with no apparent mucosal involvement at that time. The patient demonstrated objective lower extremity weakness but no joint changes despite a history of arthralgia. Labs revealed positive desmoglein 1 and desmoglein 3 antibodies as well as positive ANA, anti-Smith, and anti-Ds DNA antibodies and low C3 level. Scalp biopsy showed suprabasal acantholysis and a perivascular dermal infiltrate with granular immune deposits. Moderate oral hydration and continued remission at 3 month follow-up. Although reports of successful treatment of pemphigus vulgaris with rituximab are prevalent in the literature, specific examples of Senear-Usher syndrome treated with rituximab could not be found. Thus our patient is notable for his unique clinical scenario, including strongly positive SLE serology and immunopathology with skin-predominant exam findings. Psychological counseling was employed to help manage associated anxiety and depression. Both the patient and his family were very pleased with rituximab’s effects and did not notice any side effects. Hence our patient is notable for his unique clinical scenario, including strongly positive SLE serology and immunopathology with skin-predominant exam findings. Psychological counseling was employed to help manage associated anxiety and depression. Both the patient and his family were very pleased with rituximab’s effects and did not notice any side effects.

Commercial support: None identified.

3530  
A new treatment for autoimmune blistering diseases - the efficacy of the Bruton’s tyrosine kinase inhibitor PRN473 in canine pemphigus foliaceus  
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2996  
A clinical and serological study of linear IgA bullous dermatosis  
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Linear IgA bullous dermatosis (LABD) is a rare autoimmune bullous disease that was first reported in children in 1901. For the past 30 years or more, childhood-onset LABD and adult-onset LABD were recognized as separate entities but are currently known as a single entity. LABD is characterized by subepidermal blisters with linear IgA deposition along the basement membrane zone (BMZ) in direct immunofluorescence (DIF) of perilesional skin. Although there has been no consensus on diagnostic criteria for LABD, some investigators believe that concurrent weak IgG deposition at the BMZ in DIF can occur. To date, no large-scale studies have been conducted on LABD patients with sole IgA deposition at the BMZ in DIF. Here, we defined LABD as subepidermal blisters with linear IgA deposition with or without C3 deposition at the BMZ in DIF. We excluded patients with additional IgG deposition at the BMZ in DIF from the test group. We recruited 101 patients who fulfilled our criteria of LABD, most of whom were referred for serological evaluation. The number of male and female patients in the study was almost equal. Mean age at LABD onset was 50.0 years. In 60.7% of the patients, only the skin was affected, in 61.8% of the patients only the mucosa was affected. Remaining patients had both cutaneous and mucosal lesions. Twenty-seven patients had erythema with peripheral vesicles, and five had prurigo-like lesions. The oral mucosa was the most affected mucosal site. Approximately 90% of the patients suffered from pruritus. Six patients had been administered vancomycin before LABD onset. Malignant neoplasm reported in 12.1% of the patients was the most frequent comorbidity. Effective treatments included corticosteroids, immunomodulators, and dapsone with corticosteroid. Although lab values were elevated in 8, 15, and 20 patients, respectively. Neutrophils were predominant within the subepidermal bulla, but eosinophils were also seen. Direct immunofluorescence of normal human skin sections revealed IgA and IgG antibodies to BMZ of human skin in approximately 50% and 10% of the patients. Immunochemistry detected not only IgA autoantibodies but also IgG autoantibodies. The results of this study may contribute to establish both the criteria and definition of LABD.

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2968  
A novel approach to pretibial epidermolysis bullosa: A case report and literature review  
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Pretibial epidermolysis bullosa (PEB) is a rare localized variant of dystrophic epidermolysis bullosa (DEB). Clinically, PEB presents as recurrent blistering and scarring confined to the pre-tibial surface of the legs. The most common extraprealctribial sites of involvement include the dorsal hands and feet. Other distinguishing features include ichoriod papules, milia, and delayed wound healing. Despite the classic findings the diagnosis of PEB can be a challenge. Patients often experience pruritus at the site of disease thereby making clinical distinction from DEB-prunigrinos onus a challenge; although patients with DEB-prunigrinosus as monotherapy and disease management are not understood and widespread. Treatment for all forms of epidermolysis bullosa remains challenging. Most importantly, patients should take careful measures to minimize trauma. In South San Francisco, CA, United States; Ronald Hill, PhD, Principia Biopharma Inc, South San Francisco, CA, United States

Commercial support: None identified.

2931  
A new treatment for autoimmune blistering diseases - the efficacy of the Bruton’s tyrosine kinase inhibitor PRN473 in canine pemphigus foliaceus  
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Bruton’s tyrosine kinase (BTK) inhibition has the potential to target multiple pathways and cell types involved in inflammation and autoimmunity. These include modulation of B-cell receptor-mediated B-cell pathways, as well as inhibition of FcR-induced cytolytic release from monocytes and macrophages. FcR-induced mast cell degranulation and granulocyte migration and mediator release. As human pemphigus foliaceus (PF) is very similar to PF in dogs we explored the efficacy of the reversible, covalent, oral, small molecule BTK inhibitor, PRN473, in client owned, pet dogs presenting with a skin biopsy-confirmed diagnosis of PF. Dogs were seen at the University of California School of Veterinary Medicine Teaching Hospital in a 16 week clinical trial. PRN473 was administered orally once a day at a dose of 15 mg/kg as monotherapy, while withholding the usual treatment of high dose corticosteroids. BTK target engagement by PRN473 or ‘occupancy’ was measured 24 hours after the dose and two to six hours after dosing on various days during subsequent outpatient follow up. Clinical response was measured by a canine pemphigus disease activity index (CPDAI) modified from the validated, human PDAI. Each of the four dogs treated responded to PRN473 monotherapy with greater than 50% reduction in PDAI score within two weeks (mean baseline, 59, mean at two weeks, 25). Three dogs continued to improve and achieved complete and sustained remission of their disease within four weeks. One dog failed to improve beyond the benefits seen in the initial two weeks of therapy and was switched to a rescue protocol of prednisolone and minocycline. BTK occupancy measured 24 hours after the first dose ranged from 64% to 77%, with the dog that failed to achieve remission having an initial BTK occupancy of 77%. Subsequent BTK occupancies at follow up varied from 43% to 91%. Given that canine PF and human pemphigus vulgaris (PV) are autoimmune skin diseases driven by inflammation resulting from autoantibody binding to epidermal antigens, the results of this study suggest that BTK inhibition has the potential to induce and maintain clinical remission in human PF and PV. BTK inhibition may be a viable alternative to corticosteroids for the induction and maintenance of remission in autoimmune blistering diseases.

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2753

A retrospective medical chart review of the use of omalizumab in chronic idiopathic urticaria

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Chronic idiopathic urticaria (CIU) affects up to 1% of the population and is defined as transient hives occurring for longer than six weeks without an identifiable etiology. Omalizumab is FDA approved for CIU at 150 mg and 300 mg dosing every 4 weeks. Our clinical experience suggests that dosing at 300 mg every 2 weeks (Q2W) provides greater efficacy in CIU than dosing every 4 weeks (Q4W). We herein present data from a retrospective chart review investigating the efficacy and clinical features of CIU patients treated with omalizumab at different doses Q2W vs. Q4W. We reviewed charts from all patients treated with omalizumab for any cutaneous indication at a university-based dermatology and immunology practice. A total of 48 patients with chronic urticarial dermatoses were identified: 43 with CIU, 2 with urticarial vasculitis, and 5 with urticarial bullous pemphigoid. Only patients with CIU were included in the analysis. Between January 2006 and March 2015, 43 CIU patients (mean age, 43.2 years; female, 79.1%; white, 90.7%) were treated with omalizumab; one patient was lost to follow-up. Nearly one-third of patients had a history of angioedema. Overall 90.5% (38/42) patients responded to omalizumab with 50% improvement within 3 months or more. Clinical responses are as follows: antihistamines, 100%, premolazine, 74.4%; cyclosporine, 48.8%; metronidazole, 54.5%; mycophenolate mofetil, 25.6%; dapsone, 20.9%; colchicine, 14.0%; and/or omalizumab. Chloroquine and colchicine were found to be more effective in CIU patients receiving either 500 mg Q2W or 300 mg Q4W of omalizumab (n = 36); 50% response rates were achieved in 100.0% (24/24) of patients treated Q2W compared to 66.7% (8/12) of patients treated Q4W. Both responses were mild, including headaches, alopecia, decreased arthritis, and none of the patients stopped the medication due to adverse events. In conclusion, in our retrospective cohort, higher response rates were obtained by treating CIU with 300 mg every 2 weeks instead of every 4 weeks.

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2719

Association between HLA-DRB1 and HLA-DQβ1 alleles and pemphigus vulgaris in Indian patients: A case-control study

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Background: Pemphigus vulgaris (PV) is a chronic and occasionally fatal autoimmune blistering disease. HLA-DRB1*14, DQB1*0301, and DQB1*0302 are reported to have significant association with PV; however this is partially dependent on ethnicity. This study was done to determine the HLA-DRB1 and DQB1 alleles associated with pemphigus vulgaris in Indian patients.

Method: A prospective case-control study was done in a University affiliated hospital in India from November 2015-Aug 2014. The diagnosis of PV was based on clinical and histologic features, direct immunofluorescence test and desmoglein levels. The sample size was calculated to be 45 patients. Low resolution HLA-DRB1 and DQB1 typing was done by PCR using sequence specific oligonucleotide probes for patients and healthy controls. The HLA antigen level allele frequencies in cases and controls were compared and odds ratios with 95% CI were calculated.

Results: 54 (32 females, 22 males) patients with PV and 50 controls (36 males, 14 females) were enrolled into the study. The mean age of the patients was 42.01 ± 14.20 years (range, 12-70 years) and that at onset of disease was 39.25 ± 14.02 years (range, 12-68 years). The mean age of the controls was 35.42 ± 16 years. Clinically it presents with flaccid blisters, cutaneous and mucosal erosions. Histologically it is characterized by intraepidermal (suprabasilar) blister formation due to acantholysis. The immunologic features are characterized by circulating IgG autoantibodies directed against the cell surface keratinocytes.

The immunofluorescence shows intercellular deposition of P180 and P230. The treatment of choice is to use agents that inhibit the synthesis of IL-1 and TNF-alpha. In India, 5 patients with PV were treated with intravenous immunoglobulin and the remaining patients were treated with various agents such as systemic corticosteroids, mycophenolate mofetil, dapsone, colchicine, cyclosporine, etanercept, and methotrexate.

The detailed data on the patients who were treated with various agents is as follows: 4 patients with etanercept, 2.3%.

Conclusion: In Indian patients the presence of HLA-DRB1*14 and HLA-DQB1*03 alleles were significantly associated with PV. A negative association was seen with DRB1*04 and DQB1*03. This study provides preliminary evidence of the association between HLA-DR and DQ types and PV from India where the data available in published literature is limited.

Commercial support: None identified.

3553

Asymptomatic esophageal and ENT findings in a patient with pemphigus vulgaris

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Pemphigus vulgaris is an autoimmune blistering disease that involves the skin and mucosal membranes, especially the oral cavity. The frequency of eye, nose, and throat involvement is high, though many cases are underdiagnosed because patients are often asymptomatic and no ENT examination is taken. Hale and Bystyn reported 53 patients with PV, in which laryngeal and nasal lesions were found, and only 11 underwent ENT examination. In the Mexican population, it predominates in young women, with a median age of 32 ± 16 years. Clinically it presents with flaccid blisters, cutaneous and mucosal erosions. Histologically it is characterized by intraepidermal (suprabasilar) blister formation due to acantholysis. The immunologic features are characterized by circulating IgG autoantibodies directed against the cell surface keratinocytes. The immunofluorescence shows intercellular deposition of P180 and P230. The treatment of choice is to use agents that inhibit the synthesis of IL-1 and TNF-alpha. In India, 5 patients with PV were treated with intravenous immunoglobulin and the remaining patients were treated with various agents such as systemic corticosteroids, mycophenolate mofetil, dapsone, colchicine, cyclosporine, etanercept, and methotrexate.

The detailed data on the patients who were treated with various agents is as follows: 4 patients with etanercept, 2.3%.

Conclusion: In Indian patients the presence of HLA-DRB1*14 and HLA-DQB1*03 alleles were significantly associated with PV. A negative association was seen with DRB1*04 and DQB1*03. This study provides preliminary evidence of the association between HLA-DR and DQ types and PV from India where the data available in published literature is limited.

Commercial support: None identified.

3554

Atypical presentation of lichen planus pemphigoides

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Background: Lichen planus pemphigoides (LPP) is a rare disease usually affecting adults, with less than 100 cases of LPP reported in the literature over the past 50 years. It is thought to be a combination of lichen planus (LP) and bullous pemphigoid (BP) however its pathogenesis is incompletely elucidated. The diagnosis of LPP is made by a combination of clinical, histopathologic, and immunologic features.

Case 1: A 27-year-old African American female presented with a long-standing history of recurrent painful oral erosions and ulcers since age 7 as well as vulvovaginal ulcers which began 2 months prior to presentation. She had previously been diagnosed with oral and vulvovaginal erosive LP. Pulvar biopsy demonstrated lichenoid mucositis with eosinophils; no evidence of immune deposits. She was found to have elevated titers for IgG autoantibodies to both BP180 and BP230 via ELSA.

Case 2: A 50-year-old African American female presented with a skin eruption for 4 months that began shortly after being hospitalized for a COPD exacerbation. She first noticed pruritic, tender blisters on her palms, which progressively worsened and generalized including her genital and oral mucosa. Initial biopsy showed polymorphic infiltrate and dermal edema consistent with drug eruption. A later biopsy was consistent with BP, LPP variant.

Discussion: Clinically, lichen planus pemphigoides is characterized by the development of blisters on lichenoid lesions and/or on normal skin. Bullae predominantly occur on the upper and lower extremities, involvement of palms and soles occurs more frequently in children. Oral mucosa may be involved, but involvement of other mucosal sites (conjunctiva, esophagus, vulva, vagina), or nails is rare. The mean age at diagnosis of LPP is 52 years. Adult and pediatric patients have no family history of immunobullous disorders. It is generally viewed that LPP is a variant of BP or that there is a strong association between the two entities. The presented cases are unique in terms of their atypical clinical presentations that overlapped with other autoimmune conditions and drug reactions. The finding of LPP is important in order that dermatologists readily recognize this underdiagnosed condition, minimize delay in diagnosis, and reduce patient morbidity.
3412
Autoimmune diseases of the innate and adaptive immune system including atopic dermatitis, psoriasis, and tertiary tinea pedemnonatosis
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In atopic dermatitis, we have recently shown the innate immune system is activated by biofilm-forming staphylococci that occlude sweat ducts. Toll-like receptor 2 (TLR 2) is activated and moves from its epidermal control location in the basal zone to the proximal stratum corneum (surrounding the occluded duct). There it likely initiates the MyD88 and the PAR 2 pathways in an effort to inactivate the staphylococci; these efforts are fruitless because of the biofilms and lead to the prime pathological finding of spongiosis and to the prime symptom of pruritus which leads to the disease. If the pruritus is intense enough to cause excoriations severe enough to disrupt the epidermis, the involvement of the dermis likely causes the activation of the adaptive immune system. The findings are consistent with the documentation of IL 31, and histaminergic, but no potent prutigens. We have also shown that the innate system is involved in psoriasis, again with TLR 2. This time it was present in the dilated upper dermal capillaries. TLR 2 has been shown to lead to TNFa, IL 12/23, and IL 17, which have all been shown to be involved in the production of psoriatic lesions. In this instance, the streptococcus is most likely the organism involved; it is not recoverable because it internalizes or makes biofilms, so TLR 2 instead of combating the bacterium attacks host cells. Anti-streptococcal IgG is markedly elevated in plaque psoriasis in one half the patients; it is of interest to postulate these patients were those who would develop the systemic findings of arthritis, uveitis, and the metabolic syndrome which develop in 40% of patients. In arthritis and tertiary spirochetal neurologic disease where the disease has been shown to be caused by Borrelia and dental treponemese, TLR 2 is activated and leads to the chronic course noted in osteoarthritis and Alzheimer disease. When the adaptive immune system is involved, as in rheumatoid arthritis and after a stroke, it is curious that the disease occurs more rapidly and is much more destructive.

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3409
Bullous pemphigoid and neurodegenerative disease: A retrospective study of postmortem neuropathological, immunohistochemical, and molecular genetics findings
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Background: An epidemiologic association has been reported between neurodegenerative disease (ND) and bullous pemphigoid (BP). Prior reports have proposed that collagen XVI is unmasked with neuronal damage, as occurs in ND, thus leading to generation of autoantibodies that cross-react with the basement membrane zone of the skin and result in BP.

Objective: We aimed to investigate the presence of collagen XVI gene (BP180) expression in hippocampal brain tissue and to evaluate detectable differences in histopathologic features between brain tissue from patients with BP and ND.

Methods: This study was approved by the internal review board. We selected 2 positive skin controls and 20 FFPE (formalin fixed, paraffin-embedded) patient-derived hippocampal biopspecimens. RNA was extracted from FFPE tissue sections and reverse transcribed into cDNA using commercially available kits. Quantitative reverse transcription PCR was performed and RNA copy number was determined by running standards of diluted and linearized DNA containing the desired amplicon, ranging from 5 to 5 million in copy number. BP180/AGRN copy number was normalized to 25,000 copies of housekeeping genes (ACTB, RPL8, RPL10). For immunohistochemistry (IHC), tissue recuts were processed and stained with rabbit anti-BP180 (1:600; Abcam) using Bond-Max autostainer, using EPR14758 rabbit monoclonal BP180 antibody (Abcam) in combination with an alkaline phosphatase-based red detection kit. Lesions were categorized as IHC positive if cell surface staining was detected in any part of the tissue specimen. All existent stained FFPE biopsies of autopsy brains in patients with BP and ND were retrieved and reviewed.

Results: All brain specimens reviewed were devoid of collagen XVII gene expression despite immunoreactivity in skin controls. Collagen XVI immunoreactivity was absent in the corresponding autopsy brain tissue. Postmortem neuropathologic evaluations did not disclose specific neurodegenerative-related findings in patients with BP and ND.

Limitations: This was a retrospective, single-site study with a small sample size. Brain tissue evaluation was limited to the hippocampus.

Conclusions: Our neuropathological, immunohistochemical and molecular genetics findings cast doubt on the previously proposed pathogenic mechanism underlying the epidemiologic association between BP and ND.

Commercial support: None identified.

3493
Bullous pemphigoid induced by dipeptidyl peptidase-IV inhibitors. Five cases with documented sustained remission after discontinuation
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Introduction: Bullous pemphigoid (BP) is the most common autoimmune blistering disease. In some cases, its development has been linked with the intake of certain drugs. Recently, dipeptidyl peptidase-IV inhibitors (DPP-IVi), a new generation of antihyperglycemic drugs, have been increasingly related as causative agents of BP. In our country, the most commonly used DPP-IVi are vildagliptin and sitagliptin, which are mainly used in combination with metformin on fixed-dose oral formulations.

Objectives: To identify and report cases in which the use of DPP-IVi (4 vildagliptin, 1 sitagliptin) was likely to be involved in the pathogenesis of BP.

Methods: We reviewed clinical, histopathologic, and laboratory findings of all patients with BP probably induced by DPP-IVi, from the dermatology departments of 5 university hospitals with specialized units in bullous skin diseases, from 2013 to 2015. The relationship between DPP-IVi and BP was evaluated by the World Health Organization causality assessment system.

Results: A total of 5 patients met these criteria (3 female and 2 male), with a mean age of 76 years old. The mean period before the onset of BP after the introduction of DPP-IVi was of 13 months (range 6 to 35). Clinical and histopathologic findings were identical to those observed in idiopathic BP. In all patients the DPP-IVi were suspended shortly after the diagnosis of BP. Two patients were treated with topical clotestol propionate alone, while 3 patients received systemic treatment at low doses (2 dapson and 1 oral cyclophosphamide, along with low doses of oral corticosteroids on a tapering-off regimen). All of patients achieved rapid clinical remission. The withdrawal of the treatment for BP was possible in all patients in a mean time of 6 months (range 1.5 to 8), without subsequent clinical relapses during a mean follow-up period of 9 months (range 1 to 24).

Conclusions: Since 2011, when the first cases of BP induced by DPP-IVi plus metformin were published, a total of 14 cases have been described in the literature. Follow-up data after complete clinical remission were not available in all these cases. The documented sustained clinical remission in our patients, during a long period of time without any treatment, supports the role of DPP-IVi in the etiology of BP. In conclusion, this fact highlights the importance of an early detection and discontinuation of these drugs, given the good prognosis of the disease after its withdrawal.

Commercial support: None identified.

2363
Brunsting-Perry cicatricial pemphigoid secondary to radiation therapy
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Brunsting–Perry cicatricial pemphigoid is a rare subepidermal blistering skin condition of the head and neck that can result in significant scarring. Previously reported cases have occurred spontaneously or subsequent to cutaneous trauma involving the affected skin. We present the unusual case of a 71-year-old male who was treated with percutaneous radiotherapy to the head and neck for a parotid mass, and subsequently developed Brunsting–Perry cicatricial pemphigoid over the previously irradiated skin. This reaction could be caused by radiation-induced spongiosis and to the prime symptom of pruritus which leads to the disease. If the pruritus is intense enough to cause excoriations severe enough to disrupt the epidermis, the involvement of the dermis likely causes the activation of the adaptive immune system. The findings are consistent with the documentation of IL 31, and histaminergic, but no potent prutigens. We have also shown that the innate system is involved in psoriasis, again with TLR 2. This time it was present in the dilated upper dermal capillaries. TLR 2 has been shown to lead to TNFa, IL 12/23, and IL 17, which have all been shown to be involved in the production of psoriatic lesions. In this instance, the streptococcus is most likely the organism involved; it is not recoverable because it internalizes or makes biofilms, so TLR 2 instead of combating the bacterium attacks host cells. Anti-streptococcal IgG is markedly elevated in plaque psoriasis in one half the patients; it is of interest to postulate these patients were those who would develop the systemic findings of arthritis, uveitis, and the metabolic syndrome which develop in 40% of patients. In arthritis and tertiary spirochetal neurologic disease where the disease has been shown to be caused by Borrelia and dental treponemese, TLR 2 is activated and leads to the chronic course noted in osteoarthritis and Alzheimer disease. When the adaptive immune system is involved, as in rheumatoid arthritis and after a stroke, it is curious that the disease occurs more rapidly and is much more destructive.

Commercial support: None identified.
Characterization of circulating autoantibodies by immunoblotting in patients with immunobullous diseases

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Conclusion: Glycosylation profiling by mass spectrometry and immunoblotting are promising techniques for exploring the direct immunofluorescence (DIFF) findings in patients with LCV from a tertiary hospital.

Methods: We performed a retrospective study of 282 biopsy-proven LCV cases with DIFF diagnosed at the Department of Dermatology, University of Sao Paulo Medical School, from January 2007 to December 2014.

Results: Ages ranged from five to 87 years old (yo), median age of 45 and 191(28) (67.7%) were female individuals. DIFF analysis showed positivity in 70.21% of the samples, and C3 was the most frequent immunoreagent. Immunoglobulin M (IgM) deposition at the blood vessel wall related to females and autoimmune/inflammatory disorders, C3 and C4 consumption, antinuclear antibody and anti SSA/SB2 positivity. Immunoglobulin G (IgG) deposition at the blood vessel wall was associated to age and positive ANCA, finally C3 deposition at the blood vessel wall associated to hematuria and renal involvement. Systemic involvement was present in 12.5% cases of LCV patients.

Conclusions: To our knowledge, this is the largest DIFF analysis of patients with histology-proven cutaneous LCV. DIFF seems to be an important method to establish the prognosis and underlying etiology of LCV. Characterization of the immune complex at the blood vessel wall by DIFF is relevant to determine underlying conditions related to LCV. C3 deposits, the most frequent finding of this study, related to renal involvement; IgG deposits related to absence of autoimmune or inflammatory diseases; IgM deposition related to the presence of autoimmune or inflammatory diseases, and IgG deposits were associated to positive ANCA.

Commercial support: None identified.

4046 Concurrent pemphigus foliaceus and Graves' disease

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A 15-year-old Hispanic female presented with a scaly eruption on her scalp and breasts for 7 weeks, and diarrhea, fatigue and weight loss for one month. Initial evaluation by the ED revealed a low TSH, normal CBC and she was given a presumptive diagnosis of uncauspid and was empirically treated with 1 mg of oral prednisone. Evaluation in dermatology clinic revealed diffuse pink plaques on the scalp and forehead with thick yellow malodorous crust, and pink papules and plaques with yellow crust on the chest, upper arms and bilateral breasts. She complained of pruritus and continued diarrhea, fatigue, and cold intolerance. Bacterial culture of her chest grew pan-sensitive Staphylococcus aureus. A provisional diagnosis of pemphigus foliaceus with impetiginization and was made, and she was started on an oral antibiotic and topical steroids. She was also urgently referred to endocrinology who diagnosed her with Graves' disease due to a low TSH and markedly elevated thyroid antibodies, and was started on methimazole and atenolol. Four week later at her follow-up dermatology visit, flaccid vesicles on the inner upper arms and axilla, and superficial erosions with crust on her buttocks, back, chest, face and scalp were noted. Biopsy of a vesicle performed for routine histology and perilesional skin was sent for direct immunofluorescence. Histopathology showed a subcorneal split with subepidermal and 4 (10.8%) had intraepidermal blistering diseases. Immunoblotting was useful in establishing the diagnosis in 29 patients (78.4%); namely 11 (48.3%) patients with anti laminin 1 pemphigoid, 4 (16.4%) with mucous membrane pemphigoid (MMP), 5 (10.4%) with bullous pemphigoid (BP), 3 (10.4%) with epidermolysis bullosa acquisita (EBA), 2 (6.6%) with exclusion of paraneo- plastic pemphigus (PNP), 1 (3.3%) with PNP, 1 (3.3%) with linear IgA bullous disease (LABD) and 1 (3.3%) with bullous SLE. Of the remaining 8/37 (21.6%) patients with inconclusive immunoblot results, 3/8 (37.5%) had the diagnosis established via repeating standard investigations (histology, DIFF, IF) during periods of disease activity and 1/8 (12.5%) had the diagnosis confirmed with immunomapping. The remaining 4 out of 8 patients (50%) had blistering disorders that remain uncharacterized.

Discussion and conclusions: This study was limited by the small sample size, which made subgroup analyses difficult. Immunoblotting was a useful adjunct in 78.4% of subjects with negative or inconclusive results on standard investigations. Most of these patients were found to have subepidermal blistering disorders; particularly antilaminin 1 pemphigoid, BP, MMP and EBA. In patients with blistering disorders that remain uncharacterized after immunoblotting, repeating standard investigations during periods of disease activity appeared to be useful in 50% of cases.

Commercial support: None identified.

3045 Clinicopathologic correlation of 282 leukocytoclastic vasculitis cases in a tertiary hospital

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Introduction: Leukocytoclastic vasculitis (LCV) is an inflammatory vasculopathy of small vessels, which is often idiopathic, but may be secondary to an underlying cause. Its pathophysiology relates to deposition of immune complexes at the walls of postcapillary venules, leading to an inflammatory process. Therefore, we aimed to explore the direct immunofluorescence (DIFF) findings in patients with LCV from a tertiary hospital.

Methods: We performed a retrospective study of 282 biopsy-proven LCV cases with DIFF diagnosed at the Department of Dermatology, University of Sao Paulo Medical School, from January 2007 to December 2014.

Results: Ages ranged from five to 87 years old (yo), median age of 45 and 191(28) (67.7%) were female individuals. DIFF analysis showed positivity in 70.21% of the samples, and C3 was the most frequent immunoreagent. Immunoglobulin M (IgM) deposition at the blood vessel wall related to females and autoimmune/inflammatory disorders, C3 and C4 consumption, antinuclear antibody and anti SSA/SB2 positivity. Immunoglobulin G (IgG) deposition at the blood vessel wall was associated to age and positive ANCA, finally C3 deposition at the blood vessel wall associated to hematuria and renal involvement. Systemic involvement was present in 12.5% cases of LCV patients.

Conclusions: To our knowledge, this is the largest DIFF analysis of patients with histology-proven cutaneous LCV. DIFF seems to be an important method to establish the prognosis and underlying etiology of LCV. Characterization of the immune complex at the blood vessel wall by DIFF is relevant to determine underlying conditions related to LCV. C3 deposits, the most frequent finding of this study, related to renal involvement; IgG deposits related to absence of autoimmune or inflammatory diseases; IgM deposition related to the presence of autoimmune or inflammatory diseases, and IgG deposits were associated to positive ANCA.

Commercial support: None identified.
3404
Dietary and smoking habits in patients with pemphigus vulgaris and internal erosions
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Background: Pemphigus vulgaris (PV) and bullous pemphigoid (BP) are rare autoimmune skin blistering disorders that can involve the mucous membranes. Several genetic and environmental etiologic factors have been postulated. Food could be a potential environmental trigger. Previous studies have shown possible association of diet containing allyl compounds and tannic acid with acantholysis in in vitro models. Nicotine on the other hand has been known to have anticalcichromic effects.
Methods: We performed a retrospective survey study to analyze the dietary difference and smoking patterns prior and post diagnosis of PV or BP. We hypothesized — (1) No dietary difference exists between PV and BP patients. (2) Patients with PV and BP do not change their diet after diagnosis. (3) Smoking habits of PV and BP patients are the same. Using the patient registration software at our institution, 241 patients with the search terms pemphigus, pemphigoid, pemphigus vulgaris, and/or bullous pemphigoid were identified of which 61 qualified and 20 from which responded. Exclusion criteria included other diagnosis, nursing home patients, and patients with dementia or with no confirmatory diagnosis with biopsy. Statistical analysis was carried out using Vassar Stats, significance was considered at P < .05.
Results: Based on the survey population, PV patients ate diet containing tannic acid significantly more frequently compared to BP patients prior to diagnosis (P = 0.0082). We also saw, significantly decreased intake of allyl compounds in PV patients postdiagnosis when compared to prediagnosis (P = 0.0364). No statistically significant difference in willingness to change dietary lifestyle was seen between PV or BP patients (P = .4513). Smoking information was limited and difficult to analyze primarily because of recall bias, timeline associated with smoking as well as modes of smoking and using tobacco.
Conclusion: Our study points to importance of possible dietary triggers in PV or BP. Limitations in our study included population bias and recall bias as previously mentioned. Future prospective studies including blood and or patch allergen testing are needed to provide additional information about the roles of dietary triggers in these rare, but severe blistering disorders.
Commercial support: None identified.

3404
Erythrodemic pemphigus foliaceus: A rare refractory variant
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A 55-year-old woman presented with erythroderma, generalized exfoliation and exudation. She had a history of erythematous papules and micropustules on the trunk, about 9 months ago, which progressively lead to erythroderma. She was hospitalized, 5 months ago, with a diagnosis of staphylococcal scalded skin syndrome and treated with systemic intravenous antibiotics. She was released without the achievement of full remission of erythroderma. The patient had a long journey with antibiotics and low doses of systemic prednisone and cyclosporine in the time period between the first and the second hospitalization. At that point, histology revealed acantholysis just underneath the granular layer of the epidermis. Direct and indirect immunofluorescence showed intercellular deposition of IgG and C3. Anti-Dsg-1 antibodies with ELISA techniques were detected in extremely high titers. Western blot analysis in extract of human epidermis confirmed the molecular weight of the causative antigen. Diagnosis of pemphigus foliaceus (PF) was established with all diagnostic procedures. Treatment decisions were made after a multidisciplinary collaboration. Plasmapheresis and pulses of intravenous prednisone were combined. Patient was reentered with significant improvement after 7 weeks of hospitalization and under systemic prednisone and azathioprine. Due to the refractory course of PF the treatment plan is not completely yet, as an approval of blooms that are anticipated to continue with rituximab. Pemphigus foliaceus is an autoimmune bullous disease, with the target antigen being in most cases desmoglein-1. It has two forms, the sporadic and the endemic one (fogo selvagem). Progression to erythroderma is unusual. It has been estimated to occur in about 6% of PF cases. Differential diagnosis in these generalized cases from staphylococcal scalded skin syndrome is difficult, based only on clinical picture and histology. Immunofluorescence and molecular studies are essential to define the disease. Therapeutic procedures (systemic steroids, immunosuppression, immunomodulatory adjuvants, rituximab) show accordingly slow response and hospitalization of such cases is usually prolonged.
Commercial support: None identified.

3511
Esophagitis dissecans superficiale in a patient with mucosal pemphigus vulgaris and multiple gastrointestinal symptoms: A case report
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Introduction: Pemphigus vulgaris is a rare, immune-mediated blistering disorder characterized by acantholysis and intraepithelial blister formation involving the skin and mucous membranes. The skin disease most often presents as mucocutaneous disease with minimal gastrointestinal involvement. However, extracutaneous manifestations, including mucosal-limited pemphigus, account for 1% of pemphigus vulgaris patients. Esophagitis dissecans superficiale is a rare condition in which the esophagus presents with mucosal erosions in the absence of true epidermolysis. The mechanism of development is unknown. The diagnosis is supported with positive Nikolsky sign, endoscopic examination, and demonstration of immunofluorescence of IgG. This case illustrates a skin disease that frequently involves the esophagus, which was confirmed through a biopsy. Esophageal involvement in pemphigus vulgaris is rare, with only 18 cases reported in the literature. The aim of the study was to identify the potential mechanisms that lead to esophageal involvement in pemphigus vulgaris and to improve the management of such cases. The patient was a 54-year-old woman who presented to our clinic with a 2-month history of odynophagia. The patient was initially diagnosed with pemphigus vulgaris and treated with systemic immunosuppression. Physical examination revealed a well-developed, normotensive, nonicteric, non-anemic, and non-obese woman. The patient had no significant medical history except for a history of smoking. The patient was seen for follow-up 6 months after initiation of treatment. She reported improvement in her symptoms and no evidence of disease recurrence. The patient was maintained on a low-dose prednisone regimen, and her symptoms were monitored closely. The patient was referred for an evaluation of chest pain, which was determined to be related to gastroesophageal reflux disease. The patient was treated with medical management, including proton pump inhibitors and lifestyle modifications. The patient continued to have recurrent episodes of odynophagia, which were managed with medication and lifestyle changes. The patient was advised to maintain a healthy diet and avoid smoking and alcohol to minimize the risk of esophageal involvement. The patient was followed closely and treated as needed. The patient's symptoms improved, and she was able to continue her daily activities without significant interference. The patient was advised to continue with follow-up visits and to maintain a healthy lifestyle to prevent recurrence. The patient was discharged with a 6-month follow-up appointment. The patient was seen for follow-up 12 months after initiation of treatment. She reported no further episodes of odynophagia and no evidence of disease recurrence. The patient was maintained on a low-dose prednisone regimen, and her symptoms were monitored closely. The patient was referred for an evaluation of chest pain, which was determined to be related to gastroesophageal reflux disease. The patient was treated with medical management, including proton pump inhibitors and lifestyle modifications. The patient continued to have recurrent episodes of odynophagia, which were managed with medication and lifestyle changes. The patient was advised to maintain a healthy diet and avoid smoking and alcohol to minimize the risk of esophageal involvement. The patient was followed closely and treated as needed. The patient's symptoms improved, and she was able to continue her daily activities without significant interference. The patient was advised to continue with follow-up visits and to maintain a healthy lifestyle to prevent recurrence. The patient was discharged with a 6-month follow-up appointment.
Commercial support: None identified.
Bullous pemphigoid (BP) is a common autoimmune blistering disorder of the elderly. Several diagnostic modalities are available, including clinical impression, histopathology, direct and indirect immunofluorescence, and enzyme-linked immunosorbent assay (ELISA) detection of pathogenic antibodies. In this study, we aim to examine the utility of the newest test, ELISA, in comparison to the constellation of other tests. We describe our clinical experience in which 170 patients diagnosed with bullous pemphigoid had multiple tests performed. BP180 alone showed a sensitivity of 54% and specificity of 94%. The positive predictive value (PPV) is 95% while the negative predictive value (NPV) is 52%. BP230 alone yielded a sensitivity of 40% and specificity of 94%. The PPV is 94% and the NPV is 49%. Using both tests in combination yielded a sensitivity of 66% and specificity of 89%. The PPV of at least one of two tests returning positive is 92% while the NPV of dual negative tests is 58%. Use of ELISAs for suspected cases of BP are an inadequate standalone test, and are only helpful in making the diagnosis should they return positive. However, they would appear to miss about one-third of cases.

Commercial support: None identified.

Evaluation of ELISA testing for BP180 and BP230 as a diagnostic modality for bullous pemphigoid: A clinical experience

Jesse Keller, MD; Oregon Health & Sciences University, Portland, OR, United States; Ashley Kittridge, MD, South Hills Dermatology, Pittsburgh, PA, United States; Sara Debanne, PhD, Case Western, Cleveland, OH, United States; Neil Korman, MD, PhD; University Hospitals/Case Western, Cleveland, OH, United States

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Evaluation of ELISA testing for BP180 and BP230 as a diagnostic modality for bullous pemphigoid: A clinical experience

Jesse Keller, MD; Oregon Health & Sciences University, Portland, OR, United States; Ashley Kittridge, MD, South Hills Dermatology, Pittsburgh, PA, United States; Sara Debanne, PhD, Case Western, Cleveland, OH, United States; Neil Korman, MD, PhD; University Hospitals/Case Western, Cleveland, OH, United States

Bullous pemphigoid (BP) is a common autoimmune blistering disorder of the elderly. Several diagnostic modalities are available, including clinical impression, histopathology, direct and indirect immunofluorescence, and enzyme-linked immunosorbent assay (ELISA) detection of pathogenic antibodies. In this study, we aim to examine the utility of the newest test, ELISA, in comparison to the constellation of other tests. We describe our clinical experience in which 170 patients diagnosed with bullous pemphigoid had multiple tests performed. BP180 alone showed a sensitivity of 54% and specificity of 94%. The positive predictive value (PPV) is 95% while the negative predictive value (NPV) is 52%. BP230 alone yielded a sensitivity of 40% and specificity of 94%. The PPV is 94% and the NPV is 49%. Using both tests in combination yielded a sensitivity of 66% and specificity of 89%. The PPV of at least one of two tests returning positive is 92% while the NPV of dual negative tests is 58%. Use of ELISAs for suspected cases of BP are an inadequate standalone test, and are only helpful in making the diagnosis should they return positive. However, they would appear to miss about one-third of cases.

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3310
Laryngeal involvement in paraneoplastic pemphigus associated with benign Brenner tumor
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Introduction: Paraneoplastic pemphigus (PNP), a distinct autoimmune blistering disorder with underlying neoplasia, was first described in 1990 by Anhalt et al. PNP is usually associated with hematologic malignancy, although correlated solid tumors were described in nearly 15% of the cases. Polymorphic cutaneous lesions may resemble pemphigus vulgaris, erythema multiforme, bullous pemphigoid, lichen planus and graft-versus-host disease. Oral, ocular and genital mucosa are predominant affected sites. A 55-year-old female patient was referred to our clinic. A biopsy from left arm was obtained: histopathologic analysis showed apoptotic keratinocytes and lichenoid interface dermatitis. As she developed blisters on the face and palate with dysphagia and odynophagia, a biopsy from the palate was performed. Histopathologic evaluation exhibited apoptotic keratinocytes and a lymphoplasmacytic infiltrate at the lamina propria. Direct immunofluorescence (IF) demonstrated IgG intercellular deposits at the epidermis, and IgG and C3 bound to the basement membrane zone. Indirect IF with rat bladders epithelium as substrate is under analysis. These findings suggested the diagnosis of PNP. She was submitted to a complete neoplasia screening, and no other tumor was identified. A biopsy from the tongue was performed: histopathologic analysis revealed keratinizing squamous cell carcinoma. As she developed new erosions until 45 days of age. Although plasmatic IgG half-life is approximately 20 years. Cold temperatures and stress exacerbated these symptoms. We report a case of paraneoplastic pemphigus with mucosal involvement associated with benign Brenner tumor.

Case report: A 55-year-old female patient presented a 2-year history of brownish keratotic plaques on the trunk and limbs and violaceous papules on the face and neck. She also had conjunctivitis hyperemia and oral erosions with intense hyperaemia. Ophthalmologic evaluation reported conjunctival erosions; nasopharyngoscopy revealed blisters at the laryngeal face of epiglottis. Due to benign Brenner tumor diagnosis, bilateral adnexectomy had been performed 6 months before referral to our clinic. A biopsy from left arm was obtained: histopathologic analysis showed apoptotic keratinocytes and lichenoid interface dermatitis. As she developed blisters on the face and palate with dysphagia and odynophagia, a biopsy from the palate was performed. Histopathologic evaluation exhibited apoptotic keratinocytes and a lymphoplasmacytic infiltrate at the lamina propria. Direct immunofluorescence (IF) demonstrated IgG intercellular deposits at the epidermis, and IgG and C3 bound to the basement membrane zone. Indirect IF with rat bladders epithelium as substrate is under analysis. These findings suggested the diagnosis of PNP. She was submitted to a complete neoplasia screening, and no other tumor was identified. A biopsy from the tongue was performed: histopathologic analysis revealed keratinizing squamous cell carcinoma. As she developed new erosions until 45 days of age. Although plasmatic IgG half-life is approximately 20 years. Cold temperatures and stress exacerbated these symptoms. We report a case of paraneoplastic pemphigus with mucosal involvement associated with benign Brenner tumor.

Discussion: Our case corroborated the hypothesis of congenital EBA and after approximately 3 months of supportive care, lesions completely healed with multiple milia. No recurrence was observed.

3314
Mucocutaneous involvement in newborn with congenital epidermolysis bullosa acquisita
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Background: Epidermolysis bullosa acquisita (EBA) is a rare subepidermal bullous dermatosis with autoantibodies against type VII collagen, the main component of anchoring filaments. EBA onset commonly occurs between 40 and 60 years of age, although cases during childhood have been described. Only one case of congenital EBA has been reported. We describe a second newborn with congenital EBA.

Case report: A 25-year-old patient with EBA, receiving low dose prednisone, showed oral erosions, scarring subungual involvement and erosions of the scalp, nose, upper lip, tongue and limbs. A skin biopsy was performed at the right thigh: histopathologic analysis showed subepidermal blister with neutrophils; direct immunofluorescence microscopy of perilesional skin exhibited IgG, IgM, and C3 deposits at the basement membrane zone. Serum IgG antibodies were bound to the internal side of the cleavage in indirect immunofluorescence microscopy on salt-split skin; detection of serum antibodies against noncollagenous domain 1 of type VII collagen was performed. As she developed oral erosions until 45 days of age. Although plasmatic IgG half-life is approximately 20 years. Cold temperatures and stress exacerbated these symptoms. We report a case of paraneoplastic pemphigus with mucosal involvement associated with benign Brenner tumor.

Discussion: Our case corroborated the hypothesis of congenital EBA and after approximately 3 months of supportive care, lesions completely healed with multiple milia. No recurrence was observed.

3603
Neutrophilic dermatosis of the hands: Case report
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Neutrophilic dermatosis of the hands (NDH) is a rare dermatosis with about 60 cases being described in literature. The exclusive involvement of hands is characteristic, which differentiates from Sweet syndrome and pyoderma gangrenosum. Having been described by Strutton et al in 1995 as pustular vasculitis of the dorsal hands (considered a variant of Sweet syndrome) it received its current denomination in 2000 by Galara et al, and in the last few years it has been considered a distinct entity.

A case report is presented below. A 49-year-old female patient with rheumatoid arthritis five years ago (in use of 15 mg of methotrexate a week) came to us complaining about having asymptomatic lesions in her hands for two months. On examination there was a noninfiltrated erythematous plaques with undefined painful edge on the dorsum of the hand, resistant to all the treatments. We diagnosed neutrophilic dermatosis of the hands with rheumatoid arthritis five years ago (in use of 15 mg of methotrexate a week) came to us complaining about having asymptomatic lesions in her hands for two months. On examination there was a noninfiltrated erythematous plaques with undefined painful edge on the dorsum of the hand, resistant to all the treatments. We diagnosed neutrophilic dermatosis of the hands with rheumatoid arthritis five years ago (in use of 15 mg of methotrexate a week) came to us complaining about having asymptomatic lesions in her hands for two months. On examination there was a noninfiltrated erythematous plaques with undefined painful edge on the dorsum of the hand, resistant to all the treatments. We diagnosed neutrophilic dermatosis of the hands with rheumatoid arthritis five years ago (in use of 15 mg of methotrexate a week) came to us complaining about having asymptomatic lesions in her hands for two months. On examination there was a noninfiltrated erythematous plaques with undefined painful edge on the dorsum of the hand, resistant to all the treatments. We diagnosed neutrophilic dermatosis of the hands with rheumatoid arthritis five years ago.
Rituximab as first-line therapy for Juvenile pemphigus vulgaris

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Juvenile pemphigus vulgaris (JPV) is a rare autoimmune epidermal blistering disease that represents a clinical entity of the spectrum on pemphigus vulgaris (PV) that affects adolescents between the ages of 13-18 years of age. PV is further classified as a childhood variant if occurring in children less than 12 years of age and adults greater than 18 years of age. Pathologic autoantibodies directed at keratinocytes cytoplasmic proteins desmoglein 1 (dsg 1) and desmoglein 3 (dsg 3) results in intraepidermal vesicles with acantholysis. Clinically this manifests as flaccid blisters and erosions with oral or cutaneous involvement. Optimal treatment regimens have not been established for JPV and generally treatment for JPV follows adult PV regimens. Systemic corticosteroids are the most common initial therapeutic option for active disease, but corticosteroids can lead to severe side effects. Other therapeutic options include immunosuppressive (azathioprine, cyclophosphamide, mycophenolate mofetil), intravenous immunoglobulins, and rituximab. The latter has been typically reserved for refractory lesions. Rituximab is a monoclonal chimeric antibody directed towards CD20+ antigen, which is normally used for B cell activation and proliferation. Targeting this cell surface protein results in B cells depletion. Rituximab was initially approved for B cell lymphomas but it has been utilized in various autoimmune diseases. Since there is no conventional dosing of Rituximab for pemphigus vulgaris administration generally falls under the B cell lymphoma or rheumatoid arthritis dosing schedules, which are 375 mg/m² once a week for four consecutive weeks or two 1000 mg infusions separated by a 2-week interval. There has been some reports of recurrent JPV being successfully treated with rituximab. Here we present a 17-year-old male with JPV who was successfully treated with high-dose corticosteroids and rituximab as first line therapy.

Commercial support: None identified.

Rituximab combined with conventional therapy vs conventional therapy alone for the treatment of mucocutaneous membrane pemphigoid: A retrospective review

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Background: The anti-CD20 monoclonal antibody rituximab (RTX) is becoming increasingly accepted as a safe and effective treatment for autoimmune blistering diseases, including pemphigus and bullous pemphigoid. However, data utilizing RTX for the treatment of patients with mucous membrane pemphigoid (MMP) is limited. Several case series have demonstrated increased rates of clinical remission in MMP patients refractive to conventional immunosuppressive treatment; however, they have been constrained by small sample sizes and limited follow up time.

Objective: To compare the efficacy of adding RTX to traditional immunosuppressive therapies in the treatment of MMP in terms of both time to disease control and cessation of corticosteroids, and to compare the safety profile following addition of RTX

Methods: Patients with a diagnosis of MMP commencing immunosuppression at Emory University between August 2001 and June 2015 were identified. To be included in this retrospective analysis, patients had at least 6 months of follow-up data after initiating therapy. In total, 49 patients fit these criteria. All patients treated with RTX had already been treated with at least one systemic immunosuppressive agent, and all remained on concomitant immunosuppressive therapy throughout the study period. Outcome measures included both achievement of and time to disease control, time to relapse, withdrawal of corticosteroids, and number of adverse events.

Results: Twenty-four patients were treated with RTX and 25 were treated with conventional immunosuppression only, with a mean follow-up period of 28.5 months for the RTX group and 44.6 months in the conventional group. 100% of patients in the RTX group achieved disease control compared to 40% in the conventional group (P < 0.01), with a mean time to disease control of 10.17 months and 42 months (P < 0.01) respectively. Ten patients who had achieved disease control following RTX experienced a relapse after a mean time of 9.6 months, compared to 3 in the conventional group after a mean time of 2.33 months (P = 11). 75% of patients in the RTX group were able to come off steroids completely, compared to 33% in the conventional group (P = 0.15). Adverse events were seen in 29% of patients following RTX, compared to 48% of patients in the conventional group (P = 0.17).

Limitations: This is a retrospective review at a single academic center. There were limitations in matching by disease severity in the absence of defined clinical severity indices. Additionally, the two groups were not randomized to specific immunosuppressive regimens or fixed doses.

Conclusions: A review of the recent MMP literature suggests a favorable clinical response to RTX. Our retrospective studies have directly compared RTX to conventional immunosuppressive therapy in this disease, with smaller lower doses of RTX to conventional therapy in patients with MMP results in more rapid and sustained disease control, a steroid-sparing effect, and a favorable side effect profile.

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The isomorphic response in vancomycin-induced linear IgA bullous dermatosis

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Background: Linear IgA bullous dermatosis (LABD) is a subepidermal vesiculobul- lous eruption occurring most often with vancomycin in drug-induced cases. We describe a case of vancomycin-induced LABD presenting with an atypical isomorphic response.

Case report: An 86-year-old woman who underwent hip replacement surgery following a femoral neck fracture developed prosthetic joint infection and C difficile colitis for which she was receiving intravenous and oral vancomycin. She developed localized vesicles and bullae around the surgical wound, the left brachial peripherally inserted central catheter (PICC), the vulva and inner thighs. Due to the localized nature of the eruption, contact dermatitis to a non-rinse perinal and body cleanser and/or adhesive strip placement was initially suspected. New lesions continued to appear and spread despite the discontinuation of no-rinse soap and adhesives. Examination revealed tense vesicles and bullae on an inflammatory base at the surgical wound, PICC-line site, and sites of previous adhesive contact. We observed annular, sausage-shaped vesicles and vesicles with the specific “string of pearls” morphology, both of which were suggestive of LABD. Skin biopsy revealed subepidermal vesicles and a superficial inflammatory infiltrate in the dermis containing neutrophils and cosinophils. Direct immunofluorescence studies performed on a linear IgA band at the dermoeppidermal junction: however, these findings confirmed the diagnosis of LABD. The lesions resolved after discontinuation of vancomycin and a short course of oral prednisone.

Discussion: A small number of recent cases describe vancomycin-induced LABD (VLABD) presenting with an isomorphic response. In one patient with multiple dressings, VLABD appeared at all sites of previous adhesive strip placement and removal. Contact dermatitis to adhesive strips was initially suspected. VLABD with keratinization at the site of an old surgical scar has also been reported. We observed VLABD both at fresh wound margins and sites of previous adhesive placement, which suggests a possible role of epidermal trauma in inducing these lesions. Clinicians should be aware that LABD can present with an isomorphic response that may initially be difficult to distinguish from contact dermatitis.

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The sensitivity and specificity of mosaic-based indirect immunofluorescence biochip method in the diagnosis of pemphigus and bullous pemphigoid

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Autoimmune bullous diseases are characterized by autoantibodies against structural proteins of the epidermis or the dermoepidermal junction, clinically presented with cutaneous and/or mucosal bulla or erosions. Pemphigus and bullous pemphigoid are the major groups of autoimmune bullous diseases. The diagnosis of these rare diseases is based on a combination of clinical features, histologic and direct immunofluorescence (DIF) findings and serology with indirect immunofluorescence (IFF) biochip method and ELISA test. In recent years, a new mosaic-based indirect immunofluorescence biochip method has been developed as a cheaper, practical and a less time consuming test. In this study, we aimed to state the value of this new method in the diagnosis of pemphigus and bullous pemphigoid. We analyzed sera from pemphigus patients (n = 45) and bullous pemphigoid patients (n = 45) and healthy controls (n = 10). The control group included 35 patients with other skin diseases. The sensitivity and specificity of mosaic-based IFF biochip method in the diagnosis of pemphigus and bullous pemphigoid was considerably high; in the diagnosis of pemphigus was found 99/1 and 99/1, respectively and in the diagnosis of bullous pemphigoid was found 99/1 for both of them. Our findings showed that the mosaic-based IFF biochip method has highest diagnostic sensitivity in detecting the autoantibodies against Dsg1 in pemphigus patients and the autoantibodies against BP180/NC16A in bullous pemphigoid patients, a good rate of agreement was observed among mosaic-based IFF biochip method and ELISA test (P < 0.01). In conclusion, mosaic-based IFF biochip method has value as a cheaper, reliable, less time consuming and minimally invasive test which can be used as an initial screening test in the diagnosis and differential diagnosis of autoimmune bullous diseases.

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3522

A case of New World cutaneous leishmaniasis in Danville, PA

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Background: New World cutaneous leishmaniasis is a protozoal infectious disease transmitted by a bite from the Lutzomyia sandfly that is not commonly seen in the U.S. outside of South-Central Texas. It is most commonly seen in those who have traveled to endemic areas such as Central or South America, and is most commonly caused by the subspecies Leishmania mexicana or L braziliensis.

Case report: A 21-year-old woman presented to the clinic with a 5-month history of a slowly progressive, nonhealing erythematous 2-cm crusted plaque on the left cheek that had initially appeared as a ‘pimple-like’ bump while studying abroad in Costa Rica. The lesion had been previously biopsied by an outside physician, but pathology showed nonspecific inflammation and she was subsequently treated with ciprofloxacin for 1 month. She had developed no other mucocutaneous findings or systemic symptoms despite enlargement of the lesion and thickened crust formation. Her previous slides from the left cheek were requested and read within the Geisinger system, revealing multiple amastigotes in small clusters within the papillary dermis and within the cytoplasm of the dermal histiocytes. An additional biopsy was sent to the CDC for PCR and DNA sequencing and came back positive for the subspecies L panamensis. After consulting with the CDC, she was started on oral ketoconazole 600 mg daily for 30 days. She responded well to the treatment with resolution of the lesion and residual scar formation.

Discussion: Cutaneous leishmaniasis due to L panamensis, a subgroup of the species L braziliensis, is a common cause of New World protozoal infections outside of Central America in patients who have collected amastigotes begin as a papule at the site of inoculation from the bite of a sandfly that slowly grows into an ulcerated plaque or nodule, leading to scar. Histopathology commonly shows amastigotes within dermal macrophages with a mixed inflammatory infiltrate. Lesions can be cultured using specialized Nicolle-Novy-MacNeal media available from the CDC. Cultures are positive in approximately 40% of cases. PCR is the most sensitive and specific test. Real-time PCR assay is available at the CDC. Ketoconazole at a dose of 600 mg/day for 28 days has been shown to be more effective than sodium stibogluconate in small studies. Side effects include transient amnisti and reversible decrease in serum testosterone.

Conclusion: New World cutaneous leishmaniasis may go unrecognized without high clinical suspicion and history of travel to endemic areas. Diagnosis can be confirmed by pathology, culture, and real-time PCR.

Commercial support: None identified.

3740

A protean master mimic: Secondary syphilis presenting as psoriasiform keratosis

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Case Description: The patient is a 47-year-old white male who presented to our facility complaining of a 1-month history of a pruritic erythematous, scaly, psoriasiform rash of the penis. He was referred to dermatology by his primary care provider (PCP) after self-treatment with over-the-counter (OTC) clotrimazole and emollients failed to improve his symptoms. A few weeks prior, the patient had an episode of rash and pruritus on the right hip. He was successfully treated with 3 doses of IM penicillin G with improvement of his rash and pruritus and no complications.

Discussion: This patient’s case illustrates the importance of recognizing the diverse presentations of syphilis and the threat it poses to vulnerable populations. Syphilis is known as “the great imitator” due to its myriad diverse manifestations that can be difficult to distinguish from other diseases. The erythematous scaly psoriasiform patches on this patient represent a rare and unusual presentation of secondary syphilis, which, although very polymorphic, is much more often macular or maculopapular. Syphilis has shown a rising incidence in the United States and men who have sex with men (MSM) are at higher risk than other populations. Diagnosing and treating syphilis is vital, because if unrecognized it can lead to highly destructive and often irreversible cardiac and neurologic effects. Improved provider awareness as well as patient education and safe practices may combat this trend and prevent these unfortunate sequelae.

Commercial support: None identified.

2682

Atypical cutaneous mycobacteriosis by M mucogenicum mimicking squamous cell carcinoma in immunocompetent patient

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Introduction: Different mycobacterial species from Mycobacterium tuberculosis and Mycobacterium leprae have been called as environmental, opportunistic or atypical mycobacteria, although the term of nontuberculous mycobacteria (NTM) is one of the most accepted today. We report an interesting clinical case of a cutaneous infection produced by M mucogenicum mimicking a squamous cell carcinoma in an immunocompetent patient.

Case report: A 59-year-old male was attended in our dermatology unit complaining about an ex crescens cutaneous tumor of rapid growth, which had developed for the previous three months. He denied contact with animals, though regarding his occupation, he admitted an occasional prick with a rose thorn. On clinical examination, an infiltrated erythematous tumor with markedly hyperkeratosis in the central part could be appreciated on the dorsal aspect of his right hand. No locoregional lymph nodes and hepatosplenomegaly were observed. Histologic examination showed the existence of pseudoeosinophilomatous hyperplasia with presence of acute inflammatory reaction. Ziehl Nielsen, Fite Faraco and periodic acid–Schiff (PAS) stains, as well as the smear, were all negative. However, the culture showed the presence of nonpigmented mucoid colonies of alcohol-resistant bacilli (ARB). Species identification based on 16S rRNA was consistent with M mucogenicum. The patient was started on clarithromycin 300 mg twice daily, in association to rifampicin 300 mg, twice daily, with resolution of symptoms at 5 months.

Discussion: M mucogenicum is a fast-growing NTM, formerly known as M cheloneae. Infections due to M mucogenicum are extremely rare, but often involve skin and soft tissues. Immunocompetent patients rarely develop severe infections. It can also induce a granulomatous hepatitis, pneumonia in AIDS patients and skin infections in patients treated with TNF blockers. From a clinical point of view, the presentation of cutaneous infections caused by NTM may be highly variable. Differential diagnosis includes common warts, verrucous tuberculosis, aquamarin granuloma, sporotrichosis, and squamous cell carcinoma, as in the present case. DNA sequencing may be used to identify the exact subtype isolated from culture. There is no defined therapeutic regimen for its treatment due to the existence of multiple bacterial resistances. A combination of two or more agents should be considered in immunocompromised patients.
3460 Bacillary angiomatisos from Bartonella quintana in a cardiac transplant patient

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Bacillary angiomatisos (BA) is a vasoproliferative disorder caused by Bartonella quintana, and is associated with exposure to cat bites, scratches, cat fleas and body lice. If left untreated it can affect the liver, spleen, heart, and gastrointestinal tract and lead to death. While it was previously thought to be an AIDS-defining illness, it has also rarely been described in other immunocompromised states, such as organ transplant recipients. A 68-year-old female with PMH of peripheral neuropathy, foot drop, and dialysis cardiomyopathy s/p cardiac transplant on mycophenolate mofetil, cyclosporine, and prednisone presented for right heart catheterization. She was found to be febrile and admitted for monitoring. Dermatology was consulted for an acute onset of bright red, nonblanching papules in her axilla, antecubital fossa, bilateral forearms, chest, and abdomen. The lesions erupted simultaneously three weeks prior. She denied chills, recent travel, sick contacts, chest pains, worsening shortness of breath, weight loss, and abdominal pain. She was started empirically on doxycycline. A punch biopsy was performed and showed a vascular proliferation. However, a Warthin–Starry stain was negative. HIV and CMV were negative. Serology for B. quintana (titer 1:256) and B. henselae (titer <0.3) suggested recent infection. The patient completed a four-month course of doxycycline with full resolution of these lesions. BA is a vasoproliferative form of infection with B. quintana or B. henselae that occurs in immunocompromised patients such as those with HIV or leukemia, on chemotherapy, or on immunosuppression after organ transplantation. Clinical and histologic features are used to make the diagnosis. Histology reveals vascular proliferation with the presence of neutrophils adjacent to blood vessels. While Bartonella species can be demonstrated by Warthin–Starry stain, up to 30% of cases do not stain positively. Culture and PCR-based methods can also be used to identify the organisms. Clinicians must have a high index of suspicion and low threshold for empiric treatment of new vascular lesions in immunocompromised patients. To our knowledge, there is only one other case in peer-reviewed literature of BA in a cardiac transplant patient.

Commercial support: None identified.

3760 Fosfomycin therapy in a case of mycetomatoid granulomatous mastitis by N brasiliensis in pregnancy

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Nocardia is a genus of Gram-positive bacteria; N. brasiliensis and N. asteroides complex are the most notable. Fosfomycin is an antibiotic that inhibits peptido-glycan synthesis. It is a pregnancy category B drug that has been effective against Nocardia. To our knowledge there are no reports of a Nocardia infection treated with fosfomycin. A 19-year-old otherwise healthy woman presented with a dermatisos on the left breast of 5 weeks evolution, characterized by erythema, induration and pain. A soft tissue infection was diagnosed and surgical debridement was performed, together with a biopsy and cultures. The patient was treated with several antibiotics without improvement. Biopsy revealed a chronic granulomatous inflammation with negative Ziehl–Nielsen (ZN) stains and bacteria. Mycobacterial cultures. PPD, coxsackivin, HIV by ELISA and imaging studies were normal. The patient was referred to our dermatology clinic for diagnosis and treatment. Physical examination revealed increased volume on her left breast and presence of multiple fistulae draining a seropurulent secretion. Biopsy and cultures were negative for fungi and bacteria. A granulomatous chronic inflammation with negative stains (PAS, Grocott, ZN) was observed. N. brasiliensis IgG antibodies were positive with a titer of 0.64 (N = 0.5). A presumptive diagnosis of mycetomatoid granulomatous mastitis associated to N. brasiliensis was made. Treatment with trimethoprim/sulfa-methoxazole (TMP/SMX) 160/800 mg every 12 hours and amoxicillin/clavulenate 875 mg/125 mg every 12 hours was started but there was no improvement after 2 weeks. Amoxicillin was discontinued and fosfomycin 3 grams/day orally was added with TMP/SMX for 2 weeks with clinical improvement. Three weeks later, the patient got pregnant, and TMP/SMX was halted and fosfomycin was continued 2 g per day for 5 weeks, achieving complete resolution. At 6 months follow-up, the patient was asymptomatic and the N. brasiliensis antibody titer decreased (0.458). In this case, Nocardia brasiliensis infection was detected indirectly by positive serology. Although TMP/SMX was primarily initiated, the patient did not show improvement until fosfomycin was administered. During pregnancy, fosfomycin achieved clinical cure and decreased antibody titer. Fosfomycin can be an alternative treatment in some Nocardia infections and could be used during pregnancy.

Commercial support: None identified.

3460 Bacillary angiomatisos from Bartonella quintana in a cardiac transplant patient

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Craded scabies in a patient with lepromatous leprosy

Craded scabies is an unusual form of infection with Sarcoptes scabiei var hominis, an obligate human parasite, transmitted by skin-to-skin contact. Clinically, it can present with poikilodermic skin lesions in acral distribution with variable whitish scaling. It usually involves the subungual area with nail hyperkeratoses and dystrophy. A 56-year-old man presented with a seven month history of pruritus (with nocturnal exacerbation), weight loss and muscle weakness. The patient was diagnosed with lepromatous leprosy (LL) 22 years ago, abandoned treatment several times and developed neurologic damage and deformities. On exam, several poikilodermic crusted lesions were seen on hands and feet, with severe nail dystrophy. We also noted an erythematous scaling eruption in the face, and on neck, scalp, trunk and arms. Laboratory results included a negative HIV test and skin scraping revealed the mite. The patient was treated with oral antihista mines, topical antipruritics, keratolytics, topical permethrin (5%) and repeated doses of ivermectin (200 µg/kg) on the 1st, 2nd, 8th, 9th and 15th day. The usual method for scabies diagnosis is skin scraping with microscopic examination or dermatoscopy. CS is frequently found in immunocompromised patients (such as HIV, or HIV-1 patients), and mentally retarded or physically incapacitated individuals. Infested individuals and their close contacts should be treated at the same time, even if asymptomatic. There are few reported cases showing the association between CS and LL in non-HIV infected individuals. In Brazil, due to the high number of leprosy, physicians should be aware of the possibility of CS in leprosy patients who develop widespread hyperkeratotic eruptions.

Commercial support: None identified.

3846 High relapse rate on completion of who recommended multidrug therapy in patients of leprosy

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AIM: To study the relapse rate and change in bacillary index (BI) and morphological index (MI) after completing the multidrug therapy by WHO guidelines in lepromatous (LL), borderline (BT, BB, BL), and tuberculoid leprosy (TT).

Materials and methods: 52 patients with leprosy (slit smears (BI) and histopathology confirmed) were included. Paucibacillary category were given 600 mg rifampin monthly, 100 mg dapsone daily for 6 months and for multibacillary 600 mg rifampin, 300 mg clofazimine monthly, 100 mg dapsone, 50 mg clofazimine daily for 12months. Follow up was done monthly and after 6 months of completion of MDT.

Results: Out of 52, 6 patients of lepromatous, 4 of borderline and 3 of tuberculoid leprosy had relapse even after completion of the MDT. Decrease in bacillary and morphological index in case of lepromatous leprosy also was not significant. So, all were given ofloxacin tablets 400 mg once daily for 6 months before they were declared fit for 'release from treatment'.

Conclusion: Even after treatment, skin lesions may be present with WHO short duration treatment in patients with high bacillary load. It is difficult to distinguish clinical relapses (failure of treatment) from late type 1 lepra reaction causing skin lesions to reappear. Failure may also result from drug resistance. There are insufficient data to evaluate efficiency of shorter treatment regimens by WHO (12 months) for multibacillary leprosy and this area has vast scope of improvement and modifications in order to make this world free from 'leprosy'.

Commercial support: None identified.

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Leprosy presenting as a reversal reaction requiring urgent treatment
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Introduction: Leprosy usually presents insidiously with cutaneous lesions and variable loss of sensation in the tuberculoid form and with extensive skin and peripheral nerve damage in the lepraerythematous form. Most cases of leprosy, however, do not strictly fall into either extreme. A reversal reaction is a form of cell-mediated immune response involving a delayed hypersensitivity reaction and an acute clinical expression of the immune response to Mycobacterium leprae antigens. Reversal reactions usually present gradually over a few weeks as erythema, swelling, and edema in previously flat and asymptomatic cutaneous lesions in patients who have been receiving antilepromy whole therapy for several months. We present an unusual case in which a patient with no prior diagnosis of leprosy presented acutely with new-onset skin lesions and a severe and rapidly progressive peripheral neuritis clinically consistent with a reversal reaction as the first manifestation of her indolent infection.

Case: A 43-year-old woman was admitted to the hospital with an 8-day history of an eruption beginning on her right leg and eventually appearing on her left leg, bilateral carpal and helices, left nose, left cheek, and left elbow. The rash appeared as large, nonpruritic, erythematous, anesthetic patches and plaques that progressively increased in size and coalesced. She also developed pain in her right distal leg accompanied by motor weakness, including a foot drop. She had a spontaneous ulceration and ecchymosis on her right lateral malleolus and a palpable pulse of the dorsalis pedis artery. A clinical diagnosis of leprosy with associated neuritis was made, and the patient was started on prednisone (1 mg/kg), dapsone, and rifampin. Clofazimine would be added outpatient. All of her sensorimotor neuritis symptoms responded dramatically to therapy over the subsequent 48 hours. She was able to bear weight on her right foot again and regained significant range of motion.

Conclusion: The current case is noteworthy since it illustrates an unusual presentation of a reversal reaction that was severe, rapidly progressive, and required urgent empiric corticosteroid treatment in a patient with a previously asymptomatic, borderline tuberculoid leprosy. Early clinical recognition of reversal reactions followed by immediate initiation of corticosteroid therapy is crucial since these reactions can quickly result in severe and potentially permanent sensorimotor nerve damage.

Commercial support: None identified.

2805

Lucio's phenomenon (neocrystizing erythema) in patients with Lucio leprosy: A case report
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The phenomenon of Lucio (LP) or necrotizing erythema, described in 1882 by Lucio and Alvarado, is a rare event that occurs in patients with Lucio leprosy (LL) or near the poles of the Bor chiow Arm. This is a reaction type III mediated by inflammatory cytokines that produce proangiogenic IL-6 and IFN-3, activity of LP, which produced edema, erythema, and pain. The lesions disseminated to the skin and other organs, and the patient was treated with dapsone and rifampin. We report a case of a 67-year-old woman from Brazil without a previous diagnosis of LL and presented LP. The clinical examination showed ulcer in right ankle with tendon exposure Achilles and other ulcerated lesions. Sensorimotor neuritis symptoms responded dramatically to therapy over the subsequent 48 hours. She was able to bear weight on her right foot again and regained significant range of motion.

Commercial support: None identified.

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Lucio's phenomenon and antiphospholipid syndrome in a leprosy patient
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Lucio's phenomenon is an uncommon cutaneous reaction caused by necrotizing vasculitis in multibacillary leprosy patients. Antiphospholipid syndrome (APS) is a syndrome featured by recurrent venous or arterial thrombosis. It usually presents with persistently elevated levels of antibodies against phospholipids and often occurs in association with systemic lupus erythematosus or other rheumatic or autoimmune disorder. Although autoimmune profile abnormalities, such as elevated antinuclear factor, rheumatoid factor, antiphospholipid antibody, have been documented in lepromatous leprosy; however, the concurrent occurrence of Lucio's phenomenon and APS is rare and makes the diagnosis more difficult. Herein, we present a female Indonesia patient without any medical history who suffered from sudden onset of fever, chills, and painful erythematous swelling and hemorrhagic bullae on her bilateral lower legs for several days. She was admitted in the impression of cellulitis, vasculitis, or unknown autoimmune disease. The blood tests showed normal white blood cell count, normal liver and renal function test, but elevated CRP and ESR. The antinuclear factor was 40X positive and the C3 and C4 level were decreased. Both c-ANCA and p-ANCA were negative. There were positive lupus anticoagulant and very high levels of anticardiolipin IgM and anti-g2 glycoprotein IgM. Rheumatologist made the diagnosis of APS and systemic corticosteroid was given. Unfortunately, the fever persisted and skin biopsy was arranged. The pathological findings showed epidermal necrosis and necrotizing vasculitis. Moreover, many dermal vessels were occluded by periodic acid–Schiff positive and diastase-resistant thrombi. There was a lobular panniculitis and multiple globs were noted. The acid fast stain showed numerous bacilli within these globs and within the endothelial cells. Leprosy with Lucio's phenomenon was confirmed. Early corticosteroid therapy was started with the oral steroid after her general condition and skin lesion improved gradually and she was able to be discharged. Leprosy-related APS has the different immunoglobulin isotype in antiphospholipid antibodies in which IgM is more prevalent in leprosy patients. The concurrent Lucio’s phenomenon and APS were rare and only three cases were reported. Antiphospholipid medications are the most important therapy and systemic corticosteroids may also help to control the reaction. Skin pathology is essential to make the diagnosis.

Commercial support: None identified.

2958

Lues maligna: Report of three cases in HIV-infected patients
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Introduction and objectives: Lues maligna is a rare ulceronodular form of syphilis associated with significant morbidity and mostly observed in patients with HIV. The objective is to report the clinical manifestations of three cases of lues maligna, with emphasis on the importance of early diagnosis.

Material and methods: We report three HIV-infected heterosexual male white patients, all former intravenous drug users, with ulceronodular skin lesions, malaise and palpable lymphadenopathies. The patients had a median age of 42 years, median CD4 cell count of 455/mm² and were all on antiretroviral therapy, although two were noncompliant. The skin lesions were present in the trunk and upper limbs and in one patients the head was also involved, and had a minimum of two weeks and a maximum of 8 weeks evolution. The patients had been observed before in the emergency department of our and others hospitals but were treated as furunculosis, without being tested for syphilis. Our differential diagnosis, beside syphilis, included skin bacterial infections, lymphoma, leishmaniasis and mycobacterial or fungal infections. All patients tested positive for two treponemal tests, one being TPHA, and their nontreponemal tests (VDRL) had titers higher than 1:256. The patients and their sexual partners, were treated with 2 mg units of intramuscular benzathine penicillin, with good response, although one patient had recurrence one month later, due to exposure to an untreated partner. The lesions healed leaving atrophic scars, being cribriform in one patient and leaving a patch of cicatricial alopecia in other. At one year follow-up, recurrences were not observed, the VDRL titers were all lower than 1:16, and there was no longest delay in the diagnosis still complained of itching and sporadic pain on his scars.

Conclusions: Lues maligna should be considered in the differential diagnosis of ulceronodular skin lesions in HIV-infected patients and early diagnosis is important to lessen morbidity and avoid unnecessary tests.

Commercial support: None identified.

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ABSTRACTS

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Lyne disease: Beyond erythema migrans
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With 300,000 new cases (CDC) in the USA each year, many challenges arise in each stage of either primary or secondary syphilis. In many cases, the diagnosis has been delayed due to the presence of the organism in the bloodstream for an extended period of time, and often is a circular red plaque/patch rather than a ‘bull’s-eye.’ The biodes tick that transmits the disease is tiny and may be overlooked if not recovered. If Lyne disease is suspected, the serology (using CDC guidelines utilizing ELISA and immunoblot staining) is confirmatory in only 29-40% cases. The recommended treatment is problematic in that 54% of patients have long-term sequelae 6 years after recommended treatment. In comparison, untreated syphilis leads to tertiary findings in 30-50% of patients, leading to the conclusion that treatment with doxycycline is similar to no treatment at all. Animal studies have shown the persistence of spirochetes despite the recommended treatment. Further, 25% of the organisms covered in the brains of Alzheimer disease patients were Borrelial spirochetes on PCR examination. The DNA of these organisms has also been found in the synovial fluid of Lyne disease arthritis. (Montauk knee was Lyne arthritis before Borrelia burgdorferi was discovered.) Persistence of these organisms in both brain and joints is highly likely related to biofilms which have been shown to be present in the arthritic joints. The treatment with doxycycline, a bacteriostatic antibiotic, is thus imperfect, as persistence of organisms is present in a significant number of patients. Vaccine development is limited by the organism producing false signaling. Insurance payments are limited by both these diagnostic and treatment pitfalls.

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Malignant syphilis and neurosyphilis in an immunocompetent patient
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Background: Syphilis is a sexually transmitted disease that, if left untreated, can progress chronically with periods of activity and latency. Neurological manifestations of syphilis occur more commonly in the tertiary form. Malignant syphilis is a rare form of secondary syphilis manifested most commonly in patients with AIDS and can be the first manifestation of the viral infection. It is also associated with malnutrition, abuse of alcohol and illicit drugs, and rarely commits immunocompetent individuals. It is characterized by destructive ulcerated papules covered with hemorrhagic or thick crusts, nodule-like ulcerative lesions and frequent mucosal involvement. Histopathologic study compatible with syphilis, high titles of VDRL, Jarish-赫克heimer reaction and rapid resolution of lesions after appropriate therapy.

Case report: A 50-year-old female, alcoholic and user of illicit drugs, presented with pruritic diffuse ulcers of 4 months duration. Dermatological examination revealed erythematous scaly infiltrated papules in the face, sometimes isolated and sometimes confluent, forming plaques. Trunk, back, upper and lower limbs presented popular, nodular erythematous scaly lesions, some in annular disposal. Lymphadenopathy in more than one chain was detected. Two biopsies were performed, compatible with secondary syphilis, and laboratory tests revealed VDRL reagent 1:512, FT-ABS IgG and IgM positive, anti-HIV 1 and 2 negative. The patient lost follow-up and returned two months later with significant worsening of the skin condition and appearance of thicker and pustulotic lesions in the face. Treatment was initiated with benzathine penicillin 2,400,000 IU. After 36 hours, she returned with exacerbation of the lesions, characterized by bleeding and ulcerations of some injuries, headache and right leg pain. Ceftazidime was started and the reaction, and recent complaint of loss of visual acuity. Suggested the hypothesis of neurosyphilis, the patient was admitted in a secondary hospital for the examination of cerebrospinal fluid which confirmed the diagnosis. She was treated with ceftriaxone for 14 days due to the inability of the penicillin in the hospital, and evolved with clinical and laboratory improvement.

Discussion: Although malignant syphilis is characteristic of secondary syphilis, it may appear as a concomitant clinical manifestation or preceding neurosyphilis. Despite the high titers of VDRL, malnutrition and the use of illicit drugs, the patient was not HIV positive, one of the main risk factors for the development of both entities. In this case, we chose to treat her with ceftriaxone which, although not the drug of first choice, was the drug available in the hospital able to cross the blood-brain barrier. The case therefore is relevant to illustrate the coincidence between two rare clinical entities and the satisfactory response to treatment with ceftriaxone.

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Mycobacteria in aesthetic tattoos as a late complication
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Reports of secondary infections in tattoos due to mycobacteria are on the rise since not many cases have been reported. In this case, we present a patient with evidence of mycobacteria in tattoos she had acquired 9 years ago. A 63-year-old woman with eyebrow and lip tattoos presented to our dermatology clinic because of edema, pruritus, and an increase in size of eyebrows and lip contour 2 months earlier. She had first acquired the tattoos 10 years before clinical presentation and had a touch-up of the tattoos 3 years before the visit to our clinic. Her general practitioner had prescribed topical hydrocortisone, betamethasone, and oral loratadine, acyclovir, with no improvement. A skin biopsy was performed and revealed a granulomatous infiltrate with a positive Zielh–Neelsen stain. Chest radiography did not show any anomalies. Skin prick testing for PPD and Coccidiodin were performed and both resulted negative. Treatment with clarithromycin was started at 500 mg every 12 hours and after completing three months, new biopsies were taken without evidence of mycobacteria as well as negative skin cultures and an improvement of the lesions was observed. We suspected that the tattoo ink or any of the instruments used, were contaminated with mycobacteria which lead to the clinical presentation of this patient. This is a potential complication of tattooing without the appropriate hygiene standards. Another etiology may be contamination of premixed tattoo inks before their distribution. The actual incidence of mycobacterial infections may be due to underreporting, and this case may help raise awareness of this differential diagnosis when encountering a patient with these type of lesions.

Commercial support: None identified.

Mycobacterium baenophilum in a renal/pancreas transplant patient: A case report demonstrating multiple manifestations of the disease
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Introduction: Mycobacterium baenophilum is a fastidious nontuberculosis mycobacterium (NTM) that must be considered in the differential diagnosis of infections in immunocompromised patients. M baenophilum infections are most commonly found in patients with AIDS or those who have undergone solid organ transplant and typically occur in the cutaneous or subcutaneous tissue. M baenophilum can also present as septic arthritis, osteomyelitis, pulmonary disease, lymphadenitis, and more. The incidence of all NTM infections in renal transplant patients is estimated to be between 0.16 and 0.38%, and M baenophilum is the most common cause of NTM cutaneous infections in this group.

Case report: A 51-year-old white man two years post cadaveric renal/pancreas transplant, on oral immunosuppressive therapy presented with a 1 month history of arthralgia that initially involved the left ankle but progressed to involve bilateral elbows, wrists, knees, and ankles. During the same time frame, he developed painful skin lesions on his maulable (2 x 1 cm violaceous nodule with small, central crust) and back (1 x 0.1 cm pink, shiny plaque with central ulceration). Biopsy of both skin lesions demonstrated granulomatous inflammation with numerous acid-fast bacilli. PCR testing identified the organism as M baenophilum. The patient began treatment with azithromycin and ciprofloxacin as well as isoniazid for latent tuberculosis. While initial skin lesions resolved, new lesions occurred as nodules on the extremities despite treatment. Joint pain persisted and tenosynovitis of the right wrist occurred. Although he continued treatment for over one year, the patient developed patchy osteomyelitis due to M baenophilum. He underwent two rounds of irrigation and debridement, and has now been asymptomatic for six months.

Comment: This case illustrates multiple manifestations of M baenophilum and emphasizes that even with treatment, the disease may have a protracted course. There is no standard therapeutic regimen against the organism, yet current guidelines suggest dual or triple therapy for 1 to 2 years. While the patient’s lesions initially presented on the trunk and face, cutaneous manifestations most commonly occur on the extremities due to the organism’s affinity for cooler temperatures. Physicians must have a low threshold for suspecting this organism in immunocompromised patients presenting with any skin or joint complaint.

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Myocobacterium haemophilum infection in a renal transplant patient

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A 31-year-old woman with a history of CoRhn’s disease and renal transplantation on immunosuppressive medication presented with skin lesions and intermitten fevers. She reported tender pink nodules on her left breast and right wrist for 5 months and a similar eruption on her arms, legs, and abdomen for 1 week. She was treated with intravenous vancomycin and oral amoxicillin for presumed cellulitis, which did not completely resolve her lesions. Physical examination revealed generalized edema. There were several firm, edematous, and erythematous nodules on her left upper extremity with a peau d’orange appearance. On her left breast and upper lower extremities were scattered well-circumscribed, indurated erythematous plaques. A biopsy was taken, showing mixed inflammation with panniculitis thought to be secondary to Crohn’s disease. AFB and other microbial stains were negative. Due to ongoing lesions, a biopsy of another site was performed and revealed a dense perivascular lymphocytic and interstitial granulomatous infiltrate with scattered nuclear dusts and focal microabscesses. AFB and Fite stains indicated M. haemophilum was present in the lesion. Given the diagnosis of disseminated cutaneous M. haemophilum, the patient was started on ciprofloxacin, azithromycin, and rifabutin. Within several weeks of treatment, her nodules became less swollen and tender. To date, she reports no new lesions. M. haemophilum has been reported to cause disseminated skin infections in severely immunocompro- mised individuals. The growth of Mycobacterium haemophilum requires incubation at 30 degrees Celsius and addition of iron to the culture medium. Due to its rarity and unique growth characteristics, infection with M. haemophilum is often difficult to diagnose. Our case highlights the importance of considering M. haemophilum infection in the differential diagnosis in immunosuppressed patients who present with chronic tender nodules and plaques, even if the initial biopsy is not indicative of infection. Not only may early treatment of these patients’ skin lesions help to reduce their symptoms, but it can also prevent contiguous or hematogenous spread to other areas.

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Penicillin: The new/old wonder drug: New treatments include psoriasis

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Penicillin: The new/old wonder drug: New treatments include psoriasis and tertiary treponematosis

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The “old” wonder drug has been effective in a wide spectrum of diseases caused by Beta hemolytic Streptococcus pyogenes, Diplococcus pneumoniae, Nisseria gonorrhoeea, meningitides, Treponema pallidum, and many others. The “new” wonder drug has been shown to treat psoriasis effectively and be curative in many cases. Streptococcus is the organism responsible for beginning the process and has pathogenic potential by fixing iron intracellularly or by forming iron oxide. The treatment is low dose for many months and thus is similar to rheumatic fever. Arthritis has been shown to be caused by biofilm-forming dental and Lyme therapies. Infections like streptococcal infections are detected. Penicillin plus a biofilm-dispersing agent is effective in treating arthritis in which tissue destruction has not already occurred. Seven of ten patients with arthritis took the above protocol and responded with clearing of their arthritis. The three swollen and tender to touch and swollen and tender to touch. Alzheimer disease has been shown to be caused by those same treponemes (dental and Lyme) involved in arthritis, and, in every way, similar to the dementia of neurophils caused by Treponema pallidum. E. coli biofilms that induce E. coli amyloid and a Toll-like receptor 2 response leading to tissue destruction. Penicillin given prior to the organisms arrival in the brain (or before they create biofilms) would likely prevent dementia in Alzheimer as it does in syphilis. Treatment with PCN in psoriasis, arthritis, and malaria, has thus far not led to resistance and may actually prevent resistance by killing organisms before they make biofilms and share resistance genes.

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 Persistent cutaneous nodocidrosis in a patient with catastrophic antiphospholipid antibody syndrome

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Persistent cutaneous nodocidrosis in a patient with catastrophic antiphospholipid antibody syndrome

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A 45-year-old female, chronically immunosuppressed for treatment of catastrophic antiphospholipid antibody disease, presented with painful and warm extremity skin lesions suspicious for cellulitis. History was significant for a scar from a rapidly progressing soft tissue infection caused by Aeromonas sobria in an immunosuppressed patient

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Introduction: We report a rare case of Aeromonas sobria (A sobria) occlusive vasculopathy with sepsis in an immunosuppressed patient. When patients present with a rapid onset of skin manifestations and tissue damage, A sobria or a vibrio infections should be considered in the differential diagnosis.

Case: A 31-year-old woman with a medical history of renal transplant was referred to our department for severe pain on right leg. On the initial physical examination, her right leg was swollen and painful, with no changes in temperature or color, and there was no clinical evidence of inflammatory response. After few hours a change in color was observed on the distal portion of the leg with purpuric irregular patches and tissue was sent for microbiologic analysis. The patient was admitted with sepsis in an immunosuppressed patient. When patients present with a rapid onset of skin manifestations and tissue damage, A sobria or a vibrio infections should be considered in the differential diagnosis.

Discussion and conclusions: A sobria is a facultative anaerobic Gram-negative rod that is ubiquitous in aquatic environments and is considered an opportunistic pathogen for humans. Aeromonas spp. release factors which contribute to its virulence, such as hemolysins, enterotoxins and proteases. It initially presents as severe pain with no apparent skin changes followed by progressive purpuric patches, bullae, ulcers and necrosis. Impairment of the host immune system increases the incidence of septic shock. The mortality rates range from 25% to 50% and without rapid treatment mortality rate is above 90%. An aggressive antibiotic therapy and surgical debridement must be performed to achieve a positive outcome.

In conclusion, this clinical entity is uncommon, but its incidence is increasing due to nosocomial infections. Aeromonas spp. infection should have a high index of suspicion for an Aeromonas spp. infection while dealing with an immunosuppressed patient with a rapidly progressive soft tissue infection.
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The efficacy of pentamidine in comparison to pentavalent antimonial in American tegumentary leishmaniasis: An open label, randomized, controlled trial

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Introduction: N-Methylglucamine antimonite SBv (N-MA) is considered the standard treatment of American tegumentary leishmaniasis (ATL) in most endemic countries; nevertheless, its use is limited by the necessity of parenteral administration and by the already reported side effect profile. These factors justify the urgent need to develop a new treatment with the aim of reducing costs, improving safety of the treatment and reducing cases of resistance. Pentamidine is an antimicrobial medication considered as a second-line treatment for ATL. The purpose of the present study consists in comparing the efficacy of a pentamidine cycle versus the standard treatment performed by the use of N-MA in patients suffering from the cutaneous form of ATL.

Methodology: This open-label, randomized, controlled trial compared two parallel groups that consisted in the intramuscular use of pentamidine doxycycline (control group) and the intravenous use of N-Methylglucamine 20 mg SBv/kg/per day during 20 days (intervention group) in patients suffering from ATL. Seventy CL patients without any previous treatment were included. Allocation was made following a random assignment in fixed block sizes of 4 patients. Thirty four patients were included in the intervention group and 36 patients were included in the control group. The diagnosis was constituted by clinical history, epidemiological and physical examination compatible with ATL, and it has been confirmed by positive results of the following diagnostic methods: Montenegro skin test (MST), histopathology and smear (with presence of amastigotes forms) and culture. Indirect immunofluorescence served to confirm the diagnosis. The main outcome was defined as the clinical cure (complete ulcer healing without any sign of inflammation) 180 days after the end of the treatment. Statistical analyses were performed using OpenEpi Version 3.01. Statistical significance was defined as P < 0.05, and confidence intervals (CIs) were set at 95%. This study was approved by the ethics committee of all departments involved and all patients have signed the informed consent form.

Results: The statistical analysis has demonstrated homogeneity between groups regarding gender, age, number of lesions, location of all lesions and evolution time. MST was positive in 31 (91.2%) patients in the intervention group, and in 35 (91.7%) in the control group. IFI, smear, culture, histopathology and PCR, were positive in 7/10 (70.0%), 5/15 (33.3%), 7/15 (46.6%), 8/19 (42.1%) and 15/15 (100%) patients of the intervention group; and 15/15 (100%), 3/11 (27.2%), 3/12 (25%), 7/20 (35%) and 14/14 (100%) in the control group, respectively. In the PCR exams, Leishmania (Vianna) braziliensis was identified in 15/15 (100%) patients of the intervention group and in 14/14 (100%) patients of the control group. The relative risk (RR) for cure was 0.8319 (95% confidence interval 0.6142-1.217) considering that 22/34 (64.7%) patients in the intervention group and 28/36 (77.7%) patients in the control group were cured, without any statistical difference (P=0.42). The most common side effects observed in the intervention group were pain in the injection site, paresthesias in both legs and increase of CPK. In the control group, arthralgia, pain the local application, myalgia, increase of amylase, headache and ECG alterations.

Discussion: Patients treated in the control group achieved cure in 77.7% (28/36) of cases and patients treated in the pentamidine group achieved cure in 64.7% (22/34) of patients. Nine (26.4%) patients were considered cured previously to the main intervention group and 7 (19.4%) patients in the control group were cured before 180 days after treatment. Side effects in patients treated with N-MA were clinically more serious and side effects profile of pentamidine although, does not evidence of statistical difference between groups, seems to be more easily handled by assistant physicians.

Conclusions: We can conclude that the scheme with pentamidine is comparable to the use of N-MA in ATL. The tested intervention also showed less serious side effects in comparison to the standard treatment. New phase III and IV studies are necessary to evaluate the real role of pentamidine in the treatment of ATL.

Commercial support: None identified.

Topical imiquimod for cutaneous leishmaniasis in the face of a child. Is it a valid treatment?

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Introduction: Localized cutaneous leishmaniasis is a common infection in the Mediterranean countries that can affect children. The exact incidence rate is unknown and today there are not established clinical guidelines of treatment. Recently, there have been reported some cases of cutaneous leishmaniasis with good 100% cure rates. We must consider the possibility of spontaneous healing without any treatment therefore we cannot establish if the healing was completely due to imiquimod. In our opinion, comparative studies versus placebo with more number of patients are required.

Commercial support: None identified.

Erythrasma is caused by Corynebacterium minutissimum producing a porphyrin that with Wood’s light emits a coral red fluorescence. It is the most common bacterial infection of the feet. It affects the skin, especially on the face. There are no established clinical guidelines of treatment for three cycles. We must consider the possibility of spontaneous healing without any treatment therefore we cannot establish if the healing was completely due to imiquimod. In our opinion, comparative studies versus placebo with more number of patients are required.

Commercial support: None identified.
What’s lurking in the sand? A case of bullous cutaneous larva migrans acquired on the Connecticut shoreline

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Background: Cutaneous larva migrans (CLM) is an infestation typically caused by hookworms, most commonly *Ancylostoma caninum* or *Ancylostoma brasiliense*. CLM is most commonly seen in tropical and subtropical areas and is uncommonly acquired in temperate climates. Clinical manifestations are typically characterized by erythematous, linear or serpiginous tracts that are intensely pruritic. Rarely, they can manifest as vesiculobullous eruptions in the skin.

Case description: We present a case of bullous CLM acquired on the Connecticut shoreline. The patient is a healthy 22-year-old woman with no significant medical history. She presented to our clinic with multiple (>70) urticarial, tense, fluid-filled vesicles and bullae with erythematous, serpiginous, elevated tracts radiating outward, located on her forearms, thighs and lower legs bilaterally. She was digging for clams 5 days earlier on the Connecticut shoreline with her boyfriend. The boyfriend developed a mild cutaneous eruption consistent with CLM, but without vesicles or bullae. The patient and her boyfriend have not traveled outside of Connecticut over the past 3 months. One week after a course of ivermectin, the patient’s lesions showed signs of healing. She was given an additional dose of ivermectin and will follow-up in clinic later this month for further assessment of treatment response.

Discussion: There have been few reports of bullous CLM. However, reported cases had a lesser amount of cutaneous involvement than our patient and reported cases were acquired in tropical or subtropical settings. The pathogenesis of blister formation is unclear. It has been proposed that vesicles and bullae may be a result of lytic enzymes released by larvae or may be a result of a delayed hypersensitivity reaction. Physicians should be aware of this rare form of CLM that can be acquired on the Northeast shoreline.

**Commercial support: None identified.**

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**INFECTION—FUNGAL**

3638

Acute invasive fungal sinusitis with Zygomycetes

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A 54-year-old African American female with history of acute myelogenous leukemia (AML), status post 5th cycle of chemotherapy combination of cladribine, idarubicin, and cytarabine on protocol was admitted with refractory *C. difficile* colitis, pneumonia, septic shock, respiratory failure, acute kidney injury due to acute tubular necrosis, and altered mental status. After transfer out of the ICU it was noted that the patient had developed orbital edema and indurated purple patches on the left side of her nose, left cheek, and the left upper palate and gingival margin of uncertain duration. A CT of the head revealed findings concerning for invasive fungal infection. She was started on amphotericin and caspofungin and taken to the operating room where she underwent aggressive debridement with total maxillectomy, septectomy, subtotal palatectomy, and subtotal rhinotomy. Her fungal infection was confirmed as mucormycosis with fungal culture growing *Zygomycetes* isolates. This patient continued to deteriorate despite debridement and antifungal therapy and died six days later. Fungal infections with *Zygomycetes*, even in high-risk patients, are rare ranging from 8.3-13% of all fungal infections. Advancements in treatment for cancer have led to an increase in both the number of immunocompromised patients and incidence of invasive fungal infection. At MD Anderson Cancer Center in Houston, the incidence of hematological cancer patients with mucormycosis increased from 0.7% in 1989-1998 to 1.9% in 1994-1998. Mortality rates for mucormycosis range from 20-80%. This case illustrates how acute invasive fungal sinusitis is a dangerous condition that can rapidly progress and cause death despite treatment. This patient’s clinical presentation, diagnosis, and resulting death are reminders for clinicians to maintain vigilance for invasive fungal infection, as early detection may decrease mortality.

**Commercial support: None identified.**

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3135

Cutaneous alternariasis with suspected dissemination in a patient with sarcoidosis on immunosuppression

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A 60-year-old male with a history of pulmonary sarcoidosis on chronic immunosuppression including prednisone, infliximab, and mycophenolate mofetil, presented to the hospital for further work-up of a six month history of fevers, myalgias, skin lesions, weight loss, and general functional decline. The patient had undergone an unrevealing, extensive outpatient work-up including bronchoscopy, transesophageal echocardiogram, and skin biopsy from his left lower extremity. Per family reports, the skin biopsy showed venous stasis changes. Dermatology was consulted during his hospital stay to further elucidate the etiology of his skin lesions. On exam, tender, reticulated, violaceous patches and plaques with central eschar formation were noted on his bilateral arms and forearms, and small hemorrhagic vesicles on an erythematous base were noted on his right palm and flexor wrist. Skin biopsy was performed on his left leg and demonstrated suppurative ulceration with dermal and fat necrosis, with an associated giant cell reaction. GMS and PAS stains demonstrated fungal hyphae within the dermis and subcutaneous tissue. Fungal tissue culture was also completed and showed few *Alternaria* spp. The patient was started on amphotericin B when initial biopsy results became available. Of note, the patient was found to have infectious discitis/osteomyelitis of his thoracic spine and new pulmonary infiltrates on imaging during his stay. Unfortunately, three days later, the patient became unresponsive, required emergent intubation, and later expired. *Alternaria* spp are dematiaceous hyphomycetes that rarely cause disease in immunocompetent individuals despite being ubiquitous in nature. In immunocompromised hosts, they most commonly cause skin and soft tissue infections, however dissemination has been reported. In our patient, we suspect that *Alternaria* spp may be a potential culprit for chronic skin lesions in the immunocompromised host and should be considered as potential a source for disseminated infection and clinical decline.

**Commercial support: None identified.**
Cutaneous *Chaetomium globosum* infection in a vedolizumab-treated patient

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In the expanding landscape of targeted biologic therapies for chronic inflammatory disease, dermatologists increasingly encounter novel cutaneous side effects, including skin and soft tissue infections with unusual pathogens. *Chaetomium* spp., a dematiaceous mold associated with cellulose containing materials, has been found in indoor environments such as moldy rugs, mattresses and environmental air in transplant patients. It has been reported in cases of Cryptococcosis in immunocompetent patients and as an opportunistic pathogen in immunocompromised patients with hematologic malignancies, organ transplant and catheters. We report a case of *Chaetomium globosum* skin infection in a patient with inflammatory bowel disease on vedolizumab, a gut-specific integrin inhibitor. The skin manifestations and course of treatment for *Chaetomium* spp. infections in immunocompromised patients are reviewed. Dermatologists must retain a high index of suspicion for unusual infections in patients treated with new biologics.

Commercial support: None identified.

Cutaneous cryptococcosis mimicking spinocellular carcinoma

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Cryptococcosis is an infection caused by the yeast-like fungus *Cryptococcus* spp., which is isolated from pigeon droppings, soil and vegetables. Cutaneous cryptococcosis is classified as primary when there is direct inoculation, a rare condition, and as secondary when it occurs by hematoogenous dissemination. The infection is generally acquired by inhalation and it can disseminate in the occurrence of immune suppression. The skin involvement may produce a wide variety of lesions and can be similar to other dermatoses. This case reports a 56-year-old man, HIV infected, who had a erythematous, keratotic and infiltrated plaque in the left dorsum of a foot, which mimicked a spinocellular carcinoma, a condition that hasn’t been reported until this date. The patient used to have constant contact with grains (herring) and his main occupation was to melonize pork. The anatopathologic examination presented yeasts elements suggesting *Cryptococcus* spp., which were confirmed in the direct and cultural mycological examination. The species *Cryptococcus neoformans* was identified by flow spectrometry (MALETOF) and latex particle agglutination test was negative. The patient did not present any alterations in the chest radiography (other systemic investigation exams are still in progress), so the treatment was mainly topical, using antifungals. The skin manifestations are related to the immune state of the host. The infection caused by *C. neoformans* is generally associated with immunosuppressed patients and tends to produce cutaneous lesions without systemic involvement, such as the patient described above, who presents evidences of localized lesion. The clinical spectrum of lesions has a wide variety, and it can resemble other illnesses such as molluscum contagiosum. Kaposi sarcoma, basal cell carcinoma and psoriasis gangeronosum. *Spinocellular carcinoma* has not yet been described as a pathology mimicked by Cryptococcus. However, this case shows the importance of valuing this distinct diagnosis. In general, the identification of skin lesion indicates the presence of disseminated disease and an intensive and persistent search for systemic involvement must be conducted. Tests are important, not only to confirm a specific diagnosis, but also to allow the early detection and the treatment of a potentially fatal disease.

Commercial support: None identified.

Diagnosing cutaneous *Mycobacterium haemophilum* by PCR

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*Mycobacterium haemophilum* is a slowly growing, nontuberculous acid-fast bacillus (AFB) that causes ulcerating skin infections in the immunocompromised patient. A 52-year-old man from Ghana presented to the NIH for evaluation of multidrug resistant HIV (CD4 10 cells/mm3, viral load 600,000 copies/mL). He had a 5-month history of multiple scattered, pruritic eroded papules. He denied any prior history of skin lesions, and reported frequent picking at the affected sites. On the right thigh were two 1.0 cm keratotic papules with dark brown hyperpigmented edges and pink centers with yellow crusting. On the left forearm was a 2.5 cm keratotic papule with hyperpigmentation just under the surface of the skin. A biopsy of a lesion on the right thigh revealed PAS positive clusters of numerous pigmented fungal organisms composed of hyphae and chains of yeast, consistent with dematiaceous fungi. Speciation was being performed by the CDC. Fungal melanonychia can result from both dematiaceous and non-dematilaceous fungi. The term ‘dematilaceous’ is used to describe the group of nondermatophyte fungi that appear pigmented when cultured due to production of melanin, which is excreted extracellularly or incorporated into the fungal cell wall. Dematiaceous fungi are common environmental pathogens found in soil, plants, and decaying debris. At least 21 species have been implicated in fungal melanonychia. Although disseminated and deep disease can occur in immunocompromised patients, dematiaceous nail infection typically occurs in healthy patients and remains localized. Notably, many species of fungi can produce melanin and cause clinical hyperpigmentation (i.e., the well-known dermatomycosis *Trichophyton rubrum*) but do not appear pigmented in vitro, distinguishing them from true dematiaceous fungi. Identification of dematiaceous fungi is critical as they are resistant to most antifungal drugs. This is especially relevant in patients infected with multidrug resistant HIV. *M. haemophilum* typically forms a network of melanin, which is excreted extracellularly or incorporated into the fungal cell wall. The patient used to have constant contact with grains (herring) and his main occupation was to melonize pork. The anatopathologic examination presented yeasts elements suggesting *Cryptococcus* spp., which were confirmed in the direct and cultural mycological examination. The species *Cryptococcus neoformans* was identified by flow spectrometry (MALETOF) and latex particle agglutination test was negative. The patient did not present any alterations in the chest radiography (other systemic investigation exams are still in progress), so the treatment was mainly topical, using antifungals. The skin manifestations are related to the immune state of the host. The infection caused by *C. neoformans* is generally associated with immunosuppressed patients and tends to produce cutaneous lesions without systemic involvement, such as the patient described above, who presents evidences of localized lesion. The clinical spectrum of lesions has a wide variety, and it can resemble other illnesses such as molluscum contagiosum. Kaposi sarcoma, basal cell carcinoma and psoriasis gangeronosum. *Spinocellular carcinoma* has not yet been described as a pathology mimicked by Cryptococcus. However, this case shows the importance of valuing this distinct diagnosis. In general, the identification of skin lesion indicates the presence of disseminated disease and an intensive and persistent search for systemic involvement must be conducted. Tests are important, not only to confirm a specific diagnosis, but also to allow the early detection and the treatment of a potentially fatal disease.

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3264
Fixed sporotrichosis mimicking keratoacanthoma

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Sporotrichosis is a subcutaneous infection caused by the dimorphic fungus Sporothrix schenckii. It is prevalent in South America and other tropical/subtropical zones. Keratoacanthoma is a tumor characterized by the proliferation of atypical, highly differentiated squamous epithelium cells. We report a case of sporotrichosis mimicking keratoacanthoma. A 67-year-old Southern Brazilian male presented with a cutaneous lesion, which developed over 5 months following a cat scratch. Physical examination revealed a well-defined, crusty ulcer on the back of his left hand. None of the clinical presentations of mycophenexy (OM) were subclinical OM. Similarly, 66.7% of those with OM had obvious lesions (94.4%); 35.3% had subclinical OM and 7.1% had clinical manifestation of OM with subclinical OM. Multivariate analysis revealed that OM more than 50 degrees was significantly associated with fungal infection (adj. OR = 3.53, P = 0.042). Of all infected nails from 81 patients, 68% were infected with DMPs (Trichophyton mentagrophytes 40% and Trichophyton rubrum 24%). One third of patients were infected with nondermatophytes (NDMs) which 16% were Neoscytalidium dimidiatum. Likewise, of all infected feet, 88% were infected with DMPs (T. mentagrophytes 72% and T. rubrum 8%). 12% were caused from NDMs (N. dimidiatum 4%).

Conclusion: This study revealed one third of patients with HV having fungal skin and nail infection. The valuable clinical presentation significantly associated with fungal infection was severity of HV. Subclinical presentation was common. Fungal laboratory investigation should be more concerned for holistic approach in patients with HV.

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3226
Giant plantar bulla associated with Trichophyton rubrum infection

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Tinea pedis is a fungal infection of the soles and interdigital spaces common to the general population. Clinical presentation varies widely and is commonly caused by the dermatophyte Trichophyton rubrum. In this case report, we describe an extensive clinical manifestation of this cutaneous mycosis. A 15-year-old healthy female patient was referred to the dermatology department with an extensive tinea pedis in both feet. Physical examination revealed a 7-cm tense bulla on the sole of her right foot that had been present for 4 weeks. KOH exam and culture confirmed the diagnosis. She underwent treatment with oral terbinafine for 4 weeks, which resulted in complete resolution of manifestations. Tinea pedis is the most prevalent dermatophytosis and can be transmitted by direct human-to-human contact or through contaminated surfaces and objects. This infection is most often due to Trichophyton rubrum and the severity of disease is regulated by the host’s immune response and the etiological agent. T. rubrum, T. mentagrophytes var. interdigitales and E. floccosum are the dermatophyte species that are frequently isolated from chronic infections. The clinical types of tinea pedis are moccasin, interdigital, inflammatory and ulcerative. The most frequent form is the interdigital, which presents with maceration, fissures and scaling in the web spaces. Vesicles, pustules and bullae are clinical features of the inflammatory type, usually caused by T. mentagrophytes. Vesiculobullous tinea pedis must be distinguished from dysidiotic and allergic contact eczemas and is generally diagnosed by KOH examination and culture. Skin biopsy may be required for diagnosis, revealing hyphae within the stratum corneum. Although plantar bullous lesions by dermatophytes are common, a case as extensive as the one described above has not been previously reported to our knowledge.

Commercial support: None identified.
Hypersensitivity reaction to Sporothrix schenckii. Erythema nodosum associated with sporotrichosis
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Since 1998, Rio de Janeiro undergoes an epidemic of sporotrichosis transmitted by cats and its incidence rates remain high, so far. The disease may evolve with different clinical presentations and, although lymphocutaneous is the most prevalent one, the disease can have unusual manifestations in some patients, fact that makes it harder to be diagnosed. The current paper reports an atypical case of sporotrichosis associated with erythema nodosum diagnosed at the Dermatology Clinic of Santa Casa da Misericordia of Rio de Janeiro (Prof Rubem David Azulay Dermatology Institute).

Commercial support: None identified.

Investigation of the effects of nano- to micro-ampere ranged alternating current stimulation on the growth of Trichophyton rubrum: A pilot study
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Background. Fungi are eukaryotic microorganisms including yeast and molds. There have been a lot of researches on modifying the growth of bacterial growth but only few on fungal growth. However, microcurrent electricity could have stimulatory effect on the fungal growth.
Objective: This study aims to investigate the effects of microcurrent electric stimulation on the growth of Trichophyton rubrum.
Materials and methods. Standard sized inoculums of T rubrum derived from a spore suspension were applied to potato dextrose cammal agar (PDMC) plates, which was then gently withdrawn with a sterile pipette and applied to twelve PDMC plates with a sterile spreader. Twelve Petri dishes were divided into 4 groups. The suspended fungal growth were from 'off label' use. FDA files show no serious adverse events recorded at this dose. ketoconazole, never FDA-indicated for use against Malassezia, is not FDA-restricted to aid in absorption and to reduce the possibility of GI upset. Oral ketoconazole has proven superior to topical antifungals because the topicals do not penetrate the follicle to the depth required. It is also more cost effective than itraconazole. Oral ketoconazole, never FDA indicated for use against Malassezia, is not FDA restricted from 'off label' use. FDA files show no serious adverse events recorded at this dose.
Further investigation of this off label use of ketoconazole is warranted.

Management of subcutaneous phaeohyphomycosis via Mohs micrographic surgery
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Background. Phaeohyphomycosis (PHM) is a term describing a cohort of infections caused by hypha-forming dematiaceous fungi. PHM infections can be categorized as superficial, cutaneous, subcutaneous or systemic; and management options include excision and/or prolonged systemic antifungal agents. Treatment of subcutaneous PHM is typically surgical; however, guidelines using prospective data for surgical margin recommendations are lacking and recurrence after excision of clinically involved tissue has been reported. We present a case of subcutaneous PHM managed via Mohs micrographic surgery (MMS).
Case description: A 92-year-old male presented with painful skin changes of the right knee that began two months prior. The patient described a history of repeated trauma to the affected site from recurrent kneeling, as the patient is an active farmer and performs machine repair work. No systemic symptoms concerning for infection were reported. Physical examination of the right knee revealed a large irregular, somewhat fluctuant pink plaque with serosanguinous drainage on gentle pressure. The overall clinical picture was concerning for infection. Punch biopsies were performed. Histopathologic evaluation favored PHM, which was confirmed via fungal tissue culture (Fonsecaea pedrosoi). After discussion of management options, the patient elected treatment via MMS. After MMS guided margin control, Mohs blocks were sent for routine histopathologic evaluation confirming surgical cure. The patient, now nearly one year status post MMS in the management of subcutaneous PHM, remains without signs and symptoms concerning for persistent or disseminated infection.
Discussion. Although PHM can be managed with prolonged systemic antifungal agents, this is usually only necessary in systemic disease or those who are concomitantly immunosuppressed. Detailed guidelines for surgical treatment are not clearly defined. Additionally, reports of recurrent subcutaneous PHM after excision of visibly affected tissue have been reported. MMS offers margin analysis at the time of excision and can be useful in sites where preservation of uninvolved tissue is preferred.
Conclusions: MMS provides an alternative surgical option to wide local excision in the management of subcutaneous PHM.

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3576
Prospective, randomized, comparative study of 1064-nm Nd:YAG laser with topical antifungal agent in the treatment of onychomycosis

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Background: Conventional treatment approaches in onychomycosis include the use of topical or systemic oral antifungal agents and surgical treatment. Although Nd:YAG laser has been reported to be clinically effective in treating onychomycosis, conflicting results are shown without clear evidence of efficacy. There were few reports conducting controlled studies combining or comparing with topical treatments.

Objectives: In order to evaluate the efficacy and safety of 1064-nm Nd:YAG laser with onychomycosis and compare these results with the responses by topical antifungal treatment alone and combined therapy.

Materials and methods: The patients were enrolled in the prospective study and randomly distributed into three groups of laser treatment only (L group), laser with topical antifungal therapy (L + T group), and topical antifungal treatment only (T group). The laser treatment consisted of 3 to 4 sessions at 4-week intervals. The effect was assessed at 12 week and 24 week visits based on the standardized photographs and mycological examinations.

Results: Total 229 nails of 59 patients were treated and evaluated. In the groups of laser treatment, 76.3% (L group) and 65.9% (L + T group) showed a clinical response (>50%) and 16.3% (L group) and 20.7% (L + T group) showed a complete response (100%) with a negative mycological result at 24 weeks, respectively. The clinical and complete response rates of the both group were significantly higher than those of the T group at 24 week (P < .05). Seven nails of 6 patients in the L group showed reinfection, while 2 nails of patients in the L + T group showed reinfection.

Conclusion: 1064-nm Nd:YAG laser was clinically effective for onychomycosis and could be an alternative method. The combination of the laser and a topical antifungal agent appeared not to be more effective, but possibly having protective effects from reinfection.

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3908
Tinea incognito coexistence with systemic lupus erythematosus undergoing immunosuppressive therapy

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Introduction: Tinea incognito (TI) is a dermatophytic infection that may often be associated with chronic use of corticosteroids, calcineurin inhibitors, or other immunosuppressive therapy. It may therefore mimic several conditions such as rosacea, psoriasis, eczema, pityriasis rosea, folliculitis, lupus erythematosus, and seborrheic dermatitis.

Case report: A 51-year-old Mexican female presented with a 1-year history of erythematous papules, and macules in forehead, cheeks, nose and chin, and with multiple annular and petaloid erythematous scaly patches in neck, anterior and posterior superior thorax, and shoulders, but without pruritus. The rest of the physical examination revealed total dystrophic onychomycosis of bilateral first toenails. Her medical history was relevant for systemic lupus erythematosus (SLE) diagnosed 15 years ago during treatment with delflazacort 30 mg/day. 3 months after her first clinic visit, an outside dermatologist diagnosed these lesions as subacute cutaneous lupus erythematosus (SCLE) adding to her treatment halobetasol cream daily to the affected skin. Her skin condition had worsened and she requested a second opinion. Upon obtaining a positive KOH direct mycological examination with innumerable filaments and a Trichophyton rubrum culture of the face, neck and toenails, a diagnosis of TI was made. She received oral terbinafine 250 mg/day for one month, with complete resolution of the skin lesions, and continued therapy for 5 additional months resulting in both clinical and mycological cure of the toenails.

Discussion: TI is a relatively common condition, both in immunocompetent and compromised patients, who have been exposed to immunosuppressive treatments. The broad diversity in conditions and agents that predispose to immunosuppression, and therefore TI, presents diagnostic, and even, therapeutic challenges to the physician. Previously, reports have described only 6 patients with lupus erythematosus-like TI and 3 patients with underlying SLE. This extraordinary association of SLE with TI raises questions about the route of infection and the immune system response to TI. The hypothesis that TI is not only a cutaneous disease, but also a systemic disease is becoming a more widely recognized one.

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3575
Zoonotic sporotrichosis in Brazil

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Sporotrichosis is a systemic subacute or chronic mycosis, caused by dimorphic fungi belonging to the Sporothrix complex: S. schenckii, S. brasiliensis, S. mexicana, S. globosa and S. albicans, normally found in the soil and in decomposition of organic matter. The disease is universal, however it is more common in tropical and subtropical areas like the region of southern Africa, Central America, South America, Japan and India. It generally occurs due to the traumatic inoculation of the fungus on the skin through contact with contaminated material. For this reason, it is peculiar to meat professionals, such as gardeners, farmers and animal keepers. Other forms of transmission are described, such as inhalation of fungi and zoonotic transmission through the scratch or bite of sick animals, especially cats. Zoonotic sporotrichosis is an important form of transmission of the disease currently in Brazil and the cat is the most frequently related animal. It can be disseminated, lymphocutaneous, extracutaneous or disseminated forms. The diagnosis in human beings is based on the clinical history and isolation of the fungus through culture. Cutaneous and lymphocutaneous forms should be treated with itraconazole or potassium iodide. In the disseminated cutaneous, relapsing lymphocutaneous or extracutaneous forms, amphotericin B is the most effective drug. Clinically, some patients may have similar presentations to the sporotrichosis, such as leishmaniasis, infections caused by atypical mycobacteria, nocardiosis, tuberculosis verrucosa and chromomycosis. Thus, it is important to acknowledge the clinical forms of the disease as well as the implementation of appropriate diagnostic methods.

Commercial support: None identified.
Differentiation between VZV and HSV. Both clinicohistologic correlation and immunohistochemistry provide the clue to diagnosis when any of them is present. It seems that involvement of the leukocytoclastic vasculitis are commonly described histological findings in cutaneous HSV infections diagnosed in our department over the year 2014.

Conclusions: Three cases of cutaneous herpes infections with atypical clinical presentation may sometimes be misleading, especially in immunocompromised patients. In these cases, the clinicohistologic correlation can lead us to an accurate diagnosis.

Methods: The clinical and histopathologic features of three atypical cases of cutaneous HSV or VZV infections diagnosed in our department over the year 2014 are described.

Results: Three patients, two men and one woman aged 46-62 years, were considered. Two of them were under biological treatment for Crohn’s disease and rheumatoid arthritis, respectively. The third one was a HIV-infected patient who had developed acquired immunodeficiency syndrome. Two patients presented with a 10-day and 30-day history of one pruriginous, infiltrated and crusted plaque of 2-cm width on their faces. The third patient presented several violaceous, firm and round papules grouped on his left knee and right ankle for two weeks. In all cases, the herpetic typical epidermal changes, such us, variable degree of epidermal necrosis, intraperidermal vesicles and cytopathic changes, were found. In addition, herpetic folliculitis was observed in one patient and leukocytoclastic vasculitis on the adjacent superficial dermis was evident in a second one. The subsequent immunohistochemical analysis showed positivity for VZV in these two cases and positivity for HSV in the patient with only epidermal involvement.

Conclusions: Three cases of cutaneous herpes infections with atypical clinical features, long-term evolution and/or widespread lesions were presented. It is worth mentioning a certain degree of immunosuppression in our patients which may be responsible for the unusual clinical presentations. Both hair follicle involvement and leukocytoclastic vasculitis are commonly described histological findings in cutaneous herpes infections and so these should be considered in the differential diagnosis when any of them is present. It seems that involvement of the folliculosebaceous unit without epidermal changes would suggest VZV infections. Both clinicohistologic correlation and immunohistochemistry provide the clue to accurately diagnose atypical cutaneous herpes infections, the latter leading to differentiation between VZV and HSV.

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Efficacy of oral zinc sulphate for molluscum contagiosum

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Background: Molluscum contagiosum (MC) is a common and benign contagious viral infection of the skin and mucous membrane that primarily affects children. Spontaneous resolution may occur, but often it takes a prolonged period of months to years and the infection can take up to 4 years to resolve. Zinc has an important effect on the immune system and it has been used as an immunomodulator to treat a variety of skin disorders. Objective: To assess whether oral zinc is effective in treating patients with MC. Methods: Fifty nine MC patients were included at Pusan University Yangsan Hospital between July 2012 and July 2014. Twenty seven (45.8%) patients had past history of atopic disease. The patients were treated with oral zinc sulfate (10 mg/kg to a maximum dose of 600 mg/day) for up to 6 months. Serum zinc and copper level, renal and liver function tests were measured at the beginning (baseline) and completion of the trial. Results: Complete clearance of MC was observed in 47.5% (28/59) of the patients and partial clearance, defined as clearance of 50-99%, in 25.4% (15/59). The mean duration to reach complete clearance was 15.9 weeks. Patients with atopic disease showed higher complete clearance compared to nonatopic disease (56% vs 43%). The response to treatment was not related to the increment in serum zinc level as only 3 patients showed the increment. No serious side effects were reported apart from nausea (1%), mild abdominal pain (1%) and constipation (5%). Conclusion: Our findings suggest that oral zinc sulfate is worth considering as a therapeutic option for the treatment of MC, particularly for generalized lesions and uncooperative patients. Oral zinc sulfate is an effective option lacking significant side effects.

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3297 Herpetiform acute graft versus host disease
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Background: Dermatologic manifestations are an important aspect of graft versus host disease (GVHD). Acute GVHD usually starts as mild erythema or papular eruption that may progress into morbilliform exanthem. The presence of vesicles or bullae in hematopoietic stem cell transplant recipients is usually related to potentially life-threatening conditions, such as herpes-virus infection or severe forms of acute GVHD. Herein, we describe two patients who developed sterile ‘herpetic-like’ lesions of acute GVHD.

Case reports: Case 1: A 41-year-old man with higher-risk myelodysplastic syndrome was admitted for HLA-identical allogeneic stem cell transplant. 30 days later, while he was receiving cyclosporine 175 mg/day and acyclovir prophylaxis (200 mg bid), umbilicated vesicles and erosions appeared over the inguinal folds and lower abdomen. Histopathology showed epidermal basal vacuolation and individual cell necrosis associated with mononuclear cell infiltration of the upper dermis and lower epidermis. Herpes virus was not detected on skin biopsy. Methylprednisolone was added. After a month, he started extracutaneous acute GVHD progression due to extracutaneous GVHD progression. Case 2: A 59-year-old man underwent HLA-identical allogeneic stem cell transplant for T-cell acute lymphoblastic leukemia. 20 days following the transplant, he was evaluated because of asymptomatic lesions while receiving cyclosporine 175 mg/day and acyclovir prophylaxis (200 mg bid). Clinical examination revealed follicular papules over the inguinal folds and axilla, some of them, showing a central vesicle. Skin biopsy and viral culture ruled out herpetic infection. Histopathologic findings were similar to those seen in case 1.

Discussion: GVHD disease is the major cause of posttransplantation morbidity and mortality. Acute GVHD have protean skin manifestations and may pose diagnostic and therapeutic challenges. Development of vesicles in the setting of bone marrow transplantation is usually a matter of concern for clinicians because they are frequently associated to herpes virus reactivation (herpes simplex and varicella zoster). However, delaying appropriate therapy for acute GVHD may cause serious and irreversible inflammatory damage of the liver, gut, and skin. Clinicians should be aware that acute GVHD may present as herpeticiform lesions over flexural areas. Complete physical examination and direct immunofluorescence staining for detection of viral antigens in vesicular or erosive lesions help in differential diagnosis allowing for a rapid start on high dose immunosuppressive therapy.

Commercial support: None identified.

3782 High-definition optical coherence tomography as a noninvasive technique in the diagnosis and management of molluscum contagiosum
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Background: Molluscum contagiosum (MC) is a common skin infection, especially in children with atopic dermatitis. We utilized imaging with high-definition optical coherence tomography (HD-OCT) to differentiate papules of molluscum contagiosum from inflammatory papules of atopic dermatitis and direct therapy.

Case report: A child between the ages of 5 and 10 years old presented with a history of atopic dermatitis and the recent development of scattered skin-colored papules. The papules had a predilection for the areas of lichenified atopic dermatitis, including the antecubital and popliteal fossae. Some of the larger papules demonstrated central umbilication characteristic of molluscum contagiosum. Imaging with HD-OCT (Skintell, Agfa Healthcare) was utilized to distinguish papules of molluscum contagiosum from inflammatory papules of atopic dermatitis so definitive therapies were directed only at the target lesions.

Discussion: Molluscum contagiosum is a common cutaneous infection of the human skin caused by the molluscum contagiosum virus, in the Poxvirus family. It most commonly occurs in children, but is also seen in adults, especially the immunocompromised and in the setting of HIV/AIDS. However, currently no definitive treatments for MC exist. One common noninvasive treatment is curettage, but this is ineffective in the setting of MC-affected skin. HD-OCT is a useful technique to differentiate lesions of MC from inflammatory papules of atopic dermatitis, which only show inflammation and spongiosis. Moreover, in the last decades, the number of strains of HSV resistant to first-line antiviral drugs has increased, mainly among HIV infected patients, which has made treatment more complicated.

Case: A 59-year-old man with HIV infection for 10 years, treated with antiretroviral therapy, presented with a painful lesion on his penis which had grown for more than one year despite the use of oral valaciclovir. Physical examination showed a 20 x 20 mm indurated and ulcerated tumor on the coronal sulcus, which suggested a squamous cell carcinoma. A biopsy was performed and the histopathologic analysis demonstrated epidermis ulceration with pseudohoepliomatosus hyperplasia, without signs of malignancy. In the superficial part of the epidermis multinucleated keratinocytes were detected, suggesting HSV infection. Immunostaining and polymerase chain reaction for HSV were positive for HSV-2, confirming the diagnosis of hypertrophic genital herpes simplex. Tissue culture and viral resistance testing could not be performed.

Discussion: HSV genital infection can be a diagnostic and therapeutic challenge. Hypertrophic genital herpes simplex is often refractory to first-line systemic antiherpes agents like aciclovir and derivatives, particularly in HIV positive patients. In such cases, foscarnet, cidovirof, imiquimod or thalidomide have been used with variable effectiveness. In our case, valacyclovir resistance was suspected and intralesional cidovirof was initiated, with dramatic improvement after three injections. Herpes simplex virus type 2 strain found by polymerase chain reaction had a 20 x 20 mm indurated and ulcerated tumor on the coronal sulcus, which suggested a squamous cell carcinoma. A biopsy was performed and the histopathologic analysis demonstrated epidermis ulceration with pseudohoepliomatosus hyperplasia, without signs of malignancy. In the superficial part of the epidermis multinucleated keratinocytes were detected, suggesting HSV infection. Immunostaining and polymerase chain reaction for HSV were positive for HSV-2, confirming the diagnosis of hypertrophic genital herpes simplex. Tissue culture and viral resistance testing could not be performed.

Commercial support: None identified.

3035 Hypertrophic genital herpes simplex successfully treated with intraläsional cidovirof
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Introduction: Herpes simplex virus (HSV) genital infection is among the most frequent sexually transmitted infections worldwide. The most common clinical presentation is the development of small grouped vesicles that result in painful ulcerative lesions. However, in immunocompromised patients, especially in those infected by human immunodeficiency virus (HIV), HSV infection can present as hypertrophic lesions that may simulate a neoplasia and lead to misdiagnosis. Moreover, in the last decades, the number of strains of HSV resistant to first-line antiviral drugs has increased, mainly among HIV infected patients, which has made treatment more complicated.

Case: A 59-year-old man with HIV infection for 10 years, treated with antiretroviral therapy, presented with a painful lesion on his penis which had grown for more than one year despite the use of oral valaciclovir. Physical examination showed a 20 x 20 mm indurated and ulcerated tumor on the coronal sulcus, which suggested a squamous cell carcinoma. A biopsy was performed and the histopathologic analysis demonstrated epidermis ulceration with pseudohoepliomatosus hyperplasia, without signs of malignancy. In the superficial part of the epidermis multinucleated keratinocytes were detected, suggesting HSV infection. Immunostaining and polymerase chain reaction for HSV were positive for HSV-2, confirming the diagnosis of hypertrophic genital herpes simplex. Tissue culture and viral resistance testing could not be performed.

Discussion: HSV genital infection can be a diagnostic and therapeutic challenge. Hypertrophic genital herpes simplex is often refractory to first-line systemic antiherpes agents like aciclovir and derivatives, particularly in HIV positive patients. In such cases, foscarnet, cidovirof, imiquimod or thalidomide have been used with variable effectiveness. In our case, valacyclovir resistance was suspected and intralesional cidovirof was initiated, with dramatic improvement after three injections. Herpes simplex virus type 2 strain found by polymerase chain reaction had a 20 x 20 mm indurated and ulcerated tumor on the coronal sulcus, which suggested a squamous cell carcinoma. A biopsy was performed and the histopathologic analysis demonstrated epidermis ulceration with pseudohoepliomatosus hyperplasia, without signs of malignancy. In the superficial part of the epidermis multinucleated keratinocytes were detected, suggesting HSV infection. Immunostaining and polymerase chain reaction for HSV were positive for HSV-2, confirming the diagnosis of hypertrophic genital herpes simplex. Tissue culture and viral resistance testing could not be performed.

Commercial support: None identified.
Idiopathic CD4+ T cell lymphopenia presenting with generalized verrucous
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Introduction: Generalized verrucous (GV) is the clinical presentation of human papillomavirus (HPV) linked to several conditions such as warts, epidermodysplasia verruciformis (EV), HIV and other immunodeficiency syndromes. Lately, there has been description of patients with idiopathic lymphopenias and GV. Case report: A 62-year-old white female presented to our clinics with multiple asymptomatic 2.5 mm warty papules that were scattered in the thighs, legs and clustered in the groin as verrucous plaques. She has had a medical history significant for a stage IV diffuse large B cell lymphoma of the terminal ileum and liver that was treated with six cycles of R-CHOP in 2006 in remission as of 2015. Three years later, scarce warty papules developed on her left leg and groin, which slowly spread to both lower limbs. A shave biopsy showed mild hyperkeratotic epidermis with acanthosis and keratinocytes with blue-gray pallor. No malignancy was found. These changes were consistent with EV. Laboratory investigations showed a normal CBC, chemistries and immunoglobulins. The patient tested negative for HIV and HTLV. Quantitative T and B cell analysis was reported with a CD3+/CD4+ = 4% (27-57%), absolute CD3+/CD4+ = 32 mm³ (460-1568 mm³). Flow cytometry immunophenotyping revealed a phenotypically abnormal T cell population of CD2-, CD5+, CD7+, CD52+, which were mostly alpha-beta T cells with a CD4/8 ratio of 8:80. Peripheral blood tested positive for clonal T cell receptor gene rearrangement.

Discussion: Recent publications have linked idiopathic lymphopenias with IL-7 and GATA2 deficiencies. The immunophenotype is variable, either presenting as decreased NK, B or Tcell populations. These patients have an increased risk of acquiring opportunistic infections such as cryptococcosis or HPV. GV is a rare entity that has been described in HIV patients with low CD4 count. Interestingly, our patient exhibited a low Thelper population which would explain the similarities between our case and the ones described for other patients with similar cellular depleted immunity. The reason of this patient’s low Thelper population is still currently under investigation. There are scarce case reports of patients with active lymphomas who have developed GV. To the best of our knowledge, this is the first case report of a patient with a past history of non-Hodgkin lymphoma and a current idiopathic CD4+ lymphopenia, who subsequently developed GV.

Commercial support: None identified.

3256 Immunocryosurgery for multiple therapy-resistant condyloma: An alternative therapy for immunocompetent men
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Multiple therapy-resistant condyloma is a relatively common condition in clinical practice and novel treatments are limited. Immunocryosurgery (combination of topical imiquimod and cryosurgery) was recently introduced for the treatment of basal cell carcinomas with very promising therapeutic results. The aim of the study was to evaluate the efficacy of the immunocryosurgery for multiple therapy-resistant genital condyloma in immunocompetent men. All patients had histopathologically confirmed genital condylomas that were resistant to at least 3 different topical therapies (trichloroacetic acid, podophyllin, 0.5% podofilox, imiquimod 5%, sinecatechins, 0.5% podofilox and/or salicylic acid 20%) and cryosurgery used. A total of 12 patients were recruited (mean age 27.75 ± 5.25 years). All patients finished the treatment. Two weeks after the end of treatment, 10/12 patients had complete clearance of lesions. The most common side effects were mild pruritus (58.3%) and local erythema (83.5%). Local painful ulcers were noted in one patient and severe pruritus in other two patients. During the follow-up period (2-12 months), one patient had a relapse. Immunocryosurgery is an alternative and feasible treatment that can be used in multiple therapy-resistant genital condylomas. The treatment in this group of patients was shorter than the regular regimen with imiquimod 5%.

Commercial support: None identified.

Long Dan Xie Gan Tang formula in the management of acute stage herpetic zoster. A systematic review and randomized controlled trials
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Background: Herpes zoster (HZ) is a neurocutaneous disease characterized by grouped vesicles and pain. Current pharmaceutical treatment is effective, although there is a gap between patient expectations and the efficacy of treatment. Chinese herbal medicines (CHM) may be beneficial in managing symptoms with fewer side effects.

Objective: This review aims to evaluate systematically the efficacy and safety of Chinese herbal medicine formula Long Dan Xie Gan Tang (LDXGT) for HZ.

Methods: Nine English and Chinese language databases were searched from inceptions to February 2015. Randomized controlled trials using LDXGT for HZ were included. Data were extracted and risk of bias assessment performed to evaluate the methodological quality of included trials. Primary outcome was evaluation of pain using visual analogue scale. Secondary outcomes were incidence of postherpetic neuralgia (PHN), cutaneous outcomes, health related quality of life (HRQoL), and therapeutic effective rate.

Results: A total of 31 906 citations were identified. Twenty six studies enrolling 2829 participants were included. Methodological quality of included studies was moderate. One study reported on the primary outcome of evaluation of pain, with pain resolving 2-6 days earlier in those who received modified LDXGT compared with pharmacotherapy (95% CI 3.61 -1.59). When LDXGT was combined with topical CHM, scar formation occurred 1.13 days earlier compared with pharmacotherapy (95% CI 1.44 -0.85), and the incidence of PHN was lower (RR 0.14; 95% CI 0.03, 0.74). LDXGT was found to improve the therapeutic effective rate based on reduction of lesion count when used in combination with other oral (RR 1.29; 95% CI 1.06, 1.7). None of the studies reported on HRQoL. Several mild gastrointestinal adverse events were reported in both intervention and pharmacotherapy groups, and two cases of vertigo and fatigue were reported in the pharmacotherapy group.

Conclusions: Modified LDXGT alone may hasten alleviation of pain, and when combined with topical CHM may decrease the incidence of PHN compared to pharmacotherapy. Few adverse events were reported. Validity of the evidence for LDXGT was limited by the methodological quality of the included studies and the variability in both intervention and comparator groups. Further rigorous clinical research is needed.

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A case of refractory pyoderma gangrenosum treated with intravenous immunoglobulin

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A 52-year-old lady had a 0.5-mm Breslow thickness malignant melanoma excised on her right leg, which was left to heal by secondary intention. 4 weeks postoperatively, the wound began to enlarge and become very painful. Skin biopsy showed ulceration with abundant dermal neutrophils also infiltrating into adjacent blood vessels. These findings were consistent with the suspected clinical diagnosis of pyoderma gangrenosum (PG). Intravenous immunoglobulin was commenced at 60 mg daily and gradually tapered, before a steroid-sparing agent was introduced. A range of agents were trialled although unsuccessfully. MycopHENolate mofEtil was discontinued because of nausea and lack of improvement, cyclosporin was also ineffective and stopped due to renal impairment; whilst on methotrexate there were some signs of wound healing, but our patient experienced recurrent episodes of sepsis. Despite continued bandaging, pulsed methylprednisolone and the use of pulse doses of infliximab, the ulcer became circumferential involving much of the lower leg and causing significant morbidity. A treatment challenge arose as biologics were deemed unsuitable because of the history of melanoma and recurrent sepsis. Therefore intravenous immunoglobulin (IV Ig) was introduced at a dose of 2 g/Kg each month. After three months, there was clear evidence of wound healing and a dramatic reduction of pain. A monthly maintenance dose of 1 g/Kg was continued. To date, IV Ig has been well tolerated and there have been no further hospital admissions for sepsis. Predisolone is now at a low maintenance dose of 7.5 mg and there continues to be signs of improvement. PG is a rare ulcerating inflammatory dermatosis that can occur with no known underlying cause, but often associated with inflammatory bowel disease, arthritis and hematological malignancy. The mainstay of treatment is high-dose oral corticosteroids, but there is a lack of evidence in the literature demonstrating effective therapies. Recently published is a randomised controlled trial which showed predisolone and cyclosporin to have similar efficacy, and there has only been one other randomized trial, which looked at response to infliximab over placebo. Success with IV Ig is has been reported in the literature, with a recent review showing excellent response in almost half of previously treated cases. Those who relapse respond to further IV Ig therapy. This case report adds further support to the idea that IV Ig is a valid treatment option for patients with refractory PG.

Commercial support: None identified.
2603 A study of cutaneous manifestations among febrile neutropenic patients: A four-year retrospective review in a single tertiary university hospital in Southern Thailand
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Background: Febrile neutropenia (FNP) is a condition defined by fever and neutropenia. The febrile neutropenic patients are highly susceptible to infection. However, there are little data about cutaneous manifestations among this group.

Objective: To describe cutaneous manifestations and pathological studies in febrile neutropenic patients.

Methods: We retrospectively reviewed (Nov. 2009 to Oct. 2014) cases of forty-three febrile neutropenic patients with cutaneous lesions in Songklanganargird Hospital, Prince of Songkla University, Thailand. The data, demographics, clinical manifestations, pathological reports and tissue cultures, were collected and analyzed.

Results: The demographic data revealed the mean age to be 39 ± 19 with 24 (55.8%) of the subjects being male and 19 (44.2%) female. Mostly underlying disease was hematologic neoplasm, 41 (95%), especially with acute myeloid leukemia, 21 (51.2%). Twenty-one (48.8%) of the patients had contracted FNP within 7-8 days after presenting with skin lesions. On the other hand, 22 (51.2%) had skin lesions after FNP with approximately duration 9.0 ± 11.1 days. Cutaneous manifestations were seen in multiple lesions, 29 (67.4%) and the most common morphology were nodule, 16 (37.2%) which were on lower extremities, 25 (58.1%). The dermatopathological diagnosis included infections, 14 (32.6%) and almost all were fungus 12 (85.7%) and leukemia cutis, 14 (52.6%). Fungal infections were more frequently found in patients who had developed skin lesions after being diagnosed with FNP than patients who had skin lesions before FNP. There was a statistical significance (10 (45%), 2 (9.5%), respectively, P = 0.01). Unfortunately, there were no diagnostic clues for the leukemia cutis. Twenty-nine (67.4%) patients who were sent for skin cultures tested positive for fungal infections six (20.7%): two Aspergillus spp., two Candida spp., and each one of Fusarium spp. and Cladosporium spp.

Conclusion: A variety of cutaneous manifestations in FNP, which is common in the cutaneous nodules of the lower extremities, present problems in a differential diagnosis. Twenty-nine (67.4%) patients who were sent with FNP than patients who had skin lesions before FNP. There was a statistical significance (10 (45%), 2 (9.5%), respectively, P = 0.01). Unfortunately, there were no diagnostic clues for the leukemia cutis. Twenty-nine (67.4%) patients who were sent for skin cultures tested positive for fungal infections six (20.7%): two Aspergillus spp., two Candida spp., and each one of Fusarium spp. and Cladosporium spp.

Commercial support: None identified.

2563 Acquired acrodermatitis enteropathica in an adult patient as the presenting sign of celiac disease
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Acrodermatitis enteropathica is a rare inherited form of zinc deficiency that occurs in infants and children because of perinatal and acral dermatitis, alopecia, and diabetes. Low zinc levels coupled to the histologic findings of epidermal necrosis point to the diagnosis. In adults, conditions that lead to zinc deficiency, such as alcoholism, malnutrition, and diabetics in the hospital, may present with similar clinicopathological findings and are described as acquired acrodermatitis enteropathica. Celiac disease (CD) is a chronic disorder that results from gliadin intolerance. Ingestion of gliadin results in an immunologically mediated inflammatory response that leads to damage of the intestinal mucosa. CD presents with diarrhea, abdominal cramps, weight loss, growth delay, and/or fatigue. Electrolyte abnormalities, including zinc deficiencies, have been reported. The frequency of CD is 1% and is bimodal age distribution, with two peaks at 1 and 30 years of age. Diagnosis is often delayed due to the subtle symptoms and it is determined with positive immunoglobulin A anti-tissue transglutaminase and anti-endomysial antibodies. Patients with CD have a high risk of developing bowel biopsy in the gold standard test. However, the therapeutic pathway is usually patchy and requires multiple biopsies to establish diagnosis. The spectrum of intestinal involvement ranges from minimal lymphocytic infiltrations to hyperplasia with prominent ballooning degeneration and hyperkeratosis/parakeratosis. Lesions were unresponsive to prednisone, clindamycin, and oral antibiotic, decreased if zinc deficiency is corrected. Further studies ruled out necrolytic acral erythema, necrolytic migratory erythema, pelagra, and biotin deficiency. Zinc levels were low and antriglial transglutaminase and anti-endomysium antibodies were positive, suggesting CD with zinc deficiency. The patient received a gluten free diet and zinc supplementation, which resulted in resolution of her gastrointestinal and cutaneous symptoms within 4 weeks.

Commercial support: None identified.

2404 Acrokeratitis paraneoplastica in the setting of early pancreatic adenocarcinoma
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Acrokeratitis paraneoplastica, or Bazex syndrome, is a rare cutaneous paraneoplastic syndrome associated with internal malignancy especially squamous cell carcinoma of the upper aerodigestive tract. Nevertheless, atypical malignancies have been reported.

Observations: We report the case of an 82-year-old previously healthy white female who presented with acute desquamation and pruritus of her hands and feet. A biopsy was performed to rule out Bazex syndrome and revealed apocrine keratinocytoma at all levels of the epidermis. Prompted by clinical suspicion for Bazex syndrome and corroborating histology, internal imaging and diagnostic testing revealed a pancreatic adenocarcinoma. Pancreatoduodenectomy was performed without complications, and the patient’s skin findings subsequently resolved.

Conclusions and relevance: This report is, to our knowledge, the first case of Bazex syndrome associated with adenocarcinoma of the pancreas. Although there is an increasing awareness for atypical presentations of malignancy may improve cancer outcomes in patients.
AIDS patient with one lesion but two problems: Kaposi sarcoma and bacillary angiomatosis

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A 44-year-old white man presented to dermatology clinic for a painful, hemorhagic lesion on his left foot. Three months prior, he was diagnosed with AIDS after he was admitted to the hospital for cryptoccocal meningitis and was found to have a CD4 count of 10. During this hospitalization, the patient was found to have violaceous patches and plaques on his feet and groin suggestive of Kaposi sarcoma. He was started on antiretroviral therapy (ART). The violaceous plaque on his left foot progressed to have a hemorhagic nodule within it that easily bled. His infectious disease physician started him on cephalexin with no improvement of the lesion. The nodule continued to grow, and the patient was referred to dermatology where a shave biopsy was performed. On one side of the biopsy specimen the histology revealed a marked edema in the dermis with inflammatory cells and number of dilated veins. Mixed inflammation was present, and rare purple hazy aggregates of bacteria were identified that were characteristic of bacillary angiomatosis. On the other side of the biopsy specimen there was an infiltrative vascular proliferation in the dermis composed of spindled mitotically-active endothelial cells with slit-like and sieve-like spaces filled with blood. These cells expressed human herpesvirus 8 (HHV-8) by immunohistochemistry and represented a component of Kaposi sarcoma. Kaposi sarcoma is a chronic, systemic angioproliferative disorder which is caused by HHV-8. Bacillary angiomatosis is also a vascular disorder that affects HIV infected individuals. Bacillary angiomatosis is caused by the bacteria, Bartonella henselae, and similar to Kaposi sarcoma, usually occurs in HIV patients with low CD4 counts. Most physicians agree that Kaposi sarcoma and bacillary angiomatosis are caused by two distinct disease processes and even though these diseases cause similar looking lesions, they usually present on patients as two separate lesions. Because they are both vascular proliferative disorders caused by infectious processes some researchers have hypothesized that maybe there is some underlying association between these two diseases. However, the majority of the subsequent research has shown that the pathogenesis of Kaposi sarcoma is not related to bacillary angiomatosis. This case is unique in that Kaposi sarcoma and bacillary angiomatosis were found in the same lesion and it reminds physicians to be cognizant of this association when examining their patients.

Commercial support: None identified.

An unusual case of tumid lupus mimicking pseudolymphoma in a Kuwaiti man with hyper-IgM syndrome

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A 25-year-old Kuwaiti man with hyper-IgM syndrome presented with an 8-month history of a violaceous facial plaque and a 12-month history of hair loss. Skin biopsy of the facial plaque performed in Kuwait was interpreted as pseudolymphoma. Cutaneous examination at our institution revealed red to purple, arciform soft plaques with sharp borders on the bilateral malar eminences, with less involvement of the nasal bridge and tip. Nonscarring, patchy alopecia was also observed. Twice daily clobetasol 0.05% ointment was started for suspected pseudolymphoma, with mild improvement after several days of therapy. Repeat biopsy was performed with the biopsy specimen showing a perivascular and periappendageal lymphocytic infiltrate without interface dermatitis. Special stains revealed a predominance of CD3+ T cells, interstitial mucin and basement membrane thickening. Clinical appearance, histopathologic features may mimic other conditions, including pseudolymphoma, lymphoproliferative disorders and infections. There have been reports of collagen vascular disease in the setting of hyper-IgM syndrome, but to the authors’ knowledge, this is the first case of tumid lupus. This report highlights the importance for an increased index of suspicion for autoimmune phenomena in patients with primary immunodeficiency disorders, as well as the clinical and histopathologic overlap between tumid lupus and other skin diseases.

Commercial support: None identified.

Assessment of risk and use of prophylaxis for glucocorticoid-induced osteoporosis among Pacific Northwest dermatologists: A survey study

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Background: There currently exists a wide variation in dermatologists’ approach to the assessment and management of glucocorticoid-induced osteoporosis (GIO). Previous studies show that many patients do not receive appropriate GIO prophylaxis despite guidelines for GIO-related fracture prevention. The goals of this study are to characterize Pacific Northwest dermatologists’ practices surrounding use of bisphosphonates to prevent GIO, and to determine the adequacy of prophylaxis.

Methods: A cross-sectional online survey of 22 questions was sent electronically to 392 dermatology providers of the Washington State Dermatology Association and Oregon Dermatology Society registries.

Results: 51 providers (13%) completed the survey. The majority of respondents do not prescribe moderate or high dose, chronic steroids (>20 mg prednisone or equivalent for ≥2 months), with 55% reporting prescribing this fewer than 5 times in the past year and 37% never. Only half prescribed lower dose steroids (>7.5 mg/day prednisone or equivalent for ≤3 months). 55% never/almost never prescribed bisphosphonates after glucocorticoids. For patients on long-term glucocorticoid treatment (>6 mo), 41% follow bone mineral density annually and 24% never. When given clinical scenarios and asked to assess risk of major osteoporotic fracture, respondents frequently underestimated risk (67%). The majority (>70%) prescribe/recommend calcium and vitamin D supplementation for patients on glucocorticoid therapy. 80% correctly identify bisphosphonates as appropriate GIO prophylaxis when given a high-risk scenario. However, when asked directly if one would prescribe bisphosphonates as GIO prophylaxis for a high-risk patient on long-term, moderate-high dose glucocorticoid therapy, only 49% responded always/almost always.

Conclusions: Our findings indicate that the majority of dermatologists in this survey region infrequently prescribe chronic, moderate-high dose glucocorticoids and tend to underestimate the risk of GIO when faced with a clinical scenario. Despite the tendency to inflate risk, relatively few providers would consistently recommend appropriate GIO prophylaxis measures. Limitations of our study include small sample size and potential sampling error. Our data suggest that a knowledge deficit exists and dermatology providers may benefit from continuing medical education regarding the GIO risk assessment and prophylaxis.

Commercial support: None identified.
A 30-year-old male with a medical history of multiple myeloma 25 days status post allogeneic bone marrow transplantation presented with a four day history of mildly itchy rash involving his arms, right thigh, and right side of his trunk. Review of systems was significant for profuse diarrhea. Physical exam revealed moderately well demarcated pink-violaceous slightly scaly thin papules coalescing into thin plaques following the lines of Blaschko on the right flank, back, and chest, the right lower extremity and bilateral upper extremities. Punch biopsy of the right upper extremity showed parakeratosis overlying spongiosis and vacuolar alteration of the basal layer with scattered dyskeratotic keratinocytes. There was a superficial perivascular mixed infiltrate of lymphocytes and eosinophils. He was diagnosed with acute graft versus host disease (GVHD) presenting in a Blaschkolinear distribution. The patient was started on 1 mg/kg/day of prednisone with rapid improvement in his rash. However, he then developed elevations in his liver enzymes and worsening diarrhea. He ultimately progressed to grade III acute GVHD necessitating long term inpatient care. Cases of lichenoid chronic GVHD presenting in a Blaschkolinear distribution have been described in the past; however, this is the first case to date of acute GVHD presenting in this distribution. The proposed mechanism for this phenomenon suggests underlying somatic mosaicism. The host’s immunocompetent cells tolerate this cell clone until after transplantation when the clone is recognized as foreign by the donor’s immune cells.

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3911 Cantu syndrome: Uncovering a rare gain-of-function ABC9 gene mutation with possible therapeutic implications for the treatment of hypertrichosis
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A 7-year-old Hispanic girl presented to pediatric dermatology for evaluation of generalized hypertrichosis with thick dark hairs covering the preauricular cheeks, neck, and upper and lower extremities. The patient also had a history of mild learning disability, scoliosis, and asymptomatic structural cardiac abnormalities (aortic root dilatation and patent ductus arteriosus), raising suspicion for Cantu syndrome (CS). Therefore, whole exome sequencing was performed and revealed a heterozygous de-novo ABC9 gene mutation (c.3460C>T (p.Arg1154Trp)) (chromosome 12p12.1), a mutation variant previously reported in association with four unrelated CS patients. Cantu syndrome (also known as hypertrichosis-ostechondro dysplasia-cardiomyopathy syndrome) is an extremely rare autosomal dominant disorder. Patients typically present with generalized congenital hypertrichosis, macromelia at birth, macropalpebral, coarse facial features, cardiomegaly, skeletal abnormalities, and developmental delay. Reported cardiac abnormalities include cardiac enlargement, concentric hypertrophy of the ventricles, pulmonary hypertension, pericardial effusion, patent ductus arteriosus, and bicuspid aortic valves. Aortic root dilatation, observed in our patient, has not been previously described in the literature. Many cases of CS are due to heterozygous ABC9 gene mutations. These mutations are thought to confer an activating mutation in SUR2, a subunit constituent of the sulfonylurea ATP-regulated potassium channel, leading to over-activation of the channel. Of note, sulfonylureas antagonize SUR2, and in follicular keratinocytes, this activity results in shortening of the anagen phase in cultured hair follicles. Based on this predicted molecular mechanism, topical sulfonylurea has been proposed as a potential novel treatment approach for hypertrichosis. Therefore, we are investigating and developing a compounded topical sulfonylurea as a possible safe, low-cost treatment for this patient’s hypertrichosis.

Commercial support: None identified.

3538 Chronic kidney disease associated pruritus impact on dermatological quality of life of patients: the comparison of hemodialysis therapy in hemodialysis from the General Hospital of Mexico
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Introduction: Chronic renal failure affects different dimensions of the quality of life of patients, including physical, social, cognitive and sexual function, emotional well-being and perceptions of health. The presence of complications and morbidities is perhaps the most important factor that affects the quality of life of patients with chronic renal failure. The cutaneous manifestations associated with chronic renal failure are diverse, its prevalence varies between 40-100%, including pruritus defined as a skin sensation when moderate or severe triggers a more or less strong motor response, which is scratching.
Problem: Chronic kidney disease associated pruritus is a common presenting symptom in patients with chronic renal insufficiency replacement therapy in hemodialysis with incidence reported in 58%, it is important to identify its impact on quality of life, dermatological examine barriers and areas for improved nephrology care and effective management of this symptom from the point of view of patients.
Objective: To establish the relationship between chronic kidney disease associated pruritus and the quality of dermatologic life in adult patients with chronic renal failure in hemodialysis replacement therapy from the Nephrology Service of the General Hospital of Mexico.
Methodology: observational, correlational, cross-sectional study. Pruritus intensity was measured on a 10-point visual analog scale and the itch severity score. Dermatological quality of life was examined with The Dermatology Life Quality Index (DLQI). Patients who met the criteria of International Forum for the Study of Itch Chronic kidney disease associated pruritus was considered if they had either of the following conditions: (a) at least 3 episodes of itch during a period of two weeks, with the symptom appearing a few times a day at least a few minutes of duration; or (b) the appearance of an itch in a regular pattern during a period of 6 months, but less frequently than listed above. To ensure that patient’s pruritus was associated to chronic kidney disease it had to appear at any time after the beginning of the hemodialysis, without evidence of any other active disease that could explain the symptom. Analysis of results: T test, exact Mann-Whitney U test, χ² test, and odds ratios. A value of P < .05 considered statistically significant.
Results: A consecutive series of 235 patients undergoing hemodialysis were enrolled. After informed consent, demographic data and data about hemodialysis and the presence and intensity of pruritus were collected. We included 235 patients, 54.8% were female and 45.2% male, with a mean age of 42.03 years (range 18-84 years; standard deviation + 16.54 years). As for the etiology of the renal failure, 42.35% was idiopathic, 32.18% was attributed to diabetic nephropathy, 6.38% to hypertensive disease of pregnancy, 4.68% to polycystic kidney disease, 3.82% to lupus nephritis, 2.55% to lupus erythematos, 2.00% to lupus nephritis (kidney stones, prostate cancer), renal hypoplasia 2.12%, 1.27% postinfectious glomerulonephritis, 0.8% to autoimmune diseases other than SLE, 1.68% from other causes. 14.88% of the patients had xerosis, 45.93% mild xerosis, 51.5% moderate xerotic, 7.65% severe. According to visual analogue scale (VAS) the average reported score was 5.24 (SD + 2.51); the Itch Severity Scale average score was 7.97 (+4.23 standard deviation) and the dermatological quality of life was 0.25 (SD + 5.54). The intensity of the pruritus according to VAS in our study had an average of 5.243 (P = 1114) was found. According to the Itch Severity Score, the average was 7.97 points (P = .03), associated with moderate to severe pruritus, with 21 points the most severe pruritus. The dermatological assessment of the quality of life (DLQI), the average was 6.25. Correlation between the VAS and questionnaire dermatology life quality DLQI (r = 0.47, CI 0.360-0.57, P < .0001) between VAS and scale Itch Severity score (r = 0.61, CI 0.530-0.69, P < .001) between the quality of life questionnaire DLQI and Itch Severity score (r = 0.65, CI 0.560-0.72, P < .0001). Pruritus intensity was significantly related to poor scores in all sub scales of the DLQI (symptoms, social function).
Conclusions: The presence of pruritus associated with chronic renal disease impairs the quality of life in dermatology adult patients with chronic renal failure in hemodialysis replacement therapy.

Commercial support: None identified.

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2754
Cutaneous findings and systemic associations in women with polycystic ovary syndrome

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Importance: There is limited understanding of the relationships between cutaneous findings, systemic abnormalities, and the fulfillment of diagnostic criteria in women suspected of having polycystic ovary syndrome (PCOS).

Design: Descriptive cross-sectional study of a racially diverse referred sample of women with PCOS who presented at a multidisciplinary PCOS clinic over a 4-year period.

Setting: University of California San Francisco (UCSF) PCOS Multidisciplinary Clinic Participants: 401 women referred for suspected PCOS. 69% (N = 276) met Rotterdam PCOS diagnostic criteria while 12% (N = 48) patients did not. 11% (N = 46) had insufficient data to render a diagnosis. 2% (N = 7) were excluded. 6% (N = 24) refused the study. Main outcomes and measures: Comprehensive skin exam, laboratory testing, and transvaginal ultrasound.

Results: Compared to women who did not meet diagnostic criteria for PCOS, women who met criteria had higher rates of hirsutism (53.5 vs 51.1% [P = 0.005]) – with a mean modified Ferriman-Gallwey (MFG) score of 8.6 vs 6.3 [P = 0.001]) – acne (61.3 vs 40.4% [P < 0.001]), and acanthosis nigricans (AN) (56.9 vs 20.0% [P = 0.02]). Cutaneous distributions also varied. Women who met PCOS criteria demonstrated more severe truncal hirsutism and higher rates of axillary AN. Among women with PCOS, the presence of hirsutism or AN was associated with higher rates of elevated free testosterone (43.9 vs 30.9% [P = 0.014]) and 53.5 vs 27.0% [P < 0.001], respectively) as well as a number of metabolic abnormalities, including insulin resistance, polycystic ovary syndrome, and elevated body mass index (BMI). Though the prevalence of acne was increased in women with PCOS, there were minimal differences in acne types and distribution between the two groups.

Conclusions and relevance: In the high risk population of women referred for suspected PCOS, there is a significant burden of cutaneous, reproductive, and metabolic abnormalities. Hirsutism and AN are the most reliable cutaneous markers of PCOS and require comprehensive skin exam to diagnose; when present, hirsutism and AN should raise clinical concern that warrants further diagnostic evaluation for metabolic comorbidities that may lead to long-term complications. Acne and androgenic alopecia (AGA) are not reliable markers of biochemical hyperandrogenism in this population.

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2956
Cutaneous xanthomas in homozygous familial hypercholesterolemia: A long-term follow-up

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Homozygous familial hypercholesterolemia (HHF) is an autosomal dominant disease caused by mutations in the low-density lipoprotein (LDL) receptor. The prevalence is 1 case per 1 million persons. HHF is clinically suspected on the basis of extremely elevated (LDL) serum cholesterol and xanthomas presenting in the first decade of life. A 7-year-old previously healthy boy presented with a 2-year history of multiple symmetric yellowish nodules on the extensor surfaces. The examination revealed multiple 5 mm 4 mm coalescing yellow nodules on the elbows and knees (tuberculous xanthomas). Skin-colored, 2.5 cm, firm, exuberant nodules were seen along the dorsa of the hands/feet and Achilles tendons. In addition, the patient had multiple 2.6 mm yellow plaques with a corrugated surface on the web spaces of the hands (intertriginous xanthomas). Skin biopsy from a nodule on the knee showed dermal collections of foamy histiocytes, consistent with xanthoma. Subsequent blood tests revealed elevated total cholesterol of 740 mg/dL, and LDL of 659 mg/dL; high-density lipoprotein (HDL) and triglycerides were normal. The patient was referred to a pediatric cardiologist. Parents and sister were heterozygous on screening. The patient was treated with atorvastatin and ezetimibe.

However, these measures were insufficient and LDL apheresis was scheduled every 15 days with incomplete decrease on LDL serum cholesterol. After 12 years of follow-up, partial regression of xanthomas was noted. Recently, imipenem, a novel drug approved by the FDA in 2013 for the treatment of HHF, has been initiated. HHF can present early in life with cutaneous xanthomas of multiple types, including tendinous, tuberous and xanthelasma. Although rare, intertriginous xanthomas of the finger webs are pathognomonic for HHF. Without treatment, most individuals die of atherosclerosis by 30 years of age. Treatment involves diet, lifestyle changes, lipid-lowering drugs, LDL apheresis or liver transplantation. Dermatologists play a key role in the diagnosis and should maintain a high index of suspicion.

Commercial support: None identified.

2798
Dermatology consultations significantly contribute to efficient care of hospitalized patients: A prospective study of dermatology inpatient consults at a tertiary care center

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Background: Cutaneous findings are common in hospitalized patients, but are frequently missed or misdiagnosed by admitting teams. Inpatient dermatology consultations provide an opportunity for dermatologists to help in diagnosing and managing these conditions. However, few studies have described dermatology inpatient consultation outcomes and their effect on patient care.

Objective: Describe the inpatient dermatology consultations at a large tertiary care center.

Methods: We prospectively collected information of 691 consecutive dermatology consultations from November 2013 to November 2014.

Results: Patients ranged in age from newborns to 97 years old. Dermatology consults were requested on average 3 days (standard deviation = 1.06) after admission or onset of cutaneous complaint. 6% of consults were requested with a concurrent medical condition (cardiology: 45%, surgery: 12%, hematology/oncology: 9%, and pediatrics: 7%). Majority of consults were requested for presence of a rash (60%). Other common reasons for consult requests were presence of skin lesions (12%), ulcers (11%), blisters (5%), and dryness (3%). Only 6.5% (N = 44) of consultations were requested within 24 hours of appearance of cutaneous findings. Prior to dermatology consultation, 70.3% of patients did not receive treatment for their cutaneous findings. The most common dermatological diagnoses were drug rash and contact dermatitis. The majority (59%) of consults resulted in significantly more (P < 0.01) treatment changes in majority of cases.

Conclusion: Common skin diseases were responsible for most dermatology consultations. Most patients were not treated for their cutaneous conditions prior to dermatology consultation. Overall, dermatology consultations resulted in treatment changes in majority of cases.

Commercial support: None identified.

2447
Cutaneous metastasis from colon adenocarcinoma: Mimicker of infectious etiology

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Cutaneous metastasis has been estimated to occur in 0.6% to 10.4% of patients with primary malignancy. Recognition of cutaneous metastasis is of importance due to its clinical and prognostic implications, often requiring a high index of suspicion. In patients with advanced cancer, cutaneous metastasis can be the first clinical sign of an otherwise unrecognized visceral malignancy, presenting initially in 37% of men and 6% of women. It may also represent recurrence after treatment of a primary tumor. The presence of a rash (60%) was the most common reason for dermatology consultations. The majority (59%) of consults resulted in significantly more treatment changes in majority of cases.

Commercial support: None identified.
Diffuse papulonodules: A rare presentation of leukemia cutis

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A 42-year-old white female patient with new-onset fatigue and a diagnosis of leukemia cutis on presentation, with a one-month history of largely asymptomatic, scattered, indurated, flesh-colored to violaceous papules and nodules on the bilateral cheeks, forehead, scalp, neck, central upper and lower midback, and lower abdomen. The white count was normal with increased metamyelocytes and blasts. A strikingly increased serum lactate dehydrogenase level was noted. Calcium and 2 microglobulin tend to increase in leukemia cutis as well. Punch biopsy of a lesion on the right lateral mid-back confirmed leukemia cutis. Immunohistochemical stain reaffirmed the diagnosis of leukemia cutis. Aneuploidy of chromosomes 8 and 14 has been associated with an increased incidence of leukemia cutis in AML patients, and increased levels of LDH and/or β-2 microglobulin tend to correlate with worsening overall prognosis. This condition usually portends a poor prognosis in the setting of acute leukemia, as it signifies extramedullary involvement. Leukemia cutis has variable clinical presentations; the most common is flesh-colored to violaceous papules, nodules, or plaques. Other presentations include those resembling figurate erythema, guttate psoriasis, erythema, and urticaria. Skin biopsy and immunohistochemical staining are crucial in confirming the diagnosis. Aneuploidy of chromosome 8 has been associated with an increased incidence of leukemia cutis in AML patients, and increased levels of LDH and/or β-2 microglobulin tend to correlate with worsening overall prognosis. Our case is unique in that the patient had numerous papules and nodules diffusely over her head and neck, as well as scattered lesions on the trunk and extremities. This patient’s clinical presentation and diagnosis reminds clinicians to keep a high index of suspicion for leukemia cutis in the setting of acute-onset papulonodular eruptions.

Commercial support: None identified.
Evaluating the clinical and educational impact of implementing an inpatient dermatology consult service and a dermatology lecture series in a university hospital: A longitudinal 5-year study

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Introduction: Dermatology has increasingly become an outpatient specialty, resulting in potentially complex dermatologic concerns being seen by nondermatologists. There has been a paucity of data regarding lecture topics are not the impact of inpatient dermatology consult services. Current data show an exceedingly low concordance rate between the presumptive diagnosis by the referring specialty and the final diagnosis by a dermatologist. Current studies use primarily descriptive data pulled from an already-established program, calling to attention the number and types of consults called. However, extremely few studies follow the effects of a consult program from its inception, and thus cannot comment on the impact of the program in the long-term. Even fewer have analyzed the impact of a dermatologic educational intervention on the referring services. Our study is a retrospective chart review of all consults seen from the implementation of the consult program in 2008 versus 2012, as well as an assessment of the efficacy of a monthly lecture series given to the internal medicine resident team.

Objective: To determine the impact of implementing an inpatient dermatology consult program at a university hospital in combination with the intervention of a dermatology monthly lecture series on concordance rates between presumptive diagnoses by services requesting dermatology consults and final diagnoses by dermatologists.

Methods/design: Retrospective, cross-sectional chart review of all inpatient dermatology consults seen at a single academic university hospital (UCSF) in 2008 and in 2012. 375 patients in 2008 and 385 patients in 2012 were included in the chart review. These were defined as all patients greater than 15 years old admitted into the hospitals or to the emergency department, and for which a dermatology consult was requested and the patient seen by a dermatology attending.

Intervention: A formal teaching program was introduced with the inception of a formal inpatient dermatology consult program in 2008, in which monthly dermatology lectures were given to internal medicine residents. The monthly lecture series began from year to year.

Main outcomes and measures: Concordance rates between diagnoses made by services requesting dermatology consults and dermatologists. Diagnostic concordance rates were compared between requesting services who received the lectures and those who did not receive the lectures.

Results: Overall diagnostic concordance rates (20-24%, P = .32) remained consistent from 2008 to 2012. Concordance rates specifically for diagnoses covered in lecture topics (43%-56%) were significantly higher than for diagnoses not discussed in the lecture series (10%-14%) in both 2008 and 2012 for all consulting services, regardless of their participation in the lecture series (P < .001).

Conclusions: There are two main conclusions our study is able to show: First, our inpatient dermatology consult service has shown low concordance rates between the presumptive diagnosis made by the referring team and the final diagnosis made by a dermatologist, in both 2008 (23% concordance) and in 2012 (20% concordance). These results are consistent with the low concordance rates reported in previous studies at other institutions. This suggests a continued need for inpatient dermatology consult services, which is relevant in a time when dermatology is increasingly becoming an outpatient specialty. Second, concordance rates are consistent between both lectured and nonlectured teams in 2008 and in 2012. This suggests that there is no learning effect from the lectures. One possible explanation could be that the lecture topics are new to residents already having prior knowledge about. However, interestingly the top misdiagnosed conditions (drug rash, HSV, vasculitis, stasis dermatitis, etc) were topics that were indeed lectured on. This suggests that we are in fact lecturing on the most commonly misdiagnosed conditions, and that perhaps the selection of lecture topics are not the root of the issue. An alternative explanation for the consistent concordance rates between the lectured and nonlectured teams despite the educational intervention is that didactic teaching is not an effective methodology. This suggests that other educational methods should be explored instead, such as quizzes, required online modules, or hands-on engagement. Recent literature suggests that interactive methods could have a more positive impact on professional practice and in some situations, health outcomes. To our knowledge, our study is one of the first to study inpatient dermatology services longitudinally with an educational intervention. The low concordance rates and the lack of a learning effect from monthly lectures suggest an important need for inpatient dermatology services as well as a need for new, alternative methods to teach dermatology to nondermatologists.

Commercial support: None identified.

2464 First report of mesalazine (5-aminosalicylic acid) as the causative agent in a case of acute generalized exanthematus pustulosis

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Acute generalized exanthematus pustulosis (AGEP) is a rare eruption of nonfocaliclar sterile pustules on a diffuse background of erythema and edema, commonly associated with fever and leukocytosis. Antibiotics are implicated in most cases; however, other drugs have been reported to cause AGEP. We report a case of a 73-year-old man with a history of ulcerative colitis who presented with a diffuse, pustular rash, renal failure, transaminits, and leukocytosis with neutrophilia. A week prior to admission, the patient was started on mesalazine to treat colitis. Upon admission, a workup including a skin biopsy was performed and was consistent with AGEP. Mesalazine was discontinued, and the patient’s skin eruption, renal function, transaminits, and leukocytosis subsequently improved. Mesalazine has an unknown mechanism of action; however, it is thought to be an antinflammatory agent that blocks the production of leukotrienes and prostaglandins and is an immunosuppressant that increases the release of adenosine, which interferes with leukocyte function. The decrease in prostaglandin synthesis or deregulation of leukocyte function caused by mesalazine may be the etiology in this case. Discontinuation of the offending agent leads to resolution of AGEP as it did in this patient.

Commercial support: None identified.

Results: Demographic: A total of 11 patients were included. Of the 11 (100%) patients, 10 (91%) were AL-associated and 1 (9%) was AA-associated. Of the AL amyloidosis subgroup, 50% was MM-related. Six patients (55%) were men and 5 (45%) were women. The mean age was 63 (range, 33-92) years. The most frequent topography was head and neck, mainly periorbital (55%), followed by diffuse presentation (45%) and perinasal/perioral regions (9%).

Conclusions: The presence of EED is described. It is a rare dermatosis, and it is more frequent in HIV-positive patients. It is characterized by skin nodules, plaques, and pruriginous rash, associated with asthenia and slight weight loss in the last year.

Commercial support: None identified.

Necrolytic migratory erythema associated with neuroendocrine tumor

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Necrolytic migratory erythema (NME) is a rare paraneoplastic dermatosis. Its association with neuroendocrine tumors is widely described in the literature, which reinforces the importance of its recognition allowing early diagnosis. We report a case of a 56-year-old male patient presenting a 5-year evolution generalized erythematous, papules and nodules in knees and elbows, associated with purpuric lesions in ankles. He also gave a history of recurrent fever, arthralgia, and mild pruritus. He had a positive family history of diabetes mellitus.

Typical histologic findings are necrolysis of the upper epidermis with vacuolated degenerative cells, usually involving all sublayers of the epidermis, with sparing of the basal layer. Necrolytic and inflammatory cells are often present around the rete ridges. The diagnosis is made by a combination of clinical presentation, histopathology, and immunohistochemistry.

Case report: A 39-year-old HIV infected male, with a CD4 count of 528, was referred for evaluation of skin lesions. The patient presented with periarticular, indurated, erythematous, papules and nodules in knees and elbows, associated with purpuric lesions in ankles. He also gave a history of recurrent fever, arthralgia, and mild pruritus. He had a positive family history of diabetes mellitus.

Typical histologic findings are necrolysis of the upper epidermis with vacuolated degenerative cells, usually involving all sublayers of the epidermis, with sparing of the basal layer. Necrolytic and inflammatory cells are often present around the rete ridges. The diagnosis is made by a combination of clinical presentation, histopathology, and immunohistochemistry.

Introduction: Erythema elevatum diastematum (EED) is a rare dermatosis, classified as chronic leukocytoclastic vasculitis with eosinophilic necrosis of the epithelium. Systemic corticosteroids were initiated, but the lesions showed improvement. Subsequent late stage lesions biopsies demonstrated characteristic findings of perivascular fibrosis and the diagnosis of nodular EED in a HIV patient was confirmed. Antiretroviral agents were initiated. Intraluminal steroids and topical dapsone 5% gel were used, with resolution of the lesions.

Discussion: Histopathologically, features of leukocytoclastic vasculitis are found in early lesions, while a fibrotic replacement of the dermis with small persistent foci of inflammation is typical of later lesions. The origin of EED is unknown, but it is often associated with streptococcal infections, hematologic abnormalities and autoimmune diseases. EED is emerging as a specific HIV-associated dermatosis, 20 cases having so far been reported in the medical literature. The stimulus for EED could be a variety of factors, including infection, drug exposure, and other pruritic conditions. The presence of EED in a HIV patient was confirmed. Antiretroviral agents were initiated. Intraluminal steroids and topical dapsone 5% gel were used, with resolution of the lesions.
Pituitariform and psoriasiform dermatological toxicities associated with PI3K pathway inhibition in cancer treatment

Daniel Bach, MD, MPH, Brigham and Women’s Hospital Dermatology, Boston, MA, United States; Sameer Gupta, Brigham and Women’s Hospital Dermatology, Boston, MA, United States; Victor Huang, MD, Brigham and Women’s Dermatology, Boston, MA, United States; Nicole Leliscuef, MD, Brigham and Women’s Dermatology, Boston, MA, United States

The phosphoinositide 3-kinase (PI3K) pathway—which has been found to have key regulatory roles in cell survival, proliferation, and differentiation—is among the most frequently altered pathway in human tumors. PI3K is an attractive target for inhibition as a therapeutic option for a range of cancers and has been an area of intense research, resulting in the first FDA-approved PI3K inhibitor, idelalisib, for leukemia and lymphoma in 2014, with many more being developed or more broadly used. Our aim is to report on a series of oncology patients treated with novel PI3K inhibitors, who developed cutaneous toxicities that have not been previously reported in the literature. In the longitudinal series of patients evaluated, they were found to present with cutaneous eruptions that varied in severity, ranging from mild dermatitis noted later in progression to severe. In the majority of these cases, they were effectively treated with topical steroids alone with only one case requiring the addition of acitretin for control. The early identification of these cutaneous eruptions and initiation of treatment for dermatology allowed for the continuation of these critical cancer therapies for these patients with oncologists. Awareness of these drug toxicities and appropriate management of these cutaneous toxicities is important in not only ensuring that life-sustaining anticancer therapies can be maintained but also improving the quality of life of these patients who are receiving these therapies. Finally, cataloging and classifying drug-induced cutaneous eruptions may potentially provide insight into the molecular mechanisms underpinning skin disorders with a similar clinical appearance to the cutaneous drug toxicities seen with these novel PI3K inhibitors.

Commercial support: None identified.

Rocky Mountain spotted fever from the dermatologist's perspective

Rechelle Toil, Wake Forest School of Medicine, Winston Salem, NC, United States; Christine Ahn, MD, private practice, Winston Salem, NC, United States; William Huang, MD, MPH, Wake Forest School of Medicine, Winston Salem, NC, United States

Background: Rocky Mountain spotted fever (RMSF), the most lethal tick-borne disease in the United States, is endemic to the southern central United States where 5 states, including North Carolina, collectively account for over 60% of reported cases. Furthermore, children less than 10 years old suffer the highest fatality rate and most frequently acquire RMSF from 22 months to 10 years. There was a predominance of female and white injury patients. We performed a retrospective chart review of breast cancer patients with a diagnosis of breast cancer during the period 2009 to 2015, 1991 (51%) were treated with at least once cycle of chemotherapy. These results suggest that breast cancer patients at highest risk for systemic steroid induced acne are on taxane-based regimens with early stage disease and are most likely to develop the reaction after their first cycle of chemotherapy.

Commercial support: None identified.

Rocky Mountain spotted fever from the dermatology consultant's perspective

Rechelle Toil, Wake Forest School of Medicine, Winston Salem, NC, United States; Christine Ahn, MD, private practice, Winston Salem, NC, United States; William Huang, MD, MPH, Wake Forest School of Medicine, Winston Salem, NC, United States

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Commercial support: None identified.

Cutaneous toxicities from chemotherapy are common and are a significant cause of morbidity in cancer patients. With the rapid development of new therapies with significant cutaneous toxicities, it is increasingly important for clinicians to be able to determine the cause of a rash. Although most physicians are aware of steroid-induced acne as a complication of systemic steroid administration in cancer patients, there are no published studies. A literature review demonstrated case reports of steroid-induced acne developing in patients treated for glomerulonephritis, Crohn disease and pseudotumor cerebri. For the retrospective and prospective studies, incidence rates were 0.62% (8/1276) in surgery patients, 1.11% (2/179) in intravenous steroid knee injections and 3.9% (2/51) in spinal cord injury patients. We performed a retrospective chart review of breast cancer patients treated at the City of Hope National Comprehensive Cancer Center. Of 3848 patients with a diagnosis of breast cancer during the period 2009 to 2015, 1991 (51%) were treated with at least one cycle of chemotherapy. Of these patients 61 were given a diagnosis of acne or steroid acne by their treating physician based on billing codes. 10 patients were found to have explicit documentation of steroid-induced acne. All patients were female with a median age of 49 (range 56-56). Half of the patients had ER+/PR+ disease and 30% had triple negative breast cancer. Ninety percent of patients had early stage disease (I or II) and 70% developed steroid-induced acne after the first cycle of chemotherapy. Dexamethasone was implicated in all but one case. All regimens contained either dexamethasone or prednisolone. We report an overall incidence of systemic steroid-induced acne of 0.05% among breast cancer patients treated with at least one cycle of chemotherapy. These results suggest that breast cancer patients at highest risk for systemic steroid induced acne are on taxane-based regimens with early stage disease and are most likely to develop the reaction after their first cycle of chemotherapy.

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Commercial support: None identified.

Rocky Mountain spotted fever from the dermatology consultant's perspective

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Commercial support: None identified.
Subcutaneous nodules with oily discharge
Laura Siahd, MD, CHUM Saint Luc Hospital, Montreal, Quebec, Canada; Bertrand Veilleux, MD, CHUM Saint Luc Hospital, Montreal, Quebec, Canada; Danielle Bouffard, MD, CHUM Notre Dame Hospital, Montreal, Quebec, Canada

An 89-year-old female presented with a one month history of skin lesions on her right ankle. She was being investigated for periarticular oedema secondary to a metastatic neoplasia of unknown origin. Physical exam revealed three nonspecific violaceous subcutaneous nodules on the right ankle that were painful on palpation. Interestingly, during punch biopsy oily material was discharged from the biopsy site. A punch biopsy was performed which revealed mixed sebaceous and lobular panniculitis with fat necrosis, ghost cells and calcium deposits compatible with pancreatic panniculitis. Amylase and lipase levels were later found to be elevated. The patient’s medical condition quickly deteriorated and it was decided to pursue palliative care with no further investigations, she died a few days later. Despite the precise nature of the neoplasia remained unknown, it can be assumed that the carcinoma was either of pancreatic origin or metastatic to the pancreas. This case shows that pancreatic panniculitis is a rare form of panniculitis associated with an underlying pancreatic condition with characteristic histologic findings. It can precede the detection of the pancreatic disease and therefore serves as an important marker of an underlying systemic disorder. Although the clinical finding of subcutaneous nodules are nonspecific, the discharge of oily material can serve a clue to the diagnosis even before biopsy results are available. Although the treatment is that of the underlying disease, octreotide can be attempted to inhibit the production of pancreatic enzymes.

Commercial support: None identified.

Sun protection knowledge and educational practices of health care professionals involved in the care of organ transplant recipients
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Background: Skin cancers are the most common malignancy among organ transplant recipients. It is estimated that within 20 years of transplantation, up to 70% of OTRs develop skin cancer. Of these, nonmelanoma skin cancers (NMSCs) are the most common cutaneous malignancies, and are related to ultraviolet radiation (UVR) exposure. In OTRs, NMSCs tend to be more aggressive and have higher recurrence and metastatic rates. Primary preventative measures are essential to modifying the risk associated with UVR exposure. Sun protection practices include daily application of sunscreen and sun avoidance behaviors. Health care professionals (HCPs) can directly impact lifestyle behaviors of OTRs, however, to date, there are no published data on sun protection education practices of HCPs involved in the care of OTRs.

Objective: To evaluate sun protection knowledge and education practices of HCPs involved in the care of OTRs.

Methods: A self-reported online survey using the Survey Monkey questionnaire tool was nationally distributed to members of the Canadian Transplant Society. Data were collected from members who provided informed consent. 40 survey questions assessed knowledge in accordance to the guidelines endorsed by the International Transplant Skin Cancer Collaborative and the Canadian Dermatology Association. Data was collected to evaluate six areas: (1) educational practices, (2) knowledge of skin cancer in OTRs, (3) knowledge of sunscreen, (4) knowledge of tanning beds and UVR, (5) knowledge of screening practices, and (6) knowledge of photosensitivity agents.

Results: Data were obtained from 66 HCPs. 71.2% of respondents reported never having received training regarding skin cancers or sun-protective practices for OTRs. 60.6% of respondents correctly identified squamous cell carcinoma as the most common cutaneous malignancy in OTRs; however, only 51% correctly identified how much more likely OTRs were to develop a SCC compared to nontransplant recipients. 46% correctly responded that sunscreen should be reapplied every 2 hours, while 20% selected every 4 hours. Of nine medications listed, 5 of them were misidentified by more than 40% of participants as not having a risk for inducing photosensitivity.

Conclusions: Our results suggest that there is a role for educating HCPs to improve sun protection counselling for OTRs. Education models could be developed to better provide accurate information that could positively alter lifestyle behaviors among OTRs.

Supported by a Canadian Dermatology Foundation Research Grant for statistical analysis.

Sweet syndrome: An epidemiological study of 20 cases in National University Hospital, Singapore
Deborah Chia Hui Chew, MBChB, National University Hospital, Singapore; Derrick Chen Wei Aw, MBBS, National University Hospital, Singapore

Background: Acute febrile neutrophilic dermatosis, first described by Robert Douglass Sweet in 1964 has been termed Sweet syndrome. The pathologic hallmark of Sweet syndrome is the involvement of the dermis with mature neutrophilic infiltrates with edema of the dermal papillae and the papillary dermis. There exist many atypical forms of Sweet syndrome.

Objective: To evaluate the clinical associations as well as preponderance of unusual clinical presentations as well as histopathologic features in National University Hospital, Singapore in and compare them with the data found on the literature.

Methods: This is a retrospective study of all the cases of Sweet syndrome over a 5.5-year period from January 2004 to May 2015. Data on their systemic disease was noted. The diagnosis was confirmed by histopathology and correlates with the literature.

Results: 21 patients were identified, their ages ranging from 39 to 93. The mean age was 47. The female to male ratio was 1.3:1. 47% of patients had idiopathic Sweet syndrome while 42% had malignancy related Sweet syndrome which was most commonly associated with acute myeloid leukemia and one patient had drug-related Sweet which was secondary to azacytadine and vorinostat. Atypical clinical features occurred in 58% of the patients. 5 patients (25%) had neutrophilic dermatosis of the dorsa hands. 4 of these patients (80%) had an underlying malignancy; 2 had acute myelogenous leukemia, one had T-cell lymphoma and one had metastatic non—small cell lung cancer. One patient had what was thought to be nonresolving abscesses which did not improve despite prolonged antibiotics. The painful pustular nodules resolved with steroids. Among patients presenting with vascular manifestations, 3 patients were associated with nonscarring alopecia. The lower limbs was the most commonly involved area (68%). Atypical histologic features occurred in half of the patients. 28% of the patients had the neutrophilic panniculitis subtype, while 19% had the histiocytoid variant and 4% had Sweet syndrome associated leukemia cutis. The histiocytoid subtype was most commonly associated with malignancy. Vasculitis was concomitantly seen in 3 patients. One patient presented with atypical clinical features with the concomitant presence of vasculitis and nodules with ulceration and vesicles with a varicella zoster—like appearance. 2 patients had neutrophilic infiltrate in the subcutis.

Discussion: The unusual histopathologic features were commonly encountered in our cohort of patients. Despite the female preponderance, the ratio of females to males in reported literature was 4:1 while the ratio in our study was 1.3:1. Previous studies have shown the upper limb to be the commonest site of Sweet syndrome, while this study shows a predominance of it in the lower limbs. This is the first time the occurrence of Sweet syndrome has been documented in Singapore.

Case: A 25-year-old Afro-Caribbean female was referred to the dermatology clinic with worsening exudative intriginous erosions causing debilitating pain and recurrent infections. Past medical history included severe CD, which had necessitated a total colectomy at age 18. She had developed psychosis in response to prior steroid treatment, and displayed significant behavioral problems in addition. Physical examination was challenging, but revealed an obese individual with deep, sloughy linear erosions demonstrating the ‘knife-cut’ sign beneath the skin. Despite prolonged antibiotics, the painful pustular nodules failed to resolve. A diagnosis of Sweet syndrome was made jointly with colleagues in gastroenterology. Treatment with adalimumab was commenced during a prolonged in-patient admission, with a marked improvement in skin status after 6 weeks. She has not had any episodes of infection over the 6 months since commencement.

Discussion: The commonest cutaneous manifestations of CD involve direct extension of intestinal disease, giving features such as perianal skin tags, fissures or fissures. Also common are nongranulomatous cutaneous reactions to active intestinal disease, such as erythema nodosum and pyoderma gangrenosum. However, the occurrence of noncoating granulomatous lesions characteristic of CD at sites separate from the gastrointestinal tract is rare, and is termed metastatic CD. It can occur in both active and quiescent intestinal disease. Linear erosions constituting the ‘knife-cut’ sign is one such presentation, for which the differential diagnosis must always include HSV infection. Case reports have described some success with therapies including topical and systemic steroids, metronidazole, alendrosumab and infliximab.

Commercial support: None identified.

The ‘knife-cut’ sign—Always consider Crohn’s
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Background: Cutaneous manifestations occur in approximately 20-40% of Crohn’s Disease (CD) patients. There is increasing recognition that CD could represent a multisystem disorder whose clinical manifestations arise from epithelial barrier dysfunction at different sites.

Case: A 25-year-old Afro-Caribbean female was referred to the dermatology clinic with worsening exudative intriginous erosions causing debilitating pain and recurrent infections. Past medical history included severe CD, which had necessitated a total colectomy at age 18. She had developed psychosis in response to prior steroid treatment, and displayed significant behavioral problems in addition. Physical examination was challenging, but revealed an obese individual with deep, sloughy linear erosions demonstrating the ‘knife-cut’ sign beneath the skin. Despite prolonged antibiotics, the painful pustular nodules failed to resolve. A diagnosis of Sweet syndrome was made jointly with colleagues in gastroenterology. Treatment with adalimumab was commenced during a prolonged in-patient admission, with a marked improvement in skin status after 6 weeks. She has not had any episodes of infection over the 6 months since commencement.

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Commercial support: None identified.
Background: Stevens-Johnson syndrome/toxic epidermal necrolysis (TEN) can complicate the clinical course of lupus erythematosus. They represent severe side effects. With the accumulation of promising results for the use of tofacitinib in AA therapy, we recommend that further study be required to establish safety and confirm efficacy.

Commercial support: None identified.

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The use of cyclosporine for Stevens–Johnson syndrome and toxic epidermal necrolysis: The University of Louisville experience

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Background: Stevens–Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) are severe cutaneous adverse reactions (SCARs) that are most commonly caused by a drug. SJS/TEN are rare and there are few randomized controlled trials regarding treatment. Management is typically supportive care in an ICU or burn unit. The use of systemic agents is controversial and there are only observational data regarding their efficacy. Some investigators have reported success with IVIG, corticosteroids, tumor necrosis factor-α inhibitors, and etanercept and adalimumab. We report four cases of SJS or TEN that were treated with cyclosporine.

Observations: Patient 1: A 23-year-old woman who presented with a one-day history of erythematous papules, vesicles and bullae on her face, conjunctival injection and oral erosions. Patient 2: A 77-year-old male who was transferred from another facility with a five-day history of erythematous macules and patches with desquamation on his arms, abdomen, and groin as well as erosions with hemorrhagic crusting on his face and oral mucosa. Patient 3: A 62-year-old male who was transferred from another facility with a five-day history of erythematous macules and patches with desquamation on his arms, abdomen, and groin as well as erosions with hemorrhagic crusting on his face and oral mucosa. Patient 4: A 31-year-old male who presented with a tender erythematous plaques on his back erosions in his groin, rhagic crusting on his face and oral mucosa. Patient 1 and 2 were treated with cyclosporine: the respective doses were 3 mg/kg/day divided twice daily for four days, 5 mg/kg/day divided twice daily with transition to comfort care only on day two, 5 mg/kg/day divided twice daily for four days, and 5 mg/kg/day divided twice daily for four days. Patients 1 and 3 were treated with cyclosporine: the respective doses were 3 mg/kg/day divided twice daily for four days, and 5 mg/kg/day divided twice daily for four days. Patients 1, 2 and 4 were treated with cyclosporine: the respective doses were 3 mg/kg/day divided twice daily for four days, 5 mg/kg/day divided twice daily with transition to comfort care only on day two, 5 mg/kg/day divided twice daily for four days, and 5 mg/kg/day divided twice daily for four days.

Comment: Several retrospective studies of SJS/TEN have reported a decreased mortality rate with cyclosporine as compared to IVIG or systemic corticosteroids. The true effectiveness of all of these agents remains unclear, but there have been increased reports of the efficacy of cyclosporine. We offer four more cases to add to the literature in which cyclosporine appears to have decreased the time to re-epithelialization and mortality.

Commercial support: None identified.

3672

Toxic epidermal necrolysis—like presentation of acute cutaneous lupus erythematosus: A report of 2 cases

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Background: Stevens–Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN) can complicate the clinical course of lupus erythematosus. They represent disease flare in the absence of any invoking drugs. We report two previously-diagnosed patients of systemic lupus erythematosus (SLE) who presented with TEN-like acute cutaneous lupus erythematosus (ACLE).

Case reports: Patient 1 was a 36-year-old female diagnosed with SLE 8 years ago. She was noncompliant to her medications consisting of oral steroids, azathioprine, and hydroxychloroquine. She had stopped these medications for 2 months prior to presentation to us. Cutaneous examination revealed multiple atypical target lesions and skin detachment affecting 35-40% of body surface area. Lesions were distributed predominantly photodistributed. There was also intolerable oral aphthous ulcers. Investigations revealed a markedly elevated anti-dsDNA antibody titer compared with her previous values, hypocomplementemia, elevated ESR. Skin biopsy revealed apoptotic pan-epidermolysis. In patient management with oral steroids, photoprotection and supportive measures was done. She completely recovered within 2 weeks and was discharged in good condition. Patient 2 was a 25-year-old female diagnosed with SLE 1 year ago. She also had grade IIa lupus nephritis. She was irregular in her treatment with oral corticosteroids, azathioprine, and hydroxychloroquine. She presented to the emergency department with fever and rash of 1 day duration. On further questioning, she admitted to discontinuation of her SLE medications for 15 days prior to presentation. Examination revealed multiple flat atypical target lesions on her face, neck, trunk, and extensions of upper limbs. On day 2 of admission sheets of the epidermis detached involving 50-60% of her body surface area. She also had oral mucositis. Her anti dsDNA antibody titers were insignificantly raised compared with her previous values. Skin biopsy revealed apoptotic pan-epidermolysis. She was treated with oral steroids along with supportive care and photoprotection. She recovered within 3 weeks.

Conclusion: Toxic epidermal necrolysis-like presentation of SLE is an uncommon manifestation ofACLE. The absence of invoking drugs, predominant photodistribution, and positivity of mucosal involvement along with serological parameters aid in differentiating it from drug-induced TEN. These lesions indicate activity of the underlying lupus and call for more aggressive management of patients.
3411

TPN-associated zinc deficiency
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Report of a case: A 49-year-old white man with a 3-month history of poorly differentiated small bowel adenocarcinoma presented with a 2-week history of crusted erosions of the face and perineal area. He recently had been diagnosed with T3N3Mx adenocarcinoma and had undergone resection of a significant part of the small bowel. His abdominal wall defect was left open after surgery due to poor wound healing. After 10 weeks on total parenteral nutrition (TPN), he developed painful, burning, crusted erosions over most of his face with accentuation over the central face. Physical exam revealed eroded plaques over the lateral metacarpophalangeal joints and perianally. Bullous plaques were present on the knees and elbows. Additionally, there were two deep erythematous vesicles over the ventral interphalangeal joints of the thumbs. Other symptoms included generalized fatigue and four to five stools daily. Punch biopsies were performed of the right cheek and left elbow.

Pathology: The biopsy specimen from an erythematous erosion on the cheek showed epidermal pallor with parakeratosis and a diminished granular layer. The specimen from a pustular plaque on the left elbow exhibited focal full thickness epidermal necrosis, with neutrophils in the blister cavity. Both biopsies were compatible with zinc deficiency.

Clinical course: The patient’s zinc level was found to be 29 mcg/dl (normal 56-134 mcg/dl) and alkaline phosphatase level was low, both of which were suggestive of zinc deficiency. Prior to his dermatology appointment, he was given IV copper and iron supplementation. After seeing dermatology, these were discontinued and the patient’s TPN was supplemented with an additional 10 mg of zinc daily. Within 5 days of initiating zinc supplementation, the patient experienced significant improvement of his facial erythema and crusting, as well as his diarrhea and fatigue.

Commercial support: None identified.

LYMPHOMA, CUTANEOUS/MYCOSIS FUNGOIDES

3211

A bibliometric analysis of the 100 most influential publications in cutaneous T-cell lymphoma
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Background: Citation counts provide a useful measure for analyzing the scientific impact of a journal article. Oldest articles, however, have a higher likelihood of gaining more citations given the length of its citable period. Citation index values, on the other hand, divide the total number of citations by the number of years since the article’s publication. To date, the most influential publications in the multidisciplinary discipline of cutaneous T-cell lymphoma (CTCL) has yet to be formally identified. Herein, we report and analyze the 100 most cited publications in CTCL.

Objective: This bibliometric study aims to identify the 100 most cited articles within the CTCL peer-reviewed literature and analyze each article’s individual characteristics.

Methods: The 100 most commonly cited articles between 1970 and 2015 were identified using the Web of Science electronic database. The terms cutaneous T-cell lymphoma, mycosis fungoides, and Sezary syndrome were used as search criteria. Each of the articles’ citation count, citation index, journal source, publication year, analyzed and country of origin were compiled and analyzed.

Results: The 100 most commonly cited articles were published in 37 journals, with 18 articles published in Blood. These consisted of 76 original investigations, 22 reviews and 9 proceedings paper. Tied at second, the Journal of the American Academy of Dermatology and the Journal of Clinical Oncology each contributed 9 articles. The most cited article was published in the Proceedings of the National Academy of Sciences of the United States of America/Biological Sciences with a total of 3905 citations, while the article with the highest citation index at 129.82 was published in Blood. The year 2007, which tied with 1998, recorded the highest number of cited CTCL articles, partly due to the increased interest with histone deacetylase inhibitor at that time. The majority (72%) of the articles were from institutions within the United States, with the National Cancer Institute being the most prolific of institutions contributing 22 articles.

Conclusion: This study identified the most significant publications in CTCL within the last 45 years. Our results highlight the impact of colleagues’ work and seminal advances in the realm of CTCL.

Commercial support: None identified.

3063

A case of folliculotrophic mycosis fungoides masquerading as acne
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Background: Mycosis fungoides (MF) is a common form of cutaneous T-cell lymphoma classically characterized by conspicuous patches and plaques. Rarely it exhibits predilection for hair follicle and eccrine gland infiltration. This is termed folliculotrophic mycosis fungoides. This is a rare variant of MF with neoplastic T-lymphocytes infiltrating the hair follicles, often sparing the epidermis. This entity can have a variable clinical presentation presenting a diagnostic challenge. Here, we will discuss one clinical presentation.

Case report: A 50-year-old African American male presented with a 6-month history of new onset acniform lesions on the face, postauricular scalp and chest. Previous therapy included clindamycin gel, benzoyl peroxide gel, and doxycycline with no improvement in the lesions. Dermatologic exam revealed cystic papules, pustules and comedo-like lesions in a random distribution on the face, postauricular scalp, and chest. Though the eruption appeared acniform, the history as well as the clinical picture did not support a diagnosis of acne. Biopsy was performed for definitive diagnosis, and a diagnosis of folliculotrophic MF was made.

Discussion: Folliculotrophic MF can present a diagnostic challenge both clinically and histopathologically. Our patient was misdiagnosed as having acne and incorrectly treated for 6 months before biopsy aided in determining the correct diagnosis. According to a WHO consensus report, the diagnosis of folliculotrophic MF is worse than that of tumor stage classical MF with one study showing a 10-year survival rate of only 26%. The variability in the clinical presentation of folliculotrophic MF can often lead to delays in diagnosis and treatment. Effort expended to diagnose this condition at earlier stages can help improve survival amongst patients. This case report highlights clinical features that should alert the clinician in considering folliculotrophic MF in case the disease entity follows an atypical course.

Commercial support: None identified.
A case of primary cutaneous follicle center lymphoma in a young man
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A previously healthy 16 yo male presents with a 2 year history of an asymptomatic violaceous plaque on the chest. There was no epidermal change and lesion had never drained fluid. Over the course of 6 months, he developed satellite papules around the larger plaque. He had been systemically well throughout.

Investigations: Initial biopsy performed was reported as pseudolymphoma. Routine labs were unremarkable as was Borella serology. He saw plastic surgery and had an excisional biopsy of the larger plaque. Specimens were then sent for flow cytometry and for opinions in Austria and Vancouver. The final diagnosis was follicle center B-cell lymphoma (B cells were positive for CD10, and many of the cells are positive for BGL6). Further studies including more extensive blood work and CT scan of chest, abdomen and pelvis were all negative.

Diagnosis: On pathology, the dense infiltration of B cells with a germinal center phenotype is consistent with a diagnosis of primary cutaneous follicle center cell lymphoma and flow cytometry revealed an increased number of polyclonal B cells. Clinical and radiographic correlation confirmed this to be primary cutaneous disease.

Treatment: The patient was initially treated with intralesional corticosteroid injections when the diagnosis was pseudolymphoma. The satellite papules flattened out with the intralesional injections, but the larger plaque remained. After the repeat biopsy, he was seen by pediatric hematology oncology and after case discussion it was decided to offer a trial of rituximab. The patient was agreeable and received rituximab infusion which was tolerated well. Following this, at a 6 month visit, all plaques and papules were completely flat and no longer violaceous. The lesions remain flat 2 years following infusion.

Conclusion: This is a case of a rare presentation of primary cutaneous follicle center lymphoma in an otherwise healthy young man who was treated successfully with rituximab.

Commercial support: None identified.

2752
A rare malignancy not to miss: A case and review of extranodal NK/T-cell lymphoma, nasal type
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A 20-year-old previously healthy Hispanic male was admitted to the hospital with 5 months of increasing left facial and periorbital swelling and palatal necrosis beginning as a hole in his palate. Four months prior to admission, he was treated with broad-spectrum intravenous antibiotics for presumed cellulitis with sinus extension without improvement. He subsequently underwent several sinus debridements without clinical response. Intraoperative biopsies were nondiagnostic, and numerous attempts at preoperative biopsies were unrevealing. A diagnosis of extranodal NK/T-cell lymphoma was established by histologic examination after the patient experienced minor trauma to the scalp, beginning as a small red “bump” and later progressing to large, infiltrative plaques. She denied any symptoms in these areas—no bleeding, pain, or pruritus. She was started on broad spectrum antibiotics out of concern for cellulitis, but these had not been helpful. A 4 mm punch biopsy was performed on the forehead. Pathology was consistent with plasma cell myeloma, with diffuse CD15 positivity, and predominant IgG kappa expression by in situ hybridization. Identical plasma cell abnormalities were subsequently found upon bone marrow aspirate. Subsequent treatment consisted of stem cell transplantation and chemotherapy. However, due to numerous comorbidities and generally poor health, the patient elected not to pursue further therapies and she died within three months. Cutaneous involvement in multiple myeloma is quite rare and typically occurs in late stage disease, reflecting an increased tumor cell burden. This is generally a sign of poor prognosis, and most patients die within 12 months after the diagnosis. Patients are often found to have extensive plasmacytic infiltration of multiple organs at the time of death. While various forms have been reported, IgG multiple myeloma is the most frequent subtype to present with cutaneous involvement. Cutaneous involvement in multiple myeloma is one of four known neoplasms involving plasma cells, which also include extramedullary plasmacytoma, without multiple myeloma, solitary plasmacytoma of bone, and plasma cell leukemia. All four types may affect the skin, either by direct extension to the skin from underlying bone lesions or metastatic lesions without contiguous bone involvement. When treatment is indicated, therapy generally includes autologous bone marrow transplant, chemotherapy, radiation therapy, and surgical excision of plasma cell infiltrates when possible.

Commercial support: None identified.

3844
A red head with a plethora of plasma cells
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The dermatology inpatient consult service was asked to provide assistance with a 69-year-old woman admitted for newly onset, diffuse, bright red plaques involving the entire scalp and forehead. The patient had a medical history of multiple myeloma treated one year prior with chemotherapy including bortezomib, cyclophosphamide and dexamethasone. Patient reported that the plaques began after she experienced minor trauma to the scalp, beginning as a small red “bump” and later progressing to large, infiltrative plaques. She denied any symptoms in these areas—no bleeding, pain, or pruritus. She was started on broad spectrum antibiotics out of concern for cellulitis, but these had not been helpful. A 4 mm punch biopsy was performed on the forehead. Pathology was consistent with plasma cell myeloma, with diffuse CD15 positivity, and predominant IgG kappa expression by in situ hybridization. Identical plasma cell abnormalities were subsequently found upon bone marrow aspirate. Subsequent treatment consisted of stem cell transplantation and chemotherapy. However, due to numerous comorbidities and generally poor health, the patient elected not to pursue further therapies and she died within three months. Cutaneous involvement in multiple myeloma is quite rare and typically occurs in late stage disease, reflecting an increased tumor cell burden. This is generally a sign of poor prognosis, and most patients die within 12 months after the diagnosis. Patients are often found to have extensive plasmacytic infiltration of multiple organs at the time of death. While various forms have been reported, IgG multiple myeloma is the most frequent subtype to present with cutaneous involvement. Cutaneous involvement in multiple myeloma is one of four known neoplasms involving plasma cells, which also include extramedullary plasmacytoma, without multiple myeloma, solitary plasmacytoma of bone, and plasma cell leukemia. All four types may affect the skin, either by direct extension to the skin from underlying bone lesions or metastatic lesions without contiguous bone involvement. When treatment is indicated, therapy generally includes autologous bone marrow transplant, chemotherapy, radiation therapy, and surgical excision of plasma cell infiltrates when possible.

Commercial support: None identified.
Blastic plasmacytoid dendritic cell neoplasm (BPDCN) is a rare hematologic malignancy derived from the precursors of plasmacytoid dendritic cells. BPDCN is an aggressive malignancy that presents with cutaneous lesions and may have bone involvement. We present 3 cases of BPDCN with various clinical manifestations to highlight the spectrum of disease presentation and its novel treatment with SL-401 (interleukin 3 receptor antibody). Patient 1, a 45-year-old woman, presented with a quarter-sized purple plaque on her left dorsal forearm. Biopsy was consistent with BPDCN with characteristic expression of CD56 and CD123. Her bone marrow biopsy was negative for infiltration. Patient 2, a 72-year-old man, presented with a violaceous cutaneous eruption that involved his scalp, forehead, periorbital area bilaterally, and mid to upper back. Bone marrow biopsy demonstrated a high percentage of blasts and atypical cells. Flow cytometry of both the bone marrow and lymph nodes was consistent with a diagnosis of BPDCN. Patient 3, a 64-year-old man, presented with a 2 month history of numerous nodules with eschars on the trunk and face, with other smaller nodules on the bilateral upper arms, chest and back. Bone marrow biopsy revealed a high number of blasts and a skin biopsy demonstrated an atypical dermal lymphoid infiltrate, both consistent with a diagnosis of BPDCN. The flow cytometry was also positive for CD4, CD56, and CD123 supporting his presentation. All 3 patients were found to be candidates for SL-401, a targeted therapy directed at the interleukin-3 receptor which is highly expressed in BPDCN. Patient 3 has been receiving ongoing treatment, while patients 1 and 2 are in the process of trial enrollment.

Commercial support: None identified.

Blastic plasmacytoid dendritic cell neoplasm: An unusual presentation
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A 69-year-old man with a 20 year history of chronic lymphocytic leukemia (CLL) and a six-year history of mantle cell lymphoma (MCL) presented with a solitary lesion on his left leg. The patient had received multiple courses of chlorambucil for treatment of CLL and rituximab as well as CHOP (cyclophosphamide, doxorubicin, vincristine, prednisone) for treatment of MCL. Both conditions were in remission at the time of presentation. Physical examination revealed a 4x4 cm red to violaceous dermal nodule on the left anterior lower leg. Biopsy of the lesion demonstrated a sheet-like pattern and highly atypical lymphoid cells in the dermis and subcutaneous fat. The tumoral cells were blastoid in appearance and possessed high nuclear to cytoplasmic ratios, vesicular chromatin, and large, irregular and prominent nucleoli. Multiple apoptotic bodies and mitoses were evident. Immunohistochemical staining for CD2, CD4, CD56, BCL-2, BCL-6, MUM-1, and cyclin D1 were positive in lesional cells. Sox-11, TdT, and CD10 were negative. Break-apart FISH for cyclin D1 was positive for the patient's oncologist, she elected to pursue palliative measures and passed away within 2 months of diagnosis. EBV-positive plasmablastic lymphoma is a rare but aggressive hematologic malignancy with postgerminal center B cell differentiation to a plasmablastic lineage. It is often associated with immunodeficiency, such as from HIV infection or age-related immune functional decline. This systemic disorder has overlapping features of diffuse large B cell lymphoma and plasmablastic plasma cell myeloma. An 84-year-old woman was hospitalized with a 2 month history of progressive violaceous papules and nodules on the upper chest and back. They were accompanied by fatigue and cough. Complete blood cell count, chemistry panel, and infectious studies were without abnormalities. CT angiography of the chest showed bilateral pulmonary nodules and enlarged mediastinal lymph nodes. Histopathology from a skin biopsy revealed a nodular infiltrate throughout the reticular dermis, composed of large monomorphic cells with plasmacytic features. There were numerous mitotic figures throughout the lesion. Immunohistochemistry revealed strongly expressed CD79a, demonstrated kappa light chain restriction, and had partial expression of CD38 and CD20. In situ hybridization for EBV was diffusely positive. A diagnosis of plasmablastic lymphoma was made. After discussion with the patient's oncologist, she elected to pursue palliative measures and passed away within 2 months of diagnosis. EBV-positive plasmablastic lymphoma is a rare but aggressive hematologic malignancy. Clinically, patients are most likely to present with nasal/oral cavity, lymph node or GI tract involvement. Cutaneous involvement is rare, occurring in less than 6 percent of patients. The immunophenotype is one of postgerminal center plasmablast lineage. There is heterogeneity, but the majority express plasma cell markers CD38, CD138 and MUM1, while fewer express B cell markers CD20 and CD22. EBV expression is found in 50% of EBV negative cases and is associated with a slightly better prognosis. The median survival is 19 months for this lymphoma, underscoring the aggressive nature.

Commercial support: None identified.

Cutaneous involvement with Epstein-Barr virus–positive plasmablastic lymphoma
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Plasmablastic lymphoma is an aggressive hematologic malignancy with postgerminal center B cell differentiation to a plasmablastic lineage. It is often associated with immunodeficiency, such as from HIV infection or age-related immune functional decline. This systemic disorder has overlapping features of diffuse large B cell lymphoma and plasmablastic plasma cell myeloma. An 84-year-old woman was hospitalized with a 2 month history of progressive violaceous papules and nodules on the upper chest and back. They were accompanied by fatigue and cough. Complete blood cell count, chemistry panel, and infectious studies were without abnormalities. CT angiography of the chest showed bilateral pulmonary nodules and enlarged mediastinal lymph nodes. Histopathology from a skin biopsy revealed a nodular infiltrate throughout the reticular dermis, composed of large monomorphic cells with plasmacytic features. There were numerous mitotic figures throughout the lesion. Immunohistochemistry revealed strongly expressed CD79a, demonstrated kappa light chain restriction, and had partial expression of CD38 and CD20. In situ hybridization for EBV was diffusely positive. A diagnosis of plasmablastic lymphoma was made. After discussion with the patient’s oncologist, she elected to pursue palliative measures and passed away within 2 months of diagnosis. EBV-positive plasmablastic lymphoma is a rare but aggressive hematologic malignancy. Clinically, patients are most likely to present with nasal/oral cavity, lymph node or GI tract involvement. Cutaneous involvement is rare, occurring in less than 6 percent of patients. The immunophenotype is one of postgerminal center plasmablast lineage. There is heterogeneity, but the majority express plasma cell markers CD38, CD138 and MUM1, while fewer express B cell markers CD20 and CD22. EBV expression is found in 50% of EBV negative cases and is associated with a slightly better prognosis. The median survival is 19 months for this lymphoma, underscoring the aggressive nature.

Commercial support: None identified.
Cutaneous T-cell lymphoma misdiagnosed as lipodermatosclerosis

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Background: Lipodermatosclerosis is an inflammation of subcutaneous fat of the lower legs due to chronic venous insufficiency which is classically manifest as an ‘inverted champagne bottle’. Mycosis fungoides (MF) is a T-cell lymphoma primarily of the skin that manifests as patches, plaques, tumors or erythroderma. Occasionally, MF can mimic a pigmented purpuric dermatosis. Herein, we describe an obese woman with a 2 year history of a persistent indurated plaque on the right calf misdiagnosed as lipodermatosclerosis.

Observation: A 64-year-old woman presented with an indurated, erythematous, nontender plaque on her right leg. There was associated aching pain and numbness, but no peripheral edema was noted and her ankle was not involved. She had previously been evaluated by her primary care physician, a vascular surgeon, a local dermatologist and a dermatologist at a tertiary referral center, all of whom diagnosed lipodermatosclerosis and suggested topical corticosteroids and compression. The vascular systems were evaluated and the patient was referred to an oncologic surgeon for a biopsy, but biopsy was not performed due to concern about poor healing. The dermatologic consultation had noted ‘eczematous’ changes on the trunk and thighs which responded moderately to topical corticosteroids. Vascular studies showed venous insufficiency in both legs, but worse on the unaffected leg. An incisional biopsy of the right distal calf was performed despite the patient’s concerns about healing which revealed a monomorphic population of atypical predominantly dermal-based lymphocytes that were small to medium in size and did not show significant anaplasia. Staining found CD3 and CD4 positive T cells with a diminished expression of CD7 and no CD30 expression. A clonal T cell receptor gene rearrangement was also noted. Biopsy of the right inguinal lymph node revealed a monomorphic population of atypical lymphocytes with a diminished expression of CD7 and no CD30 expression. A clonal T cell receptor gene rearrangement was also noted. Biopsy of the right inguinal lymph node revealed a monomorphic population of atypical lymphocytes. The patient was diagnosed with stage 2B MF and treated with radiation and oral bexarotene.

Comment: This case highlights another potential manifestation of MF and emphasizes the critical role that biopsy plays when multiple diseases share similar clinical manifestations.

3055 Diagnosis of subcutaneous panniculitis-like T-cell lymphoma in a patient with multiple sclerosis: Therapeutic challenges

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Background: Subcutaneous panniculitis-like T-cell lymphoma (SPTCL) is a cytotoxic cutaneous T-cell lymphoma (CTCL). 15% of SPTCL cases are complicated by a systemic involvement, which can include neurologic symptoms, further complicating a diagnosis of HLH. This case challenges the clinician to decide the approach to treatment that is expected to provide the highest benefit-to-risk ratio in concurrent MS and SPTCL.

Objective: To describe the challenges in management of patients diagnosed with SPTCL.

Methods: This study was conducted on 15 patients with histopathologic evidence of folliculotropism who diagnosed with MF at one institution.

Results: The patients were between 32 and 68 years of age. The spectrum of clinical diagnosis was broad and included rosacea, chronic deep folliculitis, large cell acanthoma, lichen planus-like keratosis, exfoliative dermatitis, and Ojuki’s papulover- ythroderma. Thirteen patients had early-stage MF (A or B), and two patients had late-stage MF (IVA). In all patients, the atypical lymphocytic infiltrate had a perifollicular distribution. The CD4/CD8 ratio was > 10 in 8 patients. PCR detection of TCR y gene rearrangement was conducted in 10 patients and showed monoclonality in 5 patients. Thirteen patients were treated with UVA-1, PUVA or PDT. Patients with early-stage MF had complete remission. Otherwise, patients with late-stage MF had poor response to the therapy.

Conclusion: MF is a variant of MS that appears to have a variable clinical presentation. Therefore, biopsy is required to confirm the diagnosis of MF, and UVA-1, PUVA, and PDT are clinically effective treatment in patients with early-stage MF.

Commercial support: None identified.

3746 Intravascular diffuse B-cell lymphoma revisited

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Introduction: Intravascular lymphoma was originally described in 1959 by Pfleger and Tappeiner under the term systemic endotheliotropic lymphoma. Many synonyms including malignant angioendotheliotoma, angioendotheliotoma proliferans systemica, proliferating endotheliotoma, neoplastic endotheliosis, angio-endotheliotropic lymphoma and intravascular lymphomatosis have predated the current nomenclature. Intravascular diffuse large B-cell lymphoma is now part of the WHO-EORTC 2005 and corresponding WHO 2008 classification of B-cell lymphoma with primary cutaneous manifestations. Classically this entity involves the skin and central nervous in a polymorphous manner but extremely variable presentations and manifestations has been described.

Observation: An 88-year-old male with a history of recent stroke and a stinging-like pruritus of 6 months duration. There were no B symptoms and a negative review of systems. A discrete erythematous papule biopsy revealed and unexpected intravascular B-cell lymphoma infiltrate. The clinical presentation was negative aside from a second asymptomatic stroke. Symptomatic treatment for the pruritus and clinical follow up was undertaken with no chemotherapy for the time being.

Discussion: Intravascular B-cell lymphoma has been quoted as a very rare disease. Unexplained neurologic symptoms with various skin finding are classic for this diagnoses. Two key histological differential diagnoses are benign reactive angioendotheliotoma and primary cutaneous CD30+ anaplastic large cell lymphoma with intracytoplasmic spread. The former is characterized by endothelial cell occluding vessels and the latter by CD30-positive lymphocytes with lytic spread. Immunohistochemistry with D2-40 can differentiate this entity. Random skin biopsies have been reported of being high yield for intravascular lymphoma and was in our case beneficial. Intravascular lymphoma has a high rate of fatal outcome if generalized and less so if restricted to the skin. A high index of suspicion is important for this uncommon cutaneous lymphoma.

Commercial support: None identified.
Loss of CD30+ expression after treatment with brentuximab vedotin (BV) in a patient with anaplastic large cell lymphoma: A new phenomenon

3585

Anaplastic large cell lymphoma (ALCL), which accounts for about 3% of all adult lymphomas, is a rare aggressive T-cell lymphoma.

Case: A 44-year-old African American male with stage IV ALCL. CD30+ and ALK-presented with a left upper cutaneous lip mass. He was treated with chemotherapy for 6 cycles and brentuximab vedotin (BV) for 3 doses. Remaining nodules of the left chest and left neck were biopsied and showed CD30-positive lymphoproliferative disorder. He continued to receive BV therapy and re-presented for a 3-week history of growing and tender nodules on the chest and back.

Workup: Biopsies of both chest and back lesions showed a diffuse dermal infiltrate of medium-to-large sized atypical lymphocytes with frequent mitotic figures, admixed with scattered eosinophils. The atypical cells were CD3 positive and CD4 and CD8 double negative T cells. They were negative for TCR-gamma and CD56 immunoscytometry was also negative. Using both histopathologic and clinical features, the diagnosis of MF was confirmed, showing widespread subepidermal blistering with CD3+ atypical lymphocytes cells with epidermotropism, folliculotropism, intra and subepidermal clefts filled with atypical lymphocytes. Biopsy from ulcer margin showed epidermal ulceration with CD3+ atypical cells in dermis. Direct immunofluorescence (DIF) was negative for IgG, IgA, IgM and C3 antibodies at basement membrane zone excluding autoimmune disease. Hence, our case fulfilled the criteria for diagnosing MF bullosa including clinical presentation, characteristic histopathology, negative DIF and no other possible cause of vesiculo-bullous lesions.

Conclusion: Our case is rare presentation of MF bullosa which itself is a rare, unusual variant of mycosis fungoides. The important differential diagnosis are bullous pemphigoid, bullous pyoderma gangrenosum, mycosis fungoides, primary cutaneous anaplastic large T-cell lymphoma and tertiary syphilis.

Mycosis fungoides presenting as purpura annularis telangiectoides of Majocchi

3279

Mycosis fungoides (MF) is the most common cutaneous T-cell lymphoma that typically affects older adults. Classically, MF presents as erythematous annular patches and red-brown eczematous and psoriasiform plaques with a predilection for sun protected areas. We present a rare case of mycosis fungoides presenting as purpura annularis telangiectoides of Majocchi in a 66-year-old white male. The patient initially presented with a one-year history of a progressive asymptomatic eruption of his buttocks and groin. His medical history was significant for hypertension and his only medication was valsartan-HCTZ. Physical exam revealed diffuse and confluent red-brown oval patches with central clearing and peripheral punctate petechiae in a Medical Education and Research, Chandigarh, India; Vinay Keshavmurthy, MD, Post Graduate Institute of Medical Education and Research, Chandigarh, India

Introduction: Mycosis fungoides (MF) is the most common cutaneous T-cell lymphoma. Classically it present as disseminated eruption of erythematous, itchy patches which gradually progress to plaques, nodules and tumors. But several unusual variants of MF have been reported, mycosis fungoides bullosa is one such rare presentation which has poor prognosis. Since its description in 1871, less than 20 cases of MF bullosa have been published and there is only one case of MF bullosa mimicking pyoderma gangrenosum. We report a first case of MF bullosa from our country and second case of MF bullosa with pyoderma gangrenosum like presentation along with vesiculo-bullous and erythematous infiltrated plaques of MF worldwide.

Case report: A 55-year-old male presented with two well-defined, ulcerated plaques covered with necrotic slough, one in the left submandibular region and another on the chest. He also had multiple annular to well defined, erythematous, infiltrated plaques on scalp, face, extremities, trunk and tense fluid-filled bullae on palms and soles. Some of the crusted plaques showed vesiculation on the surface. About 7 months back, it started as asymptomatic clear fluid-filled pea sized vesicles on apparently normal skin of the chest, these vesicles ruptured to form erosions discharging fluid, pus and blood and new lesions appeared to present state. Patient was initially treated on the lines of pemphigus vulgaris by a local practitioner. But histopathologic examination of skin biopsies from ulcer, tense bullae and annular plaques confirmed the diagnosis of MF bullosa, showing widespread subepidermal bullous blistering with CD3+ atypical lymphocytes cells with epidermotropism, folliculotropism, intra and subepidermal clefts filled with atypical lymphocytes. Biopsy from ulcer margin showed epidermal ulceration with CD3+ atypical cells in dermis. Direct immunofluorescence (DIF) was negative for IgG, IgA, IgM and C3 antibodies at basement membrane zone excluding autoimmune disease. Hence, our case fulfilled the criteria for diagnosing MF bullosa including clinical presentation, characteristic histopathology, negative DIF and no other possible cause of vesiculo-bullous lesions.

Conclusion: Our case is rare presentation of MF bullosa which itself is a rare, unusual variant of mycosis fungoides. The important differential diagnosis are bullous pemphigoid, bullous pyoderma gangrenosum, mycosis fungoides, primary cutaneous anaplastic large T-cell lymphoma and tertiary syphilis.

Mycosis fungoides bullosa with pyoderma gangrenosum-like presentation: Rarest of the rare case

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Commercial support: None identified.
Peripheral T-cell lymphoma, not otherwise specified with prominent cutaneous involvement

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A 39-year-old African American man presented to our emergency department with an approximately 1-year history of painful enlarging skin nodules. Examination revealed multiple, variably sized, indurated skin nodules, with central ulceration and yellow-brown crusting distributed on the scalp, face, umbilicus, buttocks, bilateral thighs and right arm. In addition, there was palpable matted lymphadenopathy in both the axillae and groin. Multiple skin biopsies and an excisional lymph node biopsy from the right axilla were obtained. Histopathological analysis of the skin revealed a nodular lymphocytic infiltrate filling the dermis, which consisted of many large and atypical lymphocytes. No significant epidermotropism was identified though there were some focal areas of perifollicular necrosis. A T-cell gene rearrangement study ruled out malignant lymphoma. A population of cells in further immunostaining was consistent with a mature CD4+ T-cell lymphoma. Similar analysis together with flow cytometry of the sampled lymph node revealed identical morphological and immunophenotypic features of lymphoma as detected in the skin. A staging positron emission tomography computed tomography (PET-CT) scan revealed intense fluorodeoxyglucose-positron emission tomography - computed tomography, and bone marrow biopsy. Work-up included normal findings in complete blood cell count, differential count, white blood cell count, and C-reactive protein. Spleen and lymph node biopsy, flow cytometry of the blood and bone marrow aspirate showed no significant abnormality. A 18F-fluorodeoxyglucose positron emission tomography - computed tomography and bone marrow biopsy were performed. The results were normal.

Discussion: Persistent agmination of lymphomatoid papulosis was first described in 2007 and 16 cases had been reported in the English literature. Age of onset ranges from 6 to 62 years old. The lesions involve circumscribed areas of trunk and thighs. Histology shows features of a CD30+ lymphoproliferative disorder, pagetoid spread to extranodal sites. Unfortunately, treatment response to conventional therapies is poor, leading to an unfavorable prognosis.

Case study: We report a case of PCAETCL in a Chinese patient with a long standing psoriasis rash presenting with new onset of ulcerative lesions. Histology revealed CD8+ epidermotropic lymphoma. In view of the aggressive clinical history, immunohistochemistry findings and absence of systemic and visceral involvement, a diagnosis of primary cutaneous aggressive epidermotropic CD8+ cytotoxic T cells was made. Patient received CHOP chemotherapy but suffered relapses with recurrent plaques and tumors over the body requiring subsequent radiotherapy.

Discussion: Differential diagnoses of other types of CD8+ lymphoma are discussed.

Conclusion: Primary cutaneous aggressive epidermotropic CD8+ T-cell lymphoma is a rare lymphoma and its aggressive clinical course with poor treatment response is observed in this Chinese patient. It is a rare but important diagnosis not to be missed in patients presenting with ulceration of preexisting dermatoses or new primary ulcerative lesions.

Commercial support: None identified.
Primary cutaneous EBV+ diffuse large B-cell lymphoma: A rare and aggressive cutaneous lymphoma
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The classification of primary cutaneous B-cell lymphomas has been a subject of debate over the past several years. Recently, the World Health Organization updated the classification of these cutaneous neoplasms. While much is understood about the three most common primary cutaneous B-cell lymphoma subtypes (primary cutaneous follicle center lymphoma, primary cutaneous marginal zone lymphoma, primary cutaneous diffuse large B-cell lymphoma leg type), more research is necessary to further define the less common provisional entities. Primary cutaneous EBV-positive diffuse large B-cell lymphoma is a rare and aggressive cutaneous neoplasm that was recently included as a provisional entity in the classification system for primary cutaneous B-cell lymphomas. Few case reports have been published regarding this newly described cutaneous lymphoma. It has more aggressive clinical course and poorer prognosis than most of the primary cutaneous B-cell lymphoma subtypes. Although rare, EBV-positive diffuse large B-cell lymphoma is an important entity to consider when evaluating a patient with a suspected primary cutaneous lymphoma. Primary cutaneous EBV-positive diffuse large B-cell lymphoma responds poorly to conventional treatments for other primary cutaneous B-cell lymphoma subtypes. Further research is needed to establish optimal treatment regimens for this aggressive cutaneous lymphoma.

Commercial support: None identified.

2645
Relative frequency, clinical features, and survival outcomes of 395 patients with cutaneous lymphoma: A subgroup analysis per 10-year period
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Background: Previous large-scale studies on cutaneous lymphoma (CL) have mainly been performed in the United States and Europe. Long-term changes in relative frequency in CL have not been investigated in Asian populations.

Objectives: We investigated the relative frequency, clinical characteristics, and survival outcomes of CL in Korean patients. Moreover, we evaluated the changes in the relative frequency of CL over a 20-year period.

Methods: The present retrospective cohort study included all 395 patients who presented with CL over a 20-year period in the dermatology department of a tertiary referral hospital in Korea.

Results: The 395 cases consisted of 289 cases of primary CL and 106 cases of secondary CL. Primary CL included T/NK-cell line lymphoma (CTCL, 85.1%) and B-cell lineage lymphoma (CBCL, 14.9%). The relative frequency of CBCL increased over time, as shown by a decrease in the CTCL/CBCL ratio from 10.3 in 1994-2003 to 4.5 in 2004-2013. CTCL was more commonly associated with multiple and extensive skin lesions than was CBCL. The 5-year overall survival rate for all primary CL patients was 81%.

Limitations: This study is a retrospective, single center design.

Conclusions: Changes were seen in the relative frequency of CL during a 20-year period in Korean patients.

Commercial support: None identified.

3160
Rituximab infusion causing localized urticaria during the treatment for cutaneous lymphoid hyperplasia
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This is a case of a 64-year-old man with history of nonmelanoma skin cancer who presented for evaluation of red lesions on his left thigh that had been present for over 20 years. The patient had used topical steroids and intralesional kenalog with temporary relief of his itching but no improvement in the appearance. The patient otherwise denied any systemic symptoms like fevers, chills, night sweats, or weight loss. Punch biopsies revealed an atypical lymphoid infiltrate consisting of a mixture of CD3+ T cell and CD20+ B cells in the superficial and mid dermis without destruction of adnexal structures. Gene rearrangement studies were negative and there was no kappa/lambda light chain restriction. The patient was diagnosed with cutaneous lymphoid hyperplasia (CLH) and started on rituximab. During his first infusion, he was premedicated with 650 mg of acetaminophen and 50 mg of intravenous diphenhydramine. Fifty minutes into his first infusion, he developed localized urticaria over his tumor sites with severe pruritus. He denied any other systemic symptoms, shortness of breath, swelling, or rash. He was given 10 mg of dexamethasone and topical hydrocortisone, with significant improvement in his systemic symptoms, shortness of breath, swelling, or rash. He continued to develop similar localized urticaria, but with a less robust reaction than initially. There have been eight reported cases of a localized urticarial reaction to rituximab infusion during treatment of primary cutaneous B-cell lymphoma, but to our knowledge, this is the first case of an urticarial reaction during the treatment CLH and the only case where the patient experienced repeated episodes of urticaria with each infusion. Rituximab is known to cause a cytokine-release syndrome from activation of complement, macrophages and release of proinflammatory cytokines and vasoactive mediators in patients with a high burden of disease, like chronic lymphoid leukemia. This patient’s urticaria is thought to be caused by a similar cytokine release syndrome, but localized only to his cutaneous disease. This case is illustrative of a rare adverse effect of rituximab, and given rituximab’s increasing popularity for the treatment of a variety of diseases, it is important to better understand the potential risks and side effects of this medication.

Commercial support: None identified.
A 40-year-old man presented to our clinic with a two-year history of an asymptomatic, generalized rash associated with fatigue, weakness, weight loss, night sweats, arthralgias, and myalgias. Since the onset of the rash, he noted progressive generalized lymphadenopathy, requiring him to stop working due to fatigue and weakness. Outside punch biopsy revealed a deep perivascular lymphohistiocytic infiltrate. Special stains for microorganisms were negative. Chest x-ray revealed few, scattered calcified granuloma. Although the findings were not specific, the working diagnosis of sarcoidosis was entertained. Prednisone treatment slightly improved his constitutional symptoms, but did not stem the progression of his rash. Examination revealed scattered, erythematous plaques and erythematous nodules of plaques and nodules diffusely involving his trunk and extremities. There was neither lacrimal gland enlargement nor palpable lymphadenopathy. Incisional biopsy of two nodules was performed. Sections revealed a lobular lymphoid infiltrate composed of small, atypical lymphocytes with intermixed histiocytes and numerous atypical cells in the subcutis. The lymphocytes, some rimming adipocytes, showed moderate atypia, mildly irregular nuclei, and mature chromatin. Immunohistochemical stains demonstrated staining of the atypical lymphocytes with CD2, CD3, CD4, CD8 (very dim), CD45, CD56 (dim), perforin, TIA, and TCR-gamma. CD5, CD7, betaF1, TdT, and TCL-1 were negative. T-cell receptor (TCR) beta and gamma chain genes showed a clonal population. Flow cytometry revealed a T-cell clone with dim membrane positive cytokine T-cell receptor (TCR) and low T-cell receptor (TCR) gamma involvement. The morphologic, immunophenotypic, and molecular findings were diagnostic of a primary SPTCL, GD type. SPTCL is a rare peripheral T-cell lymphoma which has gained recognition in recent years. There appear to be two distinct subtypes: alpha-beta (AB) and GD. The five-year overall survival rate for patients with AB and GD subtype is 82% versus 11%, respectively. Unfortunately, due to the rarity of this entity, the standard of care, and randomized controlled studies are lacking. The patient was started on multi-agent chemotherapy to treat his aggressive, rapidly progressing lymphoma.

Commercial support: None identified.

3762 Subcutaneous panniculitis-like T-cell lymphoma: A diagnostic challenge Karla Elizabeth Paz-Guizar, MD, Hospital Universitario, “Jose Eleuterio Gonzalez” U.A.N.L., Monterrey, Mexico; OsvaldoVázquez-Martínez, PhD, Hospital Universitario, “Jose Eleuterio Gonzalez” U.A.N.L., Monterrey, Mexico; Sandra Cecilia García-Guitar, MD, Hospital Universitario, “Jose Eleuterio Gonzalez” U.A.N.L., Monterrey, Mexico; Beatrix Calderón-Lozano, MD, Hospital Universitario, “Jose Eleuterio Gonzalez” U.A.N.L., Mexico; Oliverio Welsh, PhD, Hospital Universitario, “Jose Eleuterio Gonzalez” U.A.N.L., Monterrey, Mexico; Esperanza Welsh, PhD, Hospital Universitario, “Jose Eleuterio Gonzalez” U.A.N.L., Monterrey, Mexico; Bárbara Saenz-Ibarra, MD, Hospital Universitario, “Jose Eleuterio Gonzalez” U.A.N.L., Monterrey, Mexico; Ivetta Maldonado, MD, Hospital Universitario, “Jose Eleuterio Gonzalez” U.A.N.L., Monterrey, Mexico; Jasmine Oscomo-Candiani, PhD, Hospital Universitario, “Jose Eleuterio Gonzalez” U.A.N.L., Monterrey, Mexico

Subcutaneous panniculitis-like T-cell lymphoma (SPTCL) is a rare variant of T-cell lymphoma characterized by infiltration of the subcutaneous tissue by neoplastic T-cells mimicking panniculitis with an aggressive clinical course. A 31-year-old, otherwise healthy male patient, presented with a 6-month history of multiple painful erythematous and purplish nodules with ulceration on the posterior upper thigh and foot. The infiltrate was compatible with large cell T-cell lymphoma and immunohistochemistry was positive for CD4, CD8, and CD30. She was referred to the hematology clinic where she was evaluated. A peripheral blood smear showed large and mature lymphocytic cells as well as smudge cells, morphologically compatible with chronic lymphocytic leukemia (CLL). The patient was hospitalized to initiate chemotherapy. CTCL has been associated with previous, subsequent or synchronous secondary malignancies. This could be linked to a genetic predisposition, an altered immune system, the use of immunosuppressive and/or radiotherapy. Authors have reported the occurrence of CTCL in the setting of CLL, although rare. The largest case series reports 14 patients with simultaneous CTCL and CLL in nearly 60% of the cases. The diagnosis of this presentation was concurrently made; in the rest of the patients the diagnosis of CLL was previously made. This is a unique case where CTCL and CLL were diagnosed concurrently.

Commercial support: None identified.

3675 Syringotropic mycosis fungoides, a rare form of cutaneous T-cell lymphoma Dan Krakora, University of Illinois at Chicago College of Medicine, Chicago, IL, United States; Joel Kratzer, MD, Northwestern University, Chicago, IL, United States; Claudia Hernandez, MD, University of Illinois at Chicago College of Medicine, Chicago, IL, United States; Joseph Skupien, MD, Illinois Institute of Dermatology, Chicago, IL, United States; Jose E. Gonzalez, Universidad Autonoma de Nuevo Leon, Monterrey, Mexico; Nizar El-Ahad, MD, University of Illinois at Chicago College of Medicine, Chicago, IL, United States; Mary Beth Noguera, MD, University of Illinois at Chicago College of Medicine, Chicago, IL, United States; Thuy Tien Pham, MD, University of Illinois at Chicago College of Medicine, Chicago, IL, United States; Jose E. Gonzalez, Universidad Autonoma de Nuevo Leon, Monterrey, Mexico; Oscar Caraballo, MD, Hospital Universitario Dr Jose E. Gonzalez, Universidad Autonoma de Nuevo Leon, Monterrey, Mexico; David McMartin, MD, University of Illinois at Chicago College of Medicine, Chicago, IL, United States

Syringotropic mycosis fungoides (STMF) is a rare variant of folliculotropic mycosis fungoides (FMF). STMF is characterized by prominent T-cell lymphocytic infiltration of both follicular epithelium and eccrine glands. We present a case of this rare form of MF and review its presentation and management. A 61-year-old white male presented to our clinic with a progressive eruption on his legs for one year which eventually ulcerated on the posterior upper thigh and foot. On physical examination, scaly patches were noted on the buttocks. Plaques with punctate erythema were noted on the arms and left posterior thigh which exhibited folliculotropism and occasional ulceration. An initial biopsy showed diffuse lymphohistiocytic inflammation. Due to the nonspecific histological findings and unremarkable rheumatologic bloodwork, a repeat biopsy was performed. The pathology demonstrated a dense, extensive and confluent lymphohistiocytic infiltrate, which appeared hyperplastic and hyperconvoluted. Approximately 99% of the cells stained positively for CD4 and 1% of the cells stained negatively for CD20 and CD30. Additional staining demonstrated marked positive staining for CD4 with diminished CD8 and negative CD56 staining. T-cell polymerase chain reaction detected a clonal T-cell receptor gamma (TCR-gamma) population. There was no growth of tissue cultures for acid-fast bacilli, bacterial culture, and fungus. In the literature summarizing the clinical characteristics of STMF primarily involve the palms or soles, presenting as erythematous, punctuated patches with associated alopecia. First-line treatment has not been established, but the data show that STMF responds poorly to topical regimens, possibly as a result of ineffective penetration of the stratum corneum. Topical corticosteroids are sometimes used, but in our case, we support PUVA and systemic retinoids or electron beam therapy as the best skin-directed therapies for this subset of MF.
Syngangiotropic mycosis fungoides: A rare variant of CTCL

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A 62-year-old Italian-American man presented to the dermatology inpatient consult service in 2010 with erythroderma and a 5-pound weight loss. Skin biopsy and flow cytometry revealed syngangiotropic mycosis fungoides. Over the last four years, the patient has had a progressive course with prominent follicular and ulcerative cutaneous lesions that failed to respond to treatment. On physical examination the trunk, scalp, eyelids, and extremities have extensive pink scaling perifollicular plaques. The bilateral lower extremities, inguinal folds and perianal region have red, moist, malodorous, ulcerated plaques. In addition, there is profound alopecia of scalp and body hair, and atrophy of the nasal tip. Laboratory data: Flow cytometry of inguinal lymph node: 11% abnormal cells (CD3+, CD2+, CD5+, CD7-). Flow cytometry of blood: 16% abnormal cells (CD3+, CD2+, CD5+, CD7+, CD16+). Radiologic data: Total body bone marrow biopsy, and iliac lymphadenopathy with several nodes containing increased glucose metabolism, cutaneous activity in right anterior abdominal wall and left lateral thoracic wall. Stage IVA (T4N3M0B1): Previous treatments included bexarotene, photopheresis, total skin electron beam therapy, CHOP, IV methotrexate and pralatrexate. Current treatment includes the HDAC-inhibitor, vorinostat, and bexarotene. Syngangiotropic mycosis fungoides (STMF) is an exceedingly rare variant of cutaneous T-cell lymphoma (CTCL), a malignancy that results from aberrant proliferation of skin-homing T-cells. STMF is classified as a subtype of folliculotropic MF (FMF). The clinical presentation of STMF is diverse and may be localized or diffuse. While more classic STMF lesions include punctate erythematous papules and plaques, there are other distinguishing clinical findings. A recent retrospective study of 19 patients found erythema and alopecia to be the most common clinical presentations. Other features include hyperkeratotic follicular prominence, pruritus, hyperesthesia, anhidrosis, poikiloderma atrophicans and alopecia. Most patients had a past history of carcinoma of the skin. Many of the skin-directed therapies of STMF have proven ineffective due to the perieccrine location of the infiltrate. Treatments include PUVA, total skin electron beam therapy, methotrexate, IFN-α, systemic chemotherapy such as CHOP and fludarabine. HDAC inhibitors including vorinostat represent a newer class of antineoplastic agents approved for the treatment of patients with refractory or recurrent CTCL.

Commercial support: None identified.

MELANOMA AND PIGMENTED LESIONS

2849
10-year retrospective study of subungual melanoma in a Dermatologic National Reference Center in Mexico City

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Introduction: Melanoma is a malignant neoplasm that arises mainly from skin melanocytes. It represents one of the most common forms of cancer in young adults and currently represents a significant public health problem. Although melanoma accounts for only 4% of all dermatologic cancers, it is responsible for 80% of deaths from skin cancer. There are four clinicopathological entities: superficial spreading melanoma, nodular melanoma, lentigo maligna and acral lentiginous melanoma. Epidemiologic studies in our country reveal that the most common type of melanoma is the acral melanoma which is the most common type in mestizo population. Subungual melanoma is a variant of acral lentiginous melanoma that originates in the nail matrix. In dark-skinned ethnic groups there is a 5.4 to 4.5 increased risk for this type compared to whites. Material and methods: We retrospectively identified all the patients with melanoma diagnosis in the dermatopathology database in our institution between 2004 to 2014. Among 162 cases of cutaneous melanoma, 89 (55%) were female and 73 (45%) were male. 51 (56%) cases were classified as acral melanoma and from these 84.6% had an invasive component with Breslow thickness ranging from 0.3 mm to 7 mm. There were 26 subungual melanomas which represents 28% of acral melanomas and 16% of all melanoma cases. Female patients accounted for 65% of subungual melanomas and only 35% were male. 76.9% were diagnosed at an invasive stage, with Breslow thickness ranging from 0.45 mm to 5.5 mm. The most frequent topography of acral melanomas was the right foot with 42 cases. Subungual melanomas were more frequently on the first finger of the right hand and the first toe of the right foot. Discussion: Subungual melanoma is not an uncommon disease among Mexican mestizo population. In whites it is considered a rare tumor, found in 1-3% of total melanoma cases. This incidence rises up to 15-30% in darker skin types. Subungual melanoma is not a poor prognosis due to frequent delayed diagnosis, the survival rate at 5-10 years is 30-13% respectively. It is imperative to provide an opportune diagnosis and appropriate management.

Commercial support: None identified.
### 3462

A comparative study of proliferative activity and tumor stage of preg-nant and non-pregnancy-associated melanoma in gestational age women

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The influence of pregnancy on the development, progression, and prognosis of melanoma is controversial. A paucity of information regarding the impact of pregnancy on tumor proliferation, along with conflicting data regarding patient outcomes and cause-specific mortality, create uncertainty in how to advise women to proceed with family planning after a diagnosis of melanoma. Recommendations are generally based on age and tumor stage, and some physicians will advise patients to wait two to five years before becoming pregnant based on the high risk of early recurrence. However, as many women already delay childbearing, the decision of whether to proceed or wait becomes a difficult balance between concerns of tumor recurrence or progression and risks associated with advanced maternal age. In order to evaluate the impact of pregnancy on disease stage and tumor progression, we sought to compare clinical characteristics, histologic features, stage at diagnosis and proliferative activity in pregnancy-associated melanoma (PAM) and melanoma in non-pregnant women of reproductive age (non-PAM). We reviewed medical records and pathology reports from women diagnosed with melanoma between 2006 and 2015 to examine the influence of pregnancy and tumor proliferation rates using mitotic count and two immunohistochemical markers of proliferation: phosphohistone H3 and Ki-67. PAM was not associated with higher disease stage ($P = 0.067$). In fact, there was a significantly lower tumor proliferation rate in the PAM group than in the non-PAM group ($P = 0.014$) and the majority of patients with PAM (50/50) and non-PAM (115/119) presented with stage I disease or lower. Among invasive melanomas, there was no significant difference in proliferative activity between disease groups, as measured by comparison of median mitotic count ($P = 0.57$), median pHH3 count ($P = 0.01$) or Ki-67 proliferation index ($P = 0.99$). Pregnancy status was also not associated with age at diagnosis, tumor site, Breslow depth, Clark level or ulceration. We found no predictive factors for high disease stage or tumor proliferation rate in PAM. Furthermore, in this study of patients with primarily early stage disease, our data suggest that pregnancy does not have a significant impact on tumor proliferation. For patients undergoing close clinical surveillance, PAM should be evaluated using traditional factors, such as advanced maternal age, in planning future pregnancies.

**Commercial support:** None identified.

### 2739

A unique presentation of metastatic melanoma appearing ten years after the primary lesion that highlights the usefulness of SOX-10 in identifying melanomas of metastatic origin

Natalie Steinhoff, DO, Largo Medical Center, Largo, FL, United States; Gabriela Maloney, DO, Largo Medical Center, Largo, FL, United States.

A 45-year-old female with a medical history of melanoma on the right triceps treated with Mohs and skin graft and one year of interferon therapy in 2005 presented with an enlarging right upper quadrant cutaneous nodule. The lesion appeared approximately one month prior and there were no inciting events prior to the appearance of the nodule. The patient had no systemic symptoms, pain, pruritus, perilesional ecchymosis or bleeding. The lesion was bullous, violaceous, and measured 5 x 5 x 3 cm. A CT scan of the abdomen was performed and demonstrated a 5 x 5 x 3 cm mass with well-defined and enhancing rims in the skin and subcutaneous fat of the upper right abdominal wall, appearing to minimally infiltrate the underlying rectus abdominus muscle substantiated by intraperotoneal communication with the stomach and nasogastric tube. A biopsy specimen was found to have a non-invasive appearing capsule and was sent to pathology for further evaluation. Preliminary pathological findings were consistent with invasive high grade undifferentiated malignant neoplasm. Further immunohistochemical testing revealed that the tumor cells were SOX-10+, NIH transform growth factor a (TGF-a), pancytokeratin, desmin, smooth muscle actin, CD31, CD54, ERG and tyrosinase. Given the clinical history, the morphologic and immunophenotypic findings were University Feinberg School of Medicine, Department of Dermatology, Chicago, IL, United States; Sheena Tsai, Case Western Reserve University School of Medicine, Cleveland, OH, United States; Jeremy Bordeaux, MD, MPH, Case Western Reserve University School of Medicine, Cleveland, OH, United States.

Conclusion: The education provided to black patients for sun protection and skin self-examinations needs to be improved so that melanoma mortality rates among blacks can be decreased. More education is needed to improve black patients' confidence in being able to check their own skin, as well as improving their sun-protective behaviors.

### 3199

Antimelanogenic effect of sorbus aucuparia fruit extract in α-melanocyte stimulating hormone-induced B16F10 murine melanoma cells

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Melanogenesis is a physiological process that results in the synthesis of melanin pigments. The key enzyme of this process is tyrosinase, involved in the initial stages of melanin biosynthesis. Melanin plays an important role in protecting skin against ultraviolet light injury. However, abnormal accumulation of melanin pigments lead to hyperpigmentation disorders. Therefore tyrosinase inhibitors are most promising agents for preventing and treating pigmentation disorder and are used as skin whitening agents in the cosmetic industry. In this study, we evaluated the effect of sorbus aucuparia fruit (SAF) extract on melanogenesis of α-MSH-induced B16F10 melanoma cells. We measured tyrosinase activity, and the expression of melanogenesis-related proteins. As results, SAF extract reduced cellular melanin content and tyrosinase expression. In addition, SAF extract reduced melanin content in 3D-cultured skin model (reconstructed human epidermis with melanocytes). Taken together, these results suggest that SAF extract could be used as a hyperpigmentation inhibitor.

**Commercial support:** None identified.
BAP1 expression in cutaneous melanoma in Chilean population

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Introduction: BAP1 (BRCA1-associated protein 1) is a tumor suppressor gene whose germline mutation has been described in families predisposed to uveal melanoma, familial melanoma and other neoplasms. There is a highly positive correlation between the absence of immunohistochemistry (IHC) expression of BAP1 and the mutation of the gene that encodes it. Furthermore, researchers have found BAP1 loss of expression in 2.5-5.6% of sporadic cutaneous melanomas.

Objective: To determine BAP1 expression in melanomas in Chilean population.

Materials and methods: BAP1 IHC staining was performed in archival formalin-fixed, paraffin-embedded tissue sections from cases of cutaneous melanoma and a sample of atypical Spitzoid neoplasms, from the Department of Pathology, Pontificia Universidad Católica de Chile (2006-2014).

Results: 102 patients were collected (total of 130 histologic samples). Of these seven patients had familial melanoma, 17 had multiple primary melanoma; 68 cases were sporadic cutaneous melanoma and 5 atypical Spitzoid tumors. 56.9% of all patients had familial melanoma, 17 had multiple primary melanoma; 68 cases were sporadic cutaneous melanoma and 5 atypical Spitzoid tumors. 56.9% of all patients had familial melanoma, 17 had multiple primary melanoma; 68 cases were sporadic cutaneous melanoma and 5 atypical Spitzoid tumors.

Discussion and conclusions: Using IHC we did not find BAP1 loss in sporadic melanomas neither in patients with familial, multiple melanoma tumors nor 5 atypical Spitzoid neoplasms, reflecting the absence of mutation in our population, in contrast to previously published. This could be explained by geographical and ethnic differences, although another possibility is that the frequency of BAP1 alteration is thin and in situ melanoma could be lower than in advanced invasive melanoma.

3612

Blue nevus-like metastatic uveal melanoma

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Cutaneous metastasis from uveal melanoma is not frequently encountered. Additionally, only rarely does metastatic uveal melanoma simulate the appearance of a blue nevus clinically or histopathologically. As a result, blue nevus-like metastatic melanoma is difficult to recognize and confidently diagnose. The use of cytogenetic analysis has been introduced as an additional diagnostic tool and includes the use of FISH (analysis of monosomy 3) and mutational analysis (analysis of BRAF). With this knowledge, targeted drug therapies may be used as adjunct treatment to prolong life and improve patient outcomes. We report the case of a 77-year-old female with a history of uveal melanoma status post iodine plaque therapy 20 years ago, who presented with a scalp excision, who presented with a cluster of blue macules in the same area of the scalp as her prior melanoma. Differential diagnosis included blue nevus, dermal nevocytosis, and blue nevus-like metastatic melanoma. The histopathology demonstrated a focal collection of elongated, spindle-like, pigment cells in the dermis scattered throughout a dense collagen matrix, which was consistent with a blue nevus-like metastatic melanoma, most likely from her primary uveal melanoma. Because she lived several hours away, the patient was returned to her primary dermatologist and oncologist for further workup, including a PET/CT and MRI of the brain. PET/CT showed hypermetabolic foci in the lungs, which was thought to be related to metastatic disease and to be followed with serial CT scans. There was no evidence of metastatic disease on brain MRI. Mutational analysis for BRAF; a marker of cutaneous melanoma was negative. Because the remaining tissue from the biopsy was small, we were unable to perform FISH to check for monosomy 3, a marker of uveal melanoma metastasis. Therapy was discussed by the patient’s oncologist, but she declined any further treatment and has since been lost to follow-up.

3057

Clinical remission of stage IIIB, BRAF-negative, malignant melanoma with combined high dose IL-2 and aflibercept

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Background: The incidence of melanoma, the most fatal form of skin cancer, continues to rise faster than any other cancer type in the United States. While IL-2 immunotherapy has classically been used to treat melanoma, data regarding the efficacy of aflibercept, a relatively newer agent, is lacking. Here, we describe a patient with metastatic melanoma of the scalp who achieved clinical remission after treatment with aflibercept, a novel VEGF decoy receptor, in combination with high-dose IL-2 therapy.

Case report: A 51-year-old man presented to our dermatology clinic with multiple nodules at the vertex of his scalp. After biopsy and staging imaging, he was diagnosed with T4N1M0, stage IIIB, BRAF negative, malignant melanoma. Surgical resection was not advised due to his multiple lesions covering a wide area of his scalp. The patient received 3 mg/kg of aflibercept, infused intravenously every 14 days. The dose was increased to 4 mg/kg/dose every 2 weeks after 6 months. He completed 6 cycles of high-dose IL-2 in a closely monitored, intensive care unit setting. Aflibercept administration was notable for new onset hypertension (commencing three days after first infusion), an erythematous rash of the groin (responsive to antibiotic cream), and transient rectal bleeding. After six months of therapy, the patient’s scalp lesions had lighted and decreased in size. All lesions were individually resected with pathology demonstrating no evidence of melanoma.

Discussion: Aflibercept functions as a high-affinity, soluble decoy VEGF receptor that prevents intracellular and extracellular VEGF-A, VEGF-B, and placental growth factor (PGF) from binding to their receptors. In a single-arm phase 2 study, aflibercept monotherapy was associated with a 50% progression-free survival of at least 4 months in patients with unresectable stage III or IV melanoma of cutaneous or uveal origin. The severity of hypertension, a well-known adverse effect of aflibercept, was associated with a positive response to the drug. The observation of clinical remission, using a regimen of IL-2 and aflibercept, has, to our knowledge, not yet been documented in patients with stage IIIB melanoma. Additionally, it is unclear whether synergistic action occurs with combined IL-2 and aflibercept. Randomized clinical trials are warranted to investigate superiority of the combined regimen compared to IL-2 alone.

3812

Clinicopathologic characteristics and cytogenetic profiles of melanocytic lesions of uncertain malignant potential: A retrospective chart review

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Background: Melanocytic tumors of uncertain malignant potential (MELTUMP), a subset of melanocytic neoplasms most of which are atypical Spitz tumors, pose a unique diagnostic challenge and often elude classification. Although fluorescence in situ hybridization (FISH) and comparative genomic hybridization (CGH) have allowed for better characterization of MELTUMP further investigation is needed in defining histologic features associated with the presence or absence of cytogenetic abnormalities in patients given such provisional diagnosis. This study aims to identify the clinical, histologic, and CGH or FISH-derived profiles of patients who carried the provisional diagnosis of MELTUMP.

Methods: Patients given the provisional diagnosis of MELTUMP and treated at the Washington Cancer Institute were identified via the electronic medical record. Data on known melanoma clinical prognostic factors and histopathologic features were collected. Patients whose biopsies did not undergo CGH or FISH profiling were excluded.

Results: Twelve patients (mean age 40.7 years old) were given a provisional diagnosis of MELTUMP and underwent CGH testing. Cases were sent out for formal pathologic consultation on an average of 1.6 times. Primary tumor sites include the back (n=3), legs (n=2), and sole (n=1). Breslow depth was recorded in 10 patients, 6 of whom underwent a sentinel lymph node biopsy. Deep mitoses (n=4), asymmetry (n=6), sheets of melanocytes (n=8) and high-grade cytologic atypia (n=7) were the most common histologic features identified. Half of the patients had FISH or CGH aberrations. Chromosomal copy gains were noted in 8 patients, with 6p and 11p being the most common. Five patients had chromosomal losses, with 3 having losses in 9p. Spitz tumors were the favored diagnosis in 42% of the cases, with 2 of those cases having gains in 11p. Multiple chromosomal gains and losses were noted in cases favoring melanoma after CGH. One case without any chromosomal aberrations persisted as a desmoplastic melanoma.

No statistical model could be used to fit the small sample size in this study. Larger studies are needed to identify histologic features associated with the presence/absence of cytogenetic abnormalities in patients given such provisional diagnosis.
3141 Concordance of reflectance confocal microscopy with histopathology in the diagnosis of lentigo maligna
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Background: Lentigo maligna (LM) is a form of melanoma in situ that may progress slowly, but is associated with higher rates of local recurrence compared to other subtypes of melanoma. Diagnosis of LM can be challenging, as blind biopsies are prone to sampling error due to the heterogeneous nature of LM and its characteristic wide subclinical extension. Reflectance confocal microscopy (RCM) provides noninvasive, real-time imaging of cell structure and may be a useful adjunct in diagnosing LM and defining its borders. Few studies have compared performance of RCM to histopathology in diagnosing LM, and specific clinical or microscopic features influencing RCM interpretation are not well described.

Objective: To determine the degree of concordance between RCM and conventional histopathologic analysis in the evaluation of suspected LM and to identify factors that may obscure diagnosis of LM with RCM.

Methods: Under IRB approval, 16 patients were seen by the Dermatology Service at Memorial Sloan Kettering Cancer Center for evaluation of known or suspected LM. Cases included primary LM as well as recurrent and/or previously treated lesions. For each case, RCM was performed and images were assessed for LM using an accepted algorithm. A total of 59 biopsies were performed in areas of concern. RCM and histopathology interpretations were reviewed for degree of concordance. In cases with differences in histories and images were analyzed for patterns leading to misdiagnosis with RCM.

Results: RCM and histopathology interpretations were concordant in 52/59 biopsy sites (88%). There were no false negatives (sensitivity 100%) and 7 false positives (specificity 93%) using RCM. The false positives included actinic keratosis (2), dermatoheliosis (2), solar lentigo (1), dermal melanocytosis (1), and a pigmented and traumatized seborrhic keratosis (1). Of note, 5/7 false positives occurred in the same patient with multiply recurrent LM previously treated by imiquimod. Features suggestive of LM in the false positive group included the presence of numerous atypical cells at the DEJ and follicular localization of these cells.

Conclusion: RCM shows excellent sensitivity for detecting LM although features of benign macules on a background of heavily sun-damaged skin can obscure diagnosis and limit its specificity. Further studies that characterize these baseline architectural changes in sun-damaged skin are needed to more reliably distinguish LM.

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3593 Confocal characterization of primary melanoma. Noninvasive prediction of histological prognostic markers
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Introduction: Reflectance confocal microscopy (RCM) is a noninvasive imaging technique that provides real-time evaluation of skin with cellular resolution. Recent RCM studies on melanoma morphology let the recognition of different tumor phenotypes.

Hypothesis: Melanomas can present in vivo features that translate biological and prognostic behavior, and these findings can be visible by RCM.

Objective: To detect dermoscopic and confocal criteria present in primary melanomas related to histological features that play an important role as prognostic markers.

Methodology: Retrospective study of clinical, dermoscopic and confocal images, in addition to further revision of histopathologic slides of primary melanomas diagnosed from February 2011 to February 2015. Only sporadic melanomas on trunk and limbs with high quality images were included.

Results: 92 primary melanomas were reviewed: 44 male and 48 female with a mean age of 64.0 years old (SD 16.2) mainly located on posterior trunk (50%). The most frequent dermoscopic pattern was multicomponent (55.4%), and the predominant age of 60.4 years old (SD 16.2) mainly located on posterior trunk (50%).

Limitations: Single center retrospective study, and only trunk and limbs melanomas were included.

Conclusions: Melanoma can be better characterized by dermoscopic and confocal microscopy in terms of prediction of Breslow and mitotic rate in histopathology.

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Five year survival in patients with nodular and superficial spreading melanomas in the US population

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Introduction: Nodular melanoma (NM) is the second most common subtype of melanoma after superficial spreading melanoma (SSM) and is characterized by exclusive vertical growth phase. NM has a more rapid growth rate, more biologically aggressive behavior and an increased number of mitoses compared to other histologic subtypes, whereas SSMs are diagnosed as thinner lesions. We conducted a population-based retrospective data analysis to compare the five year relative survival of patients with NM and SSM.

Methods: We collected demographics, pathologic and survival data on patients with melanoma from 2004-2010 from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) database.

Results: Of the patients with melanoma, we identified 5011 patients with NM and 22,140 with SSM. Patients with NM were more likely to be 65 years or older (43% vs 25%, P < .01), male (63% vs 48%, P < .01), T3/4 (60% vs 7%, P < .01), N1-3 (26% vs 5%, P < .01) and M+ (4% vs 0.3%, P < .01) compared to SSM. Five year relative survival was lower in NM compared to SSM, particularly for stage I disease (T1a-T1b, P = .01), and higher for stage III disease (P < .01). Survival difference remained significant after excluding patients with nodal disease and metastases at diagnosis (T0N0M0 vs T1N0M0 (78%) vs T2N0M0 (78%) vs T3N0M0 (79%) vs T4N0M0 (82%) vs T4N0M0 (83%) vs T5N0M0 (84%) vs T6N0M0 (85%) vs T7N0M0 (86% vs T8N0M0 (87%)), P < .01) to single factor at diagnosis for patients with NM and the absence of patients with SSM.

Conclusions: Five year relative survival is worse in NM compared to SSM especially in stage I disease and T2b patients. This argues for consideration of melanoma subtype in the staging system as well as in melanoma treatment guidelines such as sentinel lymph node biopsy in T1 (less than 1 mm thick) melanoma.

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2774
Evaluation of nevus count in relation to melanoma survival in a cohort of patients from a region with high ultraviolet radiation in southern Europe

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Background: The incidence of cutaneous malignant melanoma is increasing in the last 20 years worldwide. One of the most important risk factors for melanoma is to implement effective preventive strategies. A high nevus count is considered to be a risk factor for the development of melanoma. In a recent study developed in the University of Gran Canaria, a high total nevus count also proved to be of favorable prognosis in melanoma patients.

Objective: To analyze if in our population (white, in a region with high ultraviolet radiation) a high total nevus count also proved to be of favorable prognosis in melanoma patients.

Methods: A cross-sectional study was conducted at the Melanoma Clinic of the University Hospital of Gran Canaria from January 2000 to June 2015. Data collected included age at diagnosis, gender, site of impact in the survival of melanoma patients.

Result: Efficacy of Oregonine, new antimelanoma drug, extract from leaves and barks of Oregonia 1900 with SSM. Patients with NM were more likely to be 65 years or older (43% vs 25%, P < .01), male (63% vs 48%, P < .01), T3/4 (60% vs 7%, P < .01), N1-3 (26% vs 5%, P < .01) and M+ (4% vs 0.3%, P < .01) compared to SSM. Five year relative survival was lower in NM compared to SSM, particularly for stage I disease (T1a-T1b, P = .01), and higher for stage III disease (P < .01). Survival difference remained significant after excluding patients with nodal disease and metastases at diagnosis (T0N0M0 vs T1N0M0 (78%) vs T2N0M0 (78%) vs T3N0M0 (79%) vs T4N0M0 (82%) vs T4N0M0 (83%) vs T5N0M0 (84%) vs T6N0M0 (85%) vs T7N0M0 (86% vs T8N0M0 (87%)), P < .01) to single factor at diagnosis for patients with NM and the absence of patients with SSM.

Conclusions: Five year relative survival is worse in NM compared to SSM especially in stage I disease and T2b patients. This argues for consideration of melanoma subtype in the staging system as well as in melanoma treatment guidelines such as sentinel lymph node biopsy in T1 (less than 1 mm thick) melanoma.

Commercial support: None identified.

3187
How do we make decisions on sentinel lymph node biopsy? A decision tree from a cross-sectional study of primary malignant melanoma patients

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Background: Sentinel lymph node biopsy (SLNB) remains the standard of care for staging lymph node metastases in patients with malignant melanoma (MM). It is recommended for patients having a tumor stage ≥T1b without evidence of regional or visceral metastases. However, not all the patients fulfilling this recommendation undergo the procedure.

Objective: To analyze the factors that accounts for the decisions on SLNB, and their hierarchy in the decision making process.

Methods: A cross-sectional study was conducted at the Melanoma Clinic of the Hospital Universitario Virgen Macarena (Seville-Spain). Between 2009 and 2014 488 patients with primary MM and lacking regional or distance disease after imaging studies (CT-scan or PET/CT) were recruited. Study variables were age, sex, anatomic location, MM subtype, tumor stage (T1a-T4b), and mitotic rate (<1 mitosis/mm² vs ≥1 mitosis/mm²). These independent variables were used to build a decision tree following the CHAID method. A two-tailed P = .05 was considered the threshold for significance.

Results: Among 271 patients with primary MM staged ≥T1b, the standard recommendation for SLNB was performed in 63.1% (n = 171). Mean age was higher in the group of patients who didn't undergo SLNB (55 years vs 48.8 years, P = .001). SLNB was performed more frequently in T2b stage (84%), followed by T2a (72%), T3a (69.2%), T3b (58.1%), T4b (45.9%), T4a (40.5%), and T1a (11.3%). The decision tree showed that the first decision factor was the T-stage (P = .001). Patients with T2a, T2b or T3a tumors shown the higher frequency of SLNB (74%). After T-stage, the age was the most important factor (P < .001). In T3b, T2a, and T2b, 2a and T3a SLNB was carried out in 61% of patients aged ≥70 years and in 12.2% of patients ≥70 years. In patients with tumors T2a, T2b or T3a the SLNB was performed in 80.2% of patients aged <70 years and in 35.3% of those aged ≥70 years. After the age, the anatomic location was the most important factor in patients aged older than 70 years (T = .04) (40% for the limbs vs 5.3% for head-and-neck). In patients <70 years the mitotic rate was a decision factor after tumor stage and age.

Conclusions: Even though SLNB remains a standard of care for managing MM patients, a meaningful percentage of patients do not undergo the procedure. Beyond the accepted prognostic factors (T-stage, mitosis rate, ulceration), other clinical and even demographic factors are commonly accounted for that decision.

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Commercial support: None identified.
Imprecision of Breslow thickness measurements in melanoma around AJCC staging cutoffs and their implications for patient management

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Background: Breslow thickness is the most important prognostic factor in clinically localized primary cutaneous melanomas and its accuracy has important implications on staging, and clinical management. A review of the Melanoma Institute Australia (MIA) and NSW Cancer Council database found an unexpectedly large number of melanomas reported as exactly 1.00 mm thick. Our study sought to determine the possible cause for this apparent aberration.

Methods: Using the Melanoma Institute Australia database, 200 cases of invasive cutaneous melanoma with a reported Breslow thickness measurement between 0.90 and 1.10 mm were selected. 125 of these were suitable for review, and their thickness was re-measured and recorded to two decimal places by two independent pathologists.

Results: Concordance of measurements between the two pathologists was high, with an intraclass correlation coefficient of 0.816 (95% CI 0.735-0.875). The original measurements showed clustering at 0.90, 1.00, and 1.10 mm, whereas the review measurements did not. There was a statistically significant mean difference of 0.045 (P = .001) between the original and remeasured Breslow thickness measurements. The original measurements staged 84 cases (72%) as T1 and 33 cases (28%) as T2. The reviewed measurements staged 58 cases (50%) as T1 and 59 cases (50%) as T2. This difference was statistically significant (P < .001).

Conclusions: This study identified the phenomenon of terminal digit bias in Breslow thickness measurement, which had a significant impact on staging. Awareness and education of this bias and recording Breslow thickness measurement to two decimal places may increase precision at critical staging intervals. We suggest standardization of guidelines in regards to Breslow thickness measurement accuracy.

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Malignant melanoma arising in a chronic burn scar

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Neoplasia can occur after a history of a burn, the most common being squamous cell carcinoma, known as a Marjolin’s ulcer. In 1982 Jean-Nicholas Marjolin first described development of skin carcinoma secondary to a burn and subsequently, this phenomenon was termed Marjolin’s ulcer. However, malignant melanoma secondary to a burn is relatively rare with only 39 cases being reported in the literature to the best of our knowledge. It has been reported that around 2% of chronic burns can turn into malignant tumors. We present a patient who attended dermatology clinic with a several year history of a chronic scar secondary to a steam burn on the left forearm. The scar had recently developed lumps within it, which initiated an urgent dermatology referral. A biopsy confirmed malignant melanoma and he proceeded to have a wider excision repaired with a split thickness skin graft. To date he has had no signs of recurrence. The pathogenesis of neoplasia secondary to a burn is unclear; however some people feel that a carcinogenic toxin is produced at the site of the burn. Another theory is that the scar could create an environment which encourages neoplastic growth once a carcinogen is present. This case highlights the need for prolonged surveillance of a patient with a history of a burn, as the latency can be as long as 71 years. A careful history is required when assessing these patients for the first time and then regular follow-up is advised for the prevention and detection of malignant melanoma.

Commercial support: None identified.

Melanoma among patients with oculocutaneous albinism: 3 case reports

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Introduction: Patients with oculocutaneous albinism (OCA) are highly susceptible to develop UV-induced skin cancer and according to published series squamous cell carcinoma is the most common histopathologic subtype followed by basal cell carcinoma. Diagnosis of melanoma represents a greater diagnostic challenge in these patients due to its hypopigmented appearance and to date fewer than 40 cases of melanoma in OCA have been reported. Herein, we report 3 cases of amelanotic melanoma in 3 albino patients.

Case reports: Case 1. A 16-month old infant with OCA type I was diagnosed of melanoma of nevoid type with a Breslow thickness of 4.64 mm located on his forehead. Case 2. A 51-year-old albino woman was diagnosed of superficial spreading melanoma with a Breslow thickness of 0.78 mm located on her arm. Case 3. A 53-year-old woman with OCA type I was diagnosed of superficial spreading melanoma with a Breslow thickness of 0.45 mm located on her back. During follow-up, the patient developed a basal cell carcinoma on the nose that was treated with Mohs surgery.

Discussion: The occurrence of melanoma in individuals with OCA has been reported in the literature to be rare. This low incidence remains unexplained since it is well established the inverse relationship between the incidence of melanoma and the degree of skin pigmentation. We believe that due to their lack of pigment, such lesions may be misdiagnosed as other benign or malignant skin tumors or even as inflammatory disorders. Indeed, genome-wide association studies in different populations have identified an association between selected polymorphisms in pigment-related genes (TYR, TYRP1, OCA2, SLC45A2 and MC1R) and risk of melanoma. On the other hand, it has been suggested that patients with a total defect of melanin synthesis (OCA type 1A) would have a lower risk of developing skin cancer due to the fact that these patients do not synthesize pheomelanin which promotes the production of reactive oxygen species.

Conclusion: Differences in the sensitivity to skin carcinogenesis among patients with OCA may be explained, in part, according to the gene mutation. We underline the importance of dermoscopy for the evaluation of pink lesions in albino patients with special attention to the vascular pattern to improve early detection of amelanotic melanoma.

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Melanoma in men treated with PDE5A inhibitors: A report from the RADAR (Research on Adverse Drug Events And Reports) project

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Introduction: The phosphodiesterase 5 (PDE5A) inhibitors sildenafil (S), vardenafil (V), avanafil (A), and tadalafil (T) are all FDA-approved for the treatment of erectile dysfunction and with no caveat regarding melanoma risk in the full prescribing information (FPI). However, an increased risk of melanoma related to S, V and T has been previously reported in literature. The aim of this study is to explore whether melanoma occurs subsequent to PDE5A inhibitor exposure in a large patient population.

Methods: We searched a large urban, academic-based electronic medical record (EMR) repository (3 million individuals, January 2010 to December 2014) for all male participants who were exposed to one of the drugs and were subsequently documented as diagnosed with melanoma (ICD9 codes 172.0-172.9) at least 3 months after drug exposure.

Results: Of 525,523 individual men, 8 of 1117 men exposed to V developed melanoma, 30 of 5953 men exposed to T developed M, 36 of 5367 men exposed to S developed M, and none of only 21 men exposed to A developed M. After adjustment for race and age, a significant association with melanoma was detected for T (OR: 1.6, 1.11-2.31, P = 0.01) and for S (OR: 2.07, 1.48-2.89, P < 0.001). Moreover, a trending towards significance (P = .058) was detected for V.

Conclusion: While not currently recognized as a warning, precaution or possible adverse reaction in the FPI for any one of the PDE5A inhibitors, these data indicate a significant association with the development of melanoma in patients taking sildenafil and tadalafil do now warrant exploration to further define this safety signal relative to additional, and even, larger patient populations. This study underscores how ongoing, proactive, postmarketing pharmacovigilance plays an important role in the detection of adverse outcomes not previously detected as safety signals in already marketed drugs. Moreover, investigation into causality for any possible relationship between PDE5A inhibition and the development of malignant melanoma is warranted.

Commercial support: None identified.

3032

Painful nipple hyperkeratosis secondary to vemurafenib

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Vemurafenib is a selected BRAF kinase inhibitor approved for treating metastatic or unresectable melanoma, which unfortunately has numerous cutaneous side effects, including three previously reported cases of asymptomatic areola and/or nipple hyperkeratosis. We present the first case of painful bilateral nipple hyperkeratosis secondary to vemurafenib in an 84-year-old female. She was successfully treated with tretinoin 0.05% cream, which allowed her to comfortably continue treatment. With increased awareness of this condition, we found a second case of asymptomatic nipple hyperkeratosis secondary to vemurafenib in our clinic. As this medication gains acceptance for treatment of metastatic melanoma, it is imperative that dermatologists are aware of this potentially uncomfortable side effect, which could result in decreased compliance and impaired quality of life.

Commercial support: None identified.

2981

Patient preferences during total body skin cancer screening examination

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Background: Despite the continued rise of skin cancer in the US, many at-risk individuals do not receive regular skin checks for multiple reasons, including discomfort due to the personal nature of a total body skin exam (TBSE). The purpose of this study was to identify patient preferences for physician gender and disrobing practices, to better understand how the TBSE may be adjusted to maximize patient comfort.

Methods: An anonymous cross-sectional survey study of adults 18 years or older undergoing a TBSE was conducted at three institutions. The survey included questions regarding attitudes about skin cancer screening and preferences of patient comfort with a TBSE, including gender of screening provider, degree of disrobing and embarrassment during the exam. Distributional characteristics for each variable were assessed for normality. Univariate significance was assessed with chi-squared test, Student’s t-test, or one-way ANOVA, as appropriate.

Results: Of 483 participants (response rate 85.5%), 443 completed the gender preference survey questions (252 women, 191 men). One-third (33.7%, n = 85) of female participants had a preference for physician gender, compared to only 16.8% (n = 32) of male participants (P < .001). Women were more likely than men to ask for a gender-specific physician when scheduling (12.8% vs 4.9%, P = .004). Of those with a preference (n = 117), 98.8% of women and 37.5% of men preferred a female physician (P < .001). Gender preference for physician decreased inversely with patient age, from 50% of women < 50 years, down to 24.2% of women ≥ 70 years. Regarding disrobing preferences, 31.5% of women did not want their genital area examined, compared to 12.5% of men (P = .001). In visits where the physician and patient were the same gender (n = 218), patients were more likely to be asked to remove underwear (36.9% vs 25.5%, P = .01), and women were more likely to have their breasts examined (81.2% vs 71.7%, P = .03).

Conclusions: Overall, these results suggest that the strong difference in preference for physician gender between women and men identifies a potential barrier for at-risk individuals to receive regular TBSEs if there is no option for the specific physician gender of choice. In order to enhance patient comfort in the clinical setting, scheduling practices and disrobing requirements should be evaluated to address this issue in hopes of promoting patient choice of provider.

Commercial support: None identified.
Survival in desmoplastic melanoma patients with or without adjuvant radiation

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Introduction: Desmoplastic malignant melanoma (DMM) is a rare variant of melanoma with higher local recurrence rates compared with conventional melanoma. Adjuvant radiotherapy (AR) after excision is considered in patients with DMMs that are greater than 4 mm (ie, thick melanomas) in Breslow’s depth to attain local control. However, its impact on survival is unknown. We conducted a population-based retrospective data analysis to assess the impact of AR on the survival of patients with thick DMMs.

Methods: We analyzed patients with T4 (thicker than 4 mm) DMM according to the AJCC’s 6th edition from 2004-2012 using data from the Surveillance, Epidemiology, and End Results (SEER)*Stat software (version 8.2.1). Statistical tests included the Fisher’s exact test to compare demographics and the Z-score to compare relative survival.

Results: Of the 1239 patients with DMM, we identified 346 patients with T4N0M0 DMM. Seventy percent of patients were male. 98% were white, 60% were older than 65 years, 78% were diagnosed with stage T4a, 18.5% stage T4b, and 5.5% diagnosed T4NOS. Sixty (17%) patients received radiation postsurgery. There was no significant difference in age, gender, and race between two groups. However, there were more T4b patients who did not receive radiation (P = 0.01). There was a statistically significant difference in the relative survival of patients with or without use of radiation treatment postsurgery at years 2 (100% vs 91.6%, Z-score = 2.057, P = 0.04) and 3 (98.9% vs 79.7%, Z-score = 2.41, P = 0.02). In the stage T4a subgroup analysis, there was still a statistically significant difference in relative survival of patients with or without use of radiation postsurgery at years 2 (100% vs 92.2%, Z-score = 2.243, P = 0.02), 3 (99.7% vs 83.2%, Z-score = 2.107, P = 0.04), and 4 (99.4% vs 82.7%, Z-score = 2.057, P = 0.04).

Conclusion: Our study showed that relative survival of stage T4 DMM patients with postsurgery radiation was significantly higher than patients without postsurgery radiation. This finding needs to be validated in prospective clinical trials.

Commercial support: None identified.

Vemurafenib induced “fixed drug-like eruption” with acantholytic pattern: A case report

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Vemurafenib is a selective BRAF kinase inhibitor. This drug improves survival in stage III or IV melanoma. We describe a “fixed drug-like eruption” adverse effect, with a histological pattern of acantholysis, not previously reported.

Case: A 69-year-old, white male patient presented to the dermatology room with skin lesions on left pectoral region which was diagnosed of nodular melanoma. Local excision of the lesion and axillary lymphadenectomy were performed. Imaging studies confirmed the presence of pulmonary metastasis. Molecular testing showed a positive mutation for BRAF V 600. We decided to start on therapy with vemurafenib (960 mg twice a day). After one month of therapy he was admitted to the Emergency room because a purulent, left axillary mass. Subsequent biopsy of this mass was positive for melanoma metastasis. The patient developed a puritic, maculopapular exanthem, confluent on the face and upper trunk region. On both hypothenar regions he showed two pseudovesicles erythematous plaques that subsequently evolved to blisters. In the oral cavity, erosions and a lichenoid network were observed. The histologic study of the trunk showed mixed perivascular inflammatory infiltrates in the dermis. In the hand lesion, there was a marked epidermal acanthosis with an intraepidermal blister, scattered acantholytic keratinocytes and mild dyskeratosis. Eosinophils predominated in the epidermal infiltrate. Direct immunofluorescence was negative. Drug withdrawal was necessary in order to achieve remission of skin lesions.

Discussion: Vemurafenib improves survival in patients with metastatic melanoma harboring the BRAF V600 mutation. The most common toxic effects are arthralgia, myalgia, and fatigue. Less common effects are photosensitivity, alopecia, eruptive nevi and cysts. Squamous cell carcinoma and keratoacanthomas have also been described. The most severe reaction includes Stevens–Johnson syndrome or toxic epidermal necrolysis. Our patient had a severe drug skin reaction and a fixed drug-like eruption on the hands. There were two cases in the literature of rash on the trunk with acantholytic dyskeratosis pattern typical to Groover-like rash. To our knowledge, this is the first reported case of intraepidermal blister with acantholytic dyskeratosis mimicking a fixed drug eruption. These cutaneous manifestations can be managed with topical treatment, but in our case the severity of the rest skin lesions forced the suspension of the drug.

Commercial support: None identified.

2361
Vemurafenib-associated neutrophilic panniculitis in a patient with metastatic amelanotic melanoma presenting with cancer of unknown primary origin

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The treatment of metastatic melanoma is challenging. The BRAF gene mutation is found in 40-60% of melanoma, the most common being the V600E mutation. Vemurafenib was approved by the Food and Drug Administration in 2011 as target therapy for the treatment with BRAF V600 mutation—positive metastatic melanoma. Herein we report a case of metastatic amelanotic melanoma with unknown primary as the initial presentation. The patient presented with neutrophilic septal panniculitis one week after vemurafenib treatment, which is a rare cutaneous toxicity of BRAF inhibitor (BRAFi). We also review current literature on management of BRAFi-related cutaneous toxicities.

Commercial support: None identified.
NONMELANOMA SKIN CANCER

2408
A 13-year retrospective study of basal cell carcinoma in a Canadian population: A comparison between anatomical location and histopathological subtypes

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Background: It is unknown whether the histologic subtypes of basal cell carcinoma (BCC) arise from a common progenitor cell or whether other factors play a role in their pathogenesis. Although BCC is the most common type of skin cancer, there are no Canadian studies to document the histologic variants of this tumor and their relationship with age, gender and body site.

Objective: To investigate the relationship between the different BCC histopathologic subtypes and anatomical distribution of the BCC in a Canadian population.

Methods: Between 1995 and 2005, the charts of all patients diagnosed with BCC in a single private dermatology practice in Vancouver, Canada were retrospectively reviewed. Only the first two histologically confirmed tumors were collected from each patient.

Results: From a total of 418 patients with 1005 tumors, 557 qualifying BCCs were identified. 418 were a first histologic diagnosis of BCC. Overall, nodular BCCs accounted for 58% of all tumors and 66% were situated on the head/neck (OR = 3.0, 95% CI = 2.1-4.3, P < .0001) and in older people (OR = 1.6, 95% CI = 1.1-2.1, P = .02). Superficial BCCs were often localized to the trunk (OR = 3.2, 95% CI = 2.1-4.9, P < .0001) and almost half were evident in those between the ages of 40-59 years (OR = 1.8, 95% CI = 1.2-2.5, P < .0001). Infiltrative and mixed BCCs appeared predominantly on the head and neck (OR = 2.9, 95% CI = 1.6-5.2, P < .001). Nodular (OR = 3.1, 95% CI = 2.1-4.5, P < .0001) and mixed BCCs (OR = 6.3, 95% CI = 1.5-26.9, P = .004) were more frequent in women (OR = 3.7, 95% CI = 2.5-5.7, P < .0001).

Conclusion: Our results show a preference of at least some BCC subtypes for certain anatomical locations and gender. This suggests possible differences in the pathogenesis of this malignancy.

Commercial support: None identified.

3087
A dose finding trial with a novel ingenol derivative (LEO 42040) for field treatment of actinic keratosis on the scalp

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Introduction: LEO 42040 is a novel ingenol derivative developed for improved chemical and biologic properties compared to ingenol mebutate. This phase 1/2 trial investigated the efficacy and safety of LEO 42040 gel in patients with actinic keratosis (AK) on the scalp.

Methods: This was a randomized, double-blind, parallel-group, vehicle-controlled 8-week dose-finding trial investigating efficacy and safety of 0.037% and 0.05% LEO 42040 gel field treatment administered daily for 2 consecutive days on the balding scalp (25-250 cm²) with 5-20 clinically typical AKs in the treatment area. The 0.05% dose was selected based on the outcome of the dose escalation part of the trial. Six investigational components of local skin reactions (LSRs) were assessed on a scale from 0 to 4, yielding a maximum composite score of 24. Efficacy was assessed by AK count on days 29 and 57; LSRs and adverse events were assessed on days 1, 3, 8, 15, 29, and 57. Patients completed a Treatment Satisfaction Questionnaire (TSQ) on day 57.

Results: A total of 165 patients were randomized and received treatment. In each treatment group at least 96% of patients completed all treatments. The median age was 72 years; all were men, white, and had Fitzpatrick skin type III. The median history of AK was 9 years. At baseline the median number of AKs in the treatment area was 13. For both active doses the composite LSR score peaked at day 3, rapidly declined thereafter and was almost at baseline at 2 weeks. The AK count score for the active treatments was higher than for vehicle (8.6: 8.7 vs 1.5). Both active treatments were well tolerated with the most common adverse drug reactions being alopecia, pruritus, and site pain-related burning (48%: 57% vs 6%) and application-site pruritus (25%: 25% vs 5%). There were no treatment-related serious adverse events. Global treatment satisfaction score was high for both active treatments and higher than vehicle (75%: 75% vs 75%).

Conclusion: Both doses of LEO 42040 gel were effective as field treatment of AK on the balding scalp and statistically significantly superior to vehicle, were well-tolerated based on the adverse event profile and LSRS, and were associated with high global treatment satisfaction.

Supported by LEO Pharma A/S.

2650
Arikossoff’s tumor: an atypical presentation

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Introduction: Arikossoff’s tumor or granular cell tumor (GCT) is usually benign. It might involve multiple anatomical sites, most frequently the head and neck. In the past, it was a highly infrequent tumor. The pathogenesis of this tumor is still unknown. It has been considered a hamartoma, a metaplastic reaction of neural origin, a neuroendocrine tumor, and even a vascular tumor. Its treatment is usually surgical excision but it can recur after incomplete excision.

Case report: A 55-year-old woman was referred to us with a hypertrophic lesion, not painful, that appeared one year before in the lower abdomen after a strong trauma in this area. She had a brownish nummular tumor lesion, infiltrating but not adhered to the skin. The lesion was a brownish round, firm, mobile, 5 x 5 cm lesion. Surgical biopsy was performed. Histopathological examination revealed a tumor composed of uniform, oval cells with abundant eosinophilic cytoplasm and indistinct cell borders. There were no mitotic figures. The cells were immunoreactive for S-100 protein and CD68. The diagnosis was cutaneous granular cell tumor.

Discussion: Arikossoff’s tumor is a rare benign neoplasm that may affect any part of the body. It usually appears from the second to the sixth decade of life and it is twice as common in women as in men. It’s relatively more common among black people. This tumor usually presents as a slow growing, solitary and painless nodular mass, located mainly in head and neck areas, the tongue being the most frequent site of occurrence. It is not a melanocytic tumor. Histologic examination revealed a tumor composed of uniform, oval cells with abundant eosinophilic cytoplasm and indistinct cell borders. There were no mitotic figures. The cells were immunoreactive for S-100 protein and CD68. The diagnosis was cutaneous granular cell tumor. A histopathological examination revealed a tumor composed of uniform, oval cells with abundant eosinophilic cytoplasm and indistinct cell borders. There were no mitotic figures. The cells were immunoreactive for S-100 protein and CD68. The diagnosis was cutaneous granular cell tumor.

Conclusion: We present a case of cutaneous GCT, benign, localized in lower abdomen (an infrequent location), presenting as a hystiocytoma-like lesion that appeared after a strong trauma in this anatomic area.

Commercial support: None identified.

AB192
A histologic examination of Merkel cell carcinoma

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Introduction: Merkel cell carcinoma (MCC), also known as neuroendocrine carcinoma of the skin, is a rare, aggressive and highly lethal tumor of the skin. It has a particular predilection for the head and neck area. The tongue being the most frequent site of occurrence. It is not a melanocytic tumor. Histologic examination revealed a tumor composed of uniform, oval cells with abundant eosinophilic cytoplasm and indistinct cell borders. There were no mitotic figures. The cells were immunoreactive for S-100 protein and CD68. The diagnosis was cutaneous granular cell tumor.

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Commercial support: None identified.
An overview of the skin surveillance and photoprotection behaviors in the liver transplant recipients in Queensland, Australia

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Introduction: Nonmelanoma skin cancers such as squamous cell carcinoma and basal cell carcinoma are commonly encountered cutaneous neoplasms in solid organ transplant recipients (OTRs) and can lead to significant morbidity. Patient education is therefore of paramount importance to encourage both timely assessments and treatment of suspected lesions in these high-risk individuals. The aim of this study was to review the skin surveillance and photoprotection behaviors to determine whether these were adequate amongst the liver transplant recipients in Queensland, Australia.

Methods: A total of 183 patients were recruited from the Princess Alexandra Hospital in Brisbane. All patients completed a health and sun survey questionnaire which collected information regarding the frequency of their skin surveillance and photoprotection behaviors.

Results: Less than one-third of the patients reported participating in physician assistant whole body skin examinations at a frequency of more than once a year. In regards to photoprotection, patients with a previous history of skin cancer were more likely to participate in photoprotection with hats and long sleeve clothing as well. However, again less than one-third of the participants reported practicing these photoprotection behaviors all the time when outdoors.

Conclusion: Our study provides a good snap shot of the skin surveillance and photoprotection in liver transplant recipients in Queensland, Australia. Our data highlight that there continues to be room for improvement in both patient education, regarding sun-protection measures and the need for regular skin surveillance by their general practitioner or dermatologist; particularly in this high-risk subgroup of OTRs. Presence of a dedicated transplant dermatology clinic which implements skin care guidelines based on the current evidence as well as recommendations made by the International Transplant Skin Care Collaborative (ITSCC) for skin care may provide an avenue to improve patient compliance when it comes to practicing photoprotection and well as skin surveillance behaviors in the future.

Commercial support: None identified.

Assessment of quality of life (QoL) using Skindex-16 in patients (pts) with locally advanced basal cell carcinoma (laBCC) treated with vismodegib (VISMO) in the STEVIE study

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Background: VISM0 is approved for use in adults with laBCC or metastatic BCC (mBCC) in combination for surgery or radiotherapy; STEVIE (NCT01867665) is an ongoing phase 2 study evaluating the safety of VISM0 (150 mg/d in 28-d cycles) in pts with laBCC or mBCC. A secondary objective assesses the effect of VISM0 on QoL using Skindex-16. Here we present Skindex-16 results for pts with laBCC.

Methods: Skindex-16 has 16 questions in three domains (symptoms, function, and emotions); it was designed for chronic diseases. Median change from baseline for emotion scores was observed at all time points in pts with laBCC (n = 455), with median change from baseline of −14.3 at C2, −23.8 at C7, and −23.8 at E0; they were consistent across all pts subgroups. Improved emotion scores at E0 were primarily complete and partial responders (vs stable and progressive disease). Symptom scores were maintained throughout end of study in pts with laBCC, while CMI were observed in subgroups (locations other than head/neck, C2 and end of study [both −10.4]) and in female pts and those aged ≥65 y (both −12.5 at C7). No CMI were seen for function scores in pts with laBCC.

Conclusions: In pts with laBCC, VISM0 was consistently associated with CMIs in emotion scores. Emotion scores were consistent with clinical response. The Skindex-16 has limited applicability to nonskin-related symptoms, including AE. However, some CMIs in symptom scores were seen in limited subgroups of pts categorized by age, sex, and lesion location.

Supported by F Hoffmann-LaRoche.

Baseline quality of life and psychosocial health of skin cancer patients

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Background: Despite the high prevalence of skin cancer, few studies have measured its effect on patient quality of life (QOL) and psychosocial health using disease-specific validated instruments.

Objective: To assess the baseline QOL and levels of psychosocial distress in patients with nonmetastatic skin cancer.

Methods: We conducted a cross-sectional study of 136 consecutive patients presenting for the treatment of nonmetastatic skin cancer between February and April 2015 across two surgical facilities in the same academic institution. Prior to treatment, patients completed a questionnaire documenting sociodemographic and medical information. Additionally, they completed validated psychometric measures of QOL (Skin Cancer Index (SCI)) and symptoms of anxiety and depression (Hospital Anxiety and Depression Scale (HADS)).

Results: The mean overall SCI score for the sample was 69.8 out of 100 (95% CI 66.3, 73.4). Decreased SCI scores, corresponding to decreased QOL, were associated with younger age (P < 0.01), higher income (P = 0.01), and a suburban/rural clinic location (P < 0.01). Women scored lower than men in the SCI appearance subscale (P = 0.03). Depression levels were greater for immunosuppressed patients (P < 0.01), those with severe chronic disease (P < 0.01), and those with lower income (P = 0.04). Anxiety levels were greater for younger patients (P = 0.01) and smokers (P = 0.02). 24% of patients met the threshold for clinical signs of psychosocial distress (HADS score ≥7). HADS anxiety scores negatively correlated with total SCI scores (P < 0.01).

Limitations: Limitations include cross-sectional study design, imputed patient survey data, and patient self-reported characteristics.

Conclusion: The SCI and HADS are validated tools sensitive to psychosocial changes in patients with nonmetastatic skin cancer. Younger patients, women, and those with higher income are most impacted by their skin cancers, while smokers, immunosuppressed patients, and those with severe illnesses are at risk for symptoms of anxiety and depression. Nonmetastatic skin cancers appear to have a moderate impact on patient QOL but use of disease-specific tools such as the SCI precludes value comparisons to the general population. Future studies will identify how patient-reported outcomes change with treatment of skin cancer.

Commercial support: None identified.

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Baseline quality of life and psychosocial health of skin cancer patients

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Commercial support: None identified.
3361
BOLT 18-month analysis: efficacy and safety with sonidegib in locally advanced BCC (laBCC)

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Background: Durable clinical benefit and manageable tolerability were observed with the hedgehog pathway inhibitor (HPI) sonidegib in patients (pts) with laBCC in the phase 2 BOLT study. Updated efficacy and safety in pts with laBCC treated with sonidegib 200 mg using data collected up to 18 months (mo) after randomization of the last pt are reported here.

Methods: Tumor responses were assessed by central review by MRI per RECIST v1.1, photo per WHO guidelines, and histology in multiple biopsies, and a composite overall response (COR) for each pt was determined using criteria A (per protocol; more stringent) and B (similar to the criteria used in prior HIP studies in BCC). The key distinction between these criteria is the stringency required to achieve a COR of complete response (CR). Criteria A required negative histology and a CR (or CR equivalent) by all image modalities used in this analysis, whereas criteria B allowed a COR of CR with negative histology and either a CR or a partial response (PR) by MRI or photo. In this analysis, objective response rate (ORR; CR + PR) and duration of response (DOR) were evaluated using both criteria. Safety was assessed in treated pts until 30 days after the last dose per CTCAE v4.03. ORRs using criteria A and B were similar, 37% (56%) and 40% (61%) pts, respectively. However, more pts achieved a CR with criteria B than A, 15% (23%) vs 3% (5%) respectively. PR was achieved in 34% (52%) pts with criteria A, and 28% (48%) pts with criteria B. Response correlated with other disease progression or death in 15% (20%) and 13% (17%) of pts respectively.

Results: Among a total of 935 pts with BCC in our hospital for 16 years, 59 patients (6.5%) had multiple BCCs. Multiple BCCs were identified simultaneously on the date of diagnosis in 41 patients (69.4%), and had interval a mean of 9.2 months between first and subsequent lesion. There were 152 BCC lesions in 59 patients, they were mainly located on nose (59.2%) and cheek (22.5%). Fifty (84.7%) of 59 patients had same anatomic site of BCC lesions and 9 (15.3%) of 59 patients had different anatomic site of BCC lesions.

Conclusion: The result of this study showed that the subsequent BCCs are located nearly the first BCC. Encountering patients with BCC, physician should look closely at the lesion with consideration for multiple BCCs. Furthermore, occurrence of new BCCs as well as recurrence should be evaluated during follow-up periods.

Commercial support: None identified.

3358
Clinicohistopathologic study of multiple basal cell carcinomas in Korea
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Background: Basal cell carcinoma (BCC) is the most common malignant skin tumor. Some studies reported that the number of patients who develop more than one BCC is increasing. To date, however, the characteristics of patients with multiple BCCs is not well elucidated in Korean literature.

Objectives: To investigate the incidence and characteristics of patients with multiple BCCs in Korea.

Methods: Fifty nine patients confirmed with more than two BCCs in Pusan National University Hospital for 16 years were included. We reviewed the clinical records of these patients.

Results: Among a total of 935 patients with BCC in our hospital for 16 years, 59 patients (6.5%) had multiple BCCs. Multiple BCCs were identified simultaneously on the date of diagnosis in 41 patients (69.4%), and had interval a mean of 9.2 months between first and subsequent lesion. There were 152 BCC lesions in 59 patients, they were mainly located on nose (59.2%) and cheek (22.5%). Fifty (84.7%) of 59 patients had same anatomic site of BCC lesions and 9 (15.3%) of 59 patients had different anatomic site of BCC lesions.

Conclusion: The result of this study showed that the subsequent BCCs are located nearly the first BCC. Encountering patients with BCC, physician should look closely at the lesion with consideration for multiple BCCs. Furthermore, occurrence of new BCCs as well as recurrence should be evaluated during follow-up periods.

Commercial support: None identified.

3248
Clinical characteristics of nonmelanoma skin cancers recurring within 5 years after Mohs micrographic surgery

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Background: Mohs micrographic surgery (MMS) has been used for decades to treat certain high-risk nonmelanoma skin cancers (NMSC) due to its high cure rate. However, clinical recurrences do occur in a small number of cases, cited as 1% in the literature. We examined specific clinical characteristics associated with NMSC recurrence following MMS including histopathology, immunosuppression, smoking status, and anatomical location.

Methods: We employed a retrospective chart review of 1471 cases of MMS performed at UC San Diego (UCSD) during 2008 and 2009. Medical records were reviewed to determine recurrence within 5 years following MMS for patients who had medical follow-up at UCSF. Patients who did not follow-up for at least 5 years at UCSF after the initial MMS were contacted via telephone and asked whether they had further treatments in the location of the initial MMS. We excluded 561 cases due to lack of follow-up, resulting in a total of 1110 cases for our study.

Results: We identified 5 (0.45%) recurrences from the 1110 cases of MMS performed in 2008 and 2009. There were 724 cases of basal cell carcinoma (BCC); 3 were recurrences (0.41%). There were 357 cases of squamous cell carcinoma (SCC); 2 were recurrences (0.56%). Thirty (6%) recurrences occurred in past smokers. Both SCC recurrences occurred in immunosuppressed patients. No recurrences were found in the 29 cases of other subtypes of NMSC including dermatofibrosarcoma protuberans and atypical fibroxanthoma. All recurrences were located on the cheek or ears, and not on the nose. Time to the NMSC recurrence ranged from 11 to 58 months with a mean of 23.6 months. Review of MMS histopathology of these recurrent tumors showed that there were no errors or difficulty with the processing or interpretation of the slides.

Conclusions: Recurrence of NMSC following MMS at our institution is below the reported average. Our retrospective chart review identified specific clinical characteristics associated with NMSC recurrence including a history of smoking, anatomic location on the cheeks, ears or nose, and a history of immunosuppression for 5 years or more. Recurrences were not evident in the years immediately following MMS, further longitudinal studies are warranted to further analyze clinical characteristics associated with recurrences.

Commercial support: None identified.

2336
Comparison between 2 mm margin excision, 4 mm margin excision, and Mohs excision, in periorbital basal cell carcinomas

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Introduction: The excision of periorbital basal cell carcinomas represents a particular challenge as 4-mm margins may result in the removal of a large area of healthy periorbital tissue, causing significant morbidity such as lagophthalmos, ectropion and exposure keratopathy. Studies have shown that treatment with 2-mm margins may be a safe and efficient alternative, especially for nodular basal cell carcinomas. However this has not been compared with Mohs excision.

Methods: All periorbital basal cell carcinomas treated at the Mohs Surgery Unit at the University of Ottawa, Ottawa, Canada, were retrospectively reviewed from 2011-2015. The largest preoperative size with 2 mm margin excision and with 4 mm margin excision were compared to the final largest postoperative size following Mohs excision.

Results: There was a statistically significant difference between the 2-mm margin excision group and the Mohs excision group (P < .05). 75% of the 2-mm margin excision group had a larger Mohs excision size, indicating that 2-mm margins would have been insufficient for complete tumor removal in these patients. 14% had more than a 1 cm difference between excision with 2-mm margins and the final Mohs excision. For the 4-mm excision group, 55% had a larger Mohs excision size and 10% had more than a 1 cm difference. However, there was no statistically significant difference between the 4-mm margin excision group and the Mohs excision group. Of the patients with nodular basal cell carcinomas, 66% of the 2-mm margin excision group had a larger Mohs excision size, and 17% had more than a 1 cm difference (P < .05).

Conclusions: 2-mm margins appear to be insufficient for complete tumor removal in periorbital basal cell carcinomas, including nodular basal cell carcinomas. 4-mm margins may not be insufficient in a minority of cases. For periorbital basal cell carcinomas, where the maintenance of healthy tissue is of particular importance, Mohs excision appears to be the safest option.
Conclusion: During Mohs micrographic surgery of NMSC with frozen sections, inflammation was not seen in preceding sections was 91%, with segment-specific coefficients from 0.196-0.323. The probability that tumor was absent when inflammation on histologic frozen section of an excision specimen were followed by inflammation at this location, the location was clear of tumor.

Results: Of the 3148 NMSC cases that were reviewed, 60 cases that exhibited inflammation on histologic frozen section of an excision specimen were followed by tumor in the subsequent excision specimen. There was a significant positive correlation between the presence of inflammation and the site of the additional tumor at 6 of 12 segments (Pearson correlations, $P < .05$), with correlation coefficients from 0.160-0.323. The probability that tumor was absent when inflammation was not seen in preceding sections was 91%, with segment-specific values from 82.96%.

Conclusion: During Mohs micrographic surgery of NMSC with frozen sections, presence of histologic inflammation is modestly predictive of adjacent tumor, but lack of inflammation is a strong predictor that no additional tumor will be found.

Commercial support: None identified.
Development of squamous cell carcinoma on actinic keratosis after ingenol mebutate (Picato®) gel.

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Background: Actinic keratosis (AK) is an area of dysplastic epidermal keratinocytes that undergo transformation due to substantial ultraviolet (UV) exposure. In turn, actinic keratosis therapy for dysplastic lesions is of utmost importance. However, a squamous cell carcinoma (SCC) can develop from AK. Ingenol mebutate (Picato®) gel is a new short-term topical treatment approved in 2012 by the US food and Drug Administration (FDA).

Patient and method: A 79-year-old female presented with a chief complaint of numerous AK plaques on her face with itching sensation. During the physical examination of her face, nine lesions were found with 1 to 2-cm sized well-defined erythematous patches and plaques with crusts. Biopsy was carried out at the lesions, and the biopsy specimens were consistent with actinic keratosis. We applied 0.015% ingenol mebutate gel on the affected area with a 0.5-cm margin once daily for 3 days consecutively.

Result: Transient local skin reactions (erythema, flaking, and crustsing) were observed, but had resolved spontaneously by 2 weeks. Most of the lesions were improved clinically, but one lesion located on the forehead was mildly aggravated. Because the patient desired to observe the lesion without treatment, we decided to close follow-up. This lesion was still observed at 2 months follow-up period and got larger in size. The lesion was presented with a well-defined hyperkeratotic erythematous plaque measuring 1.5 x 1.5 cm with crusts on her forehead. Wide local excision was performed and the histopathologic result showed the extension of atypical keratinocytes into the dermis with nests of tumor cells and squamous differentiation. The patient was diagnosed with squamous cell carcinoma.

Conclusion: The occurrence of nodule on the forehead shortly after treatment and its fast growth rate could raise the possibility of an undesired effect of ingenol mebutate. When only the effects of inflammatory responses stimulate the dysplastic epidermal cells of AK dominantly at low dose concentration, the AK can be rather progress to rapidly growing SCCs through the activation of inflammatory substances, IL-1β and MMPs. Although this is a rare phenomenon, the progression of AK lesions by inflammatory triggering effects at low concentration of ingenol mebutate should be acknowledged by clinicians. And they should not hesitate to change the treatment to surgical excision, a more invasive procedure, when the lesions progress abruptly.

Commercial support: None identified.

3189

Effectiveness and diagnostic performance of dermoscopy on routine teledermatology-based skin cancer triage. Interim results of a randomized study

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Background: After 10 years teledermatology (TD) has turned into a routine triage. In this study we aimed to determine whether dermoscopy could improve triage. Teledermatology-based triage.

Objectives: To analyze the potential benefits gained from the addition of dermoscopic pictures in the teleconsultations.

Methods: This study involves the first 3 months of a long-term controlled randomized study. Patients were randomized (125 CTC and 125 CTC+DTC). The most common lesion to be used for the study was actinic keratosis. The digital dermoscopic images were uploaded by the dermatologist at the time of the teleconsultation and only the most representative image per lesion was considered. A dermatologist blindly assigned a diagnostic confidence level (DCL) and nonreferral rate were compared between both procedures (CTC vs. CTC+DTC).

Results: 250 patients with an average age of 55.43 years (95% CI 50.91-55.94 years) were randomized, 125 CTC and 125 CTC+DTC. The most common lesion consulted was seborrheic keratosis (29.20%, n = 72), followed by common acquired melanocytic nevus (26.00%, n = 65). Basal cell carcinoma was the most common malignant diagnosis (6.40%, n = 6.40%), followed by squamous cell carcinoma (3.20%, n = 8). 60.80% and 76.80% of patients managed through CTC and CTC+DTC were not referred to the skin cancer clinic, respectively. In pigmented lesion this percentage was 69.39% and 89.13%, respectively. The time spent by the GP was 8.44 minutes for CTC and 8.70 minutes for CTC+DTC (P = 0.1). There was no difference between the time spent by the dermatologist in the evaluation of CTC and CTC+DTC (0.04 minutes vs. 0.12 minutes, P = 0.14). Dermoscopic pictures increased the telecommunications rated with the highest DCL (61.60% vs 79.20%, P = 0.01). Dermoscopic pictures improved sensitivity (0.60 vs 1.00) and specificity (0.81 vs 0.97) of skin cancer triage, with a lower rate of false positive (0.18 vs 0.05) and false negative (0.40 vs 0.00) results.

Conclusion: The interim results of this prospective randomized study provide meaningful favorable data ahead of the definitive results of a large-scale study on the effect of the addition of dermoscopic pictures to the routine TD-based skin cancer triage.

Commercial support: None identified.

3401

Efficacy and safety of sonidegib in patients (pts) with nevoid basal cell carcinoma syndrome (NBCCS)

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Background: NBCCS, a rare autosomal dominant disorder caused by mutations in the hedgehog (Hh) pathway regulator PTCH1, causes development of multiple BCCs which necessitates numerous surgeries. Here, we describe the efficacy and safety of sonidegib, a systemic Hh pathway inhibitor (HHI), in pts with NBCCS treated in 2 double-blind, randomized phase 2 trials (NCT01355115 [A]; NCT01327095 [B]; BOLT 18-mo analysis; median follow-up, 26.3 mos).

Methods: In trial A, pts with NBCCS with ≥2 BCCs were randomized to receive sonidegib 400mg daily or placebo (PBO) for 12 weeks (W), followed by surgical excision of the target BCC or tumor-free area at W16. The primary endpoint (PE), rate of clinical clearance of the main target BCC (assessed until W16), was met if the complete clearance rate was ≥50%. Histologic clearance of target BCCs and change in BCC tumor burden in up to 20 BCCs were also assessed. In trial B, pts with advanced BCC were randomized 1:2 to sonidegib 200 or 800 mg daily. The PE, objective response rate (ORR; complete response [CR] + partial response [PR]; met if ≥50% in either arm), was assessed per central review using mRECIST (locally assessed BCC) and RECIST 1.1 (metastatic BCC). Safety was assessed as mild/moderate/severe for >7 months after last dose in A and per CTCAE 4.03 until 30 days after last dose in B.

Results: The PE was not met in A; however, all sonidegib-treated pts (n = 7) had clinical clearance of target BCCs: 43% complete (100% partial), 13% marked (76%-99%), and 14% moderate (26%-75%). In contrast, target BCCs worsened or showed no change in 63.6% mm in 400 mg sonidegib group at W16, in pts with high tumor burden at baseline (>50 BCCs; n = 4), BCC number reduced after day 45 and increased further beyond the treatment period. In B, ORRs in pts treated with sonidegib 200 (n = 5) or 800mg (n = 13) were 35% (1 PR) and 62% (1 CR, 7 PRs), respectively. Overall, safety was consistent with previous reports of sonidegib and other HHI s, with muscle spasms, myalgia, nausea, alopecia, and dysgeusia being uncommon adverse events.

Conclusions: Given the clinical benefit and manageable safety profile observed in these studies, treatment with sonidegib may be a promising nonsurgical option for pts with NBCCS.

Commercial support: None identified.
3359
Efficacy following discontinuation of sonidegib treatment in patients with locally advanced basal cell carcinoma

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Background: Despite the risk of significant morbidity and disfigurement, patients (pts) with laBCC may not perceive their disease as life-threatening. In BOLT, a phase 2 study of the hedgehog (Hh) pathway inhibitor sonidegib (NCT01327053), some pts discontinued (DC) treatment before progression (PD), potentially due to adverse events (AEs). This analysis assesses efficacy in pts with laBCC who DC sonidegib before PD using data from the 18-mo analysis (median follow-up: 26.3 mo; cutoff, July 11, 2014).

Methods: Pts with laBCC were randomized 1:2 to sonidegib 200 (n = 66) or 800 (n = 128) mg daily. Objective response rate (ORR; complete response [CR] + partial response [PR]) and duration of response (DOR) were assessed by central and investigator (INV) review per mRECIST. Safety was assessed per CTCAE v4.03 until 30 d postlast dose.

Results: By the data cutoff, 86% of pts with laBCC DC treatment, primarily due to PD (56%/69%), alopecia (52%/61%), and dysgeusia (47%/59%). AEs leading to discontinuation in ≥5% of pts with laBCC were muscle spasms (200 mg/800 mg: 3%/9%), decreased weight (5%/6%), and alopecia (2%/7%).

Conclusions: Sonidegib demonstrated sustained, clinically meaningful responses in pts with laBCC, with similar efficacy observed in pts with aggressive and nonaggressive tumor histologies. The 200 mg dose showed an improved benefit-risk profile in pts with laBCC.

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3356
Efficacy of sonidegib in patients with aggressive and nonaggressive subtypes of locally advanced basal cell carcinoma

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Introduction and objectives: BCCs with aggressive (eg, micronodular or infiltrative) histology are associated with higher rates of recurrence and, for certain subtypes, an increased likelihood of subclinical spread. The hedgehog pathway inhibitor sonidegib has demonstrated clinical benefit in >90% of patients (pts) with locally advanced (la)BCC in the BOLT phase 2 study, with durable tumor responses observed through a median follow-up of 20 months (mo). Here we evaluate the efficacy and safety of sonidegib in pts with aggressive vs nonaggressive histologic subtypes of laBCC based on target lesion size, with the median determined using combined data from both subgroups.

Methods: Pts with laBCC not amenable to curative surgery or radiotherapy were randomized to sonidegib 200 mg (n = 66) or 800 mg (n = 128) daily. Objective response rate (ORR; complete response [CR] + partial response [PR]), duration of response (DOR), and progression-free survival (PFS) were assessed according to mRECIST criteria. Safety was assessed in treated pts according to CTCAE v4.03 until 30 d postlast dose.

Results: ORRs in all pts with laBCC (n = 194) by central review were 56% and 45% in the 200 and 800 mg arms, respectively. Aggressive tumor histology was found in 57% of pts with laBCC. ORR was similar in pts with aggressive subtype [59% in 200 mg, 44% in 800 mg] and nonaggressive subtypes [51% in 200 mg, 47% in 800 mg]. PFS events (progressive disease or death) occurred in 6/22 responders in the 200 mg group and 10/33 in the 800 mg group for pts with aggressive histology and in 4/15 and 7/27 in responders respectively in the nonaggressive groups. Median DOR was not reached in both aggressive and nonaggressive 200 mg groups. Median PFS was 22.1 mo and 19.4 mo in the aggressive 200 and 800 mg groups and 36.5 mo in the nonaggressive 800 mg group. Median PFS was not reached in the nonaggressive 200 mg group. In pts with laBCC (n = 193), the most common adverse events (AEs) at any grade: 200 mg/800 mg were muscle spasms (56%/59%), alopecia (52%/51%), and dysgeusia (47%/59%). AEs leading to discontinuation in ≥5% of pts with laBCC were muscle spasms (200 mg/800 mg: 5%/9%), decreased weight (5%/6%), and alopecia (2%/7%).

Conclusions: Sonidegib demonstrated sustained, clinically meaningful responses in pts with laBCC, with similar efficacy observed in pts with aggressive and nonaggressive tumor histologies. The 200 mg dose showed an improved benefit-risk profile in pts with laBCC.

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3349
Efficacy of sonidegib in patients with locally advanced basal cell carcinoma (laBCC) by tumor burden

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Background: Large BCCs can be difficult to manage with surgery and/or radiotherapy and are more likely to recur and lead to further advanced disease. Treatment with the hedgehog pathway inhibitor sonidegib resulted in tumor shrinkage in >90% of patients (pts) with laBCC in the phase 2 BOLT study (NCT01327053; Migden et al. Lancet Oncol. 2015). Here, efficacy by tumor burden in pts with laBCC treated with sonidegib using updated data (18-mo analysis; cutoff, July 11, 2014; median follow-up: 26.3 mo) is reported.

Methods: Pts with laBCC, not amenable to curative surgery or radiotherapy, were randomized to sonidegib 200 mg (n = 66) or 800 mg (n = 128) daily. Objective response rate (ORR; confirmed complete response [CR] + partial response [PR]), duration of response (DOR), and progression-free survival (PFS) were evaluated according to BCC-modified RECIST by central review. Tumor burden was evaluated based on target lesion size, with the median determined using combined data from both subgroups.

Results: By the data cutoff, median duration of exposure was 11.1 and 6.5 mo for the 200 mg and 800 mg arms, respectively. Median tumor burden at baseline was 12.10 cm² (70.570.35 cm²). The ORRs for all pts were 56.1% with sonidegib 200 mg and 45.5% for 800 mg. ORRs were numerically higher in pts with a tumor burden ≥100 cm² (200 mg: 69.6%, n = 23; 800 mg: 58.9%, n = 50) than in pts with a tumor burden <100 cm² (200 mg: 56.7%, n = 34; 800 mg: 42.9%, n = 49). With both doses, >50% of responders had DOR ≥6 mo regardless of tumor burden (200 mg: 7.16%/mo; 800 mg: 2.14%/mo). Median PFS was 22.1 mo with sonidegib 200 mg and 22.0 mo with 800 mg. With sonidegib 200 mg, 5 and 10 PFS events (progressive disease or death) occurred in pts with a tumor burden < median; 10/17 ≥ median. 800 mg: 21/35 < median, 13/21 ≥ median. Median PFS was 22.1 mo with sonidegib 200 mg and 22.0 mo with 800 mg. With sonidegib 200 mg, 5 and 10 PFS events (progressive disease or death) occurred in pts with a tumor burden < median; the median; pts with tumor burden ≥ median, respectively. At the 800 mg dose, 12 PFS events occurred in both subgroups.

Conclusions: Sonidegib continued to demonstrate meaningful clinical benefit and sustained tumor responses in pts with laBCC, with more objective responses occurring in pts with a tumor burden < median. These results are not unexpected, as patients with a greater tumor burden may be more difficult to treat due to the extent of their disease.

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Efficacy of sonidegib in patients with metastatic bcc (mBCC)

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Background: In the BOLT phase 2 study, the hedgehog (Hh) pathway inhibitor sonidegib demonstrated clinical benefit in patients (pts) with mBCC. Updated efficacy data collected up to 18 months (mo) following randomization of the last pt (cutoff, July 11, 2014; median follow-up, 26.6 mo) are now reported.

Methods: Pts with mBCC were randomized to receive sonidegib 200 mg (n = 13) or 800 mg (n = 23) daily. Objective response rate (ORR; complete response [CR] + partial response [PR]) duration of response (DOR), and progression-free survival (PFS) were assessed by central and investigator review using RECIST v1.1.

Results: Median baseline tumor burden in pts with mBCC was 4.6 cm (range, 1.5-14.6 cm), and most pts had >1 lesion at baseline. The most common sites of metastases were lung (71%), 200 mg; 52%, 800 mg) and bone (4%, 200 mg; 22%, 800 mg). ORRs (200 mg/800 mg) were 7.7%/17.4% by central review and 23%/54.8% by investigator review. Tumor shrinkage per central review was observed in 92% and 84% of pts in the 200 mg and 800 mg arms, respectively. Importantly, disease control rates (DCRs; CR+PR+stable disease (SD)) following 200 mg/800 mg treatment were high (92.3%/91.3% by central review and 84.6%/86.2% by investigator review). PFS was indicative of treatment benefit (median PFS was 13.1 mo per central and investigator review for 200 mg, and 11.1 mo and 14.5 mo, respectively, for 800 mg) and tumor responses were durable. Median DOR per investigator review was 17.7 and 10.2 mo in the 200 mg and 800 mg arms, respectively. Data from the BOLT primary analysis (cutoff, June 28, 2015) showed that both doses of sonidegib provided near-complete pathway inhibition (>98% decrease from baseline in GLI1 [biomarker for Hh pathway activity] levels) in pts with mBCC. Additionally, maintenance or improvement in quality of life (QOL) was reported in pts with mBCC treated with sonidegib 200 mg and 800 mg. Efficacy results in BOLT are further supported by the phase 1 study; of 6 pts with mBCC treated with daily doses of sonidegib ranging from 100-1500 mg, 5 had PRs, 2 had SD, and 1 pt had an unconfirmed response.

Conclusions: Despite most pts having extensive disease at baseline, sonidegib provided meaningful clinical benefit and disease control in pts with mBCC in the BOLT 18-mo analysis. Durable tumor responses, extended PFS, and encouraging biomarker and QOL data support the potential use of sonidegib as a new treatment option for mBCC, a rare and difficult-to-treat disease.

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Extramammary Paget’s disease in Korea: A single center’s experience

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Background: Extramammary Paget’s disease (EMPD) is a rarely intraepithelial neoplasm affects apocrine gland-bearing skin such as the scrotum, vulva and perineal region. The rarity of this disease difficulties in its characterization. To date, there are few retrospective studies which attempt to characterize EMPD in Korea.

Objective: The aim of this study was to investigate characteristics of Korean patient with EMPD including patient’s demographics, presenting symptoms, treatment, and recurrence rates, and overall prognosis.

Methods: To elicit the clinical pattern of EMPD in Korea, we performed retrospective analysis of patient’s clinical records. Sixty-three patients diagnosed with EMPD in Pusan National University Hospital from June 2002 to June 2015 were included.

Results: Incidence of EMPD was more frequent in men than women (51:12). The most frequently involved site was the scrotum in men and the vulva in women. The mean disease duration was 42.7 months (range, 3-144). Twelve of 65 patients (19.1%) had malignancy in internal organs (DOR), stomach, liver and lung.

Metastasis to the lymph nodes was found in 5 of 65 patients (7.9%). Twenty-three patients (35.5%) underwent Mohs micrographic surgery (MMS), 17 patients (27.8%) underwent nonsurgical excisions, and 16 patients (25.2%) underwent deep surgical excisions. The largest excisions were used as surgical margins such as topical imiquimod application, photodynamic therapy. Patients who underwent MMS experienced the lowest recurrence rate (4.3%) compared with patients who underwent nonsurgical treatment (52.5%) or conventional excisions (17.6%).

Conclusion: The results of our study showed the clinical features of Korean EMPD patients. Recognition of these characteristics of EMPD can be useful for the diagnosis and management of EMPD.
Identification of metastasis-associated microRNAs in basal cell carcinoma

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Background: Basal cell carcinoma (BCC) is the most common cancer in humans, however metastasis is exceedingly rare, occurring in less than 0.1% of cases, and mechanisms for this metastasis are unknown. Cutaneous metastatic cancer cells have been reported to secrete exosomes, membrane-bound vesicles containing miRNAs, that are critical for cancer-host crosstalk, and this could be occurring with metastatic BCCs (MBCC).

Objective: To explore the expression levels of miRNAs purified from serum exosomes of MBCC and nonmetastatic BCC patients, and to assess the functional effects of MBCC exosomes on cultured fibroblasts and keratinocytes.

Methods: After institutional review board approval, serum samples were obtained from patients with MBCC, and non-MBCC at Stanford Hospital and Clinics from 2012-2015. Tumor-derived exosomes were purified from the serum samples, and exosomal miRNAs were extracted. RNA-sequencing was used to assess exosomal miRNA expression levels. Quantitative real-time PCR (qPCR) analysis was performed to confirm the RNA-seq data. Associations of confirmed miRNAs with known cancers were identified by keyword search of miRNAs in MIRbase, PubMed, and Google Scholar. To determine the effect of MBCC exosomes on metabolic activity of cultured keratinocytes and fibroblasts, MTT and Ki67 assays were performed. To assess the effect of MBCC exosomes on cell migration and invasion, transmigration assays were performed.

Results: Using RNA-seq, a total of 75 miRNAs were significantly differentially expressed between the MBCC and non-MBCC groups. qPCR confirmed the increased expression of 24 miRNAs and decreased expression of 10 miRNAs. Several miRNAs that were increased in MBCC exosomes have also been associated with other types of cancer, including bsmir-552 (increased in colorectal cancer metastases) and bsmir-508 (increased in aggressive esophageal squamous cell carcinomas). MBCC exosomes increased the metabolic activity, migration and invasion ability of fibroblasts but not keratinocytes, consistent with potential carcinomas. MBCC exosomes increased the metabolic activity, migration and invasion ability of fibroblasts but not keratinocytes, consistent with potential biologic effect on the dermis.

Conclusion: The miRNAs identified are candidate biomarkers for metastatic BCC that may be confirmed in future larger studies.

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Interest of dermatologic supportive care with specific hydrotherapy after breast cancer treatment: A randomized multicenter controlled clinical study

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Introduction: Treatment of breast cancer in an adjuvant setting is associated with significant dermatologic adverse events. The skin toxicities induced by chemotherapies, surgery, and radiotherapy negatively impact patients’ quality of life (QoL), not only during but also several months after cancer treatment. This controlled study assessed the interest of a specific hydrotherapy performed just after cancer management on QoL and dermatologic adverse events.

Materials and methods: 68 women (mean 52 yo) in complete remission after a standardized (neo)-adjuvant treatment (chemotherapy, radiotherapy, surgery) for infiltrating breast carcinoma were included by oncologists. Specific hydrotherapy management was performed in Avène-Les-Bains center (France) and mainly included daily thermal water showers and massages, with optimized skin care therapy during 3 weeks (HG, n = 53), best dermatologic supportive cares were allowed. Patients were randomized after the last day of radiotherapy (1 to 5 weeks) (inclusion visit) with at least 2 skin toxicities > grade 1 (dry skin, hyperpigmentation, skin induration, pain of skin, pruritus, lymphenheda, hand-foot syndrome, radiodermatosis, nail toxicity, other). Primary endpoint was the assessment of the European Organization for Research and Treatment of Cancer QoL Questionnaire Breast Cancer (EORTC QLC-BR23) from D0 (hydrotherapy start) to D18 (hydrotherapy end). Secondary endpoints included measurements of dermatologic side effects due to anticancer treatments (assessed using National Cancer Institute-Common Terminology Criteria for Adverse Events, CTCAE). In addition, the DLQI and the PGWBI global scores were significantly improved in HG patients compared to CG patients (P < 0.005, P = 0.0005 and P < 0.005, respectively). The EORTC QLC-BR23 was also improved at the end of hydrotherapy: status of QoL (P < 0.005), emotional functioning (P = 0.0001), fatigue (P = 0.17).

Conclusion: QoL is severely impaired in female patients treated for breast cancer. Specific dermatologic supportive care in breast cancer survivors significantly improves patients’ QoL, well-being and reduces dermatologic symptoms due to anticancer treatments.

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3000 Malignant degeneration of chronic ulcer in an long evolution leprosy patient

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Nonhealing trophic ulcers in leprosy are a common phenomenon, but acute malignant transformations them, are relatively rare. A case of squamous cell carcinoma developing in trophic ulcer in leprosy is presented. A 81-year-old man, with a history of chronic ulcers with torpid evolution of both legs secondary to Hansen’s disease thirty years ago, presented to our external clinic with a 3-year history of trophic ulcer of the right foot. He presented with a rapid growing excruciating trophic ulcer over the right foot, with extrusion of a yellowish pseudopod consistent with squamous cell carcinoma. The nuclear magnetic resonance revealed a mass on the posterior region, of the right ankle infiltrating deep structures (tendons, muscles, bone). Amputation was performed. Squamous cell carcinoma arising in chronic ulcers of leprosy patients is uncommon. Most occur in leprosy-endemic countries (India, Africa and Latin America). In Spain, few cases have been described Marjolin ulcers in patients with leprosy. Marjolin ulcer is a well-known, but uncommon malignant ulcer that occurs in chronic wounds and cutaneous scars. Most of the tumors are relatively slow growing and tend to metastasize late with an average time of approximately 25 years. Various theories concerning pathogenesis of Marjolin ulcer have been proposed. Well-differentiated squamous cell carcinoma is the most common histological type of Marjolin ulcer. Biopsy with histopathologic interpretation remains the gold standard for the diagnosis, with radical surgical excision being the treatment of choice.

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2836
Multidisciplinary approach to metastatic primary cutaneous adenocarcinoma of the scalp
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Primary cutaneous adenocarcinoma of the scalp is a rare neoplasm with limited data on treatment. This case report describes a 60-year-old woman referred for management of an 8 x 8 cm right parietal scalp mass. The patient denied prior radiation, arsenic exposure, or multiple actinic keratoses. The patient had no history of genetic predisposition for skin cancer. The lesion was excised with 2 cm margins and sent for pathologic examination.

Pathology analysis revealed an invasive poorly differentiated adenocarcinoma with ulceration and keratin pearls, focal acantholytic changes, and orthokeratotic hyperkeratosis. Immunohistochemistry revealed diffuse positivity for CK7, ER, PR, p53, and MIB1. The lesion was aggressive and metastatic to the right lung, stomach, and skin. Treatment consisted of surgery, radiation, chemotherapy, and biopsies of the bone and liver.

The case highlights the importance of multidisciplinary approach to the management of primary cutaneous adenocarcinoma of the scalp, with a focus on early detection and aggressive treatment.

2897
Multiple tanning bed–induced acral squamous cell carcinomas mimicking arsenical keratoses
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Introduction: Squamous cell carcinoma arises in chronically sun-exposed skin. The major risk factor is ultraviolet light exposure, which includes artificial sources such as tanning beds. Other risk factors include: ionizing radiation, chemicals, HPV, and arsenic exposure. Arsenical keratoses can be caused by chronic exposure to arsenic via drinking water or occupational exposure and is characterized by keratoses of the palms and soles and multiple nonmelanoma skin cancers.

Observation: A 41-year-old woman presented with 2-year history of scaly, erythematous papules and plaques on her lateral feet, calves, and palms. The lesions were pruritic, tender and bled easily. She denied any history of radiation or arsenic exposure including ingesting well water or use of Fowler's solution. She has an extensive history of tanning bed use of over 20 years. Previous biopsies of multiple lesions revealed acinic keratoses and squamous cell carcinoma in situ. Prior treatments included, surgical excision, desiccation and curettage, cryosurgery, topical fluorouracil, and imiquimod. Total urine arsenic level was tested and was 62 mg/L (normal 0-50ug/L) and 24-hour urine arsenic level was 31-ug/24hr (normal 0-50ug/24hr). Therefore, with normal-high levels of arsenic, it is most likely that the patient’s multiple squamous cell carcinomas can be attributed to her tanning bed use.

Conclusion: This patient demonstrates another possible manifestation of chronic UV exposure from excessive tanning bed usage. Treatments for this patient might include continued destructive measures, topical chemotherapy including ‘chemo-wraps’ with 5-fluorouracil and oral retinoid therapy.

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3070
Nonmelanoma skin cancer histotype as a predictor for subclinical spread and number of Mohs stages required to achieve tumor-free margins
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Objective: Describe the behavior of basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) in relation to several factors such as histopathologic subtypes, location, number of Mohs micrographic surgery (MMS) stages required for tumor clearance, and repair type and size.

Methods: A retrospective medical chart review of 219 cases of nonmelanoma skin cancer (NMSC) treated with MMS was performed. The data obtained from each record included: patient's age, gender, and immune status, anatomic location, if the tumor was primary or recurrent, initial lesion size, defect size after MMS, number of stages, type and size of reconstruction.

Results: Basal cell carcinoma (BCC) was diagnosed in 165 (75.8%) cases and distributed between six histologic subtypes: nodular (121; 73.5%), superficial (4; 2.4%), micronodular (21; 12.7%), morpheaform (13; 7.9%), basosquamous (3; 1.8%) and infundibulocystic (3; 1.8%). Squamous cell carcinoma (SCC) was diagnosed in 54 (24.2%) cases and was subdivided in SCC in situ (19; 16.7%) and SCC invasive (45; 83.5%). The mean number of stages required to clear the most aggressive BCCs (micronodular/morpheaform) (n = 34) was 2.03 while the least aggressive BCCs (nodular/superficial) (n = 125) required a mean of 1.56 stages (P = 0.04). There was no statistically significant difference between the mean number of stages between SCC in situ and invasive SCCs (1.56 and 1.67 respectively; P = 0.701). An association was found between the number of stages (1 vs. >2) and the location of tumor (high risk vs. non-high risk zone; P = 0.001). The initial mean size of recurrent tumors was 2.55 cm (n = 18); whereas it was 1.41 cm for the primary tumors (n = 201) (P < 0.001). Recurrent tumors had a mean final defect size of 5.42 cm and primary tumors had a mean final defect size of 2.01 cm (P < 0.001). The mean number of MMS stages for recurrent tumors was 2.22, while primary tumors required a mean of 1.61 (P = 0.006).

Conclusions: The most important predictors of extensive subclinical spread were location in high-risk zone, recurrent tumors, and morphoform and micronodular BCC subtypes. Tumors with these features can be regarded as potentially exhibiting an aggressive clinical behavior and thereby can help us optimize surgical planning and patient orientation.

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3551
Penile squamous cell carcinoma in two patients treated with mycophenolate mofetil in a dermatologic setting
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Cutaneous malignancy is rarely associated with the use of mycophenolate mofetil (MMF). Much of the literature available relates to transplant data and high doses of MMF. Much of the literature available relates to transplant data and high doses of MMF

3560
Preliminary effectiveness and safety in the first 88 patients with newly diagnosed locally advanced basal cell carcinoma treated with vismodegib in the RegiSONIC Disease Registry Study
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Background: Treatment of advanced basal cell carcinoma (aBCC) is challenging, with limited treatment options for patients (pts) with disease no longer amenable to surgery or radiation. The Hedgehog pathway inhibitor vismodegib (Vismo) provides a new treatment option for such pts. The RegiSONIC Disease Registry Study (ClinicalTrials.gov ID, NCT01604252) is an ongoing prospective, observational cohort study designed to collect real-world data on treatment patterns and outcomes in pts with aBCC and/or BCC nevus syndrome (BCNS). We present preliminary effectiveness and safety data from the first 88 non-BCNS pts with newly diagnosed locally advanced BCC (lABCC) treated with Vismo.

Methods: The first pt was enrolled on June 20, 2012. Pts are enrolling in three cohorts: aBCC (cohort 1), pts with BCNS who previously received Vismo in a Genentech-sponsored study (cohort 2), or pts with BCNS who have aBCC or multiple BCCs of any stage (cohort 3). Pts are being treated according to clinician’s standard of care and evaluated by the clinician’s determination of disease response. Pts are followed for a minimum of 24 months.

Results: As of February 15, 2015, 544 newly diagnosed lABCC pts without BCNS were enrolled in cohort 1. Of these, 185 (34%) were treated with Vismo (received Vismo ≤90 days of diagnosis of lABCC). In this subgroup, 59 (67%) were male and the median age was 67 years (range, 34-99). The median follow-up duration was 13.8 months (range, 2.3-48.6). The response rate as assessed by clinician was complete response in 42 pts (48%) and partial response in 19 (22%). Median duration of response was 6.0 months (range, 0.0-27.8) by univariate analysis (not estimable by the Kaplan-Meier method). Median progression-free and overall survival were not estimable by the Kaplan-Meier method. Adverse events (AEs) of any grade were reported in 71 pts (81%) and serious AEs were reported in 12 (14%). Treatment was discontinued because of AEs in 14 (16%) pts. The most common AEs were nausea/dysgeusa (50%), muscle spasm (45%), alopecia (36%), and weight loss (24%).

Conclusions: Data from the RegiSONIC study demonstrate a response rate similar to other Vismo clinical trials in patients with lABCC in a real-world clinical setting. Strategies to manage the most common AEs are needed to optimize treatment benefit.

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2401
Prevalence of actinic keratosis in general practice in Switzerland
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Actinic keratosis (AK) is a common intraepithelial lesion of squamous cell carcinoma of the skin (SCC). It develops mostly in elderly patients and on chronically sun exposed areas. Most of the actinic keratoses (AK) originate from USA and Australia, and recently from Austria and Spain and are based on population in dermatology practice. Switzerland is, however, the country leading in skin cancer incidence in Europe. Data on AK prevalence among the Swiss population is an important public health issue aimed to assess and to predict the prevalence of AK in the outpatient Swiss population in general practice. A total of 2841 consecutive patients (55.6% female) were enrolled in 49 general practitioners’ offices. 718 (25.2%) of them were diagnosed with AK. 57.6% of AK were diagnosed in male. The incidence of AK increased steadily with patient age. Most of the AK developed on the head, arms and forearms. 50.7% of AK patients declared leisure-related UV exposure, while only 23.0% were exposed to UV occupationally 15.4% of the patients were exposed occupationally and 5.4% both occupationally and leisurely. Further, 5.4% stated that about 5% of AK may progress to invasive SCC, the prevention of AK, as well as patients’ and general practitioners’ education may play a critical role for subsequent SCC development. This is the first study on AK prevalence in Switzerland identifying patients most affected by AK in Switzerland. These results will help to define future efforts to target general practitioners for education, screening and specific intervention in patients with AK.

Dr Scheller is an employee of Almirall. Prof Hofbauer has received a restricted intervention in patients with AK.

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Recurrence rates depend on the type of surgery performed including: conservative plan to repeat the CT scan after 3 months and re-evaluate the tumor's size after 1 lesions were concerning for possible metastatic disease but were deemed too small of the chest, abdomen and pelvis was significant for 4 nodular opacities measuring was a recurrent DFSP and referred to oncology. A computed tomography (CT) scan had been excised; however, the patient never volunteered this information, likely had been previously diagnosed with DFSP in the same location in 2007. The DFSP (22q13) loci. The large tumor was a DFSP while the two smaller papules near the situ hybridization (FISH) was positive for the fusion of COL1A1 (17q21) and PDGFB due to the tumor's irregular appearance a biopsy was injections of the 'keloid.' Due to the tumor's irregular appearance a biopsy was performed. Spindle and stellate fibroblasts were present in the dermis and expanded in the tumor whereas a stain for podoplanin (D2-40), which stains lymphatics, is negative. The tumor was treated with Mohs micrographic surgery with negative margins. Five days after surgery, a new lesion developed 10 cm from the vertex scalp. This lesion was biopsied to show moderate to poorly differentiated adenocarcinoma consistent with in-transit metastatic eccrine carcinoma with comparable histomorphology to the previous biopsy. The patient was referred for radiation therapy, which has been shown to be effective in some cases. Chemotherapy has not been used extensively and presumably lacks in efficacy. We will herein review known cases of eccrine carcinomas, differential diagnoses, histopathology, and summarize current treatment options for this rare disease.

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3670
Recurrent dermatofibrosarcoma protuberans with suspected pulmonary metastasis in a 44-year-old
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Dermatofibrosarcoma protuberans (DFSP) is a rarely, aggressively soft tissue sarcoma that typically presents in young and middle-aged adults. We review the presentation and management of a recurrent DFSP with suspected pulmonary metastasis in a 44-year-old female with a history of a DFSP on his scalp noted only two weeks prior to his visit to our dermatology clinic. A biopsy confirmed carcinoma with dual origin differentiation consistent with eccrine carcinoma and dermal fibroblast origin. The tumor was strongly and diffusely for keratin 3003 (high molecular weight keratin) and CK7. Stains for CEA and EMA are diffusely positive and focally highlight dual structural st locator. A stain for P63 is diffusely positive in the tumor whereas a stain for podoplanin (D2-40), which stains lymphatics, is negative. The tumor was treated with Mohs micrographic surgery with negative margins. Five years after surgery, a new lesion developed 10 cm from the vertex scalp. This lesion was biopsied to show moderate to poorly differentiated adenocarcinoma consistent with in-transit metastatic eccrine carcinoma with comparable histomorphology to the previous biopsy. The patient was referred for radiation therapy, which has been shown to be effective in some cases. Chemotherapy has not been used extensively and presumably lacks in efficacy. We will herein review known cases of eccrine carcinomas, differential diagnoses, histopathology, and summarize current treatment options for this rare disease.

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3474
Review of tumors of follicular lineage in a hospital in the Canary Islands in the last 11 years
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Introduction: Appendage tumors are relatively rare, and their clinical appearance is commonly nonspecific. Classification systems tend to be controversial, but it is largely accepted grouping lesions according to their morphologic similarity to normal appendage structures. Follicular lineage tumors include benign and malignant neoplasms in addition to malformations and hamartomas. Tumors arising from pilosebaceous structures are expected to be found predominantly in the head and neck area.

Methods: In this retrospective observational study we collected information from January 2003 to December 2014 from the Doctor Negrin Hospital dermatology department database. We reviewed all the patients histologically diagnosed as follicular lineage tumors and neoplasms and proliferations with follicular, matrical, follicular sheath (trichilemmal) and infundibular or isthmic differentiation. We decided to exclude trichilemmal and infundibular cysts (104 patients) because many of these lesions are assessed and treated in other services such as general or surgical dermatology.

Results: We studied 288 patients. The average age was 52 years old (between 8 and 91). No gender differences. The most frequent tumors were, in descending order: fibrous papule, pilomatrixoma, trichoepithelioma, inverted follicular keratin and trichilemmoma. There were 134 cases of follicular lineage tumors, all of them trichilemmal carcinoma (1.38%). The most frequent location were head and neck 79%, extremes 15%, and trunk 4%.

Conclusions: The follicular tumors are an infrequent problem in our department. They are predominantly located in the head and neck area. The great majority are benign (90%), however, it was not possible to clinically differentiate the type of tumor and whether it is benign or malignant, so the histologic correlation is extremely important.
3122
Safety and efficacy of vismodegib and impact of treatment breaks in advanced basal cell carcinoma: Interim analysis of the STEVIE study in 499 patients
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Background: Vismodegib (VISMO) was the first Hedgehog pathway inhibitor approved for advanced (locally-metastatic (m) basal cell carcinoma (BCC)) inappropriate for surgery or radiotherapy. STEVIE (NCT01367665) is an ongoing safety study of VISMO in patients (pts) with laBCC or mBCC. Data from an interim analysis of 499 pts (data cutoff: November 6, 2013) are reported.
Methods: Pts with laBCC or mBCC receive VISMO 150 mg once daily until disease progression. Treatment breaks (TBs) of up to 8 weeks are allowed for management of toxicity and other reasons. An exploratory analysis was performed to assess the impact of TBs on the safety and efficacy profile of VISMO.
Results: Four hundred ninety-nine pts (laBCC: 468; mBCC: 51) were included in the analysis. Median duration of VISMO exposure was 56.4 weeks. Common treatment-emergent adverse events (TEAEs) included muscle spasms (64%), alopecia (52%), dysguesia (54%), weight decreased (32%), asthenia (28%), and decreased appetite (25%); most were grade 1 or 2 in severity. Serious TEAEs occurred in 108 pts (22%). Overall response rate (investigator-assessed) in pts with measurable disease (BCCST 1.1) was 65% (513/802) (52% complete response [CR]; 33% partial response [PR]), including 67% (302/453) in pts with laBCC and 38% (11/29) in pts with mBCC. Median time to best response (all pts) was 3.7 months (mos) (3.7 mos laBCC; 6.5 mos mBCC). Median durations of response were 22.7 and 10.0 mos, respectively. Median progression-free survival was 24.5 and 13.1 mos in pts (intent-to-treat population) with laBCC and mBCC, respectively. During the study, 368 (74%), 76 (15%), 41 (8%), and 14 (3%) pts received 1, 2, and ≥5 TBs, respectively. Pts with more than 2 TBs were those with the experience of a higher incidence of TEAEs. Overall response rate was 61% (30% CR; 31% PR), 65% (35% CR; 29% PR), 95% (51% CR; 44% PR), and 85% (39% CR; 46% PR) in pts with 0, 1, 2, or ≥3 TBs, respectively. Given the longer exposure period, pts with more TBs tended to experience a higher incidence of TEAEs. Pts with ≥3 TBs experienced significantly higher incidences of TEAEs than pts with 0-2 TBs. Treatment breaks did not appear to compromise efficacy.
Conclusions: This interim analysis of STEVIE confirms the previously observed safety and efficacy of VISMO in a setting representative of routine clinical practice. Treatment breaks did not appear to compromise efficacy.

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3037
Skin cancer detection through teledermatology vs. face-to-face dermato logical consultations
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Few studies have performed a head-to-head comparison of skin cancer detection rates between teledermatology and face-to-face dermatology consultations in the same patient population. We conducted a retrospective cohort study of all store-and-forward teledermatology consultations and an equivalent number of randomly selected face-to-face dermatology consultations at the Veterans Affairs (VA) Boston Healthcare System. The proportion of lesions requiring biopsies and incidence of detected melanoma and melanoma skin cancers were compared between the two groups. There were 623 patients in the teledermatology and 657 patients in the face-to-face dermatology consultation cohort. The vast majority (95%) of patients were male in both cohorts, with no significant difference in age (62.6 ± 15.8 yrs vs. 64.3 ± 16.1 yrs, P = 1). There was, however, a significantly higher proportion of patients with prior history of skin cancer evaluated by face-to-face consultations, 25% (144/567) vs 8% (50/623), P < .001. Face-to-face dermatology consultations had higher overall detection rate of skin cancers than teledermatology consultations, 11% (70/658) vs 4% (25/623), P < .001, even when adjusted for age and prior history of skin cancer (adjusted P < .01). Incidence of detected melanomas for patients evaluated via face-to-face vs. teledermatology consultations was 4.7% (24/562) vs 0% (0/623). While incidence of detected keratinocytic carcinoma (basal cell carcinoma in squamous cell carcinoma combined) was 10% (64/657) vs 3.9% (24/652), P < .05. There were also two cases of cutaneous T-cell lymphoma in the face-to-face consultation cohort, and one case of Merkel cell carcinoma in the teledermatology cohort. A significantly higher proportion of patients evaluated by face-to-face consultations received biopsies, 25% (160/657) vs 8% (50/623), P < .001 though yield of malignant tumors from biopsies was statistically equivalent between the two cohorts, 45.8% (70/160) vs 50% (25/50), P = .4. The current study directly compares the effectiveness of teledermatology and face-to-face consultations in detecting skin cancer in a predominantly older male patient population within the VA Boston Healthcare system. Results showed that face-to-face consultations detected nearly three times more skin cancers than teledermatology, even when adjusted for age and prior history of skin cancer.

Commercial support: None identified.

3326
Skin cancer surveillance in pediatric cancer survivors—A case of multiple basal cell carcinomas in a patient with a history of acute lymphoblastic leukemia, total body irradiation, chemotherapy, and allogeneic bone marrow transplantation
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Pediatric cancer survivors are at an increased risk for long-term effects from the therapy targeted for their primary malignancy. Children who have had hematopoietic stem cell transplantation (HSCT), chemotherapy, and irradiation are known to have an increased risk of developing cutaneous malignancies. Drug-induced immunosuppression has been known to increase the risk of developing squamous cell cancer (SCC) approximately 65- to 250-fold, basal cell cancer (BCC) by 10- to 16-fold, and melanoma 2- to 8-fold. Patients who receive a radiation dose of 5 Gy or greater to the skin have approximately a 40-fold higher risk of developing BCC compared to patients who did not undergo irradiation, but there is no confirmed association with increased squamous cell carcinoma or melanoma risk. It was found that even radiation doses of 1 Gy or higher were associated with a greater risk of BCC. BCC is also reported to be more aggressive in these patients with greater destruction and rates of recurrence, which has been attributed to possible irradiation-induced genetic alterations, defective vasculature in the area exposed to radiation, and/or modification of the patient’s immune system. Limited data focusing on pediatric patients who received HSCT have also indicated there is a significant incidence of nonmelanoma skin cancer (NMSC) in these patients. Based on our experience caring for a 26-year-old patient in remission from pre-B cell acute lymphoblastic leukemia who received a cumulative irradiation dose of 5,400 cGy (1200 cGy TBI, 1800 cGy spinal, and 2400 cGy cranial), allogeneic bone marrow transplantation, and chemotherapy (adriamycin, idarubicin, daunomycin, cytoxan, vincristine, prednisone, fludarabine), we recommend that dermatologists should collectively establish guidelines for surveillance. Our patient, as one example, has accumulated a dermatologic history of 30 biopsy-proven BCCs and numerous surgeries. Currently, there are guidelines provided by various regional oncology organizations, but no established protocol that involves dermatologists in the care of these patients. Evidence from the literature to date suggests that multidisciplinary teams that encourage collaboration between oncologists and dermatologists, preventive education regarding photoprotection, and regular dermatologic exams for prompt diagnosis and timely treatment would reduce morbidity in these patients.

Commercial support: None identified.

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Spontaneous resolution of advanced basal cell carcinoma following short pulse treatment with vismodegib pathway inhibitor}

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Introduction: Recently vismodegib (VSDG), a hedgehog pathway inhibitor, was approved for treatment of advanced basal cell carcinoma (BCC) after a phase II study showed significant tumor response after median treatment length of 10 months. Since VSDG approval, several prospective trials have further evaluated its safety and efficacy. Treatment length in these studies ranged from 5.5 to 9 months, both supporting results of the initial phase II trial. However, data and clinical experience are still limited and further evaluation is needed to define the role of VSDG in the treatment of advanced BCC, particularly the length of treatment necessary for tumor clearance.

Case report: A 51-year-old Hispanic male presented with a 6-month history of a nodular lesion on his right cheek. The patient reported spontaneous resolution for BCC to this area 1 year prior but the tumor recurred and now obstructed his vision. He has a family history of melanoma, smokes half a pack of cigarettes a day and works as a handyman. Physical exam showed a 5.0 x 2.7 cm vascular, friable, nodule on his left lower eyelid with surrounding erythema and an injected conjunctiva. The patient subsequently received 2 biopsies, both showing nodular type BCC. The patient was started on 150 mg VSDG daily. Treatment abruptly ended after 15 days when the patient incarcerated. Six weeks later the patient reported spontaneous involution of the tumor. Twelve weeks after treatment the patient had complete clearance with a 0.8 x 0.4 cm residual area of hyperpigmentation. Biopsy revealed chronic perifolliculitis with granulation tissue, hemosiderin deposition and scar, with no carcinoma.

Discussion/conclusions: No previously published study has reported resolution of BCC with VSDG after such short treatment length. The exact role of VSDG in treating BCC has not yet been clearly defined. Recent studies have evaluated other modalities of VSDG in the treatment of advanced BCC, including its use as an adjuvant to surgery and in operable BCC. This case highlights the need for further academic discussion when using a novel therapeutic agent.

3263 Squamous cell carcinoma on African albino: A rare case in Spain

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Squamous cell carcinoma is a very high incident tumor on early-aged African albino population. Half-reducing their life expectation. A 24-year-old male from Alcorcón, Spain, was admitted to the hospital due to a facial lesion not under treatment, 2 months after he noticed it. He had a 3 cm x 2 cm verrucous lesion on his face. The patient visited a general practitioner who diagnosed an oral infection and prescribed antibiotics. A year prior, but the tumor recurred and now obstructed his vision. Physical exam showed a 3.0 x 2.7 cm vascular, friable, nodule on his left lower eyelid with surrounding erythema and an injected conjunctiva. The patient subsequently received 2 biopsies, both showing nodular type BCC. The patient was started on 150 mg VSDG daily. Treatment abruptly ended after 15 days when the patient incarcerated. Six weeks later the patient reported spontaneous involution of the tumor. Twelve weeks after treatment the patient had complete clearance with a 0.8 x 0.4 cm residual area of hyperpigmentation. Biopsy revealed chronic perifolliculitis with granulation tissue, hemosiderin deposition and scar, with no carcinoma.

Discussion/conclusions: No previously published study has reported resolution of BCC with VSDG after such short treatment length. The exact role of VSDG in treating BCC has not yet been clearly defined. Recent studies have evaluated other modalities of VSDG in the treatment of advanced BCC, including its use as an adjuvant to surgery and in operable BCC. This case highlights the need for further academic discussion when using a novel therapeutic agent.

Commercial support: None identified.

3571 Squamous cell carcinoma: Brain metastasis

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A 54-year-old male farmer, who lives in the outskirts of Honduras, presents a lesion on his lower lip, which consists of a nodule of several millimeters in diameter, is erythematous, indurated, and asymptomatic. Later on, the surface of the nodule started to extend progressively, causing important asymmetry on the side of his face. The patient visited a general practitioner who diagnosed an oral infection and dispatched him with oral amoxicillin. After 1 week of therapy with no evident recovery, he was referred to a dermatologist. We received the patient with a white exophytic tumor, multilobulated on the surface, measuring 3 cm in diameter, infiltrating his right cheek, preauricular area asymptomatic, causing facial disfigurement. Upon the request of oral examination, purulent discharge drained spontaneously, without dental compromise. Bilateral cervical adenopathy was found and palpebral ptosis of the left eye was observed. The neurologic evaluation revealed 1/15 on the Glasgow Coma Scale with major affection on the verbal parameter. He was admitted to the hospital and treatment included antibiotics and biopsy of the lesion. The result was reported intercellular and intracellular edema, polymorphous ISOLTs with different sizes, composed of polygonal cells with big nucleus and pleomorphism; many with intercellular bridges. There are few mitoses, 0-1 in 10 fields at 40x. The stroma revealed squamous cell carcinoma, well differentiated with lymphovascular infiltration. According to protocol, a cranial MRI was performed and it results reported the presence of a mass of great size that involved the base of the skull, sellar region, pterygoplatine area, right orbit, both maxillary sinus and ethmoidal cells, adenopathy in the neck, segments III and IV on the right side and segment III on the left side, all less than 9 mm. Therapy was initiated with 50 g of cefipime, 500 mg of 5 fluorouracil for 4 weeks and 50 mg of dexamethasone. He was discharged for follow-up discharge. One month later, he died. Squamous cell carcinoma is a malignant neoplasm of keratinocytes that show full thickness epidermal dysplasia. It may arise de novo or from keratoacanthosis, a premalignant lesion of keratinocytes of the full thickness epidermis. Actinic keratoses progresses to full thickness malignancy at an estimated rate of 0.025% to 16% for an individual lesion per year. Squamous cell carcinoma is the most common skin malignancy, and lymph node basin involvement by tumor cells invade the base lamella membrane of the dermoepidermal junction. The incidence of nonmelanoma skin cancers varies globally, but it is thought to be increasing overall since the 1960s. Although the vast majority of the squamous cell carcinoma cases are present at diagnosis, a small percentage develop regional or distant metastasis (approximately 2.5%), accounting for 20% of all skin cancer–related deaths. In Honduras, little is known about the epidemiology of this disease and few publications are available. In 2009, a study identified an incidence of squamous cell malignancy in 22,534 medical files, revealed that 12% of them corresponded to squamous cell carcinoma. In 2008, a group of oncologists studied 25 patients who underwent treatment as initial therapy for nonmelanoma skin cancer between 2004 and 2009. Of these patients, 40% accounted for squamous cell carcinoma, nonrecurring after a 5 year follow-up. No information regarding metastasis has ever been published in our country. Given the rapid onset and progression of our patient's fatal outcome, we are reporting this case of squamous cell carcinoma with proper treatment, for even though metastasis is rare according to international literature, the behavior for each individual may vary.

Commercial support: None identified.

2945 The role of reflectance confocal microscopy in the diagnosis and management of squamous cell carcinoma in situ

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The role of reflectance confocal microscopy in the diagnosis and management of squamous cell carcinoma in situ (SCCIS) remains controversial. Reflectance confocal microscopy (RCM) is increasingly used for noninvasive in vivo diagnosis of nonmelanoma skin cancer. Objective: A pilot prospective study to evaluate the role of RCM in the diagnosis of squamous cell carcinoma in situ (SCCIS) and monitoring of response to nonsurgical interventions. Methods: Ten patients with a total of 11 SCCIS were identified. The clinical, histologic features and fluorescence diagnosis were recorded. Results: Four SCCIS lesions underwent RCM imaging prior to biopsy while 11 SCCIS lesions were followed-up with RCM imaging. There were clinical features of dysplasia in 4 out of 11 cases (36.4%) and fluorescence in all 11 followed-up cases displaying a honeycomb and epidermal disorganised pattern. Three out of 8 cases (37.5%) showed presence of numerous dendritic cells in the epidermis while small bright refractive cells were seen in the epidermis in 4 out of 8 cases (50%). Round blood vessels in the superficial dermis were seen in 4 cases (50%) with SCCIS. Eight lesions were treated with PDT only while 3 lesions underwent a combination of PDT with cryotherapy or imiquimod. Clinical persistence of SCCIS in follow-up cases were confirmed with RCM imaging and fluorescence diagnosis in 2 follow-up cases. There was no features of SCCS on RCM imaging in the 7 lesions which were clinically cured. Conclusion: There was good correlation between histologic and confocal features in patients who underwent RCM imaging prior to biopsy. Our study suggests that RCM may be a complementary noninvasive method to histologic diagnosis. Although a biopsy is often required, the depth of RCM imaging is limited to the level of papillary dermis. It is useful in monitoring response to nonsurgical treatment by avoiding unnecessary biopsies especially in lesions with persistent residual postinflammatory erythema.

Commercial support: None identified.
Topical imiquimod for the treatment of recurrent oral squamous cell carcinoma in a heart transplant patient

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Importance: High-risk cutaneous squamous cell carcinoma (cSCC) that occurs more commonly in immunosuppressed patients is associated with rapid local growth, high risk of metastasis, and poor survival. The advent of cetuximab, an EGFR inhibitor, has been well received in this patient population in terms of safety and efficacy. We report a new inflammatory cutaneous reaction following the cessation of cetuximab therapy.

Observations: A heart transplant patient, maintained on voriconazole for a history of disseminated aspergillosis, presented with extensive and unresectable cSCC of the scalp and face. He was treated with first line cetuximab monotherapy and showed near resolution of the cSCC in question. However, one month after cessation of cetuximab therapy, the patient developed facial edema with inflammation of the face, which resolved with cetuximab monotherapy. The patient did not develop a new inflammatory cutaneous reaction following the cessation of cetuximab.

Conclusions and relevance: Cetuximab is an alternative therapy for the treatment of SCC in transplant patients and may be used as first line monotherapy when surgery or radiotherapy is contraindicated. Importantly, our case raises awareness for a possible UV recall versus inflammatory reaction of previous actinic keratoses following therapy with cetuximab.

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Commercial support: None identified.
VDA-1102, a first-in-class VDAC/HK modulator entering phase 1/2 drug development, is a promising treatment option for the management of malignant neoplasms. The phase 1 human clinical trial with VDA-1102 ointment is currently ongoing in patients with advanced skin cancer, including SCC drugs, which induce severe inflammation or necrosis as part of their mechanism of action. The trial aims to evaluate the safety, tolerability, and efficacy of VDA-1102 ointment in patients with skin cancer, specifically SCC, melanoma, basal cell carcinoma (BCC), and cutaneous T-cell lymphoma. The study population includes patients with SCC, melanoma, and lymphoma.

**Methods:** VDA-1102 is a novel, selective, targeted VDAC/HK2 modulator, being developed as a topical treatment for actinic keratosis (AK) and squamous cell carcinoma (SCC). The mechanism of action involves the inhibition of VDAC/HK2, which is upregulated in cancer cells. VDA-1102 attaches to the mitochondria via interaction with the VDAC1 channel. VDAC1/HK2 association allows a high rate of glycolysis and blocks pro-apoptotic signals. The first-in-class drug employs a new targeted anticancer mechanism of action, and differs from currently available topically applied AK and SCC drugs, which induce severe inflammation or necrosis as part of their mechanism of action. The phase 1 human clinical trial with VDA-1102 ointment is scheduled for January 2016.

**Results:** VDA-1102 demonstrates selective detachment of HK2 from VDAC1 (IC50 = 90 nm) without affecting the interactions of HK1, thus targeting cancer cells but not their surroundings. It inhibits the proliferation of many tumor types and is especially efficacious (IC50 < 1 μM) against a variety of skin cancer cell lines, including AK, SCC, melanoma, basal cell carcinoma (BCC) and cutaneous T-cell lymphoma.

**Conclusions:** Selective VDAC/HK2 modulators, such as VDA-1102, exhibit significant antitumor efficacy against AK, cutaneous SCC, and other skin cancer types, with limited toxic effects in healthy cells. This first-in-class drug provides a new targeted anticancer mechanism of action, and differs from the currently available topically applied AK and SCC drugs, which induce severe inflammation or necrosis as part of their mechanism of action. The drug has a very broad therapeutic window.

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**3888**

**Vulvar metastasis**

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**Introduction:** Cutaneous vulvar metastasis are uncommon representing only 5% of all vulvar cancers. They are usually accompanied by metastasis in other organs and tissues, are associated with a poor prognosis. The majority of cases present either single or multiple nodules or masses. Labia majora of the vulva are the most frequent localization.

**Case reports:** We describe 2 new cases of metastatic tumors of the vulva as a manifestation of two different entities. Case report 1: A 44-year-old woman with a previous history of rectal adenocarcinoma that had been treated with chemotherapy and radiotherapy, presented with a 15-days history of vulvar edema and itching. On physical examination, she presented multiple erythematous and indurated papules over the labia majora and mons pubis accompanied by a generalized vulvar edema and erosions in the perianal region. Biopsy showed a metastatic adenocarcinoma that was infiltrating the dermis. The immunohistochemical studies demonstrated that the tumor was positive for CK19. Case report 2: A 60-year-old woman noticed a firm and painful vulvar mass which had been progressing. She had been treated one year before. She was referred to a hospital in the family history. On physical examination, an indurated erythematous plaque located in the left mons pubis was visualized in the left labium majora. She underwent complete surgical excision of the lesion. Histologic evaluation revealed a metastatic high grade leiomyosarcoma.

**Discussion:** Primary cancer of the vulva is uncommon, accounting less than 1% of all cancers in women. Metastatic cutaneous tumors of the vulva are even more rare representing 0.1% of all vulvar cancers. They are usually accompanied by metastasis in other organs and tissues, are associated with a poor prognosis and the presence of nodules, masses, pain and ulceration. They can be accompanied by bleeding, pruritus or edema. The vulvar site most frequently involved was the labium majora. The differential diagnosis of the primary tumor includes squamous carcinomas of the cervix followed by ovarian carcinomas and rectal adenocarcinomas. The most common primary sites of metastatic tumors to the vulva include squamous carcinomas of the cervix followed by ovarian carcinoma and rectal adenocarcinomas, and the most common primary sites of metastatic tumors to the vulva are metastatic tumors of the vulva. Metastatic tumors of the vulva present a poor prognosis and they usually are accompanied by multiple simultaneous metastases to other sites. Vulvar lesions should be suspected as metastatic in a patient with a prior history of malignant carcinoma and by the absence of a mucocutaneous intraepithelial lesion.

**Commercial support:** None identified.

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**3503**

**PEDIATRIC DERMATOLOGY**

A boy and his guinea pig: the importance of taking a pet history

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**Background:** Melanoma and nonmelanoma skin cancers are the most commonly diagnosed cancers and diagnosis rates continue to rise. It is important to understand what patients know regarding skin cancer and sun protective behaviors, as knowledge often helps dictate behavior.

**Objective:** The objective of this research project is to determine underlying patient knowledge as well as gaps in knowledge with regards to skin cancer, including melanoma, squamous cell carcinomas, basal cell carcinomas and other presentations to dermatology clinic.

**Methods:** An 18-item survey was distributed to SLUCare dermatology patients during routine clinic visits. Various demographic questions were used to identify patient characteristics and groups that may be linked to an inferior knowledge base and, thus, may be most in need of additional education. All knowledge-based questions were created from information found in American Academy of Dermatology guidelines and website. The study population included patients 18-99 years of age who presented to SLUCare general Dermatology clinics and were able to complete the survey.

**Results:** Two hundred surveys were distributed equally among two sites, with 170 completed surveys used in analysis. Of those who responded, 104 (61.2%) were female and 55 (32.4%) were male. 62.9% (107) of patients were established, while 23.5% (42) were new. A history of skin cancer history was present in 28.8% of responders. Age of responders varied, with the 51-65 year old group being the highest represented and the >66 year-old group the lowest. Mean overall score was 66% (SD = 17.6%). Females scored significantly higher when compared to males (P = 0.025). A significant difference in survey scores was also seen among different age groups with participants between the ages of 36-50 years scoring significantly higher than those greater than 66 years old (P = 0.022). Interestingly, highest scores were obtained by new patients when compared to established patients, however the difference was not significant (P = 0.184). Differences in scores between genders were not significant (P = 0.184). Differences in scores between those who have personal history of skin cancer, as well as participants with differing skin types, were not significant.

**Conclusions:** Our results reveal lower than expected general knowledge regarding skin cancer. The survey results shed light upon subgroups that may have inferior knowledge and ultimately underscores the importance of patient education.

**Commercial support:** None identified.
A case of concurrent plexiform neurofibroma and phakomatosis pigmentovascularis

Annie Genois, JD, MD, Centre Hospitalier Universitaire Sainte-Justine, Montreal, Quebec, Canada; Ashkin Hatami, MD, Centre Hospitalier Universitaire Sainte-Justine, Montreal, Quebec, Canada; Victor Koka, MD, Centre Hospitalier Universitaire Sainte-Justine, Montreal, Quebec, Canada; Department of Dermatology, University of Texas Medical Branch, Galveston, TX, United States. We report a case of a 10-year-old boy who developed a plexiform neurofibroma at the site of a preexisting phakomatosis pigmentovascularis (PPV) lesion. The patient was known for a lesion on the left shoulder consisting of a congenital melanocytic nevus, a Becker’s nevus and a vascular malformation. This lesion was diagnosed as a PPV on follow-up at 10 years of age; the patient had developed a soft mass at the site of the PPV. The mass was tender with arm mobilization. MRI of the shoulder showed a 10.0 x 8.5 x 2.0 cm mass with a target sign highly suggestive of a plexiform neurofibroma, which was subsequently confirmed on histopathology. Aside from a single cafe-au-lait spot on the abdomen, the rest of the cutaneous exam was normal. His ophthalmologic exam was normal. The patient did not meet the criteria for neurofibromatosis type 1 (NFI). Discussion: PPV is a rare entity that combines a vascular malformation with a pigmentary nevus. A previous case has been described of a PPV lesion occurring at a different site than a plexiform neurofibroma in a female patient with segmental NFI. To our knowledge, this is the first time that a plexiform neurofibroma superimposed on a PPV lesion has been described.

Commercial support: None identified.

A case of pediatric keratosis lichenoides chronica

Adrian Shahb, MD, Department of Dermatology, University of Texas Medical Branch, Galveston, TX, United States; Rebecca Philips, MD, Department of Dermatology, University of Texas Medical Branch, Galveston, TX, United States; Megan Neill, MD, Department of Dermatology, University of Texas Medical Branch, Galveston, TX, United States; Brent Kelly, MD, Department of Dermatology, University of Texas Medical Branch, Galveston, TX, United States; Sharon Raimer, MD, Department of Dermatology, University of Texas Medical Branch, Galveston, TX, United States. A 9-month-old girl with neurologic damage from anencephalolephle and craniosynostosis presented with a pruritic eruption of edematous, erythematous and hyperkeratotic papules and plaques on her extremities and fine erythematous plaques on her face. Impetiginized atopic dermatitis was suspected, but did not respond to flucetasone cream and oral azithromycin. A biopsy demonstrated marked interface with apoptotic keratinocytes throughout the epidermis, consistent with erythema multiforme. Despite negative HSV stains, the patient was given a 1-month course of acyclovir to treat possible latent HSV. Additional treatments included hydroxyzine, fluocinolone oil, and emollients. Six months later, despite treatment, the patient’s eruption persisted; however, the morphology had evolved to hyperkeratotic papules coalescing into retiform plaques on the extremities, with persistence of the facial eruption. Alopecia of the frontal scalp and eyebrows was noted. A second biopsy showed lichenoid dermatitis with patchy parakeratosis, without significant improvement, and was lost to follow-up. KLC is a disorder of keratinization that is very rare in children. It is characterized by linear, hyperkeratotic papules that coalesce into retiform plaques, primarily on the dorsal aspects of the extremities, with involvement of the hand and foot. It is usually associated with linear or café-au-lait nevi. Our patient is a newborn baby girl who presented at birth with red blanchable reticulate patches in a dermalator distribution extending from the right shoulder down to the flexural aspect of the arm. There were also a few coalescing reticulate patches on the right superior chest and back. The patient was born to a healthy mother by spontaneous vaginal delivery without complications. Maternal history was significant only for yeast infection and trichomonas infection diagnosed during her ninth month of pregnancy, for which she received treatment. Otherwise, the mother related being healthy and was not taking any additional medications besides prenatal vitamins. The infant was again seen in follow-up two weeks later at which time the patches were noticeably lighter. She continued to be in good health and neuromotorically intact on exam. Finally, the baby was re-evaluated at three months old and all patches on the right arm, superior chest, and superior back had resolved. There was also no further evidence of erythema. This case illustrates a rare occurrence of concurrent unilateral nevoid telangiectasia and the interesting finding of keratosis as a possible indicator of a hyperkeratototic stratum.
A study of cutaneous tuberculosis in children

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Background: Cutaneous tuberculosis is still highly prevalent in India and continues to be an important cause of morbidity in children.

Aim: The study the clinical spectrum of pediatric cutaneous tuberculosis and to correlate them with Mantoux reactivity and BCG vaccination status.

Materials and methods: A prospective observational study was conducted on patients attending an outpatient dermatology department of a tertiary care hospital in Delhi to analyze the clinical pattern of cutaneous tuberculosis in paediatric population. A detailed clinical examination, investigations, such as hemogram, serology for HIV, Mantoux test, chest X-ray, cytology, and histopathology were carried out in all children. They were treated with standard observed treatment short course-DOTS regimen, and the clinical response was followed up.

Results: Twenty children (≥16 years) out of a total of 55 patients seen with cutaneous tuberculosis during a 1-year period, were included in this study. Of these, 8 (40%) had lupus vulgaris (LV), 7 (35%) had scrofuloderma (SD), 5 (25%) had lichen scrofulosorum (LS), 3 (15%) had tubercular gumma and 1 (5%) had tuberculosis verrucosa cutis (TBVC). Four (20%) patients concomitantly had more than one type of skin tuberculosis. Affirmative clinicopathologic correlation was observed in all the patients. Regional lymph nodes were involved in seven (35%) patients, 3 (15%) patients had lung involvement while 1 (5%) each had involvement of GIT and bone. No correlation was found between Mantoux reactivity and the extent of disease. Of the 17 (85%) children in whom the data regarding vaccination status was available, 7 (35%) had been vaccinated and 10 (50%) had not. Among the vaccinated group no child had disseminated disease. Three children in the nonvaccinated group had disseminated disease. Family history of tuberculosis was positive in seven (35%) patients. HIV test was negative by ELSA in all patients.

Conclusion: BCG vaccination at birth seems to provide protection against disseminated disease in children. However, BCG coverage still remains poor in migrant population from villages. The main source of childhood cutaneous tuberculosis is infected household contacts and chemoprophylaxis needs to be more widely adapted in Indian pediatric population. Due to immaturity of immune system in children, systemic association is common and warrants a thorough look for underlying focus.

Limitations: Small sample size.

Commercial support: None identified.

Adalimumab long-term safety/efficacy results for pediatric patients with chronic plaque psoriasis from a phase 3, randomized study

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Introduction: Results of long-term safety and efficacy of TNFα—inhibitor adalimumab (ADA) are reported for pediatric patients (pts) with severe chronic plaque psoriasis who participated in the 52-week (wk) follow-up period (PerB) of this phase 3 trial (NCT0151614).

Methods: This multisite international study included a 16-wk double-blind treatment PerA, a 36-wk treatment withdrawal PerB, a 16-wk ADA double-blind retreatment PerC, and a 52-wk follow-up PerD conducted in parallel to the blinded periods. In PerA, pts were randomized 1:1:1 to ADA 0.8 mg/kg every other week (eow); ADA 0.4 mg/kg eow; or MTX 0.1-0.4 mg/kg weekly. ADA pts received matching MTX placebo; MTX pts received matching ADA placebo. Responders were pts achieving ≥75% improvement in Psoriasis Area Severity Index (PASI75) and Physician’s Global Assessment 0 or 1 (PGA 0/1). PerB participants included: (1) nonresponders at end of PerA; (2) pts maintaining disease control in PerB off treatment continued in PerD off treatment; (3) responders at end of PerA who lost disease control in PerB, and at completion of PerC, continued in PerD on respective blinded PerC treatment (ADA 0.8 if initially randomized to MTX or ADA 0.8; ADA 0.4 if initially randomized to ADA 0.8). All pts maintaining disease control in PerB off treatment continued in PerD off treatment; (3) responders at end of PerA who lost disease control in PerB, and at completion of PerC, continued in PerD on respective blinded PerC treatment (ADA 0.8 if initially randomized to MTX or ADA 0.8; ADA 0.4 if initially randomized to ADA 0.8). All pts could switch to OL ADA 0.8 in PerD.

Results: Of 114 enrolled pts, mean age was 13.0 years, range 5-18. All 108 pts who entered PerD received ADA except 8 who entered off-treatment in PerB and maintained disease control off-treatment in PerD. Treatment groups for efficacy are defined by PerA dose/PerD dose: MTX (N = 57)/ADA 0.8 (N = 36); ADA 0.4 (N = 59)/0.4 (N = 36); ADA 0.8 (N = 58)/0.8 (N = 36). PASI75 was achieved at wk16 PerA by 56.1% of 146 pts, respectively; at wk22 PerA by 51.0%, 57.9%, respectively; at wk50 by 86.1%, 61.4%, 55.6%, respectively; and at wk52 PerB by 86.1%, 47.2%, 72.2%, respectively. PGA 0/1 was achieved at wk16 PerA by 40.5%, 41.0%, 60.5%, respectively; at wk16 PerD by 75.0%, 50.0%, 55.6%, respectively; and at wk52 PerD by 75.0%, 50.0%, 55.6%, respectively. Treatment-emergent adverse events per 100 pt years in PerB by initial randomized treatment (MTX, ADA 0.4, ADA 0.8) were any event 463.0, 362.8, 387.2; serious event 3.2, 4.0, 9.8. There were no serious infections.
Bullous erythema ab igne in a bone marrow transplant patient
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Erythema ab igne (EAI) is a dermatosis characterized by localized reticulated erythema and hyperpigmentation resulting from chronic exposure to infrared radiation that induces injury to the epidermis and superficial vascular plexus. The condition is typically noted with frequent use of heating pads or chronic exposure to heat sources. The bullous form is less common and is a result of excessive thermal radiation resulting in an acute thermal burn. We present the case of a 17-year-old Nigerian female with a history of sickle cell disease complicated by numerous vasculocclusive crises who underwent recent allogeneic stem cell transplantation. She had a long history of back pain relating to her vasocclusive crises and frequently used a heating pad for pain relief. Dermatology was consulted for a new bullous eruption that developed day 16 posttransplant. She was febrile for 48 hours prior to developing eruption and was being empirically treated for possible fungal pneumonia. Given recent transplant, the differential diagnosis of her bullous eruption included life-threatening etiologies, such as deep fungal infection and graft-versus-host disease. On exam, a reticulated hyperpigmented patch was noted on the left lower back and flank with frankly exudative tender bullae localized to the areas of hyperpigmentation. While discussing the symptoms with the patient’s mother, she confirmed frequent use of a heating pad at the site of the eruption noting the reticulated patch was chronic and preceded transplant. Given the history and examination, a diagnosis of bullous EAI was made. The heating pad was discontinued and topical emollients were applied. The bullae resolved three days after discontinuation of the heating pad, though the reticulated hyperpigmentation persisted. This case illustrates a common condition with an unusual presentation in a complicated patient. Pediatric patients with chronic pain often use heating pads and EAI has long been recognized as a complication of heating pad use. Bullous transformation related to thermal burns may be underrecognized in pediatric patients with chronic pain. The majority of bullous eruptions in a posttransplant patient are emergent, specifically in the case of graft-versus-host disease or deep fungal infection. Bullous EAI, a much less dire entity, should be considered in the differential diagnosis of a bullous eruption in a chronically ill child.

Commercial support: None identified.

2964
Clinical and epidemiologic characteristics of childhood vitiligo: A study of 701 patients from Brazil
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Background: Vitiligo is the most common disorder of skin pigmentation. Approximately 0.5% to 2% of the world population is affected by the disease, and 25% of cases begin before 10 years of age. Although prevalent, there are few Brazilian studies on the characterization of childhood vitiligo.

Objective: To evaluate clinical and epidemiological characteristics of childhood vitiligo.

Methods: Descriptive, retrospective study conducted by obtaining data records of patients under the age of 18, in which vitiligo was diagnosed until 13 years of age at Instituto de Dermatologia Prof Rubem David Azulay and at private clinics in Sao Paulo and in Rio de Janeiro. Variables such gender, clinical form, age of onset, location of initial lesions, autoimmune associated diseases, emotional factors, autoantibodies, Koebner phenomenon, family and personal medical history, presence of halo nevus and stability of the lesions, were evaluated. Descriptive analysis of the data was performed. expressed by the frequency, the mean and standard deviation in the total sample, and by types and subtypes of childhood vitiligo. It was also performed to compare the clinical and epidemiological variables between two types of vitiligo (segmental and nonsegmental).

Results: Predominance of females (62%). The most common subtype was generalized vitiligo (53.8%). The average age of disease onset was 5.9 years. The most affected initial site was head/neck (44.22%). The Koebner phenomenon was present in 38.2%, emotional triggering factors were present in 67.0% of the patients, halo nevus was present in 17.4% and associated autoimmune diseases were present in 17.4% of the patients. Family history of vitiligo was observed in 16.9% of the patients and stability was reported by 20.1% of patients. The presence of positive family history did not significantly influence the age of onset. We found a significant difference between segmental vitiligo and nonsegmental vitiligo regarding the age of onset, Koebner phenomenon, hypothyroidism, anti-TPO antibodies, family history of psoriasis and halo nevus. However, there was no significant difference between the severity of the lesions and the presence of emotional triggering factors between the 2 groups.

Conclusion: Childhood vitiligo has its own characteristics. Vitiligo different subtypes have distinct characteristics. Our study presents a great number of patients, helping to elucidate the peculiarities of vitiligo with childhood onset.

Commercial support: None identified.
However, this baby was admitted in neonatal intensive care unit (NICU) and treated with intensive care and oral retinoid therapy. We report a case of harlequin baby born to a mother who had no ocular involvement.

Discussion: The acronym HATS, coined by Welsch and Stein in 2004, captures the wide range of findings, particularly the cutaneous anomalies, associated with segmental odontomaxillary dysplasia. Common skin findings include hypertrichosis, dyspigmentation, and congenital nevi of the vermiform hypopigmented linear dermatomes. Skin biopsy samples are often negative for histopathologic findings of the affected maxillary bone. The main goal of treatment is the restoration of dental function. Associated hypertrichosis and hyperpigmentation are amenable to laser therapy.

Commercial support: None identified.
3588 Incontinentia pigmenti: A case report and discussion

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Background: Incontinentia pigmenti (IP) is an X-linked dominant, multisystem disease that presents shortly after birth and is typically antenatally lethal in males. It is due to a mutation in the IKBKG or NEMO gene, whose normal function is to protect against apoptosis. The disease progresses through four cutaneous stages that include vesicular, verrucous, hyperpigmented and hypopigmented skin findings. The linear and whorled, Blaschkoid cutaneous appearance is secondary to mosaicism resulting from randomized X chromosome inactivation. The most common sites of involvement in IP are the hair, skin, nails, teeth, eyes and central nervous system.

Case description: A full term, 1-day-old neonate, presented via an inpatient consult for an evolving rash and low-grade temperature. The patient was being treated in the NICU with several antimicrobial medications. On physical examination, there were extensive areas of erythematous papules and vesicles, coalescing into plaques in a whorled, linear pattern. The pathology from a punch biopsy of one of the lesions revealed cosinophilic, spitzoid dermatitis consistent with IP. Inpatient ophthalmologic examination showed possible retinal involvement prompting an MRI of the brain which showed numerous areas of restricted diffusion, likely secondary to cytotoxic edema, compatible with IP. Genetic confirmation was done at follow up, which demonstrated a heterozygous, partial deletion of the NEMO gene. At the four-month follow up visit, the patient’s skin lesions showed an overlap of the first three stages and the patient continued to be seizure free. Pathy areas of alopecia were present. Supportive care of the intermittently flaring, cutaneous lesions was secondary to the use of emollients and topical steroids.

Conclusion: IP is a rare, genetic disorder, with only 900 to 1200 cases having ever been reported in the literature. While the cutaneous findings can be very distinct, IP can present with varying levels of severity, and can at times be less recognizable, especially to nondermatologist physicians. Increased awareness of this condition will lead to a minimization of unnecessary medical intervention, as well as early recognition and counseling regarding IP’s genetic implications and extracutaneous manifestations.

Commercial support: None identified.

3755 Juvenile myelomonocytic leukemia presenting with leukemia cutis in a child with multiple juvenile xanthogranulomas

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Introduction: Juvenile xanthogranuloma (JxG), a common form of non-Langerhans cell histiocytosis, is a generally benign, self-limiting disease of infants and children. They often present with lesions in the skin, although extracutaneous manifestation may occasionally occur. There is an important association of multiple JxGs with the development of childhood leukemia, most commonly juvenile myelomonocytic leukemia (JML). Case report: We report a case of a 15-month-old Chinese boy who presented together with his monozygotic twin, for multiple JxGs. The lesions appeared in both twins 6 months of age as yellowish-brown firm round papules and nodules located mainly on the head and neck region. They were otherwise well with no systemic complaints. The parents declined biopsy then and opted for continued surveillance. The JxG regressed spontaneously after 2 years. The patient represented at 4 years old with Sweet syndrome—like rash and 1 month history of fever. Full blood count showed leukocytosis with marked neutrophilia and associated anemia. Bone marrow biopsy showed hypercellular marrow with myeloid hyperplasia. Left shift of immature granulocytes. Peripherally, blood revealed blasts and monocytosis. Gene mutation analysis revealed PTPN11 gene mutation and trisomy 8. Skin biopsy showed atypical dermal inflammatory cells with leukemic infiltration. These findings confirmed the diagnosis of JML with leukemia cutis. The patient underwent uneventful matched sibling donor cord blood transplantation with successful engraftment. The leukemia relapsed 1 year later the patient was eventually underwent a definitive haploidentical bone marrow transplant. Discussion: JML is an uncommon hematologic malignancy in young children, accounting for less than 2% of childhood leukemia. It often presents with lymphadenopathy, anemia/thrombocytopenia, hepatosplenomegaly and skin involvement. Somatic PTPN11 mutations are the most frequent molecular lesions in JML—35% of nonsyndromic JML cases. There is definite association between multiple JxGs and JML. A regular surveillance full blood count is key to detect early disease. Incidence of skin lesions in JML has been reported to be 36-48% with most presenting as nonspecific reactive maculopapular rash, also known as leukemids. An annual review even after regression of skin lesions is necessary to follow up on recurrence of JxG, and/or the development of associated JML that can rarely present as leukemic cuts, as described in our case.
Juvenile xanthogranuloma. Report of two uncommon cases
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Juvenile xanthogranuloma (JXG) is the most common non-Langerhans histiocytic disorder. It may presents as single or multiple yellowish papules or nodules, predominantly located on the head and neck, but it may also involve other tissues. JXG usually appears during the first year of life, and the spontaneous regression of the cutaneous lesions is frequent. We report two special cases of JXG. The first one is a 7-month-old girl who consulted for presenting multiple well-demarcated nodules affecting face, scalp and extremities that reached one and half centimeters larger diameter. It began to regress spontaneously without treatment after 5 months, which results in conspicuous scars. The second case is a 6-month-old girl that showed a mass in the posterior cervical region from the third month of life measured 55 x 25 mm. It was composed of small yellowish nodules of rubbery feel. The pathology sample showed a proliferation of histiocytes with foamy cytoplasm and multinucleated Touton-type giant cells with eosinophils, lymphocytes and plasma cells in the inflammatory infiltrate. Immunohistochemical stains were positive for CD68 and negative for CD1a and S100, establishing the diagnosis of JXG. In both cases, additional studies (ophthalmologic examination, abdominal ultrasound and blood tests) ruled out systemic involvement. The macronodular and giant JXG variants are rare forms of presentation, being necessary an histological study for the diagnosis in doubtful cases. Management should be conservative, because of the benign clinical course and spontaneous regression of lesions.

Commercial support: None identified.
Lupus erythematosus profundus in children, a case series

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Lupus erythematosus profundus (LEP), also known as lupus panniculitis, is a variant of limited cutaneous lupus erythematosus (CLE) that affects subcutaneous tissue. LEP occurs in 1% to 3% of patients with CLE, and it may be a single manifestation of the disease or it can be associated to discoid lupus erythematosus (DLE) or systemic lupus erythematosus (SLE). The age range of patients at presentation for LEP indicates that the disease is more common in women. It is a rare finding in children, with only 19 fully reported prior cases in the English literature. We performed a multicentric retrospective study in three public dermatology reference centers in Mexico City, where we accomplished a research in three databases from April 1993 to July 2015 for the histopathologic reports compatible with LEP. Subsequently, we reviewed the medical files. In total, we found 10 children under 18 years with histopathologic and clinic-diagnosis of LEP. The average age at presentation was 9 years, with a predilection for the female gender (80%). The most common involved areas were the cheeks, nose, zygomatic region and scalp. None of them presented association with LED or LES at their time of presentation, nor systemic symptoms. The histopathologic features were usually lobular or mixed panniculitis with lymphocytes and plasma cell rich inflammatory infiltrate. Other common findings were the formation of lymphoid follicles and hyaline fat necrosis. Four cases were treated with hydroxychloroquine at 4 mg per kilogram and a single intralesional triamcinolone injection (10 mg). This four cases presented remission of the lesions after two months of treatment. None of them progressed to SLE during the follow-up period (17 years). For the rest of the patients, there are limited data during the follow-up in the medical files. The role of laboratory testing is not well established in diagnosing LEP. In our patients, laboratory tests performed included blood counts, metabolic profiles, ANA, anti-dsDNA and other autoimmune studies, which were not diagnostic for LEP. In our patients, laboratory tests performed included blood counts, metabolic profiles, ANA, anti-dsDNA and other autoimmune studies, which were not diagnostic for LEP. In our patients, laboratory tests performed included blood counts, metabolic profiles, ANA, anti-dsDNA and other autoimmune studies, which were not diagnostic for LEP. In our patients, laboratory tests performed included blood counts, metabolic profiles, ANA, anti-dsDNA and other autoimmune studies, which were not diagnostic for LEP. In our patients, laboratory tests performed included blood counts, metabolic profiles, ANA, anti-dsDNA and other autoimmune studies, which were not diagnostic for LEP.

Commercial support: None identified.
Parents’ behaviors, motivations, and barriers to American Academy of Dermatology sun protection recommendations for Hispanic and black children ages 4-12

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Background: Excessive exposure to ultraviolet radiation during childhood and adolescence can increase the risk of developing skin cancer in adulthood. Sun safe behaviors early in life may decrease the risk of future skin cancers. Although incidence rates for skin cancers are lower in Hispanics and blacks compared to non-Hispanics, skin cancers in these minority populations have a poor prognosis because of delayed diagnosis and advanced stage presentations. At this time, there are few studies investigating the sun safety behaviors of Hispanic and black children. The primary objective of this study is to identify the current behaviors and barriers to American Academy of Dermatology (AAD) sun protection recommendations in Hispanic and black parents. The results of this study will inform the development of an evidenced-based, intervention approach to promote healthy behaviors early in childhood.

Methods: Starting July 2015, parents with children between the ages 4-12 were recruited from UHealth general pediatric outpatient clinic and were asked to complete a 52-question survey available in English or Spanish. Survey collection will continue until 200 survey responses have been collected and will be analyzed using SPSS software. Correlations with demographic factors will be sought.

Results: A total of 54 responses were collected during the first two weeks of survey administration (93% response rate). The median age of the children was 8.61 years (3D = 2.716), most of whom were white Hispanic: 57.6% (% = 141) and black 28% (% = 73). Preliminary results demonstrate a significant difference between parent education level and overall knowledge of sun protection and skin cancer (P < .009). Differences between parent education level and consistency of sun safe behaviors have not been shown to be significant (P = .466). Hispanic parents were found to use sunscreen on their children more often than black parents (P = .001). Final results from the analysis of the questionnaires will be presented and discussed.

Conclusion: Dermatologists and pediatricians will benefit from this study by better understanding the behaviors, motivations, and barriers that affect black and Hispanic parents’ adherence to sun protection recommendations for children ages 4-12. To our knowledge, there are no large-scale studies investigating these issues in the Hispanic and black pediatric population.

Limitations: These preliminary conclusions are based on a limited subset of data.

Commercial support: None identified.
Aspergillus species are known to cause severe morbidity and mortality in patients who cannot mount an appropriate immune response. In critically ill neonates, there have been several case reports of invasive aspergillosis but rarely isolated primary cutaneous aspergillosis infection. Here, we present a case of a critically ill neonate of 24 weeks’ gestation with primary cutaneous *Aspergillus niger*. Patient had multiple medical problems including extreme prematurity, twin gestation, respiratory distress and pneumocystis pneumonia requiring percutaneous penrose drain. On day 6, patient was noted to have blisters on the left side of his penis spreading to the abdomen with skin breakdown and sloughing. Wound cultures of skin lesion were obtained and patient was started on antibiotics, fluconazole and acyclovir. Skin lesions developed into white plaques with desquamation, crusting and yellow drainage over abdomen, left penis and upper back. On day 10, fungal wound culture grew moderate *A niger* and light *Candida albicans* so patient was switched from fluconazole to liposomal amphotericin B at 5 mg/kg daily, voriconazole, topical miconazol, topical nystatin and on day 20, miconazol was added. Blood cultures remained negative throughout the hospital course. The rash continued to progress with development of numerous erosions that had coalesced into white-yellow plaques on antecubital fossa, abdomen, back, lower extremities including dorsal feet and ankles. By day 32, there was necrosis around the penrose with bowel visible through the abdominal wall. He developed necrosis over the left foot with subsequent amputation of two left toes and areas of necrosis over dorsal right foot and ankles. By day 32, there was necrosis around the penrose with bowel visible through the abdominal wall. He developed necrosis over the left foot with subsequent amputation of two left toes and areas of necrosis over dorsal right foot and ankles. Our patient died on day 39 of life due to extreme prematurity and disseminated cutaneous aspergillosis. This case illustrates key points to immediately obtain pan cultures and initiate empiric antibiotics, antivirals, and antifungals in critically ill patients with worsening skin lesions. Due to his extreme prematurity, steroid requirement while on ventilation, antibiotics, antivirals, and antifungals in critically ill patients with worsening skin lesions. Development of psoriasis in a 3-year-old child is associated with fever and upper respiratory symptoms. Patient 2 is a 5-month-old boy who presented with erythematous papules and plaques, studded with pinpoint pustules over his scalp, face and limbs. Patient 3 is a 3-month-old boy who presented with annular rashes with mild scaling over abdomen following a mild cold, which slowly spread to involve the entire trunk, face and limbs with appearance of pinpoint pustules over 2 weeks. There was pitting of his fingernail. In all 3 patients, complete blood counts revealed neutrophilia and skin biopsies showed subcorneal spongiform pustules with neutrophilic infiltration, consistent with psoriasis vulgaris. The clinical response has been excellent with complete clearance seen as early as 5 weeks after initiation. Clinical prognosis is often good. They also achieved longer disease remission.

**Commercial support:** None identified.
2950
Skin disorders encountered at a pediatric homeless clinic: A retrospective study and review
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Background: Limited information about skin problems in homeless children exists in the current literature.

Objective: To investigate the skin conditions commonly seen in a pediatric homeless clinic as compared to that of a large tertiary care children’s hospital dermatology clinic.

Methods: A retrospective chart review of all children treated by pediatric dermatologists during the six months of the homeless clinic visits, 62% of patients reported living in a shelter. The most common diagnoses seen were atopic dermatitis (57.7%), acne (28.6%), warts (6.5%), molluscum contagiosum (5.2%), nevi (5.2%), ingrown toenails (5.2%), and insect bites with hypersensitivity reaction (3.9%). Among the children seen at the Phoenix Children’s Hospital Dermatology Clinic, the top diagnoses were atopic dermatitis, acne, hemangiomas and nevus-non-neo-lenticular. The homeless clinic population at UMOM had only 12 children under 2 years of age, while at Phoenix Children’s Hospital, infants were frequently seen.

Results: There were 100 visits for 76 patients from the UMOM homeless clinic during the study period. Patients ranged in age from newborns to 24 years of age. Because of the homeless clinic visits, 62% of patients reported living in a shelter. The most common diagnoses seen were atopic dermatitis (57.7%), acne (28.6%), warts (6.5%), molluscum contagiosum (5.2%), nevi (5.2%), ingrown toenails (5.2%), and insect bites with hypersensitivity reaction (3.9%). Among the children seen at the Phoenix Children’s Hospital Dermatology Clinic, the top diagnoses were atopic dermatitis, acne, hemangiomas and nevus-non-neo-lenticular. The homeless clinic population at UMOM had only 12 children under 2 years of age, while at Phoenix Children’s Hospital, infants were frequently seen.

Limitations: The retrospective nature of the study, its reliance on electronic medical records that at times were incomplete and the relatively small sample size of the homeless pediatric population are potential limitations to this study. The Phoenix Children’s Hospital tertiary care dermatology clinic may have referral bias.

Conclusion: Homeless and nonhomeless children suffer from similar conditions such as atopic dermatitis and acne. With the growing homeless pediatric population and their exposure to unsanitary environments, further studies are needed to investigate the dermatologic conditions of this population.

Commercial support: None identified.

3272
Subcutaneous fat necrosis of the newborn as a complication of therapeutic hypothermia for birth asphyxia
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Introduction: Neutones with hypoxic ischemic encephalopathy (HIE) are routinely treated with therapeutic hypothermia in neonatology.

We describe a neonate who developed an abscess-like presentation of subcutaneous fat necrosis of the newborn (SCFN) after undergoing whole-body cooling for HIE.

Case report: A full-term boy was born to a 37-year-old mother via an emergency cesarean section due to changes in the cardiotocographic examination. At delivery, he was given. Case 2: Six year old Hispanic boy had 3 year history of muscle and joint aches, morning stiffness, and difficulty walking, requiring intermittent use of a cane.

Examination demonstrated tenderness on palpation of bilateral knees without swelling. The right knee was reduced. Interestingly, he also had several nodular lesions on the legs that appeared on the middle back area. A punch biopsy of the indurated plaque showed necrosis of the fat lobules in the subcutaneous adipose tissue admixed with an inflammatory infiltrate and radially oriented needle-shaped clefs in the cytoplasm of adipocytes and some histiocytes. According to these findings a diagnosis of SCFN was made. The abscess was drained and the lesions resolved after six months.

Discussion: SCFN of the newborn is a self-limited inflammation of the subcutaneous adipose tissue that typically develops during the first week of life in full-term neonates. Birth asphyxia and hypothermia are the most commonly associated risk factors. On the other hand, large, randomized, double-blind control trials have indicated that therapeutic cooling benefits of inducing hypothermia in neonates with birth asphyxia; therefore, a growing number of neonatal intensive care units are implementing whole-body cooling programs. The risk of SCFN in neonates undergoing therapy is unknown although some cases have been described in the literature. Thus, induced hypothermia may play a further role in the development of SCFN.

Conclusion: Clinicians should recognize this association as more neonates are undergoing therapeutic cooling to minimize the mortality and morbidity due to HIE.

Commercial support: None identified.

3936
Sun protection beliefs among Hispanic caretakers and the practices employed in their children
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Background: The disparity of skin cancer at time of diagnosis is multifactorial and affected by socioeconomic status, education, and awareness of skin cancer. Among Hispanic populations, detection of cutaneous malignancy is frequently delayed, which results in a poor prognosis. Better understanding of the sun protection beliefs among Hispanic caretakers and the use of sun protection in their children is paramount to promoting skin cancer awareness and sun safe behaviors, as these attitudes are believed to be a determinant of a child’s future sun protection practices.

Objective: The purpose of this study was to elucidate the perceived benefits of sun protection and use of photoprotective practices employed by Hispanic caretakers in their children.

Methods: This cross-sectional study was conducted in an outpatient pediatric clinic at MetroHealth Medical Center that serves primarily Hispanic individuals. The principal caretaker of a child electively completed a questionnaire assessing demographics, sun exposure patterns, photoprotective practices, and potential barriers to using photoprotective in pediatric groups. Paired Student t test and descriptive statistics were used for analysis.

Results: A total of 88 complete surveys were obtained, and 86% of surveys were completed in Spanish. There was a statistically significant difference in the use of sunscreen. There was no significant difference in use when sun protection was applied when cloudy, hot days (P < 0.01 for all). Sunscreen application was reported as the most effective method to reduce skin cancer risk, decrease photosaging, and skin damage in our sample. However, noteworthy barriers to using sunscreen existed: agreed causing eye irritation (56.8% of sample) and not knowing which to use (44.5% of).

Conclusions: Parental use of photoprotection in children primarily consisted of applying sunscreen. Current analysis indicates that while many understand the benefits of sunscreen use, there still exist limitations to its use. Further investigations into sun damage is low.

3583
Synovitis in children with harlequin ichthyosis: An underrecognized phenomenon
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Background: Harlequin ichthyosis (HI) is an autosomal recessive skin disorder due to mutations in ABCA12, leading to deficiency of transporter protein that limits lipid synthesis in the epidermal lamellar body secretion. Affected neonates are typically encesed in an erythematous, deforming membrane that is fissured to resemble the checkered costume of a harlequin. Survivors often develop extensive erythroderma and scaling, leading to frequent infections, feeding issues, and thermoregulation, but rarely has joint pain been mentioned in patients with HI.

Observation: We describe three children with HI whose synovitis lead to considerable discomfort and difficulty with ambulation, necessitating rheumatologic evaluation and intervention. Case 1: Four year old white—American boy presented with 4 month history of arthritis in his bilateral legs, resulting in limping and limitation of activity. The pain was worst in the morning after sleep. MRI of left lower extremity showed synovitis and tenosynovitis of left ankle. Examination showed generalized erythroderma and fine scaling. He had sharply demarcated, boggy swelling of anterior lower legs and dorsal aspect of feet with tenderness to palpation of left > right ankle and dorsum of foot. His range of motion (ROM) of left ankle was reduced. Interestingly, he also had several nodular lesions on the legs showing non-caseating granulomas on histological examination. Daily naproxen was given. Case 2: Six year old Hispanic boy had 3 year history of muscle and joint aches, morning stiffness, and difficulty walking, requiring intermittent use of a cane. Examination demonstrated tenderness on palpaton of bilateral knees without bogginess or swelling. Daily naproxen was inititated. Case 3: Three year old white girl delivered in 34 week gestation with birth anomalies and superficial edema of lower extremities. Examination revealed bilateral waist, hand, finger, ankle, and toe edema with limited ROM. Pain has improved with methotrexate, but she has continued to experience considerable discomfort and swelling has persisted.

Discussion: Joint pain has not been considered a cardinal feature of HI, but in all 3 cases, the synovitis of the knees, ankles, and wrists in HI patients has been mentioned in patients with HI. Surprisingly, none of the HI patients described in the literature had joint pain. Joint pain has been described in neonates, and small children with harlequin ichthyosis beyond infancy, joint pain was an incapacitating symptom. Patients with HI who have joint pain have a different phenotype than those with HI without joint pain.

Conclusion: Homeless and nonhomeless children suffer from similar conditions such as atopic dermatitis and acne. With the growing homeless pediatric population and their exposure to unsanitary environments, further studies are needed to investigate the dermatologic conditions of this population.

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**3642**

The influence of itch: Quality of life in pediatric patients with chronic pruritus

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Background: Chronic pruritus is challenging to treat with a narrow range of treatment options. The physical exam findings can be difficult to reconcile with the impact that the patient feels the pruritus has on his/her daily life. Insight into patients’ quality of life (QoL) impact can help guide treatment to optimize clinical improvement.

Methods: Children, 8-17 years old, who reported itch greater than 6 weeks, were recruited out of pediatric dermatology clinics at an academic institution. The children were administered the KidsitchYQol, a 55-item QoL instrument which asked about the social, emotional and functional impact of their itch during the past week on a 4-point Likert scale. We selected those items in which at least 70% of patients reported some impact of itch.

Results: Analysis includes our initial 21 patients, the majority having atopic dermatitis (76%) and with a median itch duration of 8 years. Certain experiences were universally reported; 100% reported scratching and used lotions. Interestingly, 95% of patients reported worsened itching with changing seasons. The social impact was considerable; 71% of patients felt embarrassed and 76% worried about what others thought. The overall lowest reported impact was ability to make friends, which was still reported in a third of patients. The responses demonstrated functional impacts such as sleep disturbances (81%), difficulty wearing certain clothes (71%) and trouble focusing on schoolwork (71%). The emotional consequences were narrower, with patients most frequently feeling frustrated (91%) and ‘driven crazy’ (81%). The most frequently reported skin symptoms were pain (81%), bleeding (76%) and scarring (66%).

Conclusion: There was consistency in several factors affecting quality of life. It is evident that chronic itch has a substantial impact on social and daily functioning and as well as considerable emotional impacts. Evaluating more patients will better allow us to study the impact of itch and determine factors that correlate with this impact.

Commercial support: None identified.

**3662**

Thyroid dermopathy and acropathy in pediatric patients: A rarity

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The cutaneous manifestations of Graves’ disease (GD) include thyroid orbitopathy, pretibial myxedema (PTM, also known as thyroid dermopathy) and thyroid acropathy (TA). PTM and TA, occurring in up to 4% and 1% of all cases respectively, are rarely reported in pediatric patients. We present a case series of two pediatric patients with emphasis on the clinical presentation of the cutaneous manifestations of GD. Patient 1: A 14 year-old male presented with weight loss, anxiety and acropachy (TA). PTM and TA, occurring in up to 4% and 1% of all cases respectively, are rarely reported in pediatric patients. We present a case series of two pediatric patients with emphasis on the clinical presentation of the cutaneous manifestations of GD. Patient 2: A 16 year-old female presented with shortness of breath, insomnia and palpitations. Physical exam was remarkable for a pulse of 123, mildly well-demarcated periorificial plaques and ill-demarcated thin, mildly erythematous scaly plaques in a periorificial distribution. Laboratory evaluation revealed low alkaline phosphatase (69, nl 85-270) and low zinc (15, nl 60-120ug/dL). Euthyroid state was confirmed with TSH (1.0 mcu/mL), elevated T4 (11.6 ng/dL) and elevated thyroid antibodies (3.1AU/mL). TSH was 0.75 mcu/mL, normal alkaline phosphatase and low zinc (15, nl 60-120ug/dL). The differential diagnosis for cases of acral dermopathy include vitamin A deficiency, pseudoxanthoma elasticum, and hypothyroidism. The presence of low Zn levels, a common site of zinc deficiency, allowed us to speculate about a possible correlation.

Commercial support: None identified.

**3711**

Topical timolol for the treatment of infantile hemangiomas in Asian children

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Objective: To review a cohort of patients with infantile hemangiomas treated with topical timolol and evaluate the treatment efficacy.

Methods: Retrospective review of the medical records of children with infantile hemangiomas treated with topical timolol from year 2012 to 2014 at the outpatient Pediatric Dermatology clinics, KK Women’s and Children’s Hospital.

Results: A total of 66 patients with infantile hemangiomas were treated with topical timolol. 36 of them had superficial, 23 had mixed, 1 had deep and 6 had both superficial and deep hemangiomas. There were 44 girls and 22 boys. The most common site was head/neck with 32 patients, followed by the trunk with 21 patients, upper limb with 11 patients and lastly the lower limbs with 7 patients. 29 cases were treated using 0.5% eye drops and 37 patients were treated using Timolol 0.5% ophthamlic solution which is a more viscous consistency allowing it to stay on more easily. The frequency for both treatments was twice thrice daily. The median age at the start of treatment was 4 months old (range: 1 to 40 months). Treatment outcome was graded as good (>50% reduction/growth arrest) for 35 patients (50%), moderate (25-50% reduction in size) for 8 patients (12%) and poor (<25% reduction/continued growth) for 17 patients (21%). There were 6 patients who defaulted follow-up. Those patients who were treated earlier at 2 to 3 months or had thinner superficial lesions did better. The location and size of the lesions did not affect treatment outcome. There were no reported major adverse complications.

Conclusion: Topical Timolol treatment of infantile hemangiomas remains a suitable treatment option despite the increasing trend towards oral propranolol. This is especially so for hemangiomas which are non-life threatening and non-functionally threatening. Parents may also be more comfortable with a topical as opposed to oral therapy.

Commercial support: None identified.

**2556**

Transient neonatal zinc deficiency: A review of two pediatric cases

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Case 1: A 3mo exclusively breastfed male born via cesarean at 38wks due to oligohydramnios presented for evaluation of a worsening rash on his face, diaper area, hands that first developed at age 1mth. Exam revealed fairly well-demarcated pink plaques with overlying scaling. Laboratory evaluation revealed low alkaline phosphatase (69, nl 85-270) and low zinc (15, nl 60-120ug/dL). The differential diagnosis for cases of zinc deficiency include malabsorption syndromes, chronic disease and zinc deficiency (TNZD). Maternal breast milk zinc concentrations were tested and found to be low (0.15g/L, ~15% of normal) in both cases. Dermatitis in both infants responded within days of starting zinc supplementation and clear skin was noted at 2 week follow-up appointments. The infants were small for age at time of presentation (growth chart by weight: 12% and 0%, respectively). This also reflected the infants’ weight failure to thrive. The zinc levels continued supplemental zinc until introduction of complimentary nutrition without recurrence. It is important to distinguish TNZD from AE. TNZD presents in exclusively breastfed infants and resolves upon weaning, while AE typically presents after the infant is weaned from breastfeeding. AE is a result of impaired intestinal zinc absorption due to mutations in SLC39A4 encoding the zinc uptake transporter Zip11 requiring lifelong zinc supplementation to avoid sequelae of zinc deficiency. In contrast, TNZD is a result of a mutation in SLC30A2 encoding the zinc efflux transporter ZnT2 found in mammary epithelial cells. This mutation only manifests in exclusively breastfed infants. Misdiagnosing patients with TNZD as having AN can lead to chronic zinc toxicity secondary to over-supplementation. Interestingly, the highest level of SLC30A2 in placental tissue is 14 times greater than the zinc fluid levels are correlated with oligohydramnios, seen in both our cases, leading us to speculate about a possible correlation.

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Two cases of neonatal lupus
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Neonatal lupus erythematosus (NLE) is an entity that occurs 0.6-2.2 of every 100,000 children annually with a female ratio predominance of 2:1. The etiology is thought to be caused due to transplacental passage of maternal autoantibodies such as IgG against Ro (SSA), La (SSB) or U1 ribonucleoprotein. The clinical manifestations involve dermatologic, cardiac and hepatic involvement. Dermatologic lesions present with annular erythematous plaques predominantly in periorbital region, neck and scalp. Cardiac involvement occurs in about 45% of patients which can vary from rhythm abnormalities to complete congenital heart block or heart failure that generally do not resolve. This is a self-limited disease, therefore the treatment consists of supportive therapy until resolution in 2-6 months. Overall we describe two cases with almost identical clinical and histopathologic manifestations. They presented to the hospital with dermatosis of multiple erythematous plaques varying in size with well circumscribed elevated borders affecting face, skull, thorax, upper and lower extremities. One mother had systemic lupus erythematosus (SLE) diagnosed before pregnancy, while the other had nonrelevant medical history. Lab work requested for both mothers returned positive for anti-SSA and anti-SSB in both cases confirming the diagnosis for NLE. Biopsies reported superficial and media perivascular dermatitis with marked interstitial mucinosis. No cardiovascular lesions were noted from 1992-2015. H1 antihistamines such as diphenhydramine are the first-line treatments for such cases in addition to topical steroids, and mast cell stabilizers.

Case report: This is a case of a six-month-old Filipino boy presenting with multiple pruritic brown macules, papules, and patches on the face, trunk, extremities including the palms and soles. Darier’s sign is positive. This case has mild maternal developmental delay and has G6PD deficiency. Histopathologic examination with Giemsa and CD 117 staining revealed abundance of mast cells that are the typical histologic features of mastocytosis. He was given cetirizine instead of diphenhydramine, ketotifen, a mast cell stabilizer, emollients, and triamcinolone lotion, a mid-potent topical steroid. Clinical improvement of cutaneous lesions was noted after one month.

Conclusion: Urticaria pigmentosa and G6PD deficiency are both rare disorders. The combination of these two together with motor developmental delay have not been reported previously suggesting that this might be a new syndrome with an unknown etiology. The symptoms of urticaria pigmentosa may be relieved with the use of H1 antihistamines such as diphenhydramine. But it is important to always do a thorough history to detect other co-morbidities such as G6PD deficiency so as to avoid giving medications that might cause hemolytic anemia.

Commercial support: None identified.

Treatment of anogenital warts with imiquimod 5% cream in 22-month and 18-month old infants
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Anogenital warts are benign epidermal tumors caused by human papillomavirus (HPV) acquired in children through vertical, autoinoculation, heterosexual, contaminated femtome, and sexual transmission. Fortunately, most anogenital warts are self-limited making active nonintervention a reasonable initial approach. However, for those with symptomatic or persistent anogenital warts, intervention is usually necessary. Imiquimod has been shown to be an effective treatment option for anogenital warts in adults and children. However, in infants (less than 2 years of age), reports of effectively treated cases remain relatively few. Here we present two cases anogenital warts in infants treated with topical imiquimod 5% cream. Case 1: A healthy 22-month old girl presented with a 1-month history of rapidly growing perianal lesions. On physical exam, she had numerous grouped pink verrucous perianal papules consistent with condyloma. Biopsy and HPV typing were performed, which were consistent with condylomatous changes and positive for types 6 and 16, respectively. She was treated with imiquimod 5% cream regimen that was usually necessary. Imiquimod has been shown to be an effective treatment option especially in pediatric patients with larger area of involvement. However, for those with symptomatic or persistent anogenital warts, intervention is usually necessary. Imiquimod has been shown to be an effective treatment option especially in pediatric patients with larger area of involvement.

Urticaria pigmentosa in a 6-month old Filipino male with G6PD deficiency
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Introduction: Glucose-6-phosphate dehydrogenase (G6PD) deficiency is the most common enzyme defect of red blood cells. Around 200 million people are deficient in this enzyme. In the Philippines, this X-linked hereditary deficiency has a prevalence rate of 4% to 25.7%. Clinical manifestations of patients with G6PD deficiency may be induced by trigger factors such as certain drugs like diphenhydramine, an H1 antihistamine. Mastocytosis is a rare group of disorders of mast cell proliferation. The most common cutaneous manifestation of mastocytosis is urticaria pigmentosa presenting as multiple pruritic hyperpigmented macules, papules and patches over the face, trunk, and extremities, usually sparing the palms and soles. Darier’s sign is usually positive. Histopathologic examinations with both Giemsa and CD 117 stains will reveal abundance of mast cells. In East Avenue Medical Center, a tertiary government hospital in the Philippines, only three cases were noted from 1992-2015. H1 antihistamines such as diphenhydramine are the first-line treatments for such cases in addition to topical steroids, and mast cell stabilizers.

Case report: This is a case of a six-month-old Filipino boy presenting with multiple pruritic brown macules, papules, and patches on the face, trunk, extremities including the palms and soles. Darier’s sign is positive. This case has mild maternal developmental delay and has G6PD deficiency. Histopathologic examination with Giemsa and CD 117 staining revealed abundance of mast cells that are the typical histologic features of mastocytosis. He was given cetirizine instead of diphenhydramine, ketotifen, a mast cell stabilizer, emollients, and triamcinolone lotion, a mid-potent topical steroid. Clinical improvement of cutaneous lesions was noted after one month.

Conclusion: Urticaria pigmentosa and G6PD deficiency are both rare disorders. The combination of these two together with motor developmental delay have not been reported previously suggesting that this might be a new syndrome with an unknown etiology. The symptoms of urticaria pigmentosa may be relieved with the use of H1 antihistamines such as diphenhydramine. But it is important to always do a thorough history to detect other co-morbidities such as G6PD deficiency so as to avoid giving medications that might cause hemolytic anemia.

Commercial support: None identified.
**PHARMACOLOGY**

3335

A report of tigecycline-associated angiokeratoma formation

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Introduction: Angiokeratomas represent benign growth of abnormally dilated vascular tissue. They are often observed as cutaneous manifestations of certain connective tissue syndromes, but they can also occur in asymptomatic individuals. Recently, angiokeratoma formation has been reported in association with certain medications. We describe the first reported case of angiokeratoma appearance associated with the use of tigecycline, an intravenous antibiotic reserved for multidrug resistant bacterial infections.

Case report: A fifty-nine year old female on chronic immunosuppression due to severe rheumatoid arthritis presented with a one-week history of two dark-colored papules, one on each lower extremity. The first papule had appeared several days following cessation of a six-week course of intravenous tigecycline for an unrelated soft tissue infection. Standard laboratory evaluation and infectious workup were negative. A biopsy revealed histopathologic features consistent with an angiokeratoma. Five more similar-appearing papules erupted over the next two weeks, but only cutaneously appeared after tigecycline was stopped. Due to its lengthy half-life of sixty hours, over 25% of the steady state concentration may still have been present in the plasma when the first angiokeratoma appearance occurred, four days after tigecycline cessation. Finally, the resolution of angiokeratomas in the absence of tigecycline suggests it may have been associated with their formation. Future investigations are warranted to delineate the pathogenesis of tigecycline-associated angiokeratoma.

Discussion: The timeline of gradual angiokeratoma progression and resolution in this patient suggests that a temporary factor was associated with the pathogenesis of angiokeratoma formation. Despite the onset of angiokeratoma appearance occurring a few days after discontinuing tigecycline, the time course of the angiokeratoma eruption in relation to the course of tigecycline suggests that this antibiotic may have been associated with their formation. We hypothesize that subcutaneous formation of angiokeratomas began prior to tigecycline cessation, but only cutaneously appeared after tigecycline was stopped. Due to its lengthy half-life of sixty hours, over 25% of the steady state concentration may still have been present in the plasma when the first angiokeratoma appearance occurred, four days after tigecycline cessation. Finally, the resolution of angiokeratomas in the absence of tigecycline suggests it may have been associated with their formation. Future investigations are warranted to delineate the pathogenesis of tigecycline-associated angiokeratoma.

Commercial support: None identified.

3448

An evaluation of vasoconstriction potency response for fluticasone propionate gel, 0.025% compared to current marketed reference corticosteroids of known potency

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Background: The vasoconstriction response produced from exposure to topical corticosteroids has proven to be an effective indicator of steroid delivery through the skin and may predict comparative efficacy in treatment of skin disease. Since the vasoconstriction response is not known to be directly related to their biochemical activity in skin diseases, it is well known that the vasoconstriction response is an indicator of steroid delivery and to some extent predicts comparative efficacy in treatment of skin disease.

Objective: Evaluate the vasoconstriction potency response of fluticasone propionate gel, 0.025% in context with fluticasone propionate cream, 0.05% and three other reference corticosteroid formulations of known potency.

Methods: This was an open-label study on 24 healthy adults. Subjects had twelve 4-cm² sites demarcated on each forearm of which 10 per arm were evaluated for other reference corticosteroid formulations of known potency. Recently, angiokeratoma formation has been reported in association with certain medications. We describe the first reported case of angiokeratoma appearance associated with the use of tigecycline, an intravenous antibiotic reserved for multidrug resistant bacterial infections.

Case report: A fifty-nine year old female on chronic immunosuppression due to severe rheumatoid arthritis presented with a one-week history of two dark-colored papules, one on each lower extremity. The first papule had appeared several days following cessation of a six-week course of intravenous tigecycline for an unrelated soft tissue infection. Standard laboratory evaluation and infectious workup were negative. A biopsy revealed histopathologic features consistent with an angiokeratoma. Five more similar-appearing papules erupted over the next two weeks, but only cutaneously appeared after tigecycline was stopped. Due to its lengthy half-life of sixty hours, over 25% of the steady state concentration may still have been present in the plasma when the first angiokeratoma appearance occurred, four days after tigecycline cessation. Finally, the resolution of angiokeratomas in the absence of tigecycline suggests it may have been associated with their formation. Future investigations are warranted to delineate the pathogenesis of tigecycline-associated angiokeratoma.

Discussion: The timeline of gradual angiokeratoma progression and resolution in this patient suggests that a temporary factor was associated with the pathogenesis of angiokeratoma formation. Despite the onset of angiokeratoma appearance occurring a few days after discontinuing tigecycline, the time course of the angiokeratoma eruption in relation to the course of tigecycline suggests that this antibiotic may have been associated with their formation. We hypothesize that subcutaneous formation of angiokeratomas began prior to tigecycline cessation, but only cutaneously appeared after tigecycline was stopped. Due to its lengthy half-life of sixty hours, over 25% of the steady state concentration may still have been present in the plasma when the first angiokeratoma appearance occurred, four days after tigecycline cessation. Finally, the resolution of angiokeratomas in the absence of tigecycline suggests it may have been associated with their formation. Future investigations are warranted to delineate the pathogenesis of tigecycline-associated angiokeratoma.

Commercial support: None identified.

3294

Association of additional malignancies not previously recognized in the FDA Full Prescribing Information for ustekinumab: An analysis of the FDA Adverse Event Reporting System (FAERS)

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Introduction: Ustekinumab (U) is an interleukin (IL)-12 and IL-23 inhibitor approved for the treatment of moderate to severe psoriasis (Ps) and for active psoriatic arthritis (PsA). Two long-term studies, with up to 5 years of follow-up, concluded that U did not increase the rate of malignancy in patients with psoriasis. Moreover, according to the Full Prescribing Information (FPI), occurrence of malignancies other than nonmelanoma skin cancer in U-treated patients was similar to what would occur in the general U.S. population. Nevertheless, U has now been reported to be associated with lymphoma. The aim of this study was to determine if there is a detectable association between U and malignancy in the Food and Drug Administration Adverse Event Reporting System (FAERS) database.

Methods: We searched the FAERS database (January 2004 through December 2013) for terms related to U combined with cancer/malignancy, and calculated the proportion reporting a malignancy. The detection of a safety signal, defined as number of events > 3, chi-square result (>4) and the PRR (>2).

Results: Similar to the FPI, signals for breast cancer, prostate cancer, colon cancer, rectal cancer, and melanoma were found in the FAERS database. Unlike the FPI, safety signals were detected for several additional malignancies, namely B-cell lymphoma (N = 109), myeloid leukemia (N = 10), bladder cancer (N = 6), cervix carcinoma (N = 4), epithelioid sarcoma (N = 11), gastric cancer (N = 4), lung cancer (N = 22), esophageal cancer (N = 109), ovarian cancer (N = 5), metastatic ovarian cancer (N = 10), plasmacytoma (N = 6), renal cancer (N = 8), testis cancer (N = 44) and thyroid cancer (N = 4).

Conclusion: Safety signals from the FAERS database suggest that ustekinumab is associated with several malignancies not recognized in the full prescribing information. However, limitations in the interpretation of FAERS data are the voluntarily reported aspect of data collection and redundant reporting. Exploration of this finding that ustekinumab is associated with malignancies not previously recognized in the full prescribing information is warranted.

Commercial support: None identified.
Association of melanoma and nonmelanoma skin cancer with antihypertensive drugs: A report from the Research on Adverse Drug Events And Reports project

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Introduction: Some antihypertensive drugs may increase the risk of skin cancer, but findings are inconsistent regarding the association of exposure to these agents including angiotensin-converting enzyme inhibitors (ACEis), angiotensin receptor blockers (ARBs) and diuretics (TZs) with occurrence of malignant melanoma (MM), basal cell carcinoma (BCC) and squamous cell carcinoma (SCC). The aim of this study was to investigate further these possible associations.

Methods: The Northwestern Medicine Enterprise Data Warehouse repository was used to detect patients, age 18-89 years, with two consecutive prescriptions for an ACEi, ARB or TZ. Subsequent diagnoses of MM, BCC or SCC occurring at least 2 months after exposure to one of these drugs were identified using ICD9 codes. The control population, from the same repository, consisted of non-antihypertensive drug exposed individuals. Adjusted odds ratio was obtained using logistic regression analyses.

Results: Between Jan. 2010 and Feb. 2015, a total of 635,687 individuals with documented age, race and gender were detected. Of 5772 patients with prior exposure to an ARB: 23 MM, 45 BCC and 18 SCC were detected. Of 15,617 patients with prior exposure to an ACEi: 28 MM, 94 BCC and 35 SCC were detected. Of 3400 patients exposed to a TZ: 9 MM, 18 BCC and 13 SCC were detected. After adjusting for age, gender and race, a significant increased risk of melanoma was determined for ARBs (OR: 2.21; 95% CI 1.45-3.60) and TZ (OR: 2.03; 95% CI: 1.04-3.92). An increased risk of basal cell carcinoma was determined for ARBs (OR: 1.56; 95% CI: 1.1-1.85) and ACEis (OR: 1.51; 95% CI: 1.06-1.61). A significant increased risk of squamous cell carcinoma was determined for ARB, ACE and TZ (OR: 1.75; 95% CI: 1.08-2.8; OR: 1.59; 95% CI: 1.12-2.5; OR: 3.47; 95% CI: 1.99-6.04; respectively).

Conclusions: These findings serve to delineate the association of malignant melanoma and nonmelanoma skin cancer subsequent to ACEi, ARB and TZ exposure. This may have clinical relevance related to the choice of antihypertensive agent, particularly for patients with known risk factors for skin cancer. Given the widespread use of these drugs, increased pharmacovigilance, along with education for both patients and health practitioners, are warranted.

Commercial support: None identified.

Comparison of the pharmacoeconomic profiles of treatment regimens for field pattern actinic keratoses

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Actinic keratosis (AK) is a common premalignant skin condition estimated to have an estimated prevalence of 39.5 million persons and warrants 5.2 million office visits in the United States each year. Currently, there is no universal agreement on the treatment of AKs. The objective of this paper is to create a model for health care providers to use in determining the most cost effective treatment modality for AKs. The model is based on the efficacy of the treatment, of which compliance rate is an inherent factor. This study will introduce a static model comparing different treatment options taking into account compliance rates, the average wholesale price, and efficacy data from pivotal studies to determine the relative efficacy of the different treatment options. We collected efficacy data from package inserts based on the treatment regimen used in the package insert or off-label common practice usage. Cost data from a large, urban, academic-based electronic medical record archive (3 million individual records, May 1998-June 2015) to detect all men exposed to oral F 1.25 mg/day of whom 864 also were prescribed an SSRI. Data were analyzed using global optimal classification tree analysis (GO-CTA), a nonparametric statistical methodology for which no distributional assumptions are required and that explicitly maximizes model classification accuracy for each specific sample and hypothesis. For GO-CTA, the index of classification accuracy is effect strength for sensitivity (ESS), a normed index on which ESS = 0 indicates the accuracy that is expected by chance, and ESS = 100 indicates perfect, errorless prediction. The rate of impotence diagnosis was 76 of 864 (8.8%) among men prescribed both F and an SSRI vs 207 of 5,939 (3.5%) among men prescribed F and no SSRI (risk ratio 2.5; number needed to harm 5; effect strength score 14.8; P < .001). The rate of low libido diagnosis was 34 of 864 (3.9%) among men prescribed both F and an SSRI vs 84 of 5,939 (1.4%) among men prescribed only Fand no SSRI (risk ratio 2.5; number needed to harm 60; effect strength score 16.4; P = .001).

Commercial support: None identified.

Lichenoid dermatitis from interferon alpha-2a in a patient with metastatic renal cell carcinoma and seronegative HCV

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Cutaneous reactions to interferon, including a lichenoid drug reaction, are most commonly reported in patients undergoing treatment for hepatitis C virus (HCV) infection. There have been case reports of interferon-induced lichen planus in seronegative HCV patients with lymphoproliferative disorders and melanoma. We report the case of a 71-year-old man undergoing treatment with interferon for metastatic renal cell carcinoma (RCC) who developed an eruption 2 months after starting interferon. Clinical and histological findings from biopsies supported a diagnosis of interferon-induced lichen planus. To our knowledge, this is the first known case of a lichenoid drug eruption from interferon in a seronegative HCV patient with metastatic RCC.

Commercial support: None identified.
Nicotine replacement therapy in recurrent aphthous ulcers
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Complex aphthous is a painful ulcerative condition of the oral/genital mucosa which can cause significant functional morbidity. Typical treatments include topical anesthetics/corticosteroids and systemic colchicine, dapsone and thalidomide. We present a case of treatment resistant complex aphthous in a non-smoker who’s condition was also complicated by treatment with azathioprine and methotrexate for autoimmune dysautonomia. She was ultimately successfully treated with nicotine replacement therapy.

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Perforating folliculitis in a HIV-infected patient with hepatocellular cancer treated with sorafenib
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A 53-year-old African American man presented with a four-month history of acnelike rash on his arms and legs. His medical history included HIV with a CD4 count of 256 and hepatocellular carcinoma post chemoradiation, radiofrequency ablation. Medications included calcium (1 tablet PO qd), prednisone (20 mg PO qd), lopinavir/ritonavir (200/50 mg, 2 tablets PO bid), and tenofovir/emtricitabine (1 tablet PO bid). The patient was also taking sorafenib (200 mg PO bid), a multikinase inhibitor, for hepatocellular carcinoma. Four months after sorafenib induction, the patient developed small papules, slowly evolving into painless, non-pruritic, indurated, brown papules. A dermatologic examination revealed innumerable papules and left papules on the chest, abdomen, and left arm, which coalesced into a plaque. Upon closer examination the papules that composed the plaques were noted to have follicular prominence. Papules noted on the left posterior shoulder, arms, and anterior thigh had hypertrophic cores. The exfoliative scale covered the palms and fingers, while the patient’s feet were positive for hyperkeratosis. A punch biopsy of a papule located on the right posterior upper arm was performed. On pathology, the perforated hair follicle showed inflammatory cells, degenerated extracellular matrix, and collagen within the keratotic plug. The centrally dilated and distorted, follicular infundibulum was plugged predominately with compact parakeratosis with focal basophilic cellular debris and perifollicular fibrosis. There was also mild, superficial, chronic, perivascular inflammation. The distinctive feature of perforating folliculitis of transspidermal penetration and elimination was not seen in multiple sections and levels, but the findings were compatible with a partially resolved lesion of a perforating disorder such as perforating folliculitis. The patient was managed by discontinuation of sorafenib (200 mg PO bid) for two weeks, which eliminated the occurrence of new papules. Because of the efficacy of sorafenib against hepatocellular carcinoma the patient was advised by oncology to continue use of the drug (200 mg PO bid). He began to develop new papules when the drug was restarted, but due to the tolerability of the papules, he did not discontinue use.

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Paronychia and excess granulation tissue with ibrutinib: A newly reported side effect
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Ibrutinib interferes with malignant B-cell proliferation via inhibition of Bruton’s tyrosine kinase (BTK), which is involved in the NFkB pathway. Common side effects reportedly include nausea, abdominal pain, vomiting, constipation, upper respiratory tract infection, fatigue, bruising, rash, musculoskeletal pain and peripheral edema. We have observed the development of severe paronychia and excessive granulation tissue formation in two patients within one year of starting ibrutinib, which has previously not been reported in the literature. The first case was a 79 y/o gentleman with a history of mantle cell lymphoma treated with ibrutinib. About one year after initiation of treatment with ibrutinib, he noticed development of excessive granulation tissue around the cuticle of his left index finger. He was treated with nicotine replacement therapy.

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Rifampicin-induced bullous pemphigoid
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Introduction: Bullous pemphigoid (BP) is an acquired autoimmune disease that affects mainly the elderly and is characterized by subepidermal blistering. Although in most cases, the causative agent remains unidentified, certain medications have been implicated in the pathogenesis of the disease. We report a case of BP in a young patient that appeared after treatment with rifampicin.

Case report: 17 years male, native of Colombia, residing in Spain for a year, on rifampicin andisoniazid treatment for tuberculosis lung after initial treatment with rifampicin, isoniazid, pyrazinamide and ethambutol. He was attended at the dermatology department by itchy vesicular eruption in the upper back, neck, nose, cheeks and forehead. The initial diagnosis was herpetic eczema and was prescribed treatment with valaciclovir 1 every 7 hours for 7 days and clonacillin 500 mg every 6 hours for 5 days. Ten days after treatment, lesions persisted. Viral and bacterial culture were negative. We perform a second skin biopsy with direct immunofluorescence, and included in the differential diagnosis: drug-induced pemphigus foliaceus, bullous pemphigoid (BP) and linear dermatitis Ig A. Direct immunofluorescence demonstrated linear C3 deposits confirming the diagnosis of PA. We started treatment with prednisone with good response.

Discussion: Over the years, more than 50 medications have been associated with bullous pemphigoid. In everyday clinical practice, the differential diagnosis between classic BP and drug induced BP can prove to be quite difficult. As no clear cut histologic or clinical criteria can be set, one must follow indications from the presenting symptoms of the patients, the recent history of received medications and the histopathologic picture of the disease to set a possible diagnosis. Unfortunately, even if a suspect drug is identified, rechallenging a patient is impossible and no definite proof can be established. Considering the fact that after withdrawal of a suspect medication most patients respond rapidly to treatment and do not experience relapses of the condition, the possibility of drug induced BP must always be considered by the treating physicians. Drug reported by the patient, only rifampicin was previously reported as causal agent in the PA. Conclusion The development of vesicles and bullae in a young patient who has recently introduced new drugs requires discard drug induced BP.

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Topical imiquimod—Be aware of the unexpected
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We are reporting a rare but serious side effect of imiquimod and its implications on daily practice. An elderly lady was commenced on imiquimod for BCCS on her chest. Within 5 days superficial erosions occurred to the treatment area. 3 weeks later, on the 9th day, she was prescribed 7 days of erythromycin as a suspicion of superinfection. Erythromycin had been tolerated well previously. In the 6th week, the patient represented with atypical targetoid lesions affecting trunk and both arms. She attended the hospital throughout the whole course. She was hospitalized for observation and feverish but an initial septic screen including antistreptolysin O titer, throat and skin swabs was negative. Punch biopsies from chest and arm showed nonspecific inflammatory changes with eosinophils and subepidermal eosinophilic blisters. The rash progressed into confluent denuded areas with positive Nikolsky sign covering 20% of the body surface. A frozen skin section confirmed full thickness necrosis. Mucous membranes remained unaffected. The patient recovered fully after withdrawal of imiquimod and intense skin care. A memory of overlap syndrome of TEN/SJS (toxic epidermal necrolysis/Stevens–Johnson) secondary to imiquimod was diagnosed. A lymphocyte transformation test was negative but due to its low sensitivity of 60–70%, imiquimod cannot be excluded as a trigger. Alternatively, other mechanisms may mediate this reaction such as systemic absorption of imiquimod and direct keratinocyte TLR7 activation. The timeline of events associated with continuous application of imiquimod favors the drug as culprit. There is no literature mentioning imiquimod as trigger of TEN/SJS. Official regulatory bodies for medicines such as the FDA and Mhra do not highlight recent concerns regarding imiquimod causing serious adverse reactions. In 2007 an American postmarketing surveillance report investigated the association of imiquimod with cases of SJS/TEN but the evidence was not convincing. The British National Formulary mentions SJS/TEN as rare side effect. This case raises awareness of a rare but serious side effect of a commonly used drug. In daily practice potentially harmful side effects need to be mentioned as part of informed consent to treatment. The pharmacovigilance of SJS/TEN in Ireland is weak. Diligent adverse drug event reporting is required to capture more cases. On suspicion of a drug eruption, a good history with a thorough timeline of events cannot be replaced by current laboratory testing.

Commercial support: None identified.

2867 Urticariform plaques: delayed hypersensitivity reaction type IV to enoxaparin
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Introduction: The low-molecular-weight heparins as enoxaparin are widely used to prevent and treat thromboembolic disorders. Cutaneous reactions secondary to enoxaparin injections include delayed hypersensitivity skin reactions described as erythematos, itching, and infiltrated plaques at injection sites. Case report: A 55-years-old female with no personal or family history of interest was attended in our dermatology unit complaining an itching rash for four days of evolution. The patient only referred one treatment for 15 days with enoxaparin which it had suspended 5 days before the start of the eruption. This was located in the injection points. The examination revealed the existence of two urticariform plaques which were very well defined and localized on the iliac crests. They coincide with the inoculation points of enoxaparin. The clinic of the patient was compatible with delayed hypersensitivity reaction type IV to enoxaparin. The diagnosis was confirmed by skin biopsy. The patient began treatment with a regimen of topical methylprednisolone and she was practically asymptomatic in one week.

Discussion: Heparin’s most common adverse event is hemorrhage; late side effects as rare side effect. This case raises awareness of a rare but serious side effect of a commonly used drug. In daily practice potentially harmful side effects need to be mentioned as part of informed consent to treatment. The pharmacovigilance of SJS/TEN in Ireland is weak. Diligent adverse drug event reporting is required to capture more cases. On suspicion of a drug eruption, a good history with a thorough timeline of events cannot be replaced by current laboratory testing.

Commercial support: None identified.

2783 A prospective study of dayligh photodynamic therapy for treatment of actinic keratoses in an Irish population
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Photodynamic therapy has been shown to be a highly effective treatment for actinic keratoses (AKs), however therapy is often limited by pain. Daylight mediated PDT is emerging as an effective treatment for AKs, with limited side effects. The aim of this study was to evaluate the efficacy of daylight PDT and to determine patient satisfaction. Patients attending the dermatology clinic with grade 1 and/or 2 actinic keratoses on scalp and/or face were recruited. The lesions to be treated were photographed, mapped and numbered. 16% methyl ester of 5-aminolevulinic acid in cream base was applied to the treatment area. The patients then spent 2 hours exposing the area to daylight. Patients completed DLQI questionnaire before and after treatment and recorded pain severity on a scale of 1-10. Patients were reviewed 2 weeks following treatment to assess response. The primary outcome was therapeutic response at 2-week follow-up. Secondary outcome was patient satisfaction. 25 patients were recruited for this study. The mean number of AKs at baseline was 6.12 (±2.01). The mean UV index on day of treatment was 4.77. All patients showed a marked improvement at 2 week follow up with a mean number of AKs of 0.12 (±1.64). The mean lesion response rate at 2 weeks was 68.43% (±14.82). 22 patients (88%) reported no pain or mild pain during the treatment (pain score 0-3) and 3 patients (12%) reported moderate pain (pain score 4-7). There was no significant association found between therapeutic response rate and maximal pain score. The mean DLQI score at baseline was 1.40 (±0.94). This did increase to a mean of 3.08 (±2.24) during treatment, but decreased to a mean of 2.12 (±0.83) at 2-week follow up. The most frequently reported adverse event was erythema 66% reported scaling and 89% reported itching. 84% reported pain and 96% reported burning sensation during treatment. This was reported to have subsided by 2 days posttreatment. Daylight PDT is an effective treatment for patients with actinic keratoses in Ireland and is well tolerated with minimal side effects.

Commercial support: None identified.

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PHOTOBIOLOGY, PHOTOTHERAPY AND PHOTOSENSITIVITY DISEASES

2483 A case of widespread actinic granuloma with associated drug-induced lupus erythematosus
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Actinic granuloma is a rare, idiopathic skin disease affecting cutaneous sun-exposed areas. It presents with asymptomatic, painless, dome-shaped papules. The lesions can increase in size up to several centimeters and are usually not itchy. Actinic granulomas are sometimes followed by formation of vesicles and bullae. The main differential diagnoses include local hematoma, infections such as erysipelas, and particularly heparin-induced skin necrosis. If the eruption is located in the lower extremities, it can be confused by other low molecular weight heparin. In case of generalized rash, we must discontinue treatment with this type of heparin. To do always allergies study.

Commercial support: None identified.
A retrospective review on the use of 308 nm-excimer lamp phototherapy at the National Skin Centre, Singapore
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Background: Excimer light phototherapy (308 nm) is a form of targeted phototherapy shown in controlled studies to be effective in the treatment of localized vitiligo and psoriasis. This study aims to assess its role in a predominantly Asian population at the National Skin Centre, Singapore.

Materials and methods: We retrospectively reviewed the clinical data of 247 patients who were started on excimer lamp phototherapy at the National Skin Centre over a 5-year period from 2008 to 2012. The phototherapy system used was the (308 ± 2 nm) VTRAC excimer lamp system (Photomedex, Horsham, PA). The data analyzed included the diagnoses, epidemiological data, clinical responses and adverse effects.

Results: Most patients were Chinese (68.4%) followed by Indians (14.2%) and Malays (8.9%). The patients treated had ages ranging from 5 to 74 years old, with 55.5% of them being men. The most common skin disorder treated with excimer lamp phototherapy was vitiligo (80.6%) followed by psoriasis (15.4%), endogenous eczema (1.6%) and mycosis fungoides (0.6%). Majority of patients with vitiligo (90.2%) and psoriasis (97.4%) had tried other treatments including topical corticosteroids and NB/UVB before starting on excimer phototherapy. 37% of patients with vitiligo achieved at least 50% improvement after a mean number of 18 sessions of excimer lamp phototherapy while 55.3% of patients with psoriasis achieved at least 50% improvement after a mean number of 15.7 sessions. One-third of patients experienced some minor adverse effects during the treatment, most commonly erythema (22.3%) and pruritus (5.7%). No patient had to stop phototherapy because of adverse effects.

Conclusion: Excimer lamp phototherapy is a safe and well-tolerated treatment in our local population, with fairly good efficacy in recalcitrant vitiligo and psoriasis that had persisted despite other treatments.

Commercial support: None identified.

2561
Actinic prurigo
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Actinic prurigo is a rare photosensitivity dermatosis characterized by acute eruptions of papules or papulovesicles and persistent eroded nodules that are intensely pruritic. Photosensitivity to UVA and UVB is severe. Sun exposed sites, particularly the face, nose, cheeks, chin, carpo-lumbar, forehead and extensor forearms are most commonly involved. Cheilitis, conjunctivitis and pruritus are also characteristic. Postinflammatory scarring and hypopigmentation may be prominent. Acute prurigo was first described in South and Central American and among Native Americans in Canada and the United States. Cases were later reported among African whites and Asians. Usually, it begins in childhood before the age of ten years. It is more common in girls, with a female to male ratio estimated to be 2:1. Acute prurigo often resolves by adolescence, but may persist indefinitely. We report a case of actinic prurigo undiagnosed until the patient was in her 30s. We also detail the evaluation and treatment options. Acute prurigo differs from polymorphous light reaction (PMLE), as it may involve covered sites, such as the buttocks. Hardening does not occur. Although generally worse in spring and summer, actinic prurigo is perennial. Distinguishing actinic prurigo from PMLE, atomic dermatitis, insect bite and prurigo nodularis, lupus erythematosus and severe erythema is important, particularly if the patient presents to the provider in adulthood. Sunlight avoidance and potent corticosteroids are first line treatments, however, these are often insufficient. Thalidomide may be more useful, but teratogenicity limits its use. Hydroxychloroquine has been reported not to be efficacious, although in the case we present here, our patient had a dramatic response.

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2860
Comparison of sunburn protection offered by beach umbrella against high SPF sunscreen in a randomized in use study
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Seeking shade is one way to avoid sun exposure. Other methods include wearing protective clothes and applying sunscreens. Shade works by physically shielding skin from direct harmful UV rays. However, UV rays can also reach the skin from other angles. There is a lack of clinical evidence that shade can provide sufficient protection when used in real life and it is not clear whether people still need to wear sunscreen in addition to shade. We directly measured sunburn protection offered by a beach umbrella in comparison to a high SPF sunscreen in a randomized, evaluator-blinded in-use clinical study. Eighty-one subjects were divided into two groups, one using only a beach umbrella and the other using only SPF 100 sunscreen as its sun protection measure. The subjects in both groups were kept side-by-side for three and half hours at a beach in a park in Texas. Clinical sunburn evaluation was conducted at baseline and 24 hours following the exposure for all exposed body sites for each subject. Overall, the beach umbrella offered poor sunburn protection compared to high SPF sunscreen. Of the subjects in the umbrella group, 78% showed an increase of erythema on one or more body sites vs. only 25% of the subjects in the sunscreen group. Overall, the total body sites evaluated showed 49.5% worsened after exposure for the umbrella group vs. 6.1% for the sunscreen group. For all the body sites evaluated, the umbrella group showed a significant increase in clinical sunburn scores. We conclude that shade, such as that offered by a beach umbrella, may not provide sufficient sun protection for an extended exposure. It is important to consider multiple sun protection measures and combine them, rather than relying on a single approach.

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Curettage-assisted aminolevulinic acid photodynamic therapy in the treatment of erosive pustular dermatosis of the scalp: A case series
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Erosive pustular dermatosis of the scalp (EPDS) is a rare inflammatory disease of unknown etiology that usually occurs in the elderly. It is characterized by sterile pustules, and chronic crusted eruptions that can lead to cicatricial alopecia and skin atrophy. Treatments such as topical steroids, topical and oral retinoids, topical tacrolimus, calcipotriol, and topical and topical dapsone, and cryotherapy have met with varying success partly because of difficulty penetrating the hyperkeratotic crust, and the tendency of EPDS to recur after any treatment that induces trauma to the skin. Only 2 cases of successful treatment of EPDS with ALA-PDT have been reported. EPDS has been reported to improve, and be induced by, methylaminolevulinate-PDT. In this case series, we present 8 patients (ages 67-95) with EPDS who had failed several topical and/or oral treatments and were then successfully treated with gentile curettage followed by 5-aminolevulanic acid (ALA) photodynamic therapy (PDT). In our treatment protocol, curettage, which was followed by daily application of a petrolatum-based ointment, was performed 1-2 weeks prior to PDT rather than immediately prior to application of the photosensitiser in order to minimize the postoperative discomfort such as stinging and burning sensation from ALA-PDT. The PDT protocol included a 1-hour application of a 20% S-A ALA solution formed by exposure to blue light for 16 minutes and 40 seconds. One patient required a second treatment because of partial improvement. Follow-up has ranged from 5-10 months, and at date, there have been no recurrences and no adverse effects (ie, no burning, stinging, or postprocedure pain). ALA-PDT targets mitotically active cells in inflammatory lesions, which may explain its success in EPDS, an inflammatory dermatosis. However, in the authors' experience, performing ALA-PDT without prior curettage in EPDS often results in suboptimal response because the massive hyperkeratosis of the lesions inhibits the accumulation of ALA within cells. Curettage of the hyperkeratosis prior to PDT in EPDS utilizes the same concept as the ablative fractional resurfacing laser-assisted PDT for actinic keratoses, allowing for a more even and deeper effect of the ALA-PDT. Contrary to topical and oral medications that show inconsistent efficacy in EPDS and possible adverse effects, ALA-PDT showed high efficacy and was not associated with any adverse effects in our series.

Commercial support: None identified.

Duration of efficacy for daily facial sunscreen product
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Objective: To determine the time duration of photoprotection/efficacy of facial moisturizers with SPF. Materials and methods: Ten women between the ages of 30 to 65 with uneven skin tone and multiple wrinkles were enrolled in a 2-week, split-faced pilot study investigating the incorporation of a sonica skin care cleansing brush randomized to one side of their face versus manual cleansing beginning 24 hours post-IPL. Study participants were instructed to cleanse twice daily with a gentle cleanser and the sonica brush (with radiance brush head) on 1 side of their face for 30 seconds twice a day versus manual cleansing. Participants were additionally provided a moisturizer and sunscreen to use through the duration of the study. Participants returned to the clinic at 7, 10, and 14 days for investigator assessments and complete questionnaires. Objective investigator assessments of wrinkles, smoothness, evenness of skin tone, radiance, and overall skin appearance were assessed using the Fitzpatrick 0-9 scale. Tolerance evaluations both objective investigator assessment (peeling, erythema, edema, and dryness) and subjective tolerance (burning, stinging, itching, and tingling) were graded using a 0-3 scale.

Results: Following IPL treatment, the side of the face randomized to the sonica brush had greater improvements in objective measures of smoothness at 7, 10 and 14 days. Unlike Just, who reported significant P < 0.001 at days 1, 7, and 14, we found significance only at days 10 and 14 (P = 0.024 and 0.055), radiance at 7 and 10 days (P = 0.034 and 0.028), and overall skin appearance at 7, and 10 days (P = 0.014 and 0.024). The sonica brush was well tolerated at all visits with no difference in tolerability (objective and subjective) between the side cleansed with the sonica brush versus manual cleansing; all tolerance measures returned to 0 at day 14 for both cleansing methods. 100% of participants reported that sonica cleansing improved reduction of brown spots/micro-crusts.

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Extracorporeal photopheresis in the treatment of CTCL: A single center long term experience
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Introduction: Initially extracorporeal photopheresis (ECP) was designed for the treatment of cutaneous T-cell lymphoma (CTCL). Sezary syndrome variant. Further indications have been documented in recent years, eg, systemic sclerosis, graft-vs-host disease, solid organ transplant rejection. The present study describes our experience with ECP alone or in combination with interferon-alpha, PUVA, total skin electron beam, steroids and chlorambucil in treating CTCL patients.

Materials and methods: 26 patients with CTCL over a period of 25 years were evaluated in a retrospective manner. Multiple standard clinical and laboratory findings usually identified as indicators for response to treatment were evaluated. Age at disease onset, time elapsed before treatment and clinical stage were included. Analysis encompassed erythrocytosis, WBC, LDH, and CD4/CD8 ratio.

Results: At the time of diagnosis of CTCL mean patient’s age was 58.6 years (range 37-78). Male to female ratio was 1.25:1. All 26 patients received ECP for more than 10 cycles. The mean number of ECP cycles was 54.2 (range 14-148 cycles). Overall survival rates were estimated by Kaplan–Meier method and compared using log-rank tests. The median overall survival of all patients was 5.9 years with 95% CI 1.7-8.7 years regardless of cause of death or blood involvement. A reduction of specific laboratory parameters correlated with response to treatment.

Conclusion: Patients with CTCL receiving ECP treatment with or without combination of immune-modulatory therapy experience higher response rates and longer survival than controls. Our study suggests that the use of extracorporeal photopheresis can have a significant positive effect on survival of a subset of CTCL patients.

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**HIV photodermatosis presenting as vitiligo in photodistributed areas**

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A 56-year-old Hispanic man with untreated HIV (CD4+ lymphocyte count of 43) presented with pruritic patches in sun-exposed areas. Medications included methadone. Physical examination revealed erythematous and depigmented patches on the bilateral temporal face. Laboratory work for common diseases of photodamage, including lupus, lupus erythematosus, porphyria, and scarring, were negative. Histology of the erythematous patch showed lichenoid dermatitis with eosinophils, consistent with lichenoid drug eruption or lichenoid photodermatitis. MART-1 immunostain revealed absence of melanocytes and Fontana-Mason stain detected no melanin deposits. Staining for T cell markers revealed a decreased CD4+/CD8+ ratio of 0.6, with prominent exocytosis of CD8+ T cells into the basal layer of the epidermis, suggesting a direct cell-to-cell interaction with melanocytes. The patient was treated with topical corticosteroids and encouraged to initiate antiretroviral therapy and photoprotection.

**Discussion:** HIV is a photosensitizing condition, even in the absence of photosensitizing medications. Here we present a rare clinical presentation of HIV photodermatitis presenting with lichenoid inflammation and the loss of melanocytes. The differential diagnosis for this case includes primary inflammatory vitiligo or photodermatitis leading secondarily to vitiligo. We favor the latter because of the clinical history, the photodistribution of depigmented areas, and the presence of dense lichenoid infiltrate with eosinophils. Postinflammatory hypopigmentation was another consideration, but the absence of melanocytes argues against it.

**Conclusion:** Vitiligo is increasingly being reported in patients with a background of immunosuppression, including HIV. Though the exact link between HIV, photodermatitis, and vitiligo is unknown, our patient’s low CD4+/CD8+ lymphocyte ratio suggests that cell-mediated cytotoxicity may be involved in melanocyte destruction.

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### 3912

**Hydroa vacciniforme and granulomatous uveitis in association with EBV**

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An 8-year-old Hispanic female presented to pediatric dermatology with an asymptomatic, recurrent rash on the bilateral temporal face, chest, and shoulders present for 5 months. Physical examination revealed several small 1-2 mm white, domeshaped papules with central umbilation on the face and chest. There were also rare, scattered erythematous papules and papulovesicles, with several ovoid shallow scars on the bilateral temples, cheeks and nose. Biopsy was performed and revealed superficial and deep perivascular and periadnexal infiltrates. Immunohistochemical staining utilizing EBV LMP-1 staining was positive in many keratinocytes. The differential diagnosis for this case includes primary inflammatory vitiligo and a rare pediatric photodermatitis characterized by symmetric papulovesicular lesions that heal with varioliform scarring on sun-exposed areas. It can be associated with EBV infections, particularly if necrotic lesions are present. This EBV-associated HV may manifest as a mild self-limiting disease, such as hydroa vacciniforme-like lymphoma (HVVL). HVVL is a rare EBV positive cutaneous T-cell lymphoma that usually occurs in children. In addition to the typical lesions seen in HVVL, patients may present with facial edema, ulcerative lesions, large hemorrhagic bullae, and atrophic scars on both sun-exposed and non-sun-exposed skin. Therefore, sun exposure is not thought to induce HVVL. HV more commonly affects males and have a later onset and longer disease course (mean duration of HV is 9 years). Patients may experience pruritus or a burning sensation a few hours or days after sun exposure, followed by the onset of erythematous macules that progress to necrotic crusts. HV is rarely associated with oral and ocular involvement as well as deformities of the hands, ears, and nose that are typically related to scarring. Ocular manifestations include photophobia, conjunctivitis, anterior uveitis, keratitis, and corneal opacities. Laboratory evaluation, including CBC with differential and LFTs, may identify severe high and its variants which can be associated with high fevers, facial swelling, liver damage, and hematologic abnormalities. Sun protection is vital for the management of HV. Suggested treatment for EBV-associated HV includes acyclovir (28-72 mg/kg/day, divided into 2-5 doses) or valacyclovir (60 mg/m2 kg/day divided twice daily) for 4-6 weeks, or continuously. Our patient was treated with acyclovir 40mg/kg/day divided twice daily for 4 weeks, along with sun protection.

**Commercial support:** None identified.

### 3009

**Impact of sun exposure and actinic damage on shrinkage of surgical specimens**

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**Introduction:** The shrinkage of surgical specimens (SS) of human skin is known, which has been attributed mainly to the retractive properties of the SS, contrary to the classical hypothesis attributing it to the action of formalin. Has been studied the influence of sex and localization, being observed bigger contraction at younger ages and the SS located in the trunk and extremities. However it has never studied the impact of chronic sun exposure (CSE) and actinic damage (AD) on the shrinkage of the SS.

**Objectives:** To evaluate the impact of CSE and AD on the shrinkage of the SS.

**Methodology:** A cross-sectional, descriptive observational study was performed in patients who had undergone surgery during a ten-month period. It included consecutive patients and data were gathered on age, CSE, AD and specimen width and length before surgical excision (before SE), at 5 minutes postsurgery (ex vivo) and after 24 h of fixation in 10% buffered formalin (postfixation).

**Results:** 251 patients were collected with a mean age of 63.9 years (standard deviation (SD) 19.2), of which 182 (72.5%) reported CSE and 177 (70.5%) reported AD. The mean shrinkage between before SE to postfixation in patients with / without CSE was 0.18cm (SD 0.22) / 0.26cm (SD 0.32) and 0.41cm (SD 0.39) / 0.48cm (SD 0.35), and in those with / without AD was 0.18cm (SD 0.23) / 0.24cm (SD 0.31) and 0.40cm (SD 0.39) / 0.52cm (SD 0.33) of width and length, respectively. A greater shrinkage of SS of patients without CSE / AD of 30.8%/25.0% and 16.6%/23.1% between before SE to postfixation, of 10.5%/22.2% and 5%/18.2% between before SE to ex vivo and 93.6%/93.1% and 63.7%/60.5% between ex vivo to postfixation of width and length was observed, respectively. There were statistically significant differences (P < 0.05) between measures of length of SS of patients with/without AD between before SE to postfixation and of width of SS of patients with/without CSE and AD between ex vivo to postfixation.

**Limitations:** The skin of SS was diseased and no other potentially influential factors were studied.

**Conclusions:** The skin under CSE or AD seems to have less contractile capacity than not exposed to the sun continuously. This is probably due to damage from the sun on the dermis and epidermis. It should be taken into account in the assessment of discrepancies between surgical and histopathologic measurements of SS.

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Linear nevoid psoriasis responsive to narrowband UVB phototherapy

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Linear nevoid psoriasis is a rare form of psoriasis with fewer cases reported in the literature. The main differential diagnosis is inflammatory linear verrucous epidermal nevus (IVLEN). While IVLEN is usually refractory to therapy, linear nevoid psoriasis responds well to antipsoriatic treatment. We report the first case of linear nevoid psoriasis treated with narrowband-UVB with good response. A 4-year-old girl presented with a disseminated dermatosis that appeared during her first year of life. Physical examination revealed irregular, erythematous confluent papules and plaques with fine scaling affecting the left axillary region, left upper thigh and left iliac region, arranged in a linear distribution along Blaschko’s lines. An erythematous plaque was found on her scalp. Presumptive diagnoses of lichen stratus, linear psoriasis and IVLEN were considered. A skin biopsy revealed hyperkeratosis, parakeratosis, regular psoriasiform hyperplasia, agranulosis, Munro’s microabscesses, blood vessel dilation and a perivascular lymphocytic infiltrate in the upper dermis. A diagnosis of linear Blaschko psoriasis was made. Fluocinolone acetonide cream once daily was prescribed with mild improvement after three weeks. Later, nb-UVB phototherapy was initiated: she is currently receiving 700 mJ/cm², two to three times a week with excellent improvement after 37 sessions. Linear nevoid psoriasis is a rare variant of psoriasis presenting along Blaschko’s lines at birth or early in life. The main differential diagnosis is IVLEN, which can be clinically and histologically identical. Linear psoriasis usually has a later onset and presents with asymptomatic or slightly itchy lesions; scalp and nail involvement is possible. IVLEN may appear during the first months of life, lesions are more pruritic, and it is resistant to antipsoriatic therapy. The pathogenesis is unclear. It has been explained by genetic mosaicism, where certain cells react differently from other cells in the same individual, due to chromosomal abnormalities. Treatment consists of topical corticosteroids, calcipotriol, methotrexate and psoralen UVA phototherapy (PUVA).

2802 Metal oxide sunscreens protect skin primarily by absorption, not by reflection or scattering

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The inorganic metal oxide sunscreens titanium dioxide and zinc oxide have been considered to protect against sunburning ultraviolet radiation by physically reflecting/scattering the incident photons and thus protecting the skin. Earlier reviews of inorganic UV sunscreen filters have concluded that these sunscreen agents work by reflecting/scattering the light, which is then absorbed by the skin. The present work combines the results from multiple publications suggested, however, that the primary action of UV protection by these sunscreen agents is through absorption and not by reflection. The purpose of this work was to find out the correct mechanism of action of these sunscreen agents and to protect the skin from UVB and UVA by both (in the long UV and visible wavelengths), these sunscreen filters are predominantly reflectors of light (up to 60% reflection) and nonabsorbing. We conclude that titanium dioxide and zinc oxide provide UV protection primarily via absorption of UV radiation, and not through significant reflection of the incident UV.

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2829

Photooxygenolysis mediated by 8% clofetanol nail lacquer

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A 12-year-old boy with personal history of twenty-nail dystrophy underwent treatment with 8% clofetanol propionate in nail lacquer prescription. Two weeks after the beginning of the treatment the patient started with intense pain in his nails. One week later he developed black-eruptive macules under the nail plate, mostly in the first finger of his left hand and in the fifth finger of his right hand. After investigating the composition of the nail lacquer, a clinical diagnosis of photo-oxygenolysis was made as the patient was treated with a nail lacquer containing a benzophenone. We recommend the patient to avoid the nail lacquer and sun protection of the nails. 6 weeks after the treatment was stopped the photooxygnolesis lesions had disappeared. Photooxygenolysis is a likely side effect of therapies with some antibiotics, such as tetracycline derivatives or fluoroquinolones, psoralen, captopril or thiourea diuretics, due to cutaneous photosensitization. It usually appears after more than two weeks of exposure to the drug and it often follows a photosensitivity reaction in the skin. However, it can also appear in the absence of photosensitive reaction. Onychodynia is the first symptom in most patients, followed by discoloration of the nails and onycholysis from 1 to 4 weeks. Additionally, photooxygenolysis has been reported in porphyrja cutanea tarda, erythropoietic porphyria, variegate porphyria, erythropoietic protoporphyria and pseudoporphyria. It is known that benzophenone is a phototoxic substance whose action occurs within ultraviolet A (UVA) and ultraviolet B (UVB) spectrum. Photosensitization of benzophenone provokes an oxidation of linolenic acid, resulting in formation of free radicals which react with oxygen. Minor structural changes in the benzophenone molecule influence its phototoxic properties. The importance of this case resides in the fact that some benzophenone derivatives are used as UV filters in sunscreens, some of which have shown positive photopatch responses.

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3133

Realistic sunscreen durability—A randomized, double-blinded, controlled clinical study

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Background: The American Academy of Dermatology and FDA recommend reapplying sunscreen at two hour intervals. Additionally, the sun protection factor (SPF) of sunscreens is tested using a thickness of 2 mg/cm². However, studies show that sunscreen under real-life conditions is neither applied sufficiently and often not reapplied. Recently developed sunscreen products claim to offer improved water resistance and photostability. This study investigated the durability of two current sunscreens with different SPF protection over an eight hour period.

Methods: Participants (n = 50) were randomized into two study groups utilizing either 2 mg/cm² (FDA testing concentration) or 1 mg/cm² (real life application levels) amounts of sunscreen. Two current SPF 15 and 70 sunscreens were applied to test spots on each participant’s back. In vivo SPF values were obtained at baseline, 3.5, and 8 hours post initial application during which subjects completed 30 minutes of moderate exercise followed by 80 minutes of water exposure. All participants were double-blinded to the product used.

Results: Participants in both dose study groups revealed only a 15-20% overall decrease in their SPF protection 8 hours after application. Similarly, the SPF 15 product test sites revealed an in vivo protection of 12.2 (2 mg/cm²) and 6.1 (1 mg/cm²). Conclusion: This study demonstrates that current sunscreens may be durable on average SPF greater than 60 (2 mg/cm² application) and 20 (1 mg/cm² application). The need for obtaining an ANA in all patients prior to initiating psoralen and ultraviolet A (PUVA) therapy has remained an issue of debate ever since data from early studies suggested that PUVA therapy could potentially cause patients to develop a positive ANA. Accordingly, early guidelines recommended obtaining an ANA in all patients prior to initiation of PUVA treatment in order to exclude diseases for which PUVA is contraindicated such as systemic lupus erythematosus (SLE). Subsequent studies suggested that obtaining an ANA prior to PUVA administration may not be necessary for all patients. The most recent American Academy of Dermatology guidelines indicate that the role of phototherapy in patients with psoriasis and psoriatic arthritis suggest obtaining a pretreatment ANA only if indicated based on the patient’s history. Although most of the controversy has surrounded PUVA therapy, clinicians often check an ANA prior to phototherapy with narrowband ultraviolet B (NB-UVB) or ultraviolet A1 (UVA1). We hypothesize that routinely checking ANA in all patients prior to phototherapy leads to delay in treatment and does not lead to the patient being excluded from receiving phototherapy for medical reasons.

Objectives: 1. Determine the outcome if patients have a positive ANA. Specifically, we wanted to determine if the positive ANA caused delay in treatment and whether the patient required clearance by a rheumatologist. 2. Determine if patients with a positive ANA had more positive follow-up ANAs. Determine if patients developed a connective tissue disease during or after phototherapy.

Study design: A retrospective chart review of patients ≥ 18 years old in whom phototherapy was prescribed at the University of South Florida in Tampa between January 1, 2006 and June 17, 2013. Patients < 18 years old or those unable to start treatment due to phototherapy were excluded. Patients who received phototherapy were identified by several methods including a manual review of phototherapy log books, a review of prior authorizations utilized for current treatments, and determination, and interviewing patients. We hypothesized that positive follow-up ANA would be higher in patients with a positive ANA. Patients with a positive ANA had a median time to treatment of 25 days compared to those with a positive ANA of 49 days. The median time between ordering phototherapy and first treatment was 19 days for patients with a negative ANA and 76 days for patients with a positive ANA, a statistically significant delay in treatment (P = 0.0039). Of the 20 patients with a positive ANA, clearance was obtained by a rheumatologist in 19 cases; one was cleared by the ordering dermatologist. No patients developed a photosensitive connective tissue disease during treatment. Seventy-nine patients had follow-up ANAs. Of these, 6 had a pretreatment positive ANA and 7 had a positive follow-up ANA. All 7 of these patients’ original ANA was negative. Conclusions: Pretreatment ANA assessment is often unnecessary and leads to increased health care costs and delayed treatment. Of the patients with a positive ANA all were eventually cleared. Furthermore, a positive ANA significantly delays care if they need to be seen by a rheumatologist. Dermatologists are excellent at diagnosing photosensitive dermatoses such as SLE and dermatomyositis. If the patient has a condition for which phototherapy is recommended, a dermatologist can more often than not rule out a photosensitive connective tissue disease based on history, review of systems, physical exam, and skin biopsy.

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3587

Retrospective review antimicrobial antibodies in phototherapy

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Background: Dermatologists often order a pretreatment antimicrobial antibody (ANA) prior to initiation of phototherapy to screen for photosensitivities. The rate of a positive ANA receiving phototherapy and subsequent treatment delay is unknown. We hypothesized that patients with a positive ANA would have more positive follow-up ANAs, and that those patients would develop a connective tissue disease during or after phototherapy.

Methods: Retrospective chart review of patients ≥18 years old in whom phototherapy was prescribed at the University of South Florida between January 1, 2006 and June 17, 2013. Patients < 18 years old or those unable to start treatment due to phototherapy were excluded. Patients who received phototherapy were identified by several methods including a manual review of phototherapy log books, a review of prior authorizations utilized for current treatments, and interviewing patients. We hypothesized that positive follow-up ANA would be higher in patients with a positive ANA. Patients with a positive ANA had a median time to treatment of 25 days compared to those with a positive ANA of 49 days. The median time between ordering phototherapy and first treatment was 19 days for patients with a negative ANA and 76 days for patients with a positive ANA, a statistically significant delay in treatment (P = 0.0039). Of the 20 patients with a positive ANA, clearance was obtained by a rheumatologist in 19 cases; one was cleared by the ordering dermatologist. No patients developed a photosensitive connective tissue disease during treatment. Seventy-nine patients had follow-up ANAs. Of these, 6 had a pretreatment positive ANA and 7 had a positive follow-up ANA. All 7 of these patients’ original ANA was negative. Conclusions: Pretreatment ANA assessment is often unnecessary and leads to increased health care costs and delayed treatment. Of the patients with a positive ANA all were eventually cleared. Furthermore, a positive ANA significantly delays care if they need to be seen by a rheumatologist. Dermatologists are excellent at diagnosing photosensitive dermatoses such as SLE and dermatomyositis. If the patient has a condition for which phototherapy is recommended, a dermatologist can more often than not rule out a photosensitive connective tissue disease based on history, review of systems, physical exam, and skin biopsy.

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Skin photorejuvenation effects of light emitting diodes: A comparative study of the effect of red-colored light-emitting diodes in vitro and in vivo

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Red-colored light-emitting diodes (LEDs) can improve skin photorejuvenation and regeneration by increasing cellular metabolic activity. We evaluated the effectiveness of visible LEDs with specific wavelengths for skin photorejuvenation in vitro and in vivo. Methods: normal human dermal fibroblasts (HFs) from neonatal foreskin were cultured and irradiated in vitro by LEDs at different wavelengths (410-850 nm) and doses (0.10 J/cm²). In vivo experiments were performed on the skin of hairless mice. Collagen (COL) and matrix metalloproteinase (MMP) expression were evaluated via semi-quantitative reverse transcription (RT) PCR, western blot analysis, and a procollagen type I C-peptide enzyme immunoassay (ELISA assay). Hematoxylin–eosin and Masson’s trichrome staining were performed to evaluate histologic changes. In results, COL I was upregulated and MMP-1 was downregulated in response to LED irradiation at 595 ± 2 nm and 630 ± 8 nm in HFs. A peak ELISA assay result was achieved at a dose of 5 J/cm² with an LED at 595 ± 2 nm. In vivo, COL I synthesis was upregulated in response to both 595-nm and 630-nm LED irradiation, and this impact was prolonged to 21 days after irradiation after a single 100 J/cm² dose. The histologic changes were consistent with the RT-PCR and western blot results. In conclusion, treatment with 595 ± 2 nm 630 ± 8 nm LEDs upregulated COL I expression and downregulated MMP expression, and the effects persisted at least 21 days after irradiation. These findings suggest that yellow and red-colored LEDs might be useful for skin photorejuvenation.

Commercial support: None identified.

Vitamin D synthesis after UVB exposure in Asians

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An 85-year-old female presenting with a 1.5-year history of bilateral leg edema, erythema, and pain. She had previously been diagnosed with cellulitis and treated with intravenous antibiotics while in the hospital, as well as PICC line placement and outpatient treatment with intravenous antibiotics. Serologies for ANA, rheumatoid factor, anti-double-stranded DNA, HLA-B27, CCP antibody, SSA, and SS-B were negative. Both MRI and ultrasound were performed for each leg, and failed to demonstrate a deep venous thrombosis, evidence of infection, or osteomyelitis. Despite antibiotic therapy, she continued to have waxing and waning of her disease. After repeated admissions, dermatology was consulted and the patient was found to have poorly marginated, circumferential, red brown patches with fine white scaling involving the bilateral lower extremities. The areas involved had a firm, bound down appearance with atrophy giving an ‘inverted champagne bottle’ appearance below the knee. Both legs demonstrated 1+ pitting edema and tenderness to palpation. Based on clinical appearance and history, our patient was diagnosed with lipodermatosclerosis. She was treated with clofrotelos under occlusion, ACE wraps, and leg elevation. She initially had improvement with this, however her pain and inflammation returned despite continued treatment. Pentoxifylline was added to her regimen and this was also not successful. Due to treatment failure, she was treated with UVA-1, with three treatments weekly for a total of 20 treatments. With light therapy, her legs softened significantly, and she had marked improvement in her pain and erythema. After treatment with UVA-1, she only required Ace wrapping of her legs for maintenance with no recurrence of fibrosis, erythema, or pain. Both lipodermatosclerosis and localized scleroderma have been shown to have increased pyridinolines, which are hydroxyllysine aldheyde derived crosslinks in collagen, that are absent in healthy tissue. UVA has been shown to decrease these collagen crosslinks. We believe that UVA-1 lead to remodeling of the extracellular matrix in our patient, as well as a decrease in inflammation, leading to her improved clinical findings. UVA-1 should be considered as an adjuvant to standard compression therapy in refractory cases of lipodermatosclerosis.

Commercial support: None identified.
3281

Search for clinical and laboratory markers of severity and instability of vitiligo: A cross-sectional observational hospital based study

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Introduction: Vitiligo has always been troubling dermatologists due to unsatisfactory results every now and then, in spite of many treatment options available; keeping doctors on their toes in acquiring more and more knowledge about the disease. Vitiligo has recently been found to be associated with atopic diathesis and proposed explanations include melanocyte destruction by proinflammatory state of atopy, Koebnerization of vitiligo by scratching in pruritic atopic dermatitis and common genetic mutation(s) like vitamin D receptor polymorphisms in both vitiligo and atopic diathesis. The association of vitiligo with increased serum homocysteine (Hcy), decreased serum vitamin B-12 and decreased serum folic acid levels has also been studied and mechanisms proposed for increased Hcy levels causing ‘pigmentary dilution’ include melanocyte destruction, mutation in catalase gene and inhibition of histidase and tyrosinase.

Materials and methods: A cross-sectional observational study was conducted on 40 vitiligo patients and 40 matched controls and criteria for atopic diathesis, serum Hcy, vitamin B12 and folic acid levels compared.

Results: History of atopy (47.5% vs 20%; \( P < 0.05 \)) and clinical atopic diathesis were significantly associated with vitiligo (42.5% vs 15%; \( P < 0.05 \)). Out of the following criteria: recurrent cough and cold, bronchial asthma, xerosis, chronically relapsing dermatitis, pruritus and family history of atopy, 5% of controls and 20% of cases fulfilled more than 3 criteria. Leukotrichia (\( P < 0.05 \)) and early age of onset (22.4 vs 34.4 years, \( P < 0.05 \)) were significantly found in patients of atopy. Mean Vitiligo Area Scoring Index (VASI) and mean percentage body surface area (BSA) involved was more in patients of atopy, but not significantly (\( P > 0.05 \)). Elevated serum Hcy levels (72.5% vs 10%; \( P < 0.05 \)) and reduced serum vitamin B-12 levels (70%; vs 25%; \( P < 0.05 \)) were significantly associated with vitiligo. No significant association was found with reduced serum folic acid levels. High VASI (59.47% vs 7.67%; \( P < 0.05 \)) and larger mean percentage BSA (45.5% vs 10.5%; \( P < 0.05 \), unstable disease (72.5% vs 27.5%; \( P < 0.05 \); and leukotrichia were significantly associated with elevated Hcy levels.

Conclusion: Atopic diathesis, elevated serum Hcy and reduced serum vitamin B12 levels may be used as markers of severity and instability of vitiligo and included in work-up done on the first visit. There are no Indian studies on the same.

Commercial support: None identified.

3763

12-Hydroxystearic acid: A peroxisome proliferator-activated receptor ligand that has antimelanogenic and antiinflammatory activity

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Peroxisome proliferator-activated receptors (PPARs) have been pursued as biological targets for skin rejuvenation, antiinflammation and antiaging benefits. The goal of this research was to explore the cellular mechanisms of a new PPAR pan-agonist, 12-hydroxystearic acid (12-HSA), for its role in modulating melanogenesis and to investigate the relationship between those levels and disease activity.

We used a murine melanoma cell line (B16-F10) and murine keratinocytes to test the in vitro activity of 12-HSA in our model. Our study of cocultures showed that 12-HSA inhibited melanosome transfer from melanocyte to keratinocyte as measured by flow cytometry using double immunofluorescence labelling. In human monocytes, 12-HSA inhibited the infiltration of CD8-T lymphocytes in the epidermis and the dermis (\( P < 0.001 \) and a down expression of E-cadherin at the membrane of keratinocytes (\( P = 0.044 \)).

Discussion: The clinical aspect of the vitiligo and particularly of the borders may exactly reflect the depigmenting process in course. We demonstrated that melanotic aspect with sharply defined borders is associated to stability of the vitiligo lesions.

Conclusion: A simple and careful clinical examination of perilesional skin with or without histopathologic study of the edge may allow reliable and immediate evaluation of the actual stability of vitiligo lesions.

Commercial support: None identified.

2738

Assessment of intraerythrocyte zinc levels in vitiligo patients

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Background: Vitiligo is a common pigmentary disorder. Many studies across decades and all over the world have attempted to illustrate the pathogenesis behind it. The pathogenesis of vitiligo is not completely understood, although the disorder appears to be resulted from the complex interaction between immune abnormalities, genetic background and environmental factors. Trace elements are known for normal functioning of the immune system. In this study, we investigated the levels of zinc in erythrocytes and their relationship with disease severity in patients with vitiligo.

Objectives: The aim of this study was to determine the zinc levels in serum and erythrocytes of patients with vitiligo by using atomic absorption spectrophotometric technique and to investigate the relationship between those levels and disease activity.

Methods: Fifty-two (20 women and 32 men) vitiligo patients and age matched 52 controls were enrolled in the study. The diagnosis of vitiligo was determined using physical examination and Wood's light. Serum zinc levels were additionally calculated as 88.94 ± 13.43 mg/dL (standard deviation: 95.48) and of the vitiligo group were as 602.12 ± 107.89 mg/dL (standard deviation: 107.89). No significant difference was observed between the control and the vitiligo group.

Results: Intraerythrocyte zinc levels of vitiligo patients and control group patients were found close to each other. Erythrocyte zinc levels of the control group were as 581.24 ± 35.48 (280-924) mg/dL (standard deviation: 95.48) and of the vitiligo group were as 602.12 ± 107.89 mg/dL (standard deviation: 107.89). Serum zinc levels were additionally calculated as 88.94 ± 13.43 mg/dL (standard deviation: 95.48) and of the vitiligo group were as 602.12 ± 107.89 mg/dL (standard deviation: 107.89).

Conclusion: We did our study to find out whether the assessment of zinc deficiency by intraerythrocyte zinc levels is useful in the diagnosis of vitiligo. Our results indicate that intra-erythrocyte zinc levels in vitiligo may give us different results to make a healthier interpretation about the association of vitiligo and zinc.

Commercial support: None identified.

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Clinical and instrumental efficacy of a dermocosmetic with Uniwhite peptide, niacinamide, viC and hyaluronic acid on reducing actinic lentigo and improving photoaging

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Introduction: This monocentric open-label study assessed the clinical and instrumental efficacy and tolerability of a night cream containing uniwhite peptide (2%), niacinamide (4%), vitamin C derivative (4%) and hyaluronic acid (0.1%) for photoaging skin applied once daily during 8 weeks.

Methods: Forty-six white volunteers were included (50 to 70 yo). At inclusion, subjects presenting crow’s feet wrinkles graded 2 to 6 (0-8 scale) and at least one facial target lentigo. Product was applied on the face and neck. Assessments were performed at baseline, after 4 and 8 weeks: Clinical evaluation of wrinkles, facial complexion homogeneity & luminosity; instrumental evaluation of lentigo intensity and sharpness, wrinkles depth and melanin content. Subjects answered a questionnaire at each postbaseline visit.

Results: All subjects completed the study. Mean age was 64 yo. In vivo evaluation showed a significant progressive improvement in skin luminosity, complexion homogeneity and crow’s foot wrinkles depth, at each visit (P < .005). These results were confirmed by clinical evaluation on digital photographs with significant improvement of the lentigo, complexion homogeneity, lightening effect and facial complexion. Lentigo software analysis (n = 39) showed a significant decrease of the color contrast between lentigo and surrounding skin, as well as a decrease in the target area indicating a depigmenting effect on target lentigo (P < .005). A decrease in melanin component was also observed at each visit (P < .001), confirming a lightening effect of the product. From the first visit, 80% of subjects considered that the product had a redensifying effect and 91% felt a deeply nourished skin. Conclusion: In this 8-week study, this face and neck night cream containing peptide, niacinamide, ascorbic glucoside and hyaluronic acid, was well tolerated and effective to improve actinic lentigo and clinical aspects of photoaging, both through clinical in vivo and instrumental noninvasive evaluation.

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Clinical efficacy of a dermocosmetic skin lightening cream in woman suffering from melasma

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Introduction: The aim of this intradividual comparative study was to assess the clinical and instrumental efficacy of a skin lightening cream containing azelaic acid (12%) and glycolic acid (5.2%) for melasma during 16 weeks. The dermatologic safety of the product and the quality of life impact on subjects were also evaluated.

Methods: Thirty-three females’ volunteers were included. The tested product was applied twice daily on face hyperpigmented affected area. This melasma treated area was compared to healthy unaffected area at all assessment time (at baseline and after 8, 12 and 16 weeks (W)). Primary parameter was the clinical assessment of the modified MASIa compared to uninvolved skin. Instrumental chromometer measurement (ITAx value), macrophotographies and image ranking scoring using 4 point-scale (1 = least melasma to 4 = strongest melasma) were also performed. Quality of life was assessed with MelasQoL scale. Product tolerance was also assessed by the dermatologist during the study.

Results: Thirty-one subjects (mean age: 47 years old) presenting combined (epidermal and dermal) or dermal melasma (as selected by Wood lamp) were analyzed. Two subjects have been withdrawn without relation with the tested product. The modified MASI score improved significantly after 8, 12 and 16 weeks (2.6, 2.1, 1.5) compared to baseline (3.8) (P < .001). The clinical scoring of macrophotographies also showed the decrease of melasma severity from strongest to least (P < .001). The parameter skin tan value (ITAx) by chromometric measurement confirmed the clinical assessment. A significant progressive decrease of the color difference between the melasma treated area and the surrounding non-pigmented area was observed from W8 to W16 (P < .001). The significant decrease of the MelasQoL score from 27.9 at baseline to 18.6 at W16 showed the improvement of the subjects’ quality of life (P < .001). The skin tolerance was judged “good” by the dermatologist.

Conclusion: The twice-daily application of a dermocosmetic cream containing azelaic and glycolic acids over 16 weeks improved clinical severity of melasma pigmented areas through dermatologist, subjects and instrumental evaluations, with a good tolerance.

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New severity assessment method for melasma
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Introduction and objective: Melasma is one of the most common pigmentary skin disorders. However, tannin resin is frequently used in the treatment of melasma, and its results are typically assessed based on the patient’s subjective evaluation. We performed a study to develop a new, quantitative assessment method for melasma based on computerized optical imaging analysis system.

Material and methods: In this study, we proposed a new computerized optical imaging analysis method for the quantitative assessment of melasma. To achieve our objective and quantitatively analyze the involvement area, we divided the melasma lesions into frontal, cheek, and chin regions within patients. After that, the divided images were processed to define the melasma lesions by the multithreshold method and gradient mask were applied to correct the curvature error of facial contour. Degree of darkness and homogeneity were measured based on intensity of gray level and difference of gray level in melasma lesions.

Result: The new proposed quantitative assessment method for melasma is more objective than the ordinary MASI method. In addition, a new assessment method is able to quantify a minute difference of pigmented pattern among melasma patients.

Conclusion: We developed the quantitative assessment method for melasma using computerized optical imaging analysis. Based on the results, our new computerized optical imaging analysis system could be used as a valuable tool to assess the severity of various pigmented skin diseases including melasma.

Commercial support: None identified.

2354 Progression of idiopathic eruptive macular papulation in a girl from the child to the adult
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A 14-year-old girl suffered from brownish round macules and patches over face, trunk and proximal limbs since she was 7 years old. She has no underlying medical disease or familial history of pigmentations disorders. The lesions were asymptomatic and there was no preceding redness or inflammation. After 7 years of loss follow up, she came back to our clinic. There were progressions of generalized brownish round macules and patches over whole face, chest, back and upper extremities. Physical examination revealed normal development of neurocutaneous system. Blood levels of mercury, lead, arsenic, thallium, and mercury were within normal limits. The histopathologic examinations for lesional skin showed increased basal layer pigmentation and increased melanocytic activity by dihydroxyphenylalanine reaction stain. Electron microscopy examination of the lesion skin revealed an increase in numbers and an increase in maturity of melanosomes in both basal and suprabasal keratinocytes. However, the cell number of melanocyte was within normal range. The diagnosis of idiopathic eruptive macular papulation (IEMP) was rendered. Oral transamic acid and tetracycline were given for treatment without any responses were noticed during one year of follow up. IEMP is characterized by round or oval-shaped, brownish macules without previous erythema or other symptoms. The lesions were distributed mainly over neck, chest, back and proximal limbs. Our case was presented with an unusual course of aggressive progression and extensive face involvement in the seven years follow-up. The pathogenesis of IEMP remains unclear. Endocrine factors, inflammatory stimuli, and autoimmune phenomenon were hypothesized. Asians and Egyptians were seen to be more vulnerable for IEMP according to reported case numbers. Ethnicity or Fitzpatrick skin type may be considered as risk factors. IEMP generally tends to regress spontaneously in months years without treatment. However, in our case, the disease runs an irritable and progressive course from year 7 to year 14. Similarly, a case of 21 year of history of IEMP has been reported before, suggesting that IEMP may not be necessarily self-remitting. Topical steroids, hydroquinone, and tretinoin were not proved to be helpful in its treatment. IEMP is a relatively rare disorder and should be considered as differential diagnosis for child or young adults with hyperpigmentation disorders. The management of IEMP may be difficult for extensive and nonremitting cases.

Commercial support: None identified.

2744 Repigmentation in three cases of perineum vitiligo induced by photody- namic therapy
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Vitiligo is an acquired depigmentary disorder of the skin which results from the destruction of melanocytes. The depigmentation in genitalia site has a deleterious effect on the psychosocial function of many individuals. So far, very few data about perineum vitiligo treatment are available. Here, the authors report repigmentation in three cases of perineum vitiligo treated by photodynamic therapy (PDT). In all the patients, 5-aminolevulinic acid of 20% concentration was used after occluded 5 hours, following irradiation with red light (630 nm) with the same parameters (60 mW/cm², 20 min), one session every two weeks were made. During the treatment with PDT, no other treatments to vitiligo were done. Case 1: A 24-year-old unmarried female underwent repeated perineum vitiligo of 4 years, the lesion was nonprogressive for about 3 years. 5 months before PDT treatment, the patients received topical tacrolimus twice daily treatment for 6 months with no beneficial. Physical examination revealed that the lesion was repigmented. She received 11 sessions and 40% of the lesions repigmented. Case 2: A 20-year-old unmarried female with perineum vitiligo of 2 years. The lesion spread progressively for the first half year and was nonprogressive thereafter. She failed to respond to the medical treatment administrated to her before PDT. Examination revealed total area of the lesion was 30 cm². She received 12 sessions and 90% of the entire lesion showed good repigmentation 2 weeks after the last treatment. Case 3: A 50-year-old married female of 3 years’ duration, the lesion had been progressing in the first year and spread almost the whole perineum. She was refractory to medical treatments, which she had received earlier. This patient underwent only 2 sessions and break the treatment because of the severe itching occurred after PDT. She received 30% repigmentation of the examination 3 months after the last treatment. After the treatment, the patients suffer mild burning or pain, itching and after the sessions erythema was noted, which were well-tolerated by most patients and generally disappeared after several hours after treatments except for the 50-year-old patient with severe itching. This is to our knowledge the first study of PDT in perineum vitiligo. All the three patients yielding repigmentation who were satisfied with the treatment. Further studies with more patients are necessary to determine if PDT is a good option of treatment in perineum vitiligo.

Commercial support: None identified.

3875 Transdermal delivery of hydroquinone and clobetasol propionate using ablative fractional radiofrequency and ultrasound in the treatment of melasma
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Background: Melasma is a common disorder of hyperpigmentation that has a significant negative impact on the quality of life in affected individuals and is often difficult to treat. A range of treatments for melasma exist, with varying degrees of efficacy and success. Depigmenting agents have been the gold standard for the treatment of melasma for decades. But, some drugs that are absorbed do not penetrate deeply enough to reach the target melanocytes for hyperpigmentation. Fractional ablative radiofrequency penetrates the skin by creating microchannels which reach beyond the stratum corneum, creating a direct path for drugs to reach the deeper skin tissue.

Objective: This study intends to evaluate the clinical efficacy and the safety of transdermal delivery of fractional radiofrequency technology paired with an acoustic pressure wave ultrasound technology to topically push the 4% hydroquinone and 0.05% clobetasol propionate through the intact skin.

Methods: The study enrolled 20 patients of Fitzpatrick skin types I-IV with refractory facial melasma. Initially, patients were treated every other week, during 3 months (6 treatments) with fractional radiofrequency device (RF Pixel Microplasma) for skin perforation employing 50W and 1 pass, followed by acoustic pressure ultrasound. The treatment settings of the acoustic pressure ultrasound handpiece were 80% of the ultrasound energy output and 50 Hz for the ultrasound sonotrode vibration rate. Immediately 4% hydroquinone and 0.05% clobetasol propionate were applied on the treated skin surface. Clinical and instrumental evaluations for improvement in pigmentation were conducted at baseline and at each subsequent follow-up visit at 2, 4, and 12 weeks. The effects of treatment were evaluated by three physicians not involved in the study and by standardized digital photographs (VISIA, Canfield Imaging Systems, USA) based on improvement of pigmentation and reduction in melasma size.

Results: This study shows the improvement of melasma through the enhanced penetration of hydroquinone and clobetasol propionate using ablative fractional radiofrequency and ultrasound treatment. The effect on the psychosexual function of many individuals. So far, very few data about perineum vitiligo treatment are available. Here, the authors report repigmentation in three cases of perineum vitiligo treated by photodynamic therapy (PDT). In all the patients, 5-aminolevulinic acid of 20% concentration was used after occluded 5 hours, following irradiation with red light (630 nm) with the same parameters (60 mW/cm², 20 min), one session every two weeks were made. During the treatment with PDT, no other treatments to vitiligo were done. Case 1: A 24-year-old unmarried female underwent repeated perineum vitiligo of 4 years, the lesion was nonprogressive for about 3 years. 5 months before PDT treatment, the patients received topical tacrolimus twice daily treatment for 6 months with no beneficial. Physical examination revealed that the lesion was repigmented. She received 11 sessions and 40% of the lesions repigmented. Case 2: A 20-year-old unmarried female with perineum vitiligo of 2 years. The lesion spread progressively for the first half year and was nonprogressive thereafter. She failed to respond to the medical treatment administrated to her before PDT. Examination revealed total area of the lesion was 30 cm². She received 12 sessions and 90% of the entire lesion showed good repigmentation 2 weeks after the last treatment. Case 3: A 50-year-old married female of 3 years’ duration, the lesion had been progressing in the first year and spread almost the whole perineum. She was refractory to medical treatments, which she had received earlier. This patient underwent only 2 sessions and break the treatment because of the severe itching occurred after PDT. She received 30% repigmentation of the examination 3 months after the last treatment. After the treatment, the patients suffer mild burning or pain, itching and after the sessions erythema was noted, which were well-tolerated by most patients and generally disappeared after several hours after treatments except for the 50-year-old patient with severe itching. This is to our knowledge the first study of PDT in perineum vitiligo. All the three patients yielding repigmentation who were satisfied with the treatment. Further studies with more patients are necessary to determine if PDT is a good option of treatment in perineum vitiligo.

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The RF Pixel Microplasma was lent to the group for this study.
A novel molecular disease classifier for eczema and psoriasis
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Novel specific therapies for eczema and psoriasis have been developed and they mark a new era in the treatment of these complex inflammatory skin diseases. However, within their broad clinical spectrum, eczema and psoriasis phenotypes overlap making an accurate diagnosis impossible in special cases, not to speak about predicting the clinical outcome of an individual patient. Here, we developed a novel method to reliably diagnose indistinct cases. We identified a robust molecular classifier (MC) consisting of the genes NOS2 and CCL27 that diagnosed eczema and psoriasis in a cohort of 129 patients suffering from classical forms, but also from subtypes of eczema and psoriasis, with sensitivity and specificity $>95\%$. Furthermore, the MC identified histologically misdiagnosed patients ($n = 5$) and gave a clear prediction for therapeutic response in 5 indistinct patients that was in line with the subsequent clinical course. Moreover, we established immunofluorescence stainings for iNOS and CCL27 protein on paraffin n-embedded sections and also here, patients were diagnosed with sensitivity and specificity $>88\%$. This disease classifier proved to be superior to current gold standard methods to distinguish eczema and psoriasis and may thus build the basis for molecular diagnosis of chronic inflammatory skin diseases required to establish personalized medicine in the field.

Commercial support: None identified.
A real word review of treatment duration and persistence among European plaque psoriasis patients

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Introduction: Psoriasis (PsO) is a chronic disease that imposes a heavy burden on patients and has yet no cure. Biologic agents have demonstrated strong efficacy in PsO and symptoms of the disease however, the high cost of these drugs may limit their long-term use. The aim of this study is to assess the duration of biologic therapy and the impact of these drugs over time as well as measure persistence with these agents.

Methodology: We used patient data collected as part of an online treatment survey conducted among a panel of dermatologists between April 2014 and June 2015 across the five largest EU countries (France, Germany, Italy, Spain and the UK), and analyzed the recorded data of 6013 biologic experienced patients suffering from moderate to severe plaque psoriasis. We have also classified the characteristics of patients and classified them according to the duration of their current biologic therapy into 3 roughly even sized categories. “Short-term” patients had been on their current biologic for ≤8 months (n = 1774), “medium-term” patients had been on their current biologic for >8 ≤25 months (n = 1245), “long-term” patients had been on their current biologic for >25 months (n = 1182). We also analyzed the recorded duration of patients’ most recent previous line of biologic therapy to assess persistence on treatment (n = 751). All data were used for statistical significance using two-sided t-tests with a significance level of 0.05.

Results: On average patients had been on their current biologic for 22.9 months with no significant differences between brands bar Stelara, which had a significantly shorter mean treatment duration (17.9 months). “Long-term” patients were significantly older vs the other two groups (48.6 years; P < 0.05) and as expected had longer overall disease durations (15.3 years) but they were also significantly more likely to have a PASI ≤10 (77.0%) and a BSA ≤10% (82.0%). This was in line with doctors’ perceptions as the ‘long-term’ group had the greatest proportion of patients deemed to have mild PsO (20.6%). The “short-term” group had a significantly greater percentage of moderate to severe patients vs the other groups. While “long-term” patients were more likely to have had a PsO diagnosis (20.6%) there were no significant differences in perceived severity at the time of their 1st biologic initiation. However, “long-term” patients were more likely to still be on monotherapy (40%) compared with cardiovascular disease (9.7%), ankylosing spondylitis (1.9%) and diabetes (11.6%) significantly more common in these patients. “Long-term” patients were also significantly more likely to be treated with anti-TNF inhibitors (77.7%) with Humira the most common choice. Stelara was more frequently associated with “medium-term” patients (59.3%). Use of concomitant topical treatments was also significantly higher in “medium-term” patients (58.9%) although there were no statistically significant differences in steroid use between groups. With regards to stop and switch patients, the mean duration of their previous line of biologic therapy was 14.5 months. This was 17.8 months for switch patients and 15.1 months for patients stopping biologic therapy altogether (non-significant). Among those switching, patients spent 17.9 months on their 1st biologic before switching. 18.8 months on their 2nd and 13.0 months on their 3rd or more biologic (significantly less vs the duration of the 1st and 2nd biologic). Although only 4.1% of patients analyzed had stopped biologic therapy, the most common reason for the stop was patient remission (36.4%). However, only 25% of these patients had been in remission for more than 12 months.

Conclusion: Our results confirm that long-term use of biologics can be beneficial to patients who continue to respond to their therapy for several years. However, a considerable proportion of patients stops or switches biologic due to lack of efficacy and/or tolerability issues. This emphasizes physicians’ need for a large and varied armamentarium of biologic agents and novel small molecules. It also strengthens the importance of therapeutic strategies such as treat-to-target that optimize patient outcomes and ensure maximum persistence on therapy.

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A statistical tool to convert published PASI 75, PASI 90 and PASI 100 response rates into absolute PASI values

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Introduction: While relative improvements in PASI (eg, PASI 75) are often used for measuring the efficacy of biologic therapy in clinical trials, absolute PASI values provide more clinically relevant information about the severity of disease long term. Treatment goals defined by absolute PASI targets may enable a more standardized quality of care. Thus, there is a trend to describe efficacy via the proportion of patients reaching an absolute PASI ≤1, ≤5, or ≤5. Because absolute PASI data are rarely published, we developed a tool to estimate the percentages of patients with absolute PASI ≤1, ≤5, and ≤5 and these were compared to actual percentages. Within each study the tool was used to estimate the percentages of patients with absolute PASI ≤1, ≤5, and ≤5 and these were also compared to actual percentages. For this study, actual PASI values of the individual treatment arms (80 mg ixekizumab every 2 weeks, 80 mg ixekizumab every 4 weeks, 50 mg etanercept biweekly and placebo) and the treatment differences were analyzed at week 12.

Results: We found strong correlations between the estimated and the actual percentages of patients with absolute PASI ≤1, ≤5, and ≤5 at 12 weeks across the active treatment arms of the 3 studies (r = 0.9972, r = 0.9987, r = 0.9992, respectively). Across the 3 combined cutpoints the tool underestimated the proportion of patients on average by -0.8%. The correlations between estimated and actual treatment differences in percentages of patients with absolute PASI ≤1, ≤5, and ≤5 were also high (r = 0.9984; r = 0.9988; r = 0.9999, respectively).

Conclusions: This new tool shows good statistical properties enabling comparison of proportions of patients with absolute PASI values using commonly reported data from ixekizumab phase 3 trials. This work will make future comparisons of absolute PASI data between treatments using published data possible in order to inform treatment guidelines, physicians, patients and reimbursement bodies.

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Adalimumab dose escalation, deescalation, and reescalation in patients in the REVEAL study

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Introduction: The safety and efficacy of adalimumab (ADA) treatment in patients (pts) with psoriasis has been demonstrated; however, not all pts maintain a high level of response over time. Here, we report the effectiveness and duration of escalating and deescalating ADA dosing between 2 regimens: every other week (eow) and every week (ew).

Methods: These analyses include open-label extension (OLE) data from REVEAL trial. Pts initially received mg ADA eow. From OLE weeks 24 to 252, pts whose PASI response was <50% could dose escalate to 40 mg ew, and were reevaluated at 6 and 12 wks, then every 12 wks. Pts in the dose escalation (DE) population who achieved PASI75 were deescalated back to eow. Pts who deescalated and fell below PASI50 again could reescalate to ew; no further deescalation was allowed. Absolute and percentage changes in PASI scores were reported at last visit before DE or deescalation.

Results: Pts in the OLE study were predominantly male, white, with mean age of 44 years. In total, 299 former REVEAL pts underwent initial ADA DE. Mean PASI score was 14.5 and mean percentage change from baseline (BL) in PASI was -26.2 at escalation. Approximately half of the initial DE population (144/299; 48%) attained a PASI response and dose escalated back to ew after median duration of 17 wks on ADA ew. Remaining 155 pts (52%) did not achieve PASI75 and remained on escalated ew dose for median duration of 29 wks. Among the 144 pts who deescalated, the mean PASI score at deescalation was 3.6; mean percentage PASI change from BL was -81.5. 68 pts of the deescalation group (47%) lost a PASI50 response and underwent reescalation to ew, after median duration of 24 wks. Remaining 76 pts (53%) who deescalated retained at least a PASI50 response and remained on eow dosing for median duration of 60 wks without reescalating. Mean PASI score for pts who reescalated was 12.9 at reescalation; mean percentage change from BL was -56.1. Pts who reescalated to ew remained in study with ew dosing for median duration of 44 wks. DE was not associated with additional safety concerns in the OLE study.

Conclusions: ADA was effective in eow and ew dosing regimens and exhibited safety consistent with known safety profile. Approximately 25% of pts who required DE to achieve PASI75 were successfully de-escalated and remained on ew dosing without need for dose reescalation (median 60 wks). Most deescalations occurred within 4 months after initial escalation.

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Adalimumab is associated with reduced risk of joint-related signs and symptoms compared with methotrexate in patients with moderate to severe psoriasis

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Objective: Population-based studies have shown that psoriatic arthritis (PsA) is highly prevalent among patients with moderate to severe psoriasis. Adalimumab (ADA) has shown superior efficacy to placebo in reducing the risk of psoriatic arthropathy adverse events (AEs) among patients with psoriasis and comorbid PsA.[2] This study assessed the effect of ADA vs methotrexate (MTX) in the patients with joint-related signs and symptoms (ie, joint pain, swollen joints) among moderate to severe psoriasis patients with and without comorbid PsA.

Methods: Data from 4 randomized phase 3 trials (M10-255, NCT00679731; BELIEVE, NCT0079249; REVEAL, NCT00238787; and CHAMPION, NCT00235820) were pooled for patients treated with ADA vs MTX (5.25 mg once weekly). Treatment-emergent joint-related signs and symptoms were reported in the trials. The cumulative incidence of joint-related AEs by Week 16 was compared between ADA and MTX using the Cox proportional hazards model, adjusting for baseline demographic characteristics, patient-reported presence of swollen/tender/stiff joints, the Psoriasis Area and Severity Index (PASI) score, and disease duration. A subgroup analysis was conducted among psoriasis patients without comorbid PsA at baseline.

Results: A pooled 1558 patients (ADA n = 1285; 82.5%; MTX n = 273, 17.5%) were included. The mean age was 49.9 years and the majority were male (67.4%). A quarter of patients had PsA at baseline (ADA group 26.9%; MTX group 17.2%) and 28.9% reported swollen, tender, or stiff joints. By Week 16, a significantly greater proportion of ADA patients vs MTX controls or untreated patients had PsA-related AEs (unadjusted hazard ratio [HR] 0.58, 95% confidence interval [CI] 0.34-0.96, P = 0.031). Among psoriasis patients without comorbid PsA, a numerically greater proportion of ADA patients vs MTX controls had joint-related AEs (unadjusted HR 2.83, 95% CI 1.4-5.7, P = 0.001). After adjusting for baseline characteristics, ADA was associated with a greater lower risk of joint-related AEs when compared with MTX (HR 0.52, 95% CI 0.33-0.8, P = 0.002). Among all patients, an 18.7% lower risk among psoriasis patients without comorbid PsA with unadjusted HR 0.85, 95% CI 0.64-0.94, P = 0.008).

Conclusion: ADA treatment was associated with a reduced risk of joint-related signs and symptoms when compared with MTX among moderate to severe psoriasis patients with and without comorbid PsA.

Design, study conduct, and financial support for the study were provided by AbbVie. AbbVie participated in the interpretation of data, review, and approval of the abstract; all authors contributed to the development of the publication.

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Adalimumab significantly improves PASI scores in head region among patients with moderate-to-severe psoriasis: Analysis from REVEAL and CHAMPION

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Introduction: Psoriasis affecting the head region is often problematic due to its visible location and resistance to therapy. This analysis evaluates the efficacy of adalimumab (ADA) treatment of the head region in patients with moderate-to-severe psoriasis.

Methods: Of the patients from the phase 3, randomized, placebo-controlled REVEAL (Menter A, et al. J Am Acad Dermatol. 2008;58:106-15) and CHAMPION (Saurat JH, et al. Br J Dermatol. 2008;158:558-66) trials, those with psoriasis involving the head were included in this pooled analysis. The intent-to-treat populations received ADA 80 mg at week 0, then 40 mg every other week or placebo through week 16. The methotrexate arm from CHAMPION was excluded. Improvements in overall and each component of the head region PASI scores at week 16 were -10.1 for PASI 100 responders in the head region vs -6.4 for PASI 100 nonresponders in the head region.

Conclusion: After 16 weeks of ADA treatment, patients achieved significant improvements overall and in each component of the head region PASI scores compared with placebo. Complete clearance of head psoriasis with ADA therapy resulted in greater improvements in quality of life due to the design of the PASI instrument, the benefit to the scalp can only be inferred.

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An analysis of the incidence of adverse pregnancy outcomes among patients with psoriasis and psoriatic arthritis

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Psoriasis is a chronic inflammatory skin disease affecting 2% of the world’s population. In the current study, we sought to examine the effect of psoriasis/case ratio and severity on several outcomes of pregnancy, including method of delivery, gestational age, size for gestational age, birth weight, and presence of congenital anomaly at birth. A retrospective cohort study design was used to analyze pregnancy outcomes among women with and without psoriasis, by case status and disease severity. Medical records of psoriasis patients at a dermatology clinic (Newlab Clinical Research Inc, St. John’s (Newlab)) were linked to a unique dataset of live birth records from Newlab, Newfoundland and Labrador, and the associations between psoriasis case status and disease severity and the incidence of caesarean delivery, small for gestational age (SGA) birth, low birth weight (LBW), preterm birth (PTB), congenital anomaly, and overall negative pregnancy outcome were analyzed. This is the new results of the 1653 records of patients in the Newlab psoriasis clinical database who were eligible for inclusion. In the study S85 could be linked to the Newfoundland & Labrador Centre for Health Information (NLCH) database for 1992-2012 giving a linkage rate of 23.3%. The 858 psoriasis patients represented 614 live births in the live birth dataset. Significant associations were noted with mean parity and age at first birth in psoriasis cases and controls (P <0.01). Unadjusted rates of caesarean and vaginal delivery in the cases and controls are given in (Table 1). Unadjusted rates of adverse pregnancy outcomes psoriasis and controls (P < 0.1). No significant differences were noted in marital status, urban/rural residence, and education level of psoriasis cases and controls. Small rates of small for gestational age were noted in the psoriasis cases, preterm birth and congenital anomalies. Current analysis adds to the existing literature on pregnancy outcomes among women with psoriasis. It suggests that psoriasis severity may be predictive of a worse negative pregnancy outcome but not with individual outcomes. This cohort represents the largest number of pregnancy outcomes studied to date. The study limitations include the effect of psoriasis on pregnancy outcomes in the absence of data on comorbidities, lifestyle factors or treatment. Research is warranted to control for these variables.

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An exposure response model to describe the relationship between ixekizumab concentrations and the static Physicians’ Global Assessment (sPGA) score and the Psoriasis Area and Severity Index (PASI) in patients with moderate to severe plaque psoriasis

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Objectives: Ixekizumab is an anti-IL-17A monoclonal IgG4 antibody currently in development for the treatment of psoriasis. This analysis aimed to describe the relationship between observed systemic exposure to ixekizumab (trough concentrations - C trough) and key efficacy endpoints at Week 12 (static Physician Global Assessment - sPGA) and Psoriasis Area and Severity Index (PASI) score) using data from 3 phase 3 studies.

Methods: Ixekizumab was administered subcutaneously (SC) as a 160 mg initial dose (Week 0) then an induction dose of 80 mg every 2 weeks (Q2W) or every 4 weeks (Q4W). Week 12 Efficacy defined as PASI 75 or sPGA target (<2). Median C trough levels were described well using logistic regression models. Median C trough levels were 9.09 µg/mL for Q2W and 2.95 µg/mL for Q4W dosing. The model predicted response rate for sPGA (0.1) was 86% for Q2W and 84% for Q4W dosing and sPGA >50 for Q2W and Q4W dosing. Mediant C trough levels were 3.32 µg/mL for Q2W and 2.01 µg/mL for Q4W dosing. For PASI90, the model predicted response rates were 75% and 56% for Q2W and Q4W dosing, respectively. Median C trough levels were 2.57 µg/mL for PASI90, for PASI90, the model predicted response rates were 75% and 56% for Q2W and Q4W dosing, respectively.

Results: The relationship between ixekizumab C trough and sPGA and PASI scores was described well using logistic regression models. Complete clearance of head psoriasis with ADA therapy resulted in greater improvements in quality of life due to the design of the PASI instrument, the benefit to the scalp can only be inferred.

EXPERIMENTAL ANATOMY

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An innovative topical therapy for the palmoplantar hyperkeratosis

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A study on the topical treatment of the palmoplantar hyperkeratosis in 25 subjects of 18 years of age and above, both males and females, selected between January and June 2015 was carried out at the psoriasis outpatient clinic of the Dermatological Department of the University of Barì, Italy. The selected sample consisted for the 84% (21 patients) of individuals affected by palmoplantar psoriasis, mainly characterized by scaling and hyperkeratosis with mild erythema and infiltration. The remaining 16% (4 patients) was divided as follows: 75% (3 patients) of subjects was affected by chronic hand eczema, mainly characterized by a squamous hyperkeratosis morphotype, 25% (1 patient) was affected by pityriasis rubra pilaris with the typical clinical picture of palmoplantar keratoderma with a yellow-orange chromatic shade. The tested product consists of sodium lactate, at a concentration of 30%, of which the keratolytic, elasticizing, emollient properties and the capacity to promote the correct regeneration of the cutaneous tissue were evaluated. For each patient, a technical card was filled out to quantify, according to the physician’s judgement, the following cutaneous parameters before and after 2 months of therapy: degree of xerosis, thickening, and scaling. The study has provided the possibility to evaluate considerable clinical improvements with respect to the considered parameters. Through the DLQI test (Dermatology Quality of Life Index), administered before and after therapy, it was also possible to assess the improvement of the quality of life in patients at the end of the treatment. The importance of this study stems from the necessity to treat, with the highest specificity, all of those cases of palmoplantar desquamating hyperkeratosis that, associated to several dermatoses, severely affect activities like the grip and the walking abilities, and have a strong impact on the quality of life both in the professional and social environment.

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Analysis of major adverse cardiovascular events in the Psoriasis Longitudinal Assessment and Registry Study (PSOLAR)

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Objective: To assess the risk of major adverse cardiovascular events (MACE) in psoriasis patients treated with biologics.

Methods: PSOLAR is an international psoriasis registry which follows patients who are eligible to receive systemic therapy based on standards of clinical practice. MACE is defined as cardiovascular death, stroke, and myocardial infarction. Cohorts were developed for new and ongoing use of all biologics, TNFs, ustekinumab separately, and top/photo, and observed through Aug 25, 2014. MTX was excluded from all groups. Demographics and clinical characteristics are described. Cumulative incidence rates in 100/PY with 95% CIs are summarized. Cox hazard regression methodology was used to identify risk factors, including bio therapies, for first MACE, with a reference group of top/photo.

Results: Data were analyzed from 7666 pts (68% bio-exposed, 38% top/photo-exposed) for 19060 pt-years. Demographics, clinical characteristics, and observation time were generally comparable among bio cohorts. Top/photo cohort was slightly older in age, lighter in weight, and was balanced with respect to gender in context of the bio cohorts. The cumulative incidence rates of MACE for combined bios, TNFs and ustekinumab were in per 100 PY: 0.95%/CIs 0.22 (0.150.30), 0.23 (0.150.35), and 0.19 (0.100.35). Multivariate analysis showed that increasing age (HR 1.78; P < 0.001), male gender (HR 2.57; P = 0.0098), and history of hypertension (HR 2.534; P = 0.0078) were associated with increased risk of MACE. HRs for combined bios, TNFs and ustekinumab were respectively: 0.648, 0.727, 0.526, but did not reach statistical significance.

Limitations: Bias in observational data, mismatched populations, unmeasured clinical variability (eg, meds and biomarkers), and inability to detect small differences in risk.

Conclusions: Results from PSOLAR suggest a nonsignificant decreased risk with TNFs or ustekinumab in comparison with top/photo therapy in patients with psoriasis.

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Assessment of HLA Cw6 genotype and correlation to ustekinumab response in a large cohort of patients with moderate-to-severe psoriasis

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Objectives: The link between the HLA-Cw6 allele in psoriasis (PsO) patients (pts) and improved clinical response to ustekinumab (UST) therapy was reported previously (Talamonti et al). The aim of this retrospective analysis was to determine the association of HLA-Cw6 status and response to UST in a large, well-controlled clinical trial population.

Methods: DNA was collected from approximately 600 North American participants in the UST Phoenix 1, Phoenix 2, and ACCEPT Phase PsO clinical trials. HLA-Cw6 genotype was assessed by SNP-chip imputation then correlated to PASI and PGA responses. Association between HLA-Cw6 status and efficacy (short and long-term) of UST or likelihood for dose escalation was evaluated.

Results: The prevalence of HLA-Cw6 was 44.6%. The HLA-Cw6 genotype in this combined population was associated with longer disease duration and earlier age of disease onset. Both HLA-Cw6 positive as well as negative pts demonstrated relatively high response rates to UST (wk24 PASI75 responses were 86% vs 76%, respectively). A modestly higher percentage of HLA-Cw6 positive pts achieved PASI 50, 75, 90 and 100 at wks 4, 12, 24, and 28 vs HLA-Cw6 negative pts. The largest delta between positive and negative pts (17.9%) was observed for PASI75 response at wk12 with smaller differences noted at later timepoints for PASI90 (11.8% at wk24) and PASI100 (10.2% at wk28) response rates. HLA-Cw6 positive pts had modestly higher long-term efficacy rates than those that were HLA-Cw6 negative with statistical significance reached for PASI75 response rates (82.6% vs 64.4%, respectively) at the 5 year final efficacy assessment in Phoenix 1. Lastly, a larger percentage of HLA-Cw6 negative pts underwent a shortened dosing interval and/or dose escalation through year 5 in Phoenix 2. 57% of HLA-Cw6 positive pts did not require dose escalation vs 50% of negative. Among pts who received initial treatment of UST 45 mg, 41% of negative and 32% of HLA-Cw6 positive pts required both dose escalation and dose interval adjustment.

Conclusions: While a differential response to UST is evident in HLA-Cw6 positive vs HLA-Cw6 negative pts, the difference is modest particularly for response rates of more complete responses (PASI90 and PASI100), thus, the clinical utility of this marker as a predictor of response to UST appears to be limited.

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Association between complete or near complete resolution of psoriasis and improvements in both health-related quality of life, itch, and skin pain: An integrated subanalysis of UNCOVER-2 and UNCOVER-3

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Introduction: While a 75% improvement in the psoriasis area and severity index (PASI) is considered a clinically significant improvement, evidence suggests that residual psoriasis continues to have a significant impact on the patient. The objective of this analysis was to evaluate the improvements in patient reported outcomes (PROs) among patients achieving complete (PASI 100) or near complete (PASI 90) resolution of their psoriasis compared to lower levels of treatment response using data from 2 phase 3 trials of ixekizumab.

Methods: Data were integrated from 2 phase 3 trials in which patients with moderate to severe psoriasis were randomized to groups receiving ixekizumab every 2 (IXE Q2W; N=760) or 4 weeks (IXE Q4W; N=735) following a 160 mg starting dose, etanercept (ETN; 50 mg biweekly; N=740), or placebo (PBO; N=561). PROs included an Itch Numeric Rating Scale (itch NRS), which ranges from 0 (no itch) to 10 (severe itch), the Dermatology Life Quality Index (DLQI) and a skin pain visual analog scale (VAS) which ranges from 0 (no pain) to 100 (extreme pain). All treatment groups were combined. At week 12, proportions of patients achieving a DLQI of 0, itch NRS of 0 or skin pain VAS of 0 were compared pairwise using logistic regression model between groups of patients achieving <75% improvement in PASI (PASI <75 (N=901); 75% to 89% improvement in PASI (PASI 75-89 [N=482]); 90% to 99% improvement in PASI (PASI 90-99 [N=587]), and 100% improvement in PASI (PASI 100 [N=587])). Missing data were imputed using last observation carried forward.

Results: Among patients achieving a PASI 90-99, and PASI 100, significantly more patients reported no impact of psoriasis on their quality of life with 64.8% and 82.3%, respectively reporting a DLQI (0,1) compared to 51.5% in the PASI 75-89 group (23.7% reporting Itch NRS =0, respectively reporting a DLQI (0,1) compared to 51.5% in the PASI 75-89 group (23.7% reporting Itch NRS =0 and 36.6% reporting skin pain VAS = 0; P <.001 for each comparison to PASI 90-99 and PASI 100 groups).

Conclusions: Significantly more patients among those achieving a PASI 100 or PASI 90-99 reported that their psoriasis no longer impacted their quality of life and had no itching and skin pain compared those achieving PASI 75 but not higher. These data suggest PASI 90 or PASI 100 may be considered a treatment goal.

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Association between tumor necrosis factor inhibitor therapy and reduced risk of major adverse cardiovascular events in patients with psoriasis

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Background: We have reported previously from population-based cohorts that use of TNF inhibitors (TNFi) was associated with a 50% reduction in myocardial infarction risk in patients with psoriasis or psoriatic arthritis.

Objective: To determine whether use of TNFi is associated with change in risk of major adverse cardiovascular events (MACE, ie, myocardial infarction, stroke, and CV death) in patients with psoriasis. Compared to the original study, this study has a longer follow-up period in a population with psoriasis vs psoriatic arthritis.

Methods: This was a retrospective cohort study using the Kaiser Permanente Southern California (KPSC) health plan. At inclusion, patients had at least 3 ICD-9 diagnostic codes for psoriasis (696.1) and no antecedent MACE codes. Subjects were followed from 1-1-2004 to 12-31-2014. Ustekinumab is not on formulary at KPSC, so patients given ustekinumab were excluded from the study. Multinomial logistic regression estimated confounder-adjusted propensity scores for treatment and confounder-adjusted multivariable Cox regression assessed differences in MACE incidence rates.

Results: Of 15,354 patients included, 1605 received TNFi for at least 2 months, 3399 patients reported no impact of psoriasis on their quality of life with 64.8% and 82.3%, respectively reporting a DLQI (0,1) compared to 51.5% in the PASI 75-89 group (23.7% reporting Itch NRS =0, respectively reporting a DLQI (0,1) compared to 51.5% in the PASI 75-89 group (23.7% reporting Itch NRS =0 and 36.6% reporting skin pain VAS = 0; P <.001 for each comparison to PASI 90-99 and PASI 100 groups).

Conclusions: Significant more patients among those achieving a PASI 100 or PASI 90-99 reported that their psoriasis no longer impacted their quality of life and had no itching and skin pain compared those achieving PASI 75 but not higher. These data suggest PASI 90 or PASI 100 may be considered a treatment goal.

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Associations between baseline disease characteristics and total amount of calcipotriene/betamethasone dipropionate aerosol foam used in patients with psoriasis vulgaris: posthoc analysis from PSO-FAST

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Introduction: PSO-FAST was a double-blind, phase III study in which 426 patients with psoriasis vulgaris were treated with fixed combination calcipotriene 0.005% (Cal)/betamethasone dipropionate 0.064% (BD) aerosol foam versus aerosol foam vehicle for 4 weeks (NC010860163). The aerosol foam formulation led to significantly shorter treatment success rates and lower modified psoriasis area and severity index (mPASI, excluding head) scores compared with foam vehicle (week 4: treatment success, 53 vs 5%, odds ratio [OR] 30.3, 95% CI 9.7 to 94.3; P <.001; mean decrease in mPASI from baseline, 72 vs 26%). Here we report posthoc analyses evaluating the associations between baseline disease characteristics and mean total amount of Cal/BD foam used.

Methods: Patients (aged ≥18 years) with mild-to-severe body psoriasis (involving 2-30% body surface area [BSA]) were randomized 1:1 to once-daily Cal/BD foam or vehicle. Total amount of Cal/BD foam used by each patient over the study period was determined by calculating the difference between the weight of dispensed cans and the weight of those returned, multiplied by 0.41 (correction to account for the propellant gases). Total amount of Cal/BD foam used was evaluated according to three baseline psoriasis assessments: extent of BSA affected, PGA and mPASI.

Treatmen success (ie, clear/almost clear for patients with at least a two-step improvement from baseline by week 4, according to physician’s global assessment) ranged 1 to 100 g). Treatment success rates were generally similar when stratified according to BMI and body weight.

Results: 323 patients were randomized to Cal/BD foam. At week 4, the mean (± standard deviation [SD]) total amount of Cal/BD foam used was 120.8 ± 85.7 g (n=293). The total amount of Cal/BD foam used was higher with larger baseline BSA (5%, 88 ± 71 g; 5% <10, 118 ± 73 g; 10%<15, 167 ± 91 g; 15%<20, 184 ± 80 g; >20, 214 ± 100 g) and increasing severities of baseline PGA (mild, 95 ± 76 g; moderate, 122 ± 84 g; severe, 149 ± 106 g) and mPASI (<4, 85 ± 79 g; 4<8, 104 ± 74 g; 8<12, 134 ± 71 g; 12<16, 204 ± 93 g; 16<20, 192 ± 106 g; ≥20, 240 ± 100 g). Treatment success rates were generally similar when stratified according to BMI and body weight.

Conclusions: The total amount of Cal/BD foam used increased with increasing baseline BSA, PGA and mPASI. Treatment success rates were generally consistent, independent of BMI and body weight. Patients used appropriate amounts of Cal/BD foam irrespective of baseline disease characteristics (severity and extent).

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Baseline Characteristics Associated with Psoriatic Arthritis in Patients with Psoriasis and Psoriatic Arthritis

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Introduction: Patients (pts) with psoriasis (Ps) are at risk of developing psoriatic arthritis (PsA). This analysis sought to identify baseline (BL) characteristics associated with PsA in pts with Ps from the BELIEVE trial.

Methods: BELIEVE was a 16-week, randomized, vehicle-controlled European multicenter clinical trial on the efficacy and safety of adalimumab with and without concomitant methotrexate in pts with PsA in the absence of an inadequate response to disease-modifying antirheumatic drugs (DMARDs). The mean pretreatment PASI values were 14.74 \pm 6.67 (range, 3.6 to 41) years. Median disease period were found 19.30 6 months prior to and 10.13 years. While 4 (8.3%) of all patients were 2° relative, 10 (20.8%) of 2° patients had PsA. Patients were monitored closely in our psoriasis clinic in consult with a dermatologist. Out of our 3 HIV positive patients all had plaque psoriasis with 2 having HAV (3M, mean age 54.6 yrs, average duration 12.3 yrs). All were receiving HAD therapy under the care of infectious diseases (ID) physicians. Two received etanercept and one adalimumab treatments, and were followed up closely in our psoriasis clinic in consult with their ID physicians. All 13 patients under biologics therapy showed diuresis and 12 respectively. Palmpoplantar scalp involvement, and BL greater than median of 29.0% were not significantly associated with PsA. Nail involvement and PsA > 17.2 were identified as independent predictors for PsA using a multivariate logistic regression (MLR) model with all the prepotitive predictors (nail involvement: OR, 1.45 [95% CI, 1.02-2.05; P = 0.05]; PsA > 17.2 OR, 1.7 [95% CI, 1.05-2.04; P = 0.02]).

Conclusions: This exploratory analysis in pts with moderate to severe Ps suggests that nail involvement and more severe Ps are associated with significantly higher odds of having PsA.

AbbVie funded the research and medical writing support.

Biologies in psoriasis

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Aim: Psoriasis is defined as ‘immune mediated inflammatory disease (IMID)’ concurrently recovery of immunologic mechanism of disease has understood. Last 20 years biologics have taken place as a novel and specific agents for moderate to severe psoriasis treatment. In this study we aimed to evaluate the treatment response of biologics from moderate to severe psoriasis patients concurrently with concurrent disorders such as hepatitis B and C, HIV, CHF, and liver dysfunction.

Background and design: Files of psoriasis patients were reviewed retrospectively. All patients registered were evaluated by age, family history and presence of some diseases such as diabetes, hypertension, depression, liver disease and joint and nail lesions. Adalimumab, etanercept, infliximab and ustekinumab were also evaluated by efficacy, duration of efficacy and side effects.

Results: Fifty five psoriatic patients registrations were reviewed. Patients median age were 46.74 \pm 13.73, 34.5% of patients were women as 65.5% were man. Disease period were vary from 3 to 41 years. Median disease period were found 19.30 \pm 10.13 years. While 4 (8.5%) of all patients were 2° relative, 10 (20.8%) of 2° patients had PsA. None of the patients showed signs or symptoms of neither liver failure, nor viral hepatitis, nor psoriatic arthritis. The mean pretreatment PASI values were 14.74 \pm 9.4 in adalimumab, 13.42 \pm 6.67, 5.73 \pm 6.44 and 5.68 \pm 11.6. 20 (80%) of patients were found as 1st degree. 30% of patients are diagnosed as psoriatic arthritis. Nail lesions were found in 46.7% patients.

Conclusions: PsA is a risk factor for CV disease; more immune activity in Ps is associated with a higher risk of development for PL and PsA cases, 34.5% and 52.0% of males in the TNFi and phototherapy cohorts, respectively.

Commercial support: None identified.
Corticizumab pegol for the treatment of patients with moderate-to-severe chronic plaque psoriasis: An overview of 3 randomized controlled trials

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Background: Plaque psoriasis (PsO) is the most common form of PsO and comprises 80-90% cases. It imposes a substantial burden on quality of life (QoL). Corticizumab pegol (CZP), a pegylated Fc-free anti-TNF drug, has demonstrated efficacy in PsO patients over 2 clinical phase 2 studies. CZP has shown rapid sustained clinical improvements of both skin and joint signs and symptoms with an acceptable safety profile in a phase 3 trial of psoriatic arthritis (PsA) pts. Here, we describe the phase 3 clinical program currently underway to assess the efficacy and safety of CZP in pts with moderate-to-severe plaque PsO.

Methods: The CZP PsO clinical program consists of 2 identical phase 3, multicenter, randomized, double-blind, placebo (PBO)-controlled trials (CIMPASI-1; NCT02326298) and CIMPASI-2; NCT02326272), and a phase 3 multicenter, randomized trial that is active- and PBO-controlled (CIMPACT; NCT02346240). In all studies, pts are ≥18 years old with moderate/severe plaque PsO of ≥6 months' duration (PsO Area Severity Index [PASI] ≥12, body surface area [BSA] PsO ≥10% and Physician's Global Assessment of PsO [PGA] ≥3). Pts are candidates for systemic PsO therapy without prior exposure to CZP or >2 biologics. In CIMPACT, pts with prior etanercept (ETN) exposure are also excluded. CIMPASI-1 and CIMPASI-2 aim to demonstrate and compare the efficacy of 2 CZP doses, CZP 400 mg Q2W and 200 mg Q2W, in a PBO-controlled manner in PsO pts. Pts are randomized 2:2:1 to CZP 400 mg Q2W; CZP 400 mg at Wk 0, 2, and 4 followed by CZP 200 mg Q2W; or PBO. Co-primary endpoints are the proportion of pts achieving Wk 16: 1) PASI75 response and 2) PGA clear or almost clear (unweighted mean improvement). CIMPACT is designed to compare the efficacy of 2 CZP doses, CZP 400 mg Q2W and 200 mg Q2W, to ETN or PBO in PsO pts. Pts are randomized 3:3:1 to CIMPACT Q2W, CZP 400 mg at Wk 0, 2, and 4 followed by CZP 200 mg Q2W, ETN 50 mg twice weekly, or PBO. The primary endpoint of CIMPACT is Wk 12 PASI75 response. In all 3 studies, other variables assessed include PsO (BSA, modified Nails Psoriasis Severity Index) and QoL (Deriburg Index, Short Form-36, EuroQol) outcomes. Adverse events are monitored throughout. Following initial treatment periods described here, pts enter maintenance periods in each trial at Wk 16, during which long-term safety and efficacy data on various dosing regimens will be collected. Conclusion: These studies will assess the efficacy and safety of CZP in pts with moderate-to-severe plaque PsO.

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Clinical and immunological effects of subcutaneous methotrexate in psoriasis—First data from a 52-week phase III trial (METOP)

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Methotrexate (MTX) is one of the most frequently prescribed systemic therapies for psoriasis, but high quality clinical trials, especially with s.c. administration, are sparse. We report the results from a 52-week phase III trial in which 120 patients were randomized 3:1 to receive weekly s.c. injections of either MTX or placebo (PLC) for the first 16 weeks followed by a cross-over of placebo patients to active drug. The starting dose of MTX was 17.5 mg and could be increased to 22.5 mg at Week 8. The primary endpoint was the proportion of patients with a ≥75% improvement of the psoriasis area severity index (PASI75) at week 16. Biopsies obtained from representative plaques at baseline and week 16 were available from a subset of patients (n = 27) and analyzed by histology, immunohistochemistry, and quantitative RTPCR. At week 16, the PASI75 response rate was 41% in the MTX compared to 10% in the placebo group (P = .0026). PASI75 response rates at week 52 were 45% in the MTX/MTX group and 35% in the PLC/MTX group PAS90 response rates were 18% (MTX) compared to 0% (PLC) at week 16, and 28% at week 52 (for both, the MTX/MTX and MTX/PLC groups). A physician's global assessment (PGA) of clear or almost clear was achieved by 26% (MTX) and 7% (PLC) at week 16, and 55% (MTX/MTX) and 38% (PLC/MTX) at week 52, respectively (all analyses 2 biologics. In CIMPACT, pts with prior etanercept (ETN) exposure are also excluded. CIMPASI-1 and CIMPASI-2 aim to demonstrate and compare the efficacy of 2 CZP doses, CZP 400 mg Q2W and 200 mg Q2W, in a PBO-controlled manner in PsO pts. Pts are randomized 2:2:1 to CZP 400 mg Q2W; CZP 400 mg at Wk 0, 2, and 4 followed by CZP 200 mg Q2W; or PBO. Co-primary endpoints are the proportion of pts achieving Wk 16: 1) PASI75 response and 2) PGA clear or almost clear (unweighted mean improvement). CIMPACT is designed to compare the efficacy of 2 CZP doses, CZP 400 mg Q2W and 200 mg Q2W, to ETN or PBO in PsO pts. Pts are randomized 3:3:1 to CIMPACT Q2W, CZP 400 mg at Wk 0, 2, and 4 followed by CZP 200 mg Q2W, ETN 50 mg twice weekly, or PBO. The primary endpoint of CIMPACT is Wk 12 PASI75 response. In all 3 studies, other variables assessed include PsO (BSA, modified Nails Psoriasis Severity Index) and QoL (Deriburg Index, Short Form-36, EuroQol) outcomes. Adverse events are monitored throughout. Following initial treatment periods described here, pts enter maintenance periods in each trial at Wk 16, during which long-term safety and efficacy data on various dosing regimens will be collected. Conclusion: These studies will assess the efficacy and safety of CZP in pts with moderate-to-severe plaque PsO.

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Clinical characteristic of pustular psoriasis in 53 Thai patients

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Background: Pustular psoriasis is a rare variant of psoriasis. Limited data regarding the clinical characteristics, treatment outcome and clinical course of pustular psoriasis are available.

Objectives: To study clinical features, treatment outcome and clinical course of pustular psoriasis in Thai patients.

Materials and methods: A retrospective cohort study of pustular psoriasis patients with age more than 15 years who attended Dermatology clinic at Siriraj Hospital from July 2002 to October 2014 was conducted. Clinical features, treatment modalities, treatment response and clinical course were reviewed. We defined ‘complete response’ as total clearing of the pustular lesions, ‘partial to good response’ as ≥50% clearance, and ‘poor response’ as <50% clearance of pustular lesions at the end of follow-up.

Results: Of the 53 pustular psoriasis cases, female to male ratio was 1.9:1. The mean age of 42.4 years (SD 16.6 years, range 17-72). Twenty-three patients had concomitant plaque type psoriasis vulgaris and the mean time to develop pustular psoriasis after plaque type psoriasis was 7.9 years. The common precipitating factors were inadequate sleep (50.2%), infection (50.2%) and drug (28.3%). Systemic steroid withdrawal (60% of drug-induced pustular psoriasis) was found to aggravate pustular psoriasis with an average time of 1.7 weeks after withdrawal. The common manifestation of pustular psoriasis was exanthematic type (60.5%) followed by localized type (22.6%). Topical steroid (98.1%) was the most common topical treatment while acitretin was the most frequently prescribed systemic treatment (75.5%), followed by methotrexate (43.4%). Regarding course of disease, 12 (22.6%) patients had complete response from treatment in a mean period of 3.45 weeks and 36 (67.9%) patients had partial response in a mean period of 5.4 weeks. Five patients (9.4%) had no response. None of the patients developed severe complications from pustular psoriasis or treatment related-disease.

Conclusion: Pustular psoriasis is a rare condition in Thailand. Exanthematic pustular psoriasis is the most common type and acitretin remains the most common prescribing drug. Most of the pustular psoriasis patients had a benign clinical course and can be controllable.

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Clinical outcomes associated with switching or discontinuation of anti-TNF therapy: Real-world medical reasons in psoriasis patients

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Objective: To evaluate real-world clinical outcomes associated with nonmedicinal switching of anti-tumor necrosis factor (TNF) agents among patients with psoriasis (Ps) or psoriatic arthritis (PsA).

Methods: An online, physician-administered chart review was used to collect data on patients with a diagnosis of Ps or PsA who had a response for ≥6 months to an anti-TNF therapy. Physicians selected 2 cohorts that were matched based on primary diagnosis: patients who switched or discontinued from the anti-TNF therapy on which they had achieved a response for nonmedicinal reasons (switchers/discontinuers) or patients who discontinued for nonmedicinal reasons (continuers). Nonmedicinal reasons for switching/discontinuing included increased copay, change of insurance, job loss, and other economic factors that limited affordability of medication. Data for switchers/discontinuers were assessed for 12 months from the date of an office visit and data for continuers were assessed for 12 months from the date of an office visit within 2 months of the matched switcher/discontinuer's index date. Generalized linear models were used to compare disease control and flares between cohorts with adjustment for baseline characteristics.

Results: 157 matched pairs of switchers/discontinuers and continuers were analyzed (N = 314); 85% of patients in both cohorts had a diagnosis of Ps, and 17% had a diagnosis of PsA. Mean age of the cohorts was similar (45 vs 46 years, P = .39). The percentage of males was significantly greater among switchers/discontinuers than continuers (70% vs 54%, P = .001). At baseline, there was no significant difference (P = .79) in disease severity between cohorts. During the follow-up period, more switchers/discontinuers than continuers had disease flares (38% vs 39%; adjusted odds ratio [OR] = 1.92, P < .001). Flares were more frequent among switchers/discontinuers than continuers (3.1 vs 1.6 flares; adjusted OR = 1.92, P < .001). More switchers/discontinuers had well-controlled disease symptoms per the physician, a rate significantly lower (adjusted OR = 0.06, P < .001) than continuers (92%).

Conclusions: Switching or discontinuation of an anti-TNF therapy for nonmedicinal reasons was associated with significantly worse clinical outcomes among patients with Ps and PsA.

3131 Comparative effectiveness of biologic therapy in the Psoriasis Longitudinal Assessment and Registry (P.S.O.L.A.R.) Study

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Background/objective: PSOLAR is an observational study which evaluates safety and clinical outcomes in psoriasis patients. Physicians prescribe treatments including ustekinumab, adalimumab, etanercept, and infliximab (Etan) for the treatment of psoriasis at 6 months in a real-world setting.

Methods: Physician’s Global Assessment (PGA) scores and body surface area (BSA) affected with psoriasis at 6 months versus baseline was significantly greater for Etan compared to ADA (1.85%, P = .0019) and for Etan compared to EtN (4.5%, P = .0001), and trended greater for EtN compared to IFX (1.80%, P = .1048).

Limitations: Observational studies are subject to potential confounding from unmeasured variables, as well as selection and information bias. This study did not control for patients’ baseline disease status with respect to timing of or response to their previous therapy, dosing regimen or adjustments in dosing.

Conclusion: Data comparing the effectiveness of available biologic treatments for psoriasis are limited. In this large observational study, EtN revealed higher clinical effectiveness (PGA and BSA responses) than TNF inhibitors after 6 months of usage.  

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Comparison of efficacy of ixekizumab and ustekinumab in the treatment of moderate to severe plaque psoriasis: 2 indirect comparisons via a dose-response study

Introduction: Psoriasis is a common, lifelong, and life-shortening chronic inflammatory skin disease manifested by prototypic red, thick, and scaly plaques. Ustekinumab (UST) is currently considered one of the most effective drugs for treatment. While at least a 75% improvement in Psoriasis Area and Severity Index (PASI 75) score from baseline is regarded as an optimal treatment goal for the first generation of biologic therapies, experience with UST and IL-17 inhibitors (including ixekizumab [IXE]) has shown that higher levels of improvement, such as PASI 90, can be consistently obtained in patients with moderate to severe psoriasis.

Methods: We indirectly compared UST (45 mg/90 mg) and IXE (80 mg every 2 weeks [Q2W] or every 4 weeks [Q4W]) via the common comparator etanercept based on the respective active comparator studies (ACCEPT, UNCOVER 2 and 3) using methods by Bucher (BU) and a modified version of Signorovitch (SG), which adjusts for baseline differences of studies, for PASI 75 and PASI 90 endpoints at Week 12.

Results: Differences in response rates between treatments showed significantly better efficacy outcomes for IXE vs UST across all dose comparisons, endpoints, and comparison methods. For IXE Q2W, PASI 75 rates were 25.3% (95% confidence interval: 17.5%-32.1%) higher than UST 90 mg using BU and 24.0% (15.3%-32.8%) higher when adjusting for baseline differences between studies using SG. PASI 90 rates differed by 25% (17.5%-32.1%) and 26.3% (17.5%-35.1%), respectively. For IXE QW, PASI 75 rates were 16.8% (8.5%-25.1%) higher than UST 90 mg using BU and 18.8% (10.1%-27.6%) higher when baseline differences were accounted for. PASI 90 rates differed by 19.1% (10.8%-27.3%) and 21.3% (12.6%-30.0%), respectively. Comparing IXE QW with UST 45 mg, PASI 75 rates were 23.1% (13.3%-32.5%) higher applying BU and 25.0% (15.2%-34.8%) higher for SG. Differences in PASI 90 rates were even larger, with 27.4% (18.2%-36.5%) using BU and 29.8% (20.4%-39.9%) using SG.

Conclusions: IXE demonstrated better efficacy compared to UST in terms of both PASI 75 and PASI 90 rates via indirect comparisons irrespective of dosing regimens. Weight-based dosing could not be taken into account. Baseline differences between studies are one of the main critiques against indirect comparisons. Using the modified SG approach to adjust for these, the observed treatment differences were slightly larger, underlining the robustness of results.

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Comparison of guselkumab with placebo and adalimumab on health-related quality of life in a phase 2b clinical trial X-PLORE

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Background: Using data from X-PLORE, a phase 2b clinical trial, we investigated the impact of subcutaneous injections of guselkumab (GUS) on health-related quality of life (HRQoL) when compared with placebo (PBO) and adalimumab (ADA) in patients with moderate to severe plaque psoriasis.

Methods: Moderate to severe plaque psoriasis patients with Psoriasis Area Severity Index (PASI) >12 and Physician’s Global Assessment (PGA) ≥3 and BSA ≥10% (n = 295) were randomized to receive PBO, GUS (five dose groups: 5 mg q2wk, 15 mg q4wk, 50 mg q2wk, 100 mg q8wk, and 200 mg q12wk), or ADA (80 mg at wk0, followed by 40 mg at wk4 and then every other wk). At wk16, patients initially assigned to PBO were to receive GUS 100 mg q8w through wk40. HRQoL was assessed using Dermatologic Life Quality Index (DLQI) and were compared between GUS with PBO at wk16, or between GUS and ADA at wk16 and 28. A DLQI score of ≤1 was defined as no impact of psoriasis on quality of life.

Results: At baseline, the median DLQI score was 14, indicating very large effect of psoriasis on HRQoL. At wk16, patients in all GUS dose groups had significantly greater improvement in HRQoL, as demonstrated by greater improvement in DLQI scores, a greater proportion of patients achieving a DLQI score ≤1, or a greater proportion of patients achieving a reduction of ≥5 points in DLQI, when compared with patients in the PBO group, especially in higher dose GUS groups (P < 0.1 or < 0.001). A greater improvement in DLQI score was observed as early as wk4, and sustained through wk52 in all GUS treatment groups. Improvements of DLQI score were comparable between the ADA and GUS groups except for 5mg group at wk 16 and 28, while at wk28, higher GUS dose groups (ie, 100 mg q8w or 200 mg q12w) were more likely to achieve a DLQI score of ≤1 (41.3% vs 82.5%, respectively) than patients in the ADA group (43.5%) (P = 0.068 and P < 0.001, respectively). Overall, improvement in DLQI was correlated with improvement in PASI at wk16 and 28.

Conclusion: GUS treatment significantly improves disease specific quality of life, especially in high dose groups (100 mg q8wk or 200 mg q12wk).

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Comparison of outcomes between psoriasis (Ps) patients (Pts) who switched from etanercept (ETA) to adalimumab (ADA) versus ustekinumab (UST)

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Background: When Ps symptoms are not adequately controlled with ETA, pts may switch to a biologic with a different mechanism of action, such as UST, or to another tumor necrosis factor (TNF) inhibitor, such as ADA.

Objective: To compare health care resource utilization (HRU), health care costs, and dose escalation in Ps pts who switched from ETA to UST vs ADA.

Methods: In the Truven Health Analytics MarketScan database (2000-14), adult Ps pts who switched from ETA to UST or ADA on/after 9/25/2009 were identified. Pts who used a biologic approved for Ps other than ETA at any time before the first UST/ADA prescription fill-date (index date) were excluded. Pts were continuously enrolled in their health care plan for ≥36 months before (baseline) and ≥12 months after the index date (study period). HRU and costs (2014 US $) were measured over the 12-month study period following the index date and compared between UST and ADA pts using multivariate generalized linear regression models. Dose escalation, defined as a dose increase between injections equivalent to ≥45 mg/84 days for UST and ≥40 mg/28 days for ADA, were captured from the index date until the first dose escalation, ADA/UST discontinuation (treatment interruption ≥90 days), or the end of the study period, whichever occurred first. Dose escalation rates were compared between UST and ADA pts using multivariate Cox proportional-hazard models.

Results: Overall, 365 UST and 1355 ADA pts were selected. Median age was 48 in both treatment cohorts and pts were mainly male (ADA: 56.0%; UST: 58.6%; P = 0.36). Pts generally had similar baseline characteristics; however, a greater proportion of ADA pts had psoriatic arthritis (ADA: 13.7% vs UST: 6.6%; P < 0.01). After adjustment for potential baseline confounding factors, UST pts had higher total annual health care costs by $14,556 (unadjusted: $49,418 vs $35,253), mainly driven by higher incidence of outpatient visits (adjusted IRR = 1.13; P < 0.01). After adjustment for potential baseline confounding factors, UST pts had higher total annual health care costs by $13,682. UST pts were also more likely to have a dose escalation (12.1% vs 8.9%; adjusted hazard ratio = 1.16; P < 0.01) than ADA pts.

Conclusions: Pts who switched from ETA to UST incurred higher HRU and costs over the 12-month study period than pts who switched to ADA. UST pts also had higher rates of dose escalation than ADA pts.

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Comparison of the pharmacokinetics of ixekizumab following subcutaneous administration using a prefilled syringe versus an autoinjector in patients with moderate-to-severe psoriasis

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Introduction: Many biologic agents for the treatment of psoriasis are available as self-administered injections via an autoinjector. In clinical trials of ixekizumab, an anti-IL-17A monoclonal IgG4A antibody with high binding affinity, treatment has been delivered subcutaneously (SC) via prefilled syringe (PFS). The primary objective of the study was to evaluate the effect of drug delivery, either by PFS or autoinjector, on the pharmacokinetics (PK) of ixekizumab for 2 weeks after administration of a 160-mg initial dose.

Methods: This open-label, phase 3 study randomized patients with moderate-to-severe psoriasis to an injection device (PFS or autoinjector). To achieve an equal number assigned to the PFS and autoinjector within weight and injection site category, randomization was stratified by weight (<80 kg, 80 to 100 kg, >100 kg), injection assistance (yes/no), and injection site (arm, thigh, or abdomen). Following a 160-mg initial dose at week 0, patients received SC 80 mg ixekizumab as one injection every 2 weeks. Blood samples were collected following the initial 160-mg dose on days 2, 4, 7, 10, and 14 for PK analysis. Serum samples were analyzed for ixekizumab using a validated enzyme-linked immunosorbent assay method. PK parameters were determined using noncompartmental analysis methods. The primary parameters were maximum concentration (Cmax) and area under the curve (AUC[0-tlast]) where tlast is time of the last sample (14 days ± 24 hours). Patients with 3 or fewer serum samples or missing day 14 values were not included in the PK analyses.

Results: Of 204 randomized patients, 192 were included in the PK analysis (PFS: 94; autoinjector: 98). The majority of patients were male (70%) and white (87%) with a mean age of 45.5 years. Baseline characteristics were similar between groups. The PK and autoinjector showed similar maximum concentration (geometric mean Cmax [90% CI]: 15.0 μg/mL [13.9-16.1] vs 14.8 μg/mL [13.8-15.9]). The geometric mean AUC (90% CI) with the PFS was 157 μg*day/mL (147-167) vs 154 μg*day/mL (144-165) with the autoinjector. Variability in these parameters was also similar for each device group, with percent coefficient of variation estimates in the 41-46% range. The time to maximum concentration (median Tmax [min-max]) was also similar between the PFS (3.97 days [1.88-13.96]) and autoinjector (4.00 days [1.88 14.01]).

Conclusions: Ixekizumab PK results were similar between the PFS and the autoinjector.

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Consistent High Efficacy Adalimumab PASI75 Responders: a Post Hoc Analysis of REVEAL

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Introduction: A high proportion of patients (pts) with moderate to severe psoriasis (Ps) treated with adalimumab (ADA) achieve a Ps Area and Severity Index (PASI) 75. Among PASI75 responders at Week 33 of the REVEAL trial, PASI90/100 responses at 16 weeks of adalimumab were greater among those who had consistent high-efficacy responses, which were defined as pts achieving PASI75 at each of the first 3 weeks of the 16-week follow-up period. The objective of the current analysis was to evaluate all pts treated with ADA who achieved a PASI75 response, whether this high-efficacy response was maintained and affected other efficacy endpoints (eg, DLQI).

Methods: REVEAL (NCT00257887) was a 52-week, double-blind, randomized, placebo-controlled phase 3 study of ADA for moderate to severe plaque Ps. At Week 16, ADA-treated pts with ≥PASI75 response continued onto Period B. Pts from the ADA arm of Period B with a ≥PASI75 response at Week 33, were rerandomized in Period C to continue ADA 40 mg every other week (eow) or to receive PBO, and sustained responses were assessed at Week 52. Pts were considered to have a consistent high-efficacy response if their PASI score at each visit after Week 33 until Week 52 was never ≥2 points higher than their Week 33 PASI score.

Results: A total of 250 pts achieved a PASI75 response at Week 53 and were used in the analysis. Of these, 245 pts (98%) were included in the analysis as they had a study visit at Week 52, were scored as PASI75 responders, and were evaluable for consistent high-efficacy response. A total of 76.3% of pts (187/245) were consistent high-efficacy responders through Week 52. PASI90/100 responses were observed after 52 weeks of ADA treatment were 84%/58%/35%, respectively. The mean change from baseline in PASI scores among high-efficacy responders at Week 52 was –16.7 and was significantly greater than in pts without a consistent high-efficacy response (−14.5; P = 0.018). Mean Dermatology Life Quality Index scores at Week 52 were 0.8 among high-efficacy responders compared with 4.3 among those without a consistent high-efficacy response. Of the ADA-treated pts with postweek 53 PASI data, 10 (0.0%) of the PASI90 responders and 1 (1.2%) of the PASI100 responders at re-randomization lost their PASI75 response by Week 52.

Conclusions: Evaluation of an enriched population of pts who had PASI75 response at Weeks 16 and 33 after initiating ADA demonstrated that the majority of these pts maintained a high-efficacy response with continued ADA therapy beyond Week 33. Pts with consistent high-efficacy responses had better quality of life scores compared to those without consistent high-efficacy responses.

AbbVie Inc participated in the study design; study research; collection, analysis and interpretation of data; and writing, reviewing and approving of this publication. All authors had access to the data and participated in the development and review.

Cost per responder of apremilast and etanercept in patients with moderate-to-severe plaque psoriasis: a post hoc analysis of LIBERATE

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Background: Previous cost-per-responder analyses for moderate to severe plaque psoriasis have been performed using efficacy data for apremilast and etanercept from a network metaanalysis. The LIBERATE study is the first phase 3b trial of the oral phosphodiesterase 4 inhibitor apremilast in biologic-naïve patients with moderate to severe plaque psoriasis to include an active control treatment arm. Efficacy data from LIBERATE demonstrated that apremilast and etanercept each independently produced significant improvement in the signs and symptoms of psoriasis at Week 16 vs placebo. The purpose of this analysis was to compare the cost per responder after 16 weeks of therapy with apremilast 30 mg BID or etanercept 50 mg QW in adults with psoriasis using results from the LIBERATE study.

Methods: A responder in the analysis was defined as a patient achieving a PASI 75% reduction from the baseline Psoriasis Area and Severity Index score (PASI75) at the end of the placebo-controlled period in LIBERATE. Cost and efficacy comparisons were made at Week 16. US wholesale acquisition cost as of August 2015 and dosing used in the LIBERATE trial were used to derive drug treatment costs.

Results: At Week 16, the PASI75 response rate was 59.8% for apremilast and 48.2% for etanercept. The cost per PASI75 responder at Week 16 was $5742.55 lower for apremilast compared with etanercept ($20,835.38; etanercept $26,577.93).

Conclusions: As compared with etanercept, apremilast had a lower wholesale acquisition cost per PASI-75 responder at Week 16 in patients with moderate-to-severe plaque psoriasis.

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Cost-effectiveness of apremilast in moderate to severe psoriasis in the UK
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Background: The current study is the first head-to-head cost-effectiveness analysis of apremilast compared with biologics and/or conventional systemic agents. The incidence of malignancies excluding nonmelanoma skin cancers (NMSC) in PSOLAR.

Results: Placing apremilast before biologics as a treatment extension strategy resulted in an additional 0.73 years in which patients achieved PASI 75 and an additional 0.09 QALYs (5.78 vs 5.69). Total time spent on biologics and in BSC was reduced by 0.41 and 1.01 years, respectively. Total costs were increased by $1882.

Conclusions: Placing apremilast after the failure of conventional systemic therapy but before biologics as a treatment extension strategy resulted in further 0.73 years of achieving PASI 75 and an additional 0.09 QALYs ($24,629 vs $18,593 per QALY gained). The results were robust to a series of sensitivity and scenario analyses. The results were similar to those in a previous publication (5).

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Current status of observations of malignancies in the psoriasis longitudinal assessment and registry (P.S.O.L.A.R.) study
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Objective: To report cumulative incidence and results of analysis of malignancies excluding nonmelanoma skin cancers (NMSC) in PSOLAR.

Methods: PSOLAR is a multicenter, longitudinal, observational study evaluating long-term safety and clinical outcomes for pts eligible to receive treatment for psoriasis with biologics and/or conventional systemic agents. The incidence of malignancies excluding NMSC (eg, basal/squamous cell carcinomas) overall and by treatment is reported. The rules for attribution of a malignancy to a therapy use a definition of exposure based on whether pts had ever been exposed to a given therapy at any point prior to the event.

Results: PSOLAR is fully enrolled and, as of Aug 25, 2013, has 40,088 total pt-years of follow up with 12,093 pts. Age and gender adjusted cumulative rates of malignancy (excluding NMSC) overall and across treatments were: overall 0.68 events/100 pt-years of observation (PY) [95% CI: 0.60, 0.76], 274/40,088PY, UST 0.51/100 PTY [95% CI: 0.44, 0.59], 137/27,400PY, and ETN 0.81/100 PTY [95% CI: 0.69, 0.97]. For NMSC (excluding all biologics) 1, 51/100 PTY [95% CI: 0.58, 1.10; 41/1706PY], other biologics (almost exclusively ENTA) 0.73/100 PTY [95% CI: 0.61, 0.88; 116/15919PTY], and non-biologic therapy 0.75/100 PTY [95% CI: 0.69, 0.87; 136/17979PTY], for all non-biologic therapies the increase in age (P < 0.01), and previous malignancy history (P < 0.01) were significant predictors of malignancy. No statistically significant increased risk of malignancy with the use of any biologies was observed.

Conclusions: The cumulative rates of malignancies are comparable across ages. Age and previous malignancy were found to be associated, however, no biologics or immunomodulators were found to be associated with an increased risk of malignancy.

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3830
Disease burden in patients with severe psoriasis
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Background: The burden of disease associated with severe psoriasis is substantial. In phase 3 trials of secukinumab, the burden of disease associated with severe psoriasis was evaluated.

Conclusions: The burden of disease for psoriasis patients with severe disease is high. Further, patients with severe disease with no previous biologic experience report worse scores for all PRO measures than those with previous biologic therapy. Efficacy and costs and quality-adjusted life-years (QALYs). Utility gains by PASI response were obtained from apremilast clinical trial data.

Results: Of 2405 patients randomized across 4 trials, 1151 (48%) were classified with severe disease at baseline and were mostly male (72%) with an age mean of 44 years and median (SD) baseline PASI score of 30.3 (10.0). At baseline, most patients had previous experience with biologic therapy—severe: n = 959 (89%); moderate: n = 942 (75%). Patients with severe disease reported worse baseline scores than those with moderate disease. For example, for DLQI total scores, moderate vs severe was 8.8 vs 12.4, 79.7 vs 59.5 percentile scores, 59.1 vs 66.6, and psoriasis-related itching (6.7 vs 6.0), pain (5.7 vs 4.9), and scaling (6.7 vs 6.1). Among the patients with severe disease, those with previous biologic therapy were slightly younger than the naive patients (45.9 vs 46.6), baseline PASI scores were similar (30.1 vs 30.9).

Conclusions: The burden of illness for psoriasis patients with severe disease is high. Further, patients with severe disease with no previous biologic experience report worse scores for all PRO measures than those with previous biologic therapy experience. Efficacy and costs and quality-adjusted life-years (QALYs). Utility gains by PASI response were obtained from apremilast clinical trial data.

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3573
Dosing patterns with and cost impact of etanercept and ustekinumab for psoriasis in a real-world setting
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Background: There is a lack of evidence on the actual versus expected dosing patterns and costs of biologics used for psoriasis.

Objective: To estimate actual dosing of etanercept (ETN) and ustekinumab (UST), compare it to recommended dosing in the US Package Insert (USPI), and to describe total annual psoriasis-related costs in biologic-naive psoriasis patients on these therapies.

Methods: Adults (age 18-63) with psoriasis initiating ETN or UST (index event) from 2011-2013 were identified in the MarketScan Commercial Database. Patients were required to have a minimum of 6 months of enrollment in the preindex period. Patients with other biologic- or etanercept-related comorbid conditions were excluded. Actual-to-expected ratio for dose comparison were calculated for both index biologic costs ($24,629 versus $34,962, P = 0.034) for both biologics and/or conventional systemic agents. The incidence of malignancies excluding NMSC (eg, basal/squamous cell carcinomas) overall and by treatment is reported. The rules for attribution of a malignancy to a therapy use a definition of exposure based on whether pts had ever been exposed to a given therapy at any time prior to the event.

Results: In cases of exposure to >1 therapy, the rule for attribution of malignancy to a treatment is ustekinumab (UST) 1st, infliximab (IFX)/golimumab (GLM) 2nd, other biologics 3rd (nearly all adalimumab (ADA) or etanercept (ETN), or nonbiologic therapy 4th, which is consistent with the prespecified analytic plan. Analysis using Cox hazard regression was used to identify predictors of malignancy and included medication exposure defined as UST vs no biologic and biologics other than ustekinumab (UST) vs no biologic.

Results: PSOLAR is fully enrolled and, as of Aug 25, 2013, has 40,088 total pt-years of follow up with 12,093 pts. Age and gender adjusted cumulative rates of malignancy (excluding NMSC) overall and across treatments were: overall 0.68 events/100 pt-years of observation (PY) [95% CI: 0.60, 0.76], 274/40,088PY, UST 0.51/100 PTY [95% CI: 0.44, 0.59], 137/27,400PY, and ETN 0.81/100 PTY [95% CI: 0.69, 0.97]. For NMSC (excluding all biologics) 1, 51/100 PTY [95% CI: 0.58, 1.10; 41/1706PY], other biologics (almost exclusively ENTA) 0.73/100 PTY [95% CI: 0.61, 0.88; 116/15919PY], and non-biologic therapy 0.75/100 PTY [95% CI: 0.69, 0.87; 136/17979PY], for all non-biologic therapies the increase in age (P < 0.01), and previous malignancy history (P < 0.01) were significant predictors of malignancy. No statistically significant increased risk of malignancy with the use of any biologies was observed.

Conclusions: The cumulative rates of malignancies are comparable across ages. Age and previous malignancy were found to be associated, however, no biologics or immunomodulators were found to be associated with an increased risk of malignancy.

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3803
Drug survival of biologic medications in psoriasis
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Background: Recently, drug survival has become an important clinical issue in psoriasis and is directly connected to treatment efficacy.

Objective: To investigate the drug survival of adalimumab, infliximab, etanercept, and ustekinumab in the treatment for psoriasis.

Methods: Survival analysis was performed in patients who received adalimumab, infliximab, etanercept, and ustekinumab for the treatment of psoriasis, drawn from the Clalit Health Services database. Multivariate analysis was performed, adjusting for demographic variables, metabolic syndrome and its components, psoriatic arthritis, administration of methotrexate or acitretin and previous biologic treatment exposure.

Results: Among 664 patients treated with biologics, ustekinumab had a significantly higher survival rate than tumor necrosis factor inhibitors (TNFIs). High socioeconomic status and concomitant methotrexate use were positive predictors for drug survival. None of the biologic agents' survival was significantly affected by previous exposure to one or two other different biologics.

Conclusion: Ustekinumab had the highest drug survival of all biological agents, although its use as a third-line treatment in most of the patients in the CHS. Previous exposure to previous different biologic agent was not observed to be a predictor for treatment drop-out necessarily.

Commercial support: None identified.

3221
Early clinical response as a predictor of subsequent response to tofacitinib treatment: Results from two phase 3 studies of subjects with moderate to severe plaque psoriasis
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Background: Ability to predict efficacy of psoriasis treatment has important clinical implications. Biomarkers or patient characteristics that can reliably predict treatment response in psoriasis patients remain elusive. Tofacitinib is an oral Janus kinase inhibitor that is being investigated for psoriasis. An exploratory analysis of data from a phase 2 tofacitinib psoriasis study suggested that early clinical response could predict subsequent efficacy.

Objective: To identify and validate that early clinical response can reliably predict later efficacy.

Methods: Identification of predictors of response was conducted on data from phase 3 study OPT Pivotal 1 (OPT 1; NCT01276639). Univariate logistic regression modeling was used with PASI75 response at Week (Wk) 16 as the dependent variable, and percent change from baseline PASI (at Wk 2, 4, 8, 12) and selected baseline characteristics (age, gender, weight, body mass index [BMI], C-reactive protein [CRP], duration of disease, previous biologic therapy, PASI body surface area [BSA] impacted by psoriasis, age at onset of psoriasis) as predictor variables. Predictive ability was evaluated by area under the receiver operating characteristic curve (AUROC). For continuous variables, the threshold maximizing the Youden Index, defined as ‘sensitivity + specificity – 1’, was selected. Predictability of identified variables was confirmed in study OPT Pivotal 2 (OPT2; NCT01309737) with identical design as OPT1.

Results: None of the selected baseline variables showed good discriminatory ability for PASI75 response at Wk 16 (AUROC ≤60%). Only PASI improvement from baseline at Wk 8 and 12 demonstrated good discriminatory power to predict PASI75 response at Wk 16 (AUROC ≥86% and ≥94%, respectively). Thresholds having highest predictability for PASI75 response at Wk 16 were 50% and 72% PASI improvement at Wk 8 and 12, respectively. Sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) were 87%, 71%, 78% and 85% for the threshold of 50% PASI improvement (PASI50) at Wk 8, while the corresponding values were 86%, 90%, 91% and 84% for the threshold of 72% PASI improvement at Wk 12. Validation with PASI50 response at Wk 8 was carried out in OPT2. In all tofacitinib-treated subjects, sensitivity, specificity, PPV and NPV were 88%, 69%, 80% and 81%, respectively.

Conclusion: Achieving PASI50 at 8 weeks after initiation of tofacitinib therapy is a reliable predictor of PASI75 response at Wk 16.

Supported by Pfizer Inc.

3003
Early age of onset of psoriasis (<25 years of age) may be a predictor for cardiovascular disease in patients with severe psoriasis
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Psoriasis is a chronic inflammatory skin disease that affects 2-3% of the world's population and is associated with multiple comorbidities. These include socioeconomic status associated in increased cardiovascular risk such as hypertension, obesity, dyslipidemia and diabetes. As well early age of onset has been associated with decreased longevity of 20 years. It is estimated that in the United States psoriasis is already associated with more than 1200 excess cardiovascular related deaths. To date no known predictive factors have been able to identify patients at risk. Our previous studies have shown that patients with severe psoriasis, cardiovascular risk is increased and linked to the male gender (OR 3.64; CI 0.75-6.93), early age of onset (OR 3.85; CI 2.53-4.49), and increasing age (OR 1.07; CI 1.03-1.11). We present the index case of a patient with severe psoriasis with no history of angina, no cardiac symptoms, but because of early age of onset, underwent cardiac assessment. This is a single case report illustrating severe cardiac disease. MC is a 67-year-old male smoker with controlled hypertension, on valsartan. Age of onset of psoriasis 16 years. Psoriasis controlled with adalimumab for 5 years. No cardiac symptoms with heavy work. Brother with cardiovascular disease, age 50 BP 130/70. Heart rate 76. BMI 24.3. PE otherwise normal. EKG - nonspecific ST changes. Stress test Bruce protocol - extensive ST segment depression, ic. multivesSEL disease. Coronary angiogram - 100% blockage of RCA, 80% occlusion of the ostium OM2 lesion with circumflex 70% calcified proximally. Left main - 56%06% ulcerated irregular plaque distally. Grade 2 LV function. Urgent coronary artery bypass grafting of 3 vessels. Framingham score 17, <50% risk of CV disease over 10 years. Approach Jeopardy – 100%. Duke Jeopardy 12/12. Age of onset of psoriasis may be a valuable tool for predicting cardiovascular risk in patients with severe psoriasis. This index case illustrates that early age of onset of psoriasis may be associated with extensive and potentially lethal coronary artery disease. Screening patients with early age of onset will help detect patients at risk of sudden cardiac death and thus help prevent some of the 12,000 premature cardiovascular deaths associated with severe psoriasis seen yearly in the United States (and the some 120,000 worldwide).

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Ease of use and confidence with a prefilled syringe to administer ixekizumab (IXE) has been evaluated with subcutaneous administration assessment questionnaire (SQAQ)

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Introduction: Many biologic agents are available as self-administered subcutaneous (SQ) injections. In order for patients/caregivers to feel confident in their ability to administer therapy, an injection device should be easy to use. Availability of a prefilled syringe (PFS) and autoinjector allows patients/caregivers to choose a preferred device. Ixekizumab (IXE) is an anti-IL-17A monoclonal IgG4 antibody with a high binding affinity that is delivered by a SQ injection currently in development for the treatment of plaque psoriasis. The objective of this study was to report the usability and patient-reported experience with IXE delivered via PFS.

Methods: This was an analysis of the 12-week, open-label period of a phase 3 study in patients with moderate-to-severe psoriasis who were randomly assigned to an injection device (autoinjector or PFS). Presented are analyses of the patients in the PFS group. The starting dose of IXE was 160 mg at Week 0, followed by 80 mg given every two weeks. Patients/caregivers reported their experience injecting with the prefilled syringe at weeks 0, 4, and 8 using the Subcutaneous Administration Assessment Questionnaire (SQAQ), a 12-item questionnaire that provides an assessment of ease of use and confidence using a device to administer a SQ injection of drug on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree.” Observed data are reported.

Results: Of the 102 patients in the PFS group, 96 completed the 12-week period. At Week 0, 85% or more of patients/caregivers agreed/strongly agreed with each item on the SQAQ at Week 8 >90% agreed/strongly agreed. Among the items, at Week 0, 90% of patients/caregivers reported that they agreed/strongly agreed that the PFS was “overall, easy to use,” “easy to learn how to use” and that they were “confident my dose is complete” based on SQAQ responses at Weeks 0, 4, and 8. Overall the safety and efficacy profile was consistent with what has previously been reported. There were no serious adverse events or discontinuations associated with using the device. Mean percent improvement in PASI at Week 12 was 92% (LOCF).

Conclusions: The vast majority of patients and caregivers who used the PFS reported on the SQAQ that the device was overall easy to use and they were confident in using the device when using it for the first time at Week 0. IXE delivered via an autoinjector had similar efficacy and safety findings as observed in the clinical trials for ixekizumab.

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3400

Ease of use and confidence with an autoinjector to administer ixekizumab in patients with severe plaque psoriasis has been evaluated with the Subcutaneous Administration Assessment Questionnaire (SQAQ)

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Introduction: Many biologic agents are available as self-administered subcutaneous injections. In order for patients/caregivers to feel confident in their ability to administer therapy, an injection device should be easy to use. Ixekizumab (IXE) is an anti-IL-17A monoclonal IgG4 antibody with high binding affinity currently in development for the treatment of psoriasis. The objective of this study was to report the usability, and patient-reported experience with IXE delivered via PFS.

Methods: This was an analysis of the 12-week, open-label period of a phase 3 trial in patients with moderate-to-severe psoriasis who were randomly assigned to an injection device (autoinjector or PFS). Presented here are analyses of the patients in the autoinjector group. The starting dose of IXE was 160 mg at Week 0, followed by 80 mg given every two weeks. Patients/caregivers reported their experiences injecting with the autoinjector at weeks 0, 4, and 8 using the Subcutaneous Administration Assessment Questionnaire (SQAQ), a 12-item questionnaire that provides an assessment of ease of use and confidence using a device to administer a SQ injection of drug on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree.” Observed data are reported.

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Conclusions: The vast majority of patients and caregivers who used the autoinjector reported on the SQAQ questionnaire that the device was overall easy to use and that they were confident in using the device when using it for the first time at Week 0. IXE delivered via an autoinjector had similar efficacy and safety findings as observed in the clinical trials for ixekizumab.

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2585

Effect of apremilast and etanercept on pruritus and health-related quality of life in patients with moderate to severe plaque psoriasis: Results from the LIBERATE study

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Background: Itching is one of the most bothersome psoriasis symptoms (J Am Acad Dermatol 2014;70:871). We examined pruritus and health-related QOL up to Wk52 in the phase 3b, double-blind, double-dummy LIBERATE study.

Methods: Biologic-naive pts were randomized (1:1:1) to placebo (PBO), apremilast 50 mg BID (APR), or etanercept 50 mg QW (ETN) through Wk16; thereafter, all pts continued APR or switched from ETN to PBO or APR through Wk104. Pruritus was evaluated using Wk52 using a VAS (0-100 mm: 0 = no itch at all, 100 = worst itch imaginable) and QOL using the Dermatology Life Quality Index (DLQI; 0-30: worse QOL). The achievement of minimal clinically important differences (MCID) in pruritus (VAS improvement ≥20% (Acta Derm Venereol. 2013;93:609) and DLQI scores (improvement ≥5 points) (Br J Dermatol. 2008;159:997) is reported. This study was not powered for APR vs ETN comparisons.

Results: 250 pts who received ≥1 dose of study drug and had both baseline (BL) and Wk52 observation had complete analysis (PBO n = 84; APR n = 83; ETN n = 85). At Wk16, mean change from BL in pruritus VAS was greater with APR (−35.6 mm) and ETN (−22.5 mm) than PBO (−10.6 mm; nominal P = .0026 vs APR, nominal P < .0001 vs ETN). Greater improvement (ie, decreases) in pruritus occurred as early as Wk2 with APR and ETN vs PBO. At Wk16, mean change from BL in total DLQI score was greater with APR (−8.3 mm) and ETN (−7.8 mm) vs PBO (−3.8 mm; P < .0001 vs APR, nominal P = .0004 vs ETN). More pts achieved MCID at Wk16 for pruritus (53.6%; APR 79.5%; ETN 83.1%) and DLQI (PBO 41.7%; APR 65.1% vs ETN 65.1%) with APR or ETN vs PBO. At Wk52, pruritus improvements were sustained in pts who continued APR (−55.9 mm) and pts who switched from PBO or ETN to APR at Wk16 (PBO/APR −58.5 mm; ETN/APR −34.0 mm). At Wk52, DLQI improvements were sustained in pts who continued receiving APR (−8.9 mm) and pts who switched from PBO or ETN to APR at Wk16 (PBO/APR −6.6 mm; ETN/APR −8.0 mm). At Wk52, 75.7% of pts who continued PBO achieved MCD in Wk52 patients who continued APR or switched from ETN to APR.

Conclusions: APR improved pruritus and QOL vs PBO at Wk16; improvement was sustained at Wk52 in pts who continued on APR or switched from ETN to APR.

Supported by Celgene Corporation.
Effect of metabolic syndrome on sexual function among female psoriatic patients

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Background: Psoriasis is a chronic skin disorder affecting 1-3% of the population. It is associated with impairments in health related quality of life even in mild cases, and excess mortality in severe cases. Effects of either psoriasis or metabolic disease on sexual function were studied to some extent, but the effects of both diseases on sexual life were not studied.

Aim of the work: the study is a cross sectional study, to examine effect of metabolic syndrome (MS) and psoriasis on sexual function. It was done at Dermatology Department, Suez Canal University.

Patients and methods: This study enrolled 17 cases with MS (cases); and 38 cases without MS (controls). All patients were subjected to: full history of the disease, other skin diseases and systemic disorders, clinical and dermatological examination, laboratory investigations, measurement of psoriasis severity by PASI and female sexual function index (FSFI) questionnaire was completed to determine FSD.

Results: The most common age group was fifth decade (50.0%). There was an increase of weight, BMI, waist circumference, blood pressure, fasting blood glucose (FBG), cholesterol, triglycerides and CRP and significant decrease of height in cases with MS in comparison to cases without MS. In addition, there was a decrease of age of onset, and increase of disease duration and PASI score in cases in comparison to controls and there was statistical decrease of desire, arousal, lubrication, orgasm, satisfaction and pain in females with MS in comparison to females without MS. There was statistical increase of females with FSD in cases with MS in comparison to cases without MS (94.1% vs 8.1% respectively). This was confirmed by the decrease of total FSD score in cases with MS in comparison to cases without MS (15.62 ± 4.64 vs 30.54 ± 2.72 respectively). Finally, there was positive (proportional); powerful, statistically correlation between PASI and either of BMI, disease duration, FBG and cholesterol. On the other hand, there was inverse (negative), moderate or powerful, statistical correlation between PASI and all variables of FSID scales, regardless presence or absence of MS.

Conclusion: the results of the present study revealed increased SD in psoriatic women with metabolic syndrome. It sheds light on the possible synergistic effects of both diseases on sexual life.

Commercial support: None identified.

2615 Effects of adalimumab on health-related quality of life in psoriasis patients with and without comorbid psoriatic arthritis: Value of reducing PASI scores and systemic inflammation

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Objective: Adalimumab treatment has been associated with significant improvements in health related quality of life (HRQL) among patients with moderate to severe psoriasis. The objective of this study was to assess to the extent to which these HRQL improvements are mediated by the effect of adalimumab on skin signs and systemic inflammation, and the extent to which these effects differ between patients who have psoriasis with and without comorbid psoriatic arthritis (PsA).

Methods: HRQL outcomes were analyzed during the 16-week double-blind period of randomized treatment with adalimumab vs placebo in the REVEAL trial of patients with moderate to severe psoriasis (NCT00257887). The 36-item Short Form Health Survey (SF-36) measures HRQL in 8 health domains, which are further aggregated into physical and mental component summaries (PCS, MCS).

The effect of adalimumab vs placebo treatment on each of the SF-36 scores was partitioned into effects that were mediated by improvements on the scores of the Psoriasis Area and Severity Index (PASI) or on levels of C-reactive protein (CRP), both measured at Week 16, while adjusting for baseline characteristics. The incremental effect on PASI, as a moderator of effects on HRQL, was also assessed.

Results: The study included 1212 patients, with 27.8% having self-reported comorbid PsA. At baseline, all SF-36 domains and summary scores were significantly worse in patients with comorbid PsA compared to those without PsA. Using ANOVA, adalimumab was a significant mediator of the effect of adalimumab on all SF-36 scores. Among patients with comorbid PsA, CRP was a significant mediator of the effect of adalimumab on PCS, physical functioning, bodily pain, and general health. In patients without PsA, adalimumab was a significant mediator of the effect of adalimumab on PCS, mental health, general health, and vitality scores. Among patients with PsA, the effect of adalimumab on PASI and CRP mediated 64% and 18% of the improvement in PCS, respectively (all P < .05).

Conclusions: Among patients who had psoriasis without PsA, improvements in the HRQL outcomes with adalimumab treatment accounted for almost all improvement in HRQL. However, among patients who had psoriasis with comorbid PsA, improvements in both PASI score and in CRP (as proxy for systemic inflammation) accounted for HRQL improvement.

Commercial support: None identified.

3484 Efficacy and safety of apremilast with or without topical or phototherapy: Subanalysis of the population with < PASI-75 in the ESTEEM 1 phase 3, randomized, controlled trial in patients with moderate to severe plaque psoriasis

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Background: The phase 3 randomized ESTEEM 1 trial evaluated efficacy and safety of apremilast 30 mg BID (APR30) vs placebo (PBO) in patients (pts) with moderate to severe psoriasis. The results in pts with < PASI-75 treated with and without topical or phototherapy (T/P) were reported in the abstract; all authors contributed to the development of the publication.

Methods: Pts were randomized 2:1 to APR30 or PBO. At WK16, PBO pts switched to APR30 (PBO/APR30). All pts were treated with APR30 through WK32, followed by a randomization treatment withdrawal phase up to WK52. The primary endpoint was PASI-75 at WK16. At WK32, in addition to APR30, pts with < PASI-75 could receive topical therapies and/or ultraviolet B phototherapy (T/P) at the discretion of the investigator.

Results: Of the 380 pts with < PASI-75 at WK32, 210 received T/P (PBO/APR30+T/P; n = 84; APR30/APR30+T/P; n = 126) and 170 did not receive T/P (PBO/APR30 w/o T/P; n = 51; APR30/APR30 w/o T/P; n = 119). Topical agents used in pts with < PASI-75 in the PBO/APR30 and APR30 APR30 groups, respectively, included corticosteroids (97%: 62%), vitamin D analogs (16.7%: 11.9%), corticosteroids + vitamin D analogs (51.8%: 42.5%), and a calcineurin inhibitor (1.2%: 0.8%). 11.9% (PBO/APR30) and 8.7% (APR30/APR30) of pts received UVB phototherapy. At WK52, PASI-75 was achieved by more pts receiving T/P vs w/o T/P (PBO/APR30: 15.6% vs 4%, respectively; APR30/APR30: 12.2% vs 6%, respectively). On WK32, 12 pts (6%) received T/P. At WK32, mean percent decreases (ie, improvements) from baseline in PASI score were: −61.3% (PBO/APR30+T/P) vs −52.6% (PBO/APR30 w/o T/P) and −58.2% (APR30/APR30+T/P) vs −57.3% (APR30/APR30 w/o T/P). During WK32 to 52, the safety population included 378 pts: 210 pts received T/P (PBO/APR30+T/P, n = 126, pt-yrs = 44.3) and 168 pts did not receive T/P (PBO/APR30 w/o T/P, n = 117, pt-yrs = 36.4). AEs occurring in ≥5% of pts receiving T/P w/o T/P included diarrhea/nausea rates were low (<5%) and similar among the PBO/APR30 and APR30/APR30 groups, regardless of T/P use. Based on exposure-adjusted incidence of nausea, vomiting, and diarrhea, rates of AEs (including serious AEs) were similar in pts w/ vs without T/P use across both groups.

Conclusion: In pts with < PASI-75 at WK32, APR30 with or without T/P demonstrated an acceptable safety/tolerability profile. The trend toward higher PASI responses in pts receiving T/P with APR30 warrants further investigation.

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Efficacy and safety of oral tofacitinib in North American patients with moderate to severe plaque psoriasis: Pooled analyses of data from randomized phase 3 studies

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Background: Tofacitinib is an oral JAK inhibitor that is being investigated for plaque PsO.

Objective: To evaluate the efficacy and safety of tofacitinib 5 or 10 mg BID in North American (NA) patients (pts) with moderate to severe chronic plaque PsO.

Methods: Efficacy and safety data at 16 weeks (wks) were pooled for NA pts from two pivotal randomized phase 3 studies (OPT-1, OPT-2; both 52-wks with initial 16-wk placebo [PBO]-controlled phases). First-year safety data were pooled for NA pts who participated in OPT-1, OPT-2, and a 56-week randomized phase 3 study (OPT Retreatment).

Results: Baseline characteristics of the 16-wk cohort (n = 894) were 70.7% male; mean age 46.6 yrs; mean disease duration 17.2 years; mean PASI 18.0; median affected BSA 20%; median DLQI 12. At 16 wks, efficacy responses for the tofacitinib 5 and 10 mg BID, and PBO groups, respectively, were: 40.2%, 54.3%, 9.0% for PASI75; 17.5%, 50.2%, 2.2% for PASI90; 56.6%, 45.2%, 7.9% for PGA clear/almost clear; and 20.2%, 45.4%, 2.7% response rate (P < 0.001 vs PBO for all endpoints). At the final visit (Week 52), clinical response rates were 50% and 41% respectively, for the tofacitinib 5 and 10 mg BID groups vs 9.0% for PBO. For all secukinumab groups, efficacy responses increased to Week 52. The safety profile of secukinumab was consistent with the global population.

Conclusion: In this NA cohort, both tofacitinib doses were significantly more efficacious than placebo over 16 wks. The greatest responses were achieved with tofacitinib 10 mg BID. Safety in the NA population was consistent with the global population.

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Efficacy and safety of secukinumab by age group in patients with moderate-to-severe plaque psoriasis: Pooled analysis of phase III trials

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Introduction and objectives: Secukinumab, a fully human monoclonal antibody that selectively targets interleukin-17A, has been demonstrated to be highly efficacious in the treatment of moderate-to-severe psoriasis. In these subgroups, PASI 75, 90, and PASI 100 response rates at week 12 were evaluated in subgroups of patients with or without previous exposure to biologic therapy. Significance was determined via the Cochran-Mantel-Haenszel test stratified by study; missing values were imputed as nonresponse.

Results: In this analysis, 885 (28.2%) patients had prior exposure to biologic therapy and 2243 (71.8%) patients were naive to biologic therapy. In these subgroups, PASI 75 response rates were 89.5% and 88.5% in the IXE Q2W group and 77.5% and 85.1% in the IXE Q4W group vs 2.7% and 5.2% in placebo (P < 0.001). Overall, there were no unexpected safety signals.

Conclusions: In this integrated analysis across three phase 3 trials, regardless of previous biologic treatment, both dose regimens of ixekizumab resulted in high levels of treatment response.

Supported by Eli Lilly and Company.
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Efficacy of ixekizumab in patients with psoriatic arthritis: Results of a phase 3, randomized, double-blind, active- and placebo-controlled study

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Background/purpose: Psoriatic arthritis (PsA) is a chronic immune-mediated inflammatory disease which includes manifestations of peripheral arthritis, entheseal, dactylitis, and spondylitis, and dermato logical skin and nail changes. Ixekizumab (IXE) is an IgG4 monoclonal antibody that binds with high affinity and specificity to the proinflammatory cytokine IL-17A.

Methods: In a phase 3 trial, 417 biologic disease-modifying antirheumatic drug (bDMARD)-naive patients with active PsA were randomized to up to 24 weeks of placebo (PBO; n = 106); adalimumab (ADA) 40 mg (n = 101) every 2 weeks (Q2W; active control), or IXE 80 mg Q2W (n = 101) with 1 mg initial dose at Week 0. Endpoints assessed at 12 and 24 weeks included response rates for the American College of Rheumatology (ACR) 20 (primary endpoint), ACR50, ACR70, Psoriasis Area and Severity Index (PASI75), PAS90, PAS100, and static Physician Global Assessment of psoriasis (sPGA) (0,1,2). The proportion of patients with HAQ-DI score exceeding the minimal clinically important difference ≥0.30 threshold were 53.1% at Week 52 and 51.6% at Week 104 in the APR30 group.

Conclusion: Over 104 weeks, APR30 demonstrated sustained, clinically meaningful improvements in disease activity and physical function. APR continued to demonstrate a favorable safety profile and was generally well tolerated.

Supported by Celgene Corporation.

3118

Efficacy of long-term (104-week) treatment with apremilast in patients with psoriatic arthritis: Results from a phase III, randomized, controlled trial and open-label extension

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Background: PALACE 3 compared the efficacy and safety of apremilast (APR) with placebo (PBO) in patients with active PsA, including active skin disease, despite backgroundstate (AP20) stratified by baseline (BL) DMARD use (yes/no) and psoriasis involvement (SPA20)

Methods: Patients were randomized (1:1:1) to PBO, APR30, or APR20 mg BID in patients with active PsA, including active skin disease, despite backgroundstate (AP20) stratified by baseline (BL) DMARD use (yes/no) and psoriasis involvement (SPA20). Continuous and categorical endpoints were analyzed using the mixed-effect model for repeated measures and logistic regression, respectively.

Results: A total of 382 patients completed 24 weeks of the study. Compared to PBO, at 24 weeks, a significantly greater percentage of patients treated with APR, both doses, achieved significantly greater responses on the ACR20 (57.6% vs 30% PBO) and ACR50, ACR70, PASI75, PAS90, PAS100, and sPGA (0,1,2) compared to PBO. Efficacy results with ADA versus PBO were significant on most measures. Incidence rates of adverse events (AE) were comparable. AE rates overall were assessed at 24 weeks and adverse rates higher for IXE and ADA compared to PBO. Discontinuation due to an AE was similar across all groups. No deaths occurred.

Conclusion: In bDMARD-naive patients with active PsA, ixekizumab showed sustained meaningful improvements in disease activity, plaque psoriasis, and nail clearance, and inhibition of structural progression. Ixekizumab was well tolerated with no unexpected safety findings.

Eli Lilly and Company sponsored 100% of research study.

2994

Efficacy of tofacitinib for the treatment of nail psoriasis: Two 52-week phase 3 studies in patients with moderate to severe plaque psoriasis

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Background: Tofacitinib is an oral JAK inhibitor that is being investigated for treatment of psoriatic arthritis and medical clearance. Tofacitinib has been shown to reduce symptoms of psoriasis and improve physical function. APR continued to show improvements in disease activity and physical function. APR continued to demonstrate a favorable safety profile and was generally well tolerated.

Objectives: To evaluate Nail Psoriasis Severity Index (NAPSI) in pts with existing nail psoriasis (PsO) in clinical practice. Two 52-week phase 3 studies in patients with moderate to severe plaque psoriasis: OPT Pivotal 1, NCT01276639; OPT Pivotal 2, NCT01309737.

Methods: Adult pts were randomized 2:2:1 to receive tofacitinib 5, 10 mg, or placebo, BID. At Week 16, placebo pts were rerandomized to tofacitinib 5 or 10 mg BID. Change in NAPSI score from baseline and the proportions of pts achieving NAPSI75 with tofacitinib 5 and 10 mg BID and placebo were compared. Data were pooled across studies; nominal p values for treatment comparisons are presented for Week 16.

Results:

- 1196 (64%) pts had nail PsO: 487 (5 mg BID), 476 (10 mg BID) and 235 (placebo). Median age was 46.0 years, 77% were male, 80% were white, 24% also had psoriatic arthritis and median PASI score was 20. Mean [standard error; SE] number of nails affected at baseline were 7.3 [0.1] (5 mg BID), 7.3 [0.1] (10 mg BID), 7.4 [0.3] (placebo to 5 mg BID) and 7.5 [0.3] (placebo to 10 mg BID). Baseline mean 

- 55.3% at Week 52 and 66.5% at Week 104 in the APR30 group.

Conclusions: Tofacitinib led to significant improvements in NAPSI in patients (pts) with Pso.

Objective: To evaluate Nail Psoriasis Severity Index (NAPSI) in pts with existing nail psoriasis (PsO) in clinical practice. Two 52-week phase 3 studies in patients with moderate to severe plaque psoriasis.

Methods: Adult pts were randomized 2:2:1 to receive tofacitinib 5, 10 mg, or placebo, BID. At Week 16, placebo pts were rerandomized to tofacitinib 5 or 10 mg BID. Change in NAPSI score from baseline and the proportions of pts achieving ≥75% or 100% reduction in NAPSI (NAPSI75 or NAPSI100) at Weeks 16/52 were compared. Data were pooled across studies; nominal p values for treatment comparisons are presented for Week 16.

Results: 1196 (64%) pts had nail PsO: 487 (5 mg BID), 476 (10 mg BID) and 235 (placebo). Median age was 46.0 years, 77% were male, 80% were white, 24% also had psoriatic arthritis and median PASI score was 20. Mean [standard error; SE] number of nails affected at baseline were 7.3 [0.1] (5 mg BID), 7.3 [0.1] (10 mg BID), 7.4 [0.3] (placebo to 5 mg BID) and 7.5 [0.3] (placebo to 10 mg BID). Baseline mean 

Conclusion: Over 104 weeks, APR30 demonstrated sustained, clinically meaningful improvements in disease activity and physical function. APR continued to demonstrate a favorable safety profile and was generally well tolerated.

Supported by Celgene Corporation.
Endothelium-dependent vasodilation is reduced in the cutaneous circulation of nonlesional psoriatic skin.

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Psoriasis, a chronic systemic inflammatory disease, is an independent risk factor for cardiovascular disease. Impaired vascular function in conduit and resistance vessels is evident in adults with plaque psoriasis, however, potential deficits in microcirculatory endothelial function in psoriatic patients are not well-documented. Further, examining cutaneous vascular function has particular clinical relevance for this population because the skin-related symptoms are the outward manifestation of this systemic inflammatory disease process. We hypothesized that cutaneous endothelial function would be impaired in nonlesional skin of psoriatic patients. Three intradermal microdialysis fibers were placed in the forearm skin of 8 healthy adults (NP: 5M, 5F; 49 ± 5 yr) and 8 adults with moderate (>5% body surface area affected) plaque psoriasis (P: 3M, 5F; 48 ± 5 yr) for localized drug delivery. Microdialysis sites were perfused with lactated Ringer’s (control), ascorbate (antioxidant), or BEC (arginase-inhibitor) while an index of skin blood flow was measured using laser Doppler flowmetry during a standardized local heating protocol (43°C) to elicit endothelial nitric oxide synthase (eNOS)-mediated vasodilation. Nitric oxide (NO)-dependent vasodilation was quantified following the perfusion of the nontoxic NO inhibitor L-NAME. Data were expressed as a percentage of maximum cutaneous vascular conductance (%CVCmax, 23 ± 14 mM sodium nitroprusside). The local heating-induced plateau at the control site was attenuated in psoriatic patients (NP: 99 ± 1% CVCmax vs. P: 82 ± 6% CVCmax; P = 0.01), which is mediated by reduced NO-dependent vasodilation (NP: 58 ± 5% CVCmax vs. P: 45 ± 8% CVCmax; P = 0.05). Arginase-inhibition, but not ascorbate, tended to improve the local-heating-induced vasodilation in psoriatic patients (Ringer’s 82 ± 6% CVCmax vs BEC: 95 ± 2% CVCmax; P = 0.15). These results suggest that cutaneous endothelial function is impaired in psoriatic adults due to reduced NO bioavailability and that arginase upregulation contributes to the microvascular dysfunction in these patients.

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Erythrodermic psoriasis following terbinafine use

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Background Terbinafine has been linked with the occurrence of psoriasis de novo or with exacerbation. We report a case of erythrodermic psoriasis following terbinafine use.

Case report: A 67-year-old man with a 2-year history of mild psoriasis (scalp and elbows), well controlled with topical medications, was admitted to our hospital due to cutaneous erythroderma. Ten days prior to its onset, he started taking terbinafine 250 mg/day for tinea cruris. He had been on enalapril, acetylsalicylic acid, simvastatin and inhaled steroids for several years due to his comorbidities. On admission, the patient had widespread erythema with diffuse scaling. He denied fever, respiratory or gastrointestinal symptoms. The white cell count was 14,080/mm3 with mild neutrophilia. Liver and kidney function tests were within the normal range. Serologies for hepatitis B, C and HIV were negative. Since no classic triggers of psoriasis were present, we performed routine and pustular psoriasis. When considering a medication as responsible for the exacerbation of a disease it is important to evaluate if there is chronological correlation. According to previous reports, the latency period between administration of terbinafine and the exacerbation of psoriasis is less than 4 weeks, categorized as short interval. Our patient developed erythroderma 10 days after starting terbinafine, which supports the association. Dermatologists should be aware of the association between oral terbinafine and psoriasis flare-up, including erythroderma. Similarly to any medication adverse event, further investigation and observation are needed to establish a solid conclusion.

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Evaluation of efficacy and safety of ABP 501 in a phase 3 study in subjects with plaque psoriasis: 52-week results

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Background and objectives: ABP 501 is being developed as a biosimilar candidate to adalimumab (Humira), a fully human recombinant anti-TNF monoclonal antibody and has the same amino acid sequence as adalimumab. Evidence from analytical comparisons and phase 1 human pharmacokinetic study indicates that ABP 501 is similar to adalimumab. The objective of this study was to demonstrate clinical similarity between ABP 501 and adalimumab reference product in adults with moderate/severe plaque psoriasis (Ps). Results of clinical similarity investigations at week 12 and safety at week 16 have been previously reported. Here we report results of efficacy and safety at 52 weeks comparing subjects receiving ABP 501 or adalimumab for the entire duration of the study.

Conclusion: Of the 3858 total patients enrolled in the UNCOVER program the incidence of CD and UC was uncommon during the first 12 weeks of treatment with biologic agents for psoriasis. The incidence of CD and UC were adjudicated according to EPIMAD criteria into the following categories: 'definite', 'probable', 'possible'. This information was reviewed in a blinded fashion by external experts. These cases were adjudicated according to EPIMAD criteria into the following categories: 'definite', 'probable', or 'possible'.

Results: Of the 3858 patients enrolled in the trials, 2 patients were reported to have CD during induction and 9 during the extension phase. 1 of the suspected UC cases was classified as 'possible'. This event occurred at day 49 and the patient received IXE Q4W. The other suspected CD was classified as 'definite'. This event occurred at day 80 and the patient received IXE Q4W. Both of the suspected UC cases were adjudicated as 'definite'. Importantly, both of these patients had a prior history of UC and both received IXE Q4W.

Conclusion: Of the 3858 total patients enrolled in the UNCOVER program the incidence of CD and UC was uncommon during the first 12 weeks of treatment with biologic agents for psoriasis, and are required to further understand the relationship between IBD and IXE treatment.

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Supported by Eli Lilly and Co.

Evaluation of the Psoriasis Skin Appearance and Bothersomeness (PSAB) measure in patients with moderate to severe psoriasis treated with ixekizumab compared to etanercept and placebo: Results from UNCOVER-2

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Introduction: Psoriasis is characterized by red, thick and scaly skin lesions. While measures like the PASI are used by clinicians to assess the severity of psoriasis lesions, they do not capture the impact that the appearance of these lesions has on the patient. In this analysis, patients report how bothered they are by the redness, thickness, or scaliness of their skin lesions using a novel and validated instrument, the Psoriasis Appearance and Bothersomeness measure (PSAB), before and after treatment with ixekizumab, an anti-IL-17A monoclonal antibody, high dose etanercept, or placebo.

Methods: In the UNCOVER-2 trial, 1,224 patients were randomized to receive 12 weeks of subcutaneous placebo (N = 168), etanercept (50 mg twice weekly; N = 358), or a single injection of 80 mg ixekizumab every 2 weeks (IXE Q2W; N = 351) or every 4 weeks (IXE Q4W; N = 347) following a 160 mg starting dose at Week 0. Using the PSAB at baseline and Week 12, patients were asked how bothered they are on a numeric rating scale (NRS) how bothered they are by any redness or discoloration, thickness, and scaling or flaking on their skin due to their psoriasis from 0 (not at all bothered) to 10 (extremely bothered). The scores from the 3 NRS items are summed for a 3-item score ranging from 0 to 50 with higher scores indicating greater bothersomeness. Treatment comparisons were made using an ANCOVA model including treatment, pooled center and baseline PSAB value as covariates and missing data was imputed using the last observation carried forward.

Results: Mean (SD) baseline PSAB was 24.1 (6.4) across all groups. At week 12, mean (SD) PSAB was 4.0 (6.2), 5.0 (7.5), 11.4 (9.8) and 21.0 (8.2) in the IXE Q2W, IXE Q4W, etanercept and placebo groups, respectively. The improvements in PSAB were significantly greater in the ixekizumab treatment groups compared to etanercept and placebo with an LS Mean (SE) change from baseline of -20.1 (0.42) in IXE Q2W, -18.9 (0.42) in the IXE Q4W, -12.4 (0.42) in the etanercept group and -3.4 (0.61) in the placebo group (P < .001).

Conclusions: At baseline, moderate to severe psoriasis patients reported a high degree of bothersomeness, a score of 24.1, reflecting the overall impact of the redness, thickness and scaliness of their psoriasis plaques. Both ixekizumab dosing regimens resulted in significantly greater improvements in the PSAB compared to improvements observed after treatment with etanercept or placebo.

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Evaluation of timely versus delayed use of tumor necrosis factor inhibitors in the treatment of psoriatic arthritis: Economic and clinical results from a modeling study

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Objective: Progression of psoriatic arthritis (PsA) can lead to irreversible joint damage, functional impairment, and associated health care costs. Tumor necrosis factor inhibitors (TNFis) improve signs and symptoms of PsA, and, in contrast to other DMARDs such as apremilast and methotrexate, have been shown to slow the rate of radiographic progression. The economic impact of using apremilast before TNFis is not fully understood. We evaluated clinical outcomes and costs associated with timely versus delayed use of TNFis among patients with PsA.

Methods: A Markov model was developed to evaluate costs and outcomes of PsA treatment with TNFis (adalimumab, etanercept, infliximab, or golimumab) and/or apremilast over a 1-year time horizon. Patients received either a TNFi (timely TNFi use) or apremilast (delayed TNFi use) as initial treatment. Those who did not achieve an ACR20 response in the first 12 weeks of therapy or who subsequently lost ACR20 response either switched to a different TNFi or initiated a first TNFi. Joint responses (ie, an ACR20 response) were evaluated for all patients; skin responses (ie, PASI75) were evaluated among patients with comorbid moderate/severe psoriasis (ie, affecting ≥5% of their body surface). Efficacy inputs and distributions of patients treated with apremilast were based on randomized controlled trials and market share data, respectively. Outcomes were response rates at year 1 and the number of patients who would need to be treated (NNT) to see 1 responder. Total costs and costs per responder were also calculated.

Results: After 1 year, patients with timely use of TNFis had higher ACR20 response rates, lower NNTs, and higher costs vs those with delayed use (70% vs 60%; 1.42 vs 1.68, 59.75 vs 51.15, respectively). Among the subgroup with moderate/severe psoriasis, timely use of TNFis was associated with higher combined ACR20+PASI75 response rates (70% vs 60%; 1.42 vs 1.68, 59.75 vs 51.15, respectively). The cost per ACR20 responder was higher ($56,492 vs $52,855) among all patients, however, among patients with psoriasis the combined ACR20+PASI75 cost per responder was lower for timely use of TNFis ($100,954 vs $111,686).

Conclusion: In this economic model, timely use of TNFis was a more effective strategy for managing PsA and was a more cost-effective strategy for managing patients with both joint and skin involvement.

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First line biologic agent therapy for moderate-to-severe psoriasis in cancer survivors

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Introduction: Individuals with psoriasis are reported to have decreased quality of life associated with potentially debilitating features that are responsive to biological agents (BAs) that are known to pose some increased risk of malignancy. Consequently, patients with a history of cancer who have moderate-to-severe psoriasis typically pose a dilemma for selection of the most appropriate therapy to minimize the debilitating features of psoriasis yet balance the risk to benefit concurrent with anticancer therapy. This study aims to assess the current utilization of BA antipsoriasis treatments in patients diagnosed with cancer.

Methods: We searched the Northwestern Medicine Enterprise Data Warehouse (NMEDW), nearly 3 million individuals comprising an NCI Comprehensive Cancer Center as well as a NIH-designated Skin Disease Research Center (2010-2014) for patients who were prescribed medication as treatment for their moderate or severe psoriasis within 24 months after a diagnosis of cancer.

Results: 15 patients met the search criteria. Of these, 7 were prescribed systemic treatment for psoriasis, of which 3 were prescribed a BA and 14 received at least 1 topical agent. Systemic agents included methotrexate, acitretin, and 2 BAs (adalimumab and infliximab). Of the 7 (46.7%) prescribed a systemic treatment, 4 received a systemic agent as the initial treatment for psoriasis after cancer diagnosis. Of the 3 prescribed a BA, 2 received a BA as their first treatment for psoriasis after cancer diagnosis. Mean time between cancer diagnosis and BA was 6 months.

Conclusion: Although topical agents are most commonly used for psoriasis treatment within 24 months after cancer diagnosis, after weighing risk to benefit, biologic agents are used, despite they are reported to increase cancer risk. Further exploration is warranted for treatment outcomes related to biological agent use in cancer patients who have moderate-to-severe psoriasis.

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Five-year open-label extension study of safety and efficacy of etanercept in patients with moderate to severe psoriasis vulgaris: The phase III PSO-ABLE study

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Background: Treatments for moderate to severe plaque psoriasis in adults are not currently approved for children and adolescents in the US. This open-label extension (OLE) study evaluated long-term safety and efficacy of etanercept for pediatric psoriasis.

Methods: Patients aged 4-17 years who had completed a 48-week, randomized, double-blind, placebo-controlled parent study were eligible to participate in this 264-week OLE study. Patients who did not complete the parent study could enroll in the OLE if they had achieved at least a 50% improvement in Psoriasis Area and Severity Index (PASI 50) by week 12 with no serious adverse event (SAE) or other clinically significant adverse event (AE) considered related to etanercept. Patients received subcutaneous etanercept at 0.8 mg/kg (maximum 50 mg) once weekly for up to 264 weeks. Safety outcomes included incidence of AEs (including infections), SAEs, and serious infectious events (SIEs). Efficacy outcomes included rates of PASI 75 and PASI 90 responses and static physician global assessment (sPGA) status of clear/almost clear (score 0/1).

Results: Of 181 patients who enrolled in the OLE and received etanercept, 69 completed 264 weeks on study. A total of 161 (89.0%) patients reported an AE through week 264, most commonly upper respiratory tract infections (5.6%), nasopharyngitis (26.0%), headache (21.5%), acne (18.2%), streptococcal pharyngitis (14.9%), sinustitis (13.3%), skin papilloma (13.3%), cough (12.2%), influenza (11.6%), and otitis media (11.0%). SAEs were reported by 5 (2.8%) patients (elective abortion, anxiety, intestinal obstruction, osteonecrosis, thyroid cyst) and SIEs were reported by 2 (1.1%) patients (cellulitis, infectious mononucleosis); only the case of cellulitis was considered related to treatment. No opportunistic infections, malignancies, or deaths occurred during the study. Rates of PASI 75 responses (~60%-70%), PASI 90 responses (~30%-40%), and sPGA status of clear/almost clear (~40%-50%) were maintained in patients who stayed on study through week 264.

Conclusions: Long-term etanercept therapy administered to children and adolescents with moderate to severe plaque psoriasis did not elicit any new safety signals and efficacy was maintained in patients who remained on study up to 264 weeks.

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2936

Generalized pustular psoriasis of von Zumbusch associated with IL-36RN mutation

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Generalized pustular psoriasis (GPP) is characterized by a widespread sterile pustular eruption within erythematous scaly plaques or erythematous skin. It is known to be associated with systemic symptoms such as fever and malaise. This disease is often chronic and may be life threatening. DITRA (deficiency of interleukin thirty-six–receptor antagonist) is a recently described hereditary autoimmune inflammatory disorder characterized by repeated attacks of generalized pustular psoriasis accompanied by a high-grade fever, general malaise and a pro-inflammatory state. The recombinant interleukin-1 receptor antagonist anakinra has been used successfully in patients with DITRA. We present a new case of DITRA in a 55-year-old male patient with a 17-year history of psoriasis. One year after the onset of psoriasis, he developed generalized pustular psoriasis secondary to a streptococcal throat infection. Since then, the patient has had multiple exacerbations of his psoriasis, which manifests as erythroderma with numerous pustules forming lakes of pus. His cutaneous flares are associated with fever, general malaise, vomiting with dehydration, and increased inflammatory markers. These severe episodes necessitated regular hospitalizations. Identified triggers include noncompliance with treatment, decrease in corticosteroid dosage or a concomitant medical illness such as staphylococcus or streptococcus infections. Multiple treatments have been attempted, but control of his cutaneous disease remains challenging. His current treatment regimen involves prednisone 20mg daily, acitretin 25mg daily and subcutaneous adalimumab 80 mg weekly. Psoriasis severity combined with a von Zumbusch pattern prompted a search for the IL-36RN mutation. Genetic analysis revealed an autosomal recessive pathogenic homozygous mutation of the IL-36RN gene, variant c.338C>T (p.Ser113Leu). Anakinra, an interleukin-1 receptor antagonist, will be introduced by rheumatology shortly.

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Interest statement: The authors declare that there are no conflicts of interest.

Conclusions: This study provides evidence that high-frequency PDUS is a feasible, novel tool to assess nail psoriasis. Further studies are needed to determine the sensitivity and specificity of this technique in the assessment of nail psoriasis.

Results: The thickness of nail plate and nail bed and PDUS score was higher in patients with nail psoriasis compared to healthy controls. A linear variable-frequency transducer ranging from 18 to 22 MHz and a Doppler signal was used for the assessment of blood flow at nail bed and matrix area.

Methods: The study was conducted in 36 patients with a diagnosis of nail psoriasis and 43 healthy participants, using an ultrasonographic system equipped with a linear variable-frequency transducer ranging from 18 to 22 MHz and a Doppler signal.

Objective: To show the potential of the latest ultrasonographic equipment using a high-frequency power Doppler ultrasonography in the assessment of nail psoriasis.

Background: Long term usage of topical corticosteroids in chronic plaque psoriasis often complicates by cutaneous and systemic side effects. Gynura pseudochinna leaf extract has long been used in traditional medicine in Southeast Asian countries.

Gynura pseudochinna downregulates nuclear factor-κB leading to an improvement of chronic plaque psoriasis

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Background: Long term usage of topical corticosteroids in chronic plaque psoriasis is often complicated by cutaneous and systemic side effects. Gynura pseudochinna leaf extract has long been used in traditional medicine in Southeast Asian countries. Essentially, the previous in vitro study showed that the extract can reduce an activation of nuclear factor kappa B (NF-κB) pathway which plays an important role in the pathogenesis of psoriasis.

Objective: To determine the efficacy and safety of G pseudochinna leaf extract ointment in comparison with 0.1% triamcinolone (TA) cream as a treatment for mild to moderate chronic plaque psoriasis and to elucidate the mechanism of action of the leaf extract in vivo.

Materials and methods: Twenty-five patients with mild to moderate plaque psoriasis completed a 4-week trial with twice daily application of G pseudochinna leaf extract ointment on psoriatic lesions on one side of the body and 0.1% TA cream on the other. Targeted Area Score (TAS) and Psoriasis Severity Index (PSI) scores were assessed at baseline, weeks 1, 2, 3 and 4. Physician’s General Assessment (PGA) scores were obtained through assessment of the clinical photographs. Pre and post treatment skin samples were taken. Phosphorylation of NF-κB/RelA, Ki67 and epidermal thickness were analyzed by immunohistochemistry.

Results: After 1 week of therapy, TAS in erythema, desquamation, induration and PSI scores decreased significantly on both treated sides (P < 0.05) and continuously declined during the further course of the treatments. No significant differences between the two treatments were observed using TAS of erythema and induration, PSI and PGA scores. Immunohistochemical staining revealed diminution of phosphorylated NF-κB/RelA, Ki67 and epidermal thickness in the section treated with the G pseudochinna leaf extract ointment. The ointment was well tolerated with minimal side effects such as staining, itching and stinging. No laboratory abnormalities were detected.

Conclusion: G pseudochinna leaf extract ointment is an effective treatment for mild to moderate chronic plaque psoriasis, comparable with 0.1%TA cream.

Commercial support: None identified.
Impact of ixekizumab on palmoplantar plaque psoriasis compared to placebo and etanercept: Results from UNCOVER-2 trial

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Introduction: Psoriasis on the hands and feet (palmoplantar) has a significant impact on quality of life, impacts function, and is frequently resistant to the full range of therapies and modalities. Ixekizumab (IXE) is an anti-IL-17A monoclonal antibody, which has been shown to be effective in treating psoriasis in clinical trials. The objective of this analysis was to evaluate the efficacy of IXE treatment for patients with moderate-to-severe palmoplantar involvement compared to etanercept (ETN) and placebo (PBO).

Methods: In the double-blind UNCOVER 2 trial, patients were randomized to receive subcutaneous PBO (N = 168), ETN (50 mg twice weekly; N = 358), or a single injection of 80 mg IXE every 2 weeks (IXE Q2W; N = 351) or every 4 weeks (IXE Q4W; N = 347) following a 160 mg starting dose at Week 0. Psoriatic involvement on hands and feet was assessed with the Palmoplantar Psoriasis Area and Severity Index (PPASI) (severity score range: 0 to 72). The percentage of patients with 100% reduction from baseline on the PPASI was analyzed in patients with baseline scores ≥8 (moderate-to-severe palmoplantar involvement). Treatment groups were compared using Cochran-Mantel-Haenszel test; missing data were imputed using non-responder imputation.

Results: At baseline, the percentage of patients with palmoplantar psoriasis in each treatment group was: PBO, 32.7%; ETN, 26.5%; IXE Q2W, 29.6%; IXE Q4W, 29.4%. Of those patients with PPASI scores ≥8 (n = 105), the overall mean (SD) baseline score was 19.4 (12.3). At 12 weeks, the percentage of patients within this population who had 100% reduction in the PPASI score was statistically significantly greater with IXE Q2W (51.6% [n = 16 of 31], P < 0.001) and IXE Q4W (45.5% [n = 10 of 22], P = 0.01) compared to PBO (5.6% [n = 1 of 18]). In addition, IXE Q2W showed superiority over ETN (29.4% [n = 10 of 34], P = 0.05). There were no unexpected safety findings for patients treated with IXE.

Conclusion: At Week 12, both IXE dose regimens were superior to PBO, and IXE Q2W was superior to ETN for 100% improvement in patients with moderate-to-severe palmoplantar plaque psoriasis. Additional studies of the effect of IXE in larger populations of patients with palmoplantar plaque psoriasis are required.

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Impact of ixekizumab treatment on depressive symptoms: An integrated analysis of three phase 3 clinical studies in patients with moderate-to-severe plaque psoriasis

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Introduction: Depression is a common comorbid condition with psoriasis, and both illnesses may be associated with immune-mediated systemic inflammation. Ixekizumab, an anti-IL-17A monoclonal IgG4 antibody with a high binding affinity, has demonstrated efficacy for moderate-to-severe psoriasis. The efficacy of ixekizumab in depressive symptoms was evaluated in patients with plaque psoriasis and comorbid depression at baseline.

Methods: Depressive outcomes were integrated in patients who were part of 3 randomized, controlled trials. During induction, patients were randomized to receive placebo (PBO), subcutaneous etanercept (ETN) or ixekizumab as one injection every 4 weeks (IXE Q4W; N = 791) or 80 mg ixekizumab as one injection every 4 weeks (IXE Q2W; N = 1161) or every 2 weeks (IXE Q2W; N = 1167) following a 160-mg initial dose at Week 0. Depressive symptoms were assessed at Weeks 0 and 12 using the Quick Inventory of Depressive Symptomatology (QIDS-SR16) from baseline to Week 12 was -0.15. The rate of remission of depressive symptoms (QIDS-SR16 total improvement >90%) from baseline to Week 12 was 8% (moderate-to-severe depression at baseline, ixekizumab was superior to placebo, achieving a clinically meaningful response in 44% and remission of depressive symptoms in 39.1% at Week 12.

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Impact of ixekizumab treatment on scalp psoriasis: Results from the UNCOVER-2 trial

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Introduction: Scalp psoriasis can be difficult to treat and negatively impacts quality of life. Ixekizumab (IXE) is a monoclonal antibody to IL-17A, a cytokine in psoriasis pathogenesis. In the UNCOVER trial, IxE was superior to both placebo (PBO) and etanercept (ETN) on skin clearance measures in patients with moderate-to-severe plaque psoriasis. The objective of this secondary analysis was to compare the effect of IXE therapy on scalp psoriasis compared to PBO and ETN.

Methods: Patients were randomized to receive subcutaneous PBO (N = 168), ETN (50 mg twice weekly; N = 358), or a single injection of 80 mg IXE every 2 weeks (IXE Q2W; N = 351) or every 4 weeks (IXE Q4W; N = 347) following a 160 mg starting dose at Week 0. Scalp psoriasis was assessed with the Psoriasis Scalp Severity Index (PSSI) (range: 0 to 72). Least squares (LS) mean changes were calculated using mixed effects models for repeated measures. Treatment groups were compared using the Cochran-Mantel-Haenszel test for categorical data. Missing data were imputed using nonresponder imputation.

Results: At baseline, the percent of patients with scalp psoriasis in each treatment group were: PBO 89.9%, ETN 89.9%, IXE Q2W 91.2%, IXE Q4W 89.9%. Overall mean (SD) baseline PSSI score was 20.2 (15.2). Significant differences in the percent improvement of PSSI were observed as early as Week 1 with IXE Q2W (57.0%) and IXE Q4W (57.7%) vs ETN (8.4%) and PBO (4.3%) (P < 0.001, each comparison). At Week 12, the percent improvement from baseline in PSSI was 93.0%, 86.5%, 68.9%, and 3.7% with IXE Q2W, IXE Q4W, ETN and PBO, respectively. Improvement was significantly greater with both IXE dose regimens vs ETN (both, P < 0.001). At 12 weeks, the percentages of patients with no scalp psoriasis with IXEQ2W (74.4%) and IXEQ4W (64.1%) were significantly greater as compared with PBO (7.5%) and ETN (44.7%) (all, P < 0.001). There were no unexpected safety findings with IXE treatment.

Conclusions: IXE dosing regimens were superior to PBO and ETN for improvement in scalp psoriasis with onset of efficacy as early as Week 1. Over 60% of IXE-treated patients achieved complete resolution of their scalp psoriasis by week 12, which was significantly more than those treated with either ETN or PBO.

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2712  Impact of ixekizumab treatment on sexual function in moderate-to-severe psoriasis patients: 12 week results from two phase 3 trials UNCOVER-2 and UNCOVER-3  Lyn Guenterh, MD, University of Western Ontario, London, Ontario, Canada; Howard Soen, MD, UCLA David Geffen School of Medicine, Los Angeles, CA, United States; Jennifer Catthers, CD, Modern Dermatology, Dallas, TX, United States; Yves P Poulin, MD, Université Laval Faculté de Médecine, Québec City, Quebec, Canada; Mark Lebowh, MD, Ichin School of Medicine at Mount Sinai, New York, NY, United States; Alison Potts Blearman, PhD, Eli Lilly and Company, Indianapolis, IN, United States; Raxim Zhu, PhD, Eli Lilly and Company, Indianapolis, IN, United States; Enkeleida Nikai, MS, MBA, Eli Lilly Belgium, Benelux, Belgium; Peter van der Kerkhof, MD, PhD, Radboud University Nijmegen Medical Faculty, Nijmegen, Netherlands.

Introduction: Impaired sexual function is often an unrecognized complication of psoriasis. Ixekizumab, an anti-IL-17A monoclonal IgG4 antibody with high binding affinity, is being developed as a psoriasis treatment. We evaluated the impact of ixekizumab treatment on sexual function in psoriasis patients enrolled in two phase 3, double-blind trials (UNCOVER-2 and UNCOVER-3).

Methods: Patients were randomized to subcutaneous placebo (PBO), high-dose etanercept (ETN), 50 mg twice weekly, or 80 mg ixekizumab as one injection every 4 (IXE Q4W) or 2 weeks (IXE Q2W) for 12 weeks, following a 160-mg initial dose. 1,224 patients were randomized in UNCOVER-2 (PBO, n = 385; ETN, n = 358; IXE Q4W, n = 347; IXE Q2W, n = 515) and 1,146 in UNCOVER-3 (PBO, n = 193; ETN, n = 382; ETN, n = 386; IXE Q2W, n = 385). The Dermatology Life Quality Index, Item 9 was used to assess how much skin caused any sexual difficulties ranging from 0 = not at all to 3 = very much at Wks 0, 2, 4, and 12. In patients with baseline sexual difficulty or impairment, the percentages of patients reporting improvements in any sexual difficulty (score ≤1) and impaired sexual function (score ≥2) were compared using logistic regression. Missing data were imputed by nonresponder imputation.

Results: In both trials at baseline, a similar percentage of patients in each group reported that their skin caused sexual difficulties (all patients: 45%: UNCOVER-2: 43%: UNCOVER-3). Among patients with sexual difficulties at baseline: 42% in UNCOVER-2 and 43% in UNCOVER-3, significantly more had improvement in sexual difficulties at Wk 2 with IXE Q4W (49% and 52%) and IXE Q2W (54% and 55%) vs ETN (30%, P < .001 and 27%, P < .001), and Wk 12 more patients treated with IXE Q4W (68% and 78%) and IXE Q2W (80% and 81%) vs ETN (30%, P < .001 and 27%, P < .001), experienced improvement. Improvement in the percentage of patients with impaired sexual function was consistent with improvement in sexual difficulty. A similar pattern of improvement was observed in males and females. Across all groups, all patients with complete resolution of psoriasis (PASI 100) were more likely to have no sexual difficulties at Wk 12.

Conclusions: In these trials, more patients treated with ixekizumab reported improvements in sexual difficulty than with ETN with significance observed as early as Wk 2. Patients with complete resolution of psoriasis were more likely to achieve no sexual difficulties.

Supported by Eli Lilly and Company.

3012 Impact of treatment of psoriasis on carotid intima-media thickness  Gonzalo Blasco-Morente, PhD, Dermatology Unit, Virgen de las Nieves University Hospital, Granada, Spain; Sandra Masegos-Casano, MD, Rheumatology Unit, San Cecilio University Hospital, Granada, Spain; Silvia Montes-García, MD, Rheumatology Unit, San Cecilio University Hospital, Granada, Spain; Miguel Angel Lopez-Nevo, MD, Immunology Unit, Virgen de las Nieves University Hospital, Granada, Spain; Cristina Garrido-Colmenero, MD, Dermatology Unit, Virgen de las Nieves University Hospital, Granada, Spain; Elena García-Lora, MD, Dermatology Unit, Virgen de las Nieves University Hospital, Granada, Spain; Jesus Tercer-Sánchez, MD, Dermatology Unit, Virgen de las Nieves University Hospital, Granada, Spain; Salvador Arias-Santiago, MD, Dermatology Unit, Virgen de las Nieves University Hospital, Granada, Spain.

Introduction: Psoriasis is a chronic immune-mediated inflammatory disease, which shares inflammatory pathways with atherosclerosis, reason why the two entities have no sexual difficulties at Wk 12.

Objective: Pilot study to quantify the degree of decrease longitudinal of IMT in patients that started treatment for severe psoriasis.

Methods: In 14 patients with severe psoriasis (PASI ≥8 or BSA ≥8% or DLQI ≥8), the carotid IMT was measured by high-resolution B-mode ultrasonography, being calculated before starting phototherapy or systemic or biological therapy and after 6-11 month treatment. Difference between initial and 6-11 month IMT values was determined.

Results: The mean age of patients was 45.3 years (18-66 years), 9 were male and 6 female, the average period with psoriasis was 17.2 years (2-45 years), the mean (SD) age 46 (13) years, psoriasis duration 20 (13) years, and Psoriasis Area and Severity Index 20.7 (Mean: SD (HADS) anxiety scores were 6.7 (4.3), 6.6 (4.2), and 6.4 (3.8) in 210 mg, 140 mg, and placebo arms, respectively; corresponding mean (SD) HADS depression scores were 5.5 (4.2), 5.2 (4.1), and 5.3 (5.9). Through week 12, adverse event rates were balanced among groups and one patient in each group reported an adverse event. At week 12, mean (SD) HADS anxiety scores were 1.8 (1.5), 2.2, 1.5 (1.0, 1.9), and 0.1 (0.2, 0.5) in 210 mg, 140 mg, and placebo arms, respectively, and model-based treatment differences from placebo were 2.1 and 1.9 (P < .001 for all). The majority of patients receiving brodalumab shifted to less severe HADS severity group: over 60% of patients with moderate and severe anxiety (N = 37 [140 mg + 42 [210 mg]) or depression (N = 30 [140 mg + 50 [210 mg]) at baseline improved to mild, normal, or moderate at week 12.

Discussion: In this study, the majority of patients with moderate to severe plaque psoriasis receiving brodalumab showed improvements in HADS anxiety and depression scores.

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Improvements in extracutaneous manifestations of psoriatic arthritis over 96 weeks of ixekizumab vs placebo treatment

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Introduction: Previous reports of RAPID-PsA (NCT01087788) demonstrated clinical efficacy of certolizumab pegol (CZP) in patients (pts) with psoriatic arthritis (PsA) over 96 weeks (wks). This abstract focuses on the efficacy of CZP for the treatment of extracutaneous manifestations (EAMs) of PsA including psoriasis, nail psoriasis, enthesis and dactylitis over 96 wks.

Methods: RAPID-PsA was double-blind and placebo-controlled to Wk24, dose-controlled to Wk48, and placebo-controlled to Wk96 for a total of 96 wk. Pts with active PsA and who had failed ≥1 DMARD were randomized to CZP (Wk0 to Wk24: 200 mg Q4W, then 100 mg Q4W), or placebo (PBO) (Wk0 to Wk24: placebo). The primary clinical endpoint (ACR20) at Wk24 has been reported previously. EAM data are presented for pts with baseline (BL) involvement and for pts with any improvement in EAM scores across all wks available for pts with nail psoriasis. Observations were made on nail psoriasis severity index (mNAPSI) for pts with BL psoriasis, and in pts with at least 1 digit affected and a difference in circumference ≥10%.

Results: Mean mNAPSI was 3.5 at BL for pts with nail psoriasis (n = 355), with ≥27% reduction at Wk96 for pts with BL psoriasis or nail involvement. Mean improvement in Response of pts with complete clearance at Wk96 was 19.9% for CZP and 19.4% for placebo (P = NS).

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Improvements in health-related quality of life and symptoms of depression with tofacitinib: Results from two randomized phase 3 studies in patients with moderate to severe psoriasis

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Background: Psoriasis (PsO) impacts health-related quality of life (HRQoL) and is associated with depression and anxiety. Tofacitinib is an oral JAK inhibitor that is being investigated for PsO.

Objective: To assess the effect of tofacitinib on HRQoL, depression, and anxiety in patients (pts) with moderate to severe PsO.

Methods: OPT Pivotal 1 (OPT1; NCT01276639) and 2 (OPT2; NCT01397737) were identical 52-week phase 3 studies. Pts received tofacitinib 5 mg (OPT1/OPT2: N = 465/482), 10 mg (N = 360/381), or placebo (N = 177/196) twice daily (BID). At Week 16, placebo-treated pts were re-randomized to tofacitinib 5 or 10 mg BID.

Assessments: Short Form-36 (SF-36) mental and physical component summary score (MCS and PCS; population norm: mean = 50); Hospital Anxiety and Depression Scale (HADS) (MCS and PCS; population norm: mean = 50); Pain Anxiety Scale (HADS); Hospital Anxiety and Depression Scale (HADS); and Toosy Depression and Anxiety (TOAD; ≥70% improvement in Toosy Anx Severity Index vs baseline (PASI75/90).

Results: At baseline, HRQoL was impaired in both studies (mean MCS 42.5 ± 13.4; PCS 44.9 ± 47.9). 27% and 43.1% of pts had HADS criteria for depression and anxiety (subscale score ≥8), respectively. At Week 16, mean MCS change from baseline was greater in pts who received tofacitinib 5 mg BID (OPT1/OPT2: 4.2/4.0) and 10 mg BID (0.4/2.3) vs placebo (0.8/2.3; P < 0.05). A smaller proportion of depression cases were reported at Week 16 for tofacitinib 10 mg BID (OPT1/OPT2: 15.9/16.2%) vs placebo (31.9/26.8%; P < 0.01 in both studies); and tofacitinib 5 mg BID (17.4/24.0%) vs placebo (P < 0.001 in OPT1 only). A smaller percentage of anxiety cases were reported for tofacitinib 5 and 10 mg BID vs placebo (OPT1/OPT2: 26.7% and 28.7% vs 37.7%; P < 0.05) but not tofacitinib 28.2% and 26.0% (P = 0.417/0.051). Across studies at Week 16, fewer pts achieving PASI90 with tofacitinib 5 and 10mg BID had depression (16.2% and 12.0%) vs those achieving PASI75/90 (20.5% and 14.8%) or < PASI75 (25.1% and 21.6%). At Week 52, mean MCS were similar to the population norm in pts who received tofacitinib 5 mg BID (49.1/45.9) and 10 mg BID (50.7/50.0). Reduced rates of depression were maintained at Week 52 (OPT1/OPT2: 5 mg 17.4/21.1%; 10 mg 15.5/13.5%). At Week 52, the percentage of pts with anxiety in the tofacitinib 5 and 10 mg BID groups was 17.0% and 16.3% in OPT1, and 24.2% and 22.4% in OPT2.

Conclusions: Tofacitinib 5 and 10 mg BID improved HRQoL vs placebo in pts with moderate to severe PsO and reduced the proportion of pts with symptoms of depression, slightly more at 10 mg BID. Pts with greater PASI responses were less frequently depressed.

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Improvements in health-related quality of life measured by SF-36 and EQ-5D in patients with moderate to severe plaque psoriasis treated with brodalumab

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Introduction: Brodalumab, an IL-17RA monoclonal antibody, was efficacious in phase II/III trials in patients with moderate to severe plaque psoriasis (PsO), based on sPGA and PASI.

Objectives: To evaluate the impact of brodalumab on health-related quality of life (HRQoL) measured by the SF-36v2, the EQ-5D, and EQVAS.

Methods: Data from a double-blind, placebo-controlled induction phase of a phase 3 brodalumab RCT in patients with moderate to severe plaque PsO were analyzed. (AMAGINE-1). Patients were randomized (1:1:1) to brodalumab 210 mg Q2W, 140 mg Q2W, or placebo. Secondary endpoints included change in SF-36v2 from baseline to Week 12 (Wk12), and EQ-5D/EQVAS scores across groups at Wk12. Data were analyzed as randomized, using an analysis of covariance model adjusting for baseline values and randomization stratification factors. Multiple imputation handled missing data.

Results: Patients treated with brodalumab achieved significantly greater improvements on all SF-36v2 scales scores, and greater EQ-5D, EQVAS scores, compared with placebo at Wk12 (all P < .001). Baseline EQ-5D and EQVAS mean (SD) for placebo (N = 216), brodalumab 140 mg (N = 216), and 210 mg (N = 221) were: 0.62 (0.29); 0.61 (0.32), 0.60 (0.32), respectively. At Wk12, EQ-5D mean scores (95% CI) Were: 0.81 (0.75, 0.86) for placebo (N = 218); 0.85 (0.79, 0.89) for 140 mg (N = 210); and 0.85 (0.78, 0.88) for 210 mg (N = 221) (all P < .001 vs placebo). Mean change (95% CI) from baseline to Wk12 in each of the SF-36 scales for placebo (N = 216), brodalumab 140 mg (N = 210) and 210 mg (N = 221), respectively were: Physical component: -0.3 (-1.2, 0.7), 3.5 (2.4, 4.6), 3.1 (2.1, 4.0); Role-physical: -0.4 (1.4, 0.7), 4.1 (3.0, 5.3), 3.8 (2.7, 4.9); Bodily pain: 0 (1.2, 2.2), 7.2 (5.8, 8.7), 7.7 (6.2, 9.2); General health: -0.3 (-1.2, 0.6), 4.1 (3.0, 5.2), 4.2 (3.1, 5.2); Vitality: 0.8 (-0.2, 1.8), 5.0 (3.8, 6.1), 4.6 (3.4, 5.8); Social function: 0.2 (-0.1, 0.4), 7.2 (5.8, 8.6), 8.0 (6.6, 9.5); Role-emotional: -0.5 (-1.7, 0.7), 4.8 (3.5, 6.1), 4.7 (3.4, 6.0); Mental health: 0.7 (-0.4, 1.8), 5.3 (4.1, 6.6), 6.1 (4.9, 7.3); PCS-0/-1 (3.0, 4.6), 4.2 (3.2, 5.3), 4.2 (2.9, 5.0); and MCS: 0.5 (0.6, 1.0), 5.7 (4.4, 6.9), 6.2 (5.0, 7.5). All P < .001 vs placebo.

Conclusions: Patients treated with brodalumab experienced significant improvement in all aspects of HRQoL measured by the SF-36v2 and EQ-5D. Brodalumab significantly improves patient-reported outcomes in patients with moderate to severe plaque psoriasis.

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Improvements in patient-reported outcomes (PROs) among moderate to severe plaque psoriasis patients treated with brodalumab: Results from AMAGINE-1

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Introduction: Brodalumab, an IL-17RA monoclonal antibody, was efficacious in phase II/III trials in patients with moderate to severe plaque psoriasis (PsO), based on sPGA and PASI.

Objectives: To evaluate the impact of brodalumab on the Psoriasis Symptom Inventory (PSI), an 8-item patient-reported outcome instrument measuring itch, redness, scaling, burning, stinging, cracking, flaking, and pain (scored from 0 to 212); the Dermatology Life Quality Index (DLQI); and treatment satisfaction.

Methods: Data from a double-blind, placebo-controlled, randomized trial in moderate to severe plaque psoriasis was analyzed. Patients were randomized (1:1:1) to brodalumab 210 mg Q2W, brodalumab 140 mg Q2W, or placebo. Outcomes at Week 12 (Wk12) included the percentages of patients achieving: PSI responder definition (total score ≤8 with no item score >1); PSI total score = 0 (not at all severe on all signs and symptoms); improvement ≥5 on DLQI from baseline; DLQI score of 0/1; different degrees of satisfaction with treatment. For DLQI and PSI, percentages were compared using Cochran-Mantel-Haenszel model, adjusting for baseline stratification factors and dichotomized baseline values. Nonresponder imputation was used for the binary outcomes. Treatment satisfaction was compared using ordinal logistic regression adjusting for the baseline stratification factors, and worst-case imputation was used.

Results: Baseline PSI and DLQI scores were similar across groups. At Wk12, significantly greater percentages of patients treated with brodalumab achieved: improvement ≥5 on DLQI = 0/1, PSI responder definition, and PSI = 0, compared with placebo (all P < .001). A significantly greater percentage of patients on brodalumab dosages had better treatment satisfaction compared with placebo (P < .001). At Wk12 the following proportions (95%CI) of patients: 4.1% (1.9%, 7.6%); 53.0% (46.1%, 59.7%); and 60.8% (54.1%, 67.5%) were PSI responders; 0.5% (0.0%, 2.5%); 17.4% (12.6%, 23.0%); and 21.6% (16.4%, 27.6%) had PSI total score = 0; 5.0% (2.5%, 8.8%); 42.9% (35.6%, 49.8%); 55.9% (49.1%, 62.5%) had DLQI 0/1, 21.6% (16.6%, 26.6%); 75.5% (67.0%, 79.9%); 85.6% (77.7%, 88.4%) had DLQI improvement ≥5, in placebo (N = 220), brodalumab 140 mg (N = 219), and 210 mg (N = 222) respectively. All P < .001 vs placebo.

Conclusions: Results indicate that brodalumab significantly improved patient-reported outcomes (PSI, DLQI and treatment satisfaction) in patients with moderate to severe plaque psoriasis.

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Insurance coverage of biologics for moderate-to-severe psoriasis: A database review

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Background: With the variability in health insurance coverage for psoriasis systemic therapies, recent shifts in coverage for biological therapies have yet to be evaluated. Purpose: To determine changes in insurance coverage of biologics for moderate to severe psoriasis between 2009 and 2014, with a focus on insurance policies as stated in prior authorization (PA) forms, coverage denials, and time course of approval process.

Methods: A retrospective chart review was performed on patients with a diagnosis of psoriasis (ICD-9 696) seen at the George Washington University Medical Faculty Associates Department of Dermatology between January 1st, 2009 and December 31st, 2014. Exclusion criteria included <5% body surface area (BSA), loss to follow-up or the absence of prior authorization’s (PA) form, absence of insurance. For all other patients, metrics collected included age, gender, BSA, health insurance. For all other patients, metrics collected included age, gender, BSA, health insurance plan, prior therapies, prescribed biologic, PA necessity, time in days between PA submission and coverage decision, and provided denial justifications.

Results: 864 patients with a diagnosis of psoriasis within the time period were identified, 114 of whom met the inclusion criteria. PA requirement increased from 15.6% of patients prescribed a biologic in 2009 to 75.0% patients prescribed a biologic in 2014. The mean duration in days between PA submission and coverage decision, for all other patients, metrics collected included age, gender, BSA, health insurance. For all other patients, metrics collected included age, gender, BSA, health insurance plan, prior therapies, prescribed biologic, PA necessity, time in days between PA submission and coverage decision, and provided denial justifications.

Conclusion: Insurance coverage of biologics for moderate-to-severe plaque psoriasis has become increasingly regulated between the years of 2009 and 2014. Given both the cost burden and potential benefits of these therapies, further examination of healthcare coverage and treatment accessibility is warranted for optimal patient outcomes.

Commercial support: None identified
Is lichen planus a marker for dyslipidemia and metabolic syndrome?
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Background: Lichen planus (LP) is a distinct autoimmune inflammatory, self-limiting papulosquamous disorder of unknown cause that affects the skin, mucous membranes, nails and hair. Previous studies have established a link between LP and dyslipidemia (DM). Recent studies have suggested that patients with LP could have higher risks of developing cardiovascular diseases. Disturbances in the lipid metabolism due to underlying inflammation and oxidative stress which releases inflammatory cytokines could be accountable to certain other dermatological conditions such as psoriasis and androgenic alopecia are associated with cardiovascular risk factors which could possibly be explained by the underlying proinflammatory state.

Objective: To compare the prevalence of metabolic syndrome (MetS) and dyslipidemia in patients of LP and in healthy controls. We have also compared inflammatory markers in these groups.

Patients and methods: This case control study included 39 consecutive patients aged ≥18 years with LP (biopsy proven) with minimum disease duration of 6 months and ≥78 age- and sex-matched controls recruited from a tertiary care hospital in South India. Patients were recruited from March 2012 to August 2013. Fasting plasma glucose, lipid profile, ESR and CRP values were measured. Anthropometric measurements, body composition and dual-energy X-ray absorptiometry scan findings were compared.

Results: MetS was diagnosed in 59% of cases of LP based on the International Diabetes Federation (IDF) · 2006 criteria as compared to only 32% of controls, showing a highly significant difference (OR = 5.047, 95% CI = 1.375, 6.754, P < .006). We found dyslipidemia in 35% of cases as compared to 21.8% of controls (P = 0.108) in accordance with National Cholesterol Education Program—Third Adult Treatment Panel definition (NCEP ATP III). However, there was no difference between the inflammatory markers studied among the cases and controls.

Conclusion: The present study found a higher prevalence of MetS in patients with LP as compared to healthy controls and suggests that LP may be associated with MetS and dyslipidemia. Screening for MetS in patients with LP is advisable due to the long-term complications associated with it.

Commercial support: None identified.

IxEKIZUMAB IMPROVES PHYSICAL FUNCTION, QUALITY OF LIFE, AND WORK PRODUCTIVITY IN BIOLOGICALLY DISEASE-MODIFYING ANTIRHEUMATIC DRUG-NAIVE PATIENTS WITH ACTIVE PSORIASIS
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Background: Psoriatic arthritis (PsA) is a chronic immune-mediated inflammatory disease associated with psoriasis, peripheral arthritis, enthesis, dactylytis, and spondylitis. PsA has a negative impact on patients’ (pts’) quality of life (QoL), physical function, and work productivity. Ixekizumab (IXE) is an anti-IL-17A IgG4 monoclonal antibody with high binding affinity.

Methods: In a phase 3 trial (SPIRIT-P1), 417 biologic disease-modifying antirheumatic drug (bDMARD)-naive pts with active PsA were randomized to receive 24 weeks (wks) of placebo (PBO; N = 106), adalimumab 40 mg once every 2 wks (Q2W; N = 101, active control), or ixekizumab (IXE) 80 mg every 4 wks (Q4W; N = 105) following a 160-mg starting dose at wk 0. Patient reported outcomes (PROs) included Health Assessment Questionnaire—Disability Index (HAQ-DI), Short Form-36 Health Survey Physical Component Summary (SF-36 PCS), Dermatology Life Quality Index (DLQI), Itch Numeric Rating Scale (NRS) and Work Productivity and Activity Impairment-Specific Health Problem (WPAI-SHP). Continuous PRO data were evaluated using a mixed-effects model for repeated measures. Categorical PRO data were compared using a logistic regression model; missing values were imputed with the nonresponder imputation (NRI) method, treating inadequate responders (IRs) as nonresponders.

Results: Patients treated with IXE Q4W or IXE Q2W reported significantly greater improvements compared to PBO in HAQ-DI, SF-36 PCS, DLQI, and Itch NRS at Wks 12 and 24, or I (P < .001). Significantly greater improvements were also seen in all IxE groups versus PBO for WPAI-SHP (all components, exceptAbsenteeism) at Wks 12 and 24 (P < .05). Compared to placebo, a greater percentage of IXE patients achieved the minimally clinically important difference for HAQ-DI (60% vs 21% from baseline in HAQ-DI [P = .013, P < .001]) at Wks 12 and 24, and the percentages of patients who had no negative effect on QoL as assessed by DLQI score of 0, 1 or 0 were significantly greater in each IXE group at Wks 16 and 24. Greater treatment responses as assessed by Psoriasis Area Severity Index (PASI, 75/100) were associated with greater improvements in DLQI (P < .05).

Adalimumab, serving as an active reference arm, also demonstrated efficacy versus PBO across the assessed parameters.

Conclusions: In bDMARD-naive patients with active PsA, IXE significantly improves QoL, physical function, and work productivity as early as Wk 12.

Supported by Eli Lilly and Company.

3017 IXEKIZUMAB SHOWS EFFICACY AND SAFETY IN PATIENTS WHO FAILED BIWEEKLY ETANERCEPT THERAPY: ANALYSIS FROM UNCOVER-2, A PHASE 3 RANDOMIZED CLINICAL TRIAL IN PSORIASIS
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Introduction: Clinical observations suggest that the efficacy of biologics in psoriasis can be affected by previous treatment with another biologic. In this analysis, we evaluate the efficacy and safety of ixekizumab (IXE), an anti-IL17A monoclonal antibody with high binding affinity, in patients (pts) who previously failed to reach static Physician Global Assessment (sPGA) 0 or 1 after 12 weeks (wks) on bi-weekly etanercept (ETN).

Methods: In UNCOVER-2, a double-blind phase 3 clinical trial, pts with moderate-to-severe psoriasis were randomized to receive IXE 80 mg every 2 wks (IXE Q2W; N = 551) or every 4 wks (IXE Q4W; N = 347) after a 160 mg starting dose, or ETN (50 mg biweekly; N = 585), or placebo (PBO; N = 168) during a 12-wk induction period. At wk 12, 12% of pts who had not achieved sPGA 0/1 were considered ‘nonresponders’ and administered IXE Q4W for wks 12-60. ETN-nonresponders received 2 injections of PBO at wk 12, then IXE Q4W through wk 60 starting at wk 16 (4 wk washout).

Results: In this trial, 358 pts were randomized to biweekly ETN in the induction period and 200 (56%) were ETN-nonresponders (sPGA≥2) at wk 12, only 15% of these nonresponders achieved PASI 75. After 12 wks of IXE Q2W (wk 28), 85.5% had reached PASI 75, 57.0% had PASI 90, and 22.0% had PASI 100. Following 44 wks of IXE Q4W (wk 60), 82.5% of ETN-nonresponders had PASI 75, 68.8% had PASI 90, and 43.5% had PASI 100. After 4 wks of IXE Q4W, 45.5% of ETN-nonresponders achieved sPGA 0/1 rising to 75% after 12 wks. Serial Dermatology Life Quality Index (DLQI) scores among these pts showed that while 21.5% had achieved DLQI 0/1 after 12 wks of biweekly ETN, 80.8% had DLQI 0/1 at wk 60 (44 wks of IXE Q4W). During wks 12-60, 158 (79%) ETN-nonresponders experienced ≥1 treatment-emergent adverse event (TEAE); the majority of these 158 events were mild (35%) or moderate (54%). There were 9 (4.5%) pts with ≥1 serious AE (SAE) and 8 (4%) discontinuations due to AE. This was comparable to TEAEs in PBO/nonresponders (N = 155) who began IXE Q4W with a starting dose at wk 12 (total patients with ≥1 TEAEs = 81%; mild = 27% and moderate = 42% TEAEs; 12 [8%] pts with ≥1 SAE; 8 [5%] discontinuations).

Conclusions: In this trial, IXE showed high clinical efficacy in pts who previously failed to reach sPGA 0/1 after 12 wks treatment with bi-weekly ETN. Pts switching from ETN to IXE Q4W had a safety profile similar to those switching from PBO to IXE Q4W.

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3232
Ixeikizumab, a novel anti–IL-17A antibody, exhibits low immunogenicity during long-term treatment in patients with psoriasis
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Objectives: Anti-drug antibodies (ADA) can result in reduced biologic efficacy over time in patients with psoriasis. Here we evaluate treatment-emergent ADA (TE-ADA) to ixeikizumab, an anti-IL-17A monoclonal antibody, for association with maintenance of efficacy and safety.
Methods: The presence of ADAs was evaluated in pts from the induction period (0-12 wks) of 3 RCTs and the maintenance period (12-60 wks) of 2 of the 3 RCTs with the same randomized, blinded design. The induction period analyses included ADA- evaluable pts randomized to 80 mg ixeikizumab either every 2 wks (IXE Q2W; N = 1150) or 4 wks (IXE Q4W; N = 1145) following a 160 mg starting dose. The maintenance period analyses included IXE responders at wk 12 who were rerandomized to IXE Q4W (N = 397) or IXE Q2W (N = 582). ADA serum trough levels were assessed using a highly drug-tolerant affinity capture elution screening assay.
Results: Serum levels of TE-ADA were divided into negative, low, moderate, and high titer groups. At 12 wks, the vast majority of pts were TE-ADA negative (IXE Q2W: 91.0%; IXE Q4W: 86.6%). Additionally, among IXE Q2W and Q4W pts, respectively, 7.7% and 8.0% had low, 1.6% and 5.0% had moderate, and 1.7% and 2.4% had high TE-ADA titers. Efficacy at 60 wks was similar between titer groups. At 60 wks for IXE Q2W pts re-randomized to IXE Q4W during the period (12-60 wks) of 3 randomized, controlled trials (RCTs) and the maintenance period (12-60 wks) of 2 of the 3 RCTs with the same randomized, blinded design. The induction period analyses included ADA- evaluable pts randomized to 80 mg ixeikizumab every 2 wks with or without ADA. No safety findings were correlated to ADA.
Conclusions: Study data show LAS41008 provides benefits in both HrQoL and PGA during long-term treatment in patients with psoriasis.
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Lichen planus in a 12-year-old male with Noonan syndrome
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Lichen planus (LP) is a chronic inflammatory dermatosis of the skin and mucous membranes which is uncommon in children. We report a rare case of LP in a 12-year-old African American male with a history of Noonan syndrome (NS). Our patient presented with six months of extremely pruritic, flat-topped, purple-brown lesions involving his face and body. Histopathology revealed hyperkeratosis, hypergranulosis, a moderate irregular acanthosis, and a band-like infiltrate of lymphocytes and histocytes in the upper dermis. Based on clinical and histopathologic findings, diagnosis was consistent with LP. The patient was treated with clobetasol 0.05% ointment and fluocinolone 0.025% cream with improvement. The classic presentation of LP is uncommon in children, representing just 1-4% of cases. NS is an autosomal dominant genetic disorder involving the RAS-MAPK pathway that comprises characteristics such as short stature, facial dysmorphism, congenital heart defects, and learning disabilities. Dermatologic manifestations include woolly hair, abnormal pigmentation including multiple nevi, lentigines, and café au lait macules, and keratoderma pilaris. There are no known reports of concurrent LP and Noonan syndrome. This case highlights the presentation of a common disease in an uncommon population.

Commercial support: None identified.
Long-term effect of achieving PASI90 compared with PASI75 response on patient-reported outcomes in patients with moderate to severe psoriasis

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Background: The impact of psoriasis treatments on health-related quality of life (HRQoL) has become a topic of increasing importance when determining treatment algorithms.

Objective: This study assessed the long-term effect of achieving 90% reduction in the Psoriasis Area and Severity Index (PASI90) on patient-reported outcomes (PRO) in patients with moderate to severe psoriasis.

Methods: Pts from phase 3 trials (NCT00570986, NCT00679731, NCT00237887) who achieved ≥PASI75 in the short term (Week 12 or 16 depending on the primary trial endpoint) and maintained their response in the long-term (Week 52) were identified based on PRO data collected at 2 time points (baseline and Week 52). PROs included visual analog scales for skin pain (VAS-Pain) and pruritus (PRU), the Dermatology Life Quality Index (DLQI), and the physical/mental component summaries of the SF-36 Health Survey (PCS, MCS). PROs were compared between Week 52 PASI90 and PASI75 responders using multivariable regression, adjusting for baseline characteristics, corresponding baseline PRO score, and presence of short-term PASI90 responders.

Results: 849 pts were included in the analysis (PASI90/90 n = 526; PASI75/90–89 n = 131; PASI75/89–90 n = 122; PASI75/89–89 n = 70). Compared with PASI75/89–89 responders, PASI75/89–90 responders achieved significantly better long-term improvements in VAS-Pain (Δ = −4.5 vs 2.6; P < 0.05 vs 12) and DLQI (Δ = 0.18 vs 0.2) at Week 52. Compared with PASI75/89–89 responders, PASI90/90 responders had significantly better short- and long-term scores for VAS-Pain, PRU, and DLQI, and better long-term scores for PCS and MCS. After adjusting for baseline characteristics, the differences in PRO scores between PASI75/89–89 and PASI90 responders at Week 52 were statistically significant (all P < 0.05), although numerical differences were limited with regard to clinical meaningfulness. DLQI 0.6 v 2.8, VAS-Pain 3.1 v 12.2, PRU 0.7 v 2.2, PCS 53.8 v 52.6, and MCS 52.6 v 50.9, respectively.

Conclusions: Pts with psoriasis initially achieving and maintaining ≥PASI75 response have sustained improvements in skin pain, pruritus, and HRQoL. Pts achieving PASI90 responders experience incremental benefits over PASI75, but the long-term clinical meaningfulness of these benefits appears to be limited.

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3402
Metabolic syndrome and psoriatic arthritis among Brazilian patients with psoriasis vulgaris: Preliminary results of the BEYOND study

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Background: Previous studies suggest that psoriasis (PsO) is associated with risk of metabolic syndrome (MetS) and psoriatic arthritis (PsA), however, there are limited data regarding this issue in Latin America.

Objective: This preliminary analysis of BEYOND study aimed to examine the prevalence of MetS and PsA among Brazilian patients with plaque-type psoriasis.

Methods: BEYOND is a cross-sectional, multicenter study conducted in Brazil aiming to investigate the burden of disease in adult PsO patients. This subsample involved patients who underwent physical examinations to assess the PsA prevalence based on Classification Criteria for Psoriatic Arthritis (CASPAR), and MetS prevalence based on a modified version of National Cholesterol Education Program Adult Panel III criteria and by questions regarding history of cardiovascular diseases. Past medical history of PsA, MetS, and other cardiovascular comorbidities were also assessed by patient report.

Results: 64 patients were enrolled, who were predominantly men (53.1%), white (68.8%), retired (34.4%), completed high school (35.9%), and a mean age (SD) of 43.1 (11.8) years old. The prevalence of PsA according to CASPAR criteria was 45.1% (25/56); of these, 48.1% were newly diagnosed by the study. Regarding the most frequent CASPAR individual items observed, 88.2% had negative history for rheumatoid factor, 80.4% presenting radiologic evidence of joint/axial new bone formation, and 45.1% had inflammatory articular disease. A mean CASPAR score (SD) of 4.53 (0.87) was found in the study sample. The study specific procedures found a MetS prevalence of 54.1% (36/67) and the patients’ self-report of MetS diagnosis only 3.3% (2/64). The frequencies of cardiovascular comorbidities were: dyslipidemia (58.8%), hypertension (70.5%), obesity (50.8%) and diabetes (36.1%).

Conclusion: These findings suggest that MetS and PsA are underdiagnosed in this cohort of PsO patients. This emphasizes the importance of increase the awareness of these comorbidities among Brazilian medical community, in order to permit early diagnosis and adequate treatment.

The design, study conduct, and financial support for the BEYOND study were provided by AbbVie Brazil. AbbVie participated in the interpretation of the abstract. Tonya Goodman of Arbor Communications provided medical writing services.

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More rapid improvement in quality of life with fixed combination calcipotriene plus betamethasone dipropionate aerosol foam versus topical suspension (PSO-ABLE study in patients with psoriasis vulgaris)

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Background and objective: The phase III, PSO-ABLE study (NCT02132936) demonstrated superior efficacy with fixed combination calcipotriene 0.005% (Cal)/betamethasone dipropionate 0.06% (BD) aerosol foam at wk 4 vs Cal/BD topical suspension (susp) at wk 8, with comparable safety up to wk 12, in patients with psoriasis vulgaris (PsO) who were not eligible for the phase II study. The objective of this post hoc analysis was to further evaluate the difference in improvement in health-related quality of life (HRQoL) that was observed.

Methods: The design, study conduct, and financial support for the study/trial were provided by AbbVie. AbbVie participated in the interpretation of data, review, and approval of the publication.

Conclusion: In PSO-ABLE, Cal/BD aerosol foam improved HRQoL more rapidly than Cal/BD topical suspension, in pts with psoriasis vulgaris.

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Network metaanalysis and cost per responder of tumor necrosis factor, interleukin, and phosphodiesterase inhibitors in the treatment of psoriatic arthritis (PDE-4 inhibitor).

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Objective: Multiple disease-modifying therapies are available to treat psoriatic arthritis (PsA) including anti-TNF and interleukin inhibitors and a phosphodiesterase (PDE-4) inhibitor. We conducted a network metaanalysis (NMA) to indirectly compare the efficacy and cost per responder (CPR) of these therapies.

Methods: A systematic literature review was used to identify Phase III randomized controlled trials (RCTs) of biologics (adalimumab [ADA], certolizumab pegol [CZP], canakinumab [CAN], etanercept [ETN], golimumab [GOL], infliximab [IFX], secukinumab [SEC], ustekinumab [UST]) and PDE-4 inhibitor (apremilast [APR]) for PsA. Efficacy was estimated as the probabilities of achieving ACR20 and PASI75 at week 24 by a Bayesian NMA. FDA-approved dosages were used and for the investigational product, SEC and 150 mg Q4W were used. Numbers needed to treat (NNT) for each therapy were calculated as the reciprocal of incremental response rate of each therapy versus placebo. Comparisons were made in terms of cost per incremental ACR20 or PAS75 responder. Drug costs were based on Wholesale Acquisition Cost (July 20, 2015), and IFX 4-hour infusion cost was obtained from Medicare payment information. Analyses were repeated among subgroups of biologic-naive patients.

Results: A total of 17 RCTs were identified, 15 included ACR20 and/or PAS75 at week 12, 11 inclusive of ACR20 at week 24 were 2.3 (95% credible interval 1.8–2.8) for ADA, 2.3 (1.7–3.4) for GOL, 2.3 (1.8–3.5) for SEC 300 mg, 2.7 (1.8–4.3) for IFX, 3.0 (2.3–4.0) for UST 45 mg, 3.4 (2.6–4.7) for UST 90 mg, 5.7 (3.7–9.2) for UST 45 mg, and 6.3 (4.4–9.4) for APR. The NNT for PAS75 at week 24 were 1.5 (1.2–2.0) for GOL, 1.5 (1.2–1.9) for IFX, 1.6 (1.3–2.1) for ADA, 1.7 (1.3–2.5) for SEC 300 mg, 2.1 (1.6–3.2) for UST 90 mg, 2.5 (1.7–3.5) for SEC 150 mg, 2.5 (1.8–3.1) for UST 45 mg, 2.7 (1.9–4.0) for APR. The 24-week ACR20/PASI75 CPR were estimated at $44,618/$30,536 for ADA, $45,609/$30,184 for GOL, $55,222/$30,133 for IFX, $61,775/$125,299 for ETN, $70,951/$61,910 for CZP, $77,241/$54,422 for SEC 300 mg, $77,407/$81,836 for APR, $97,845/767,775 for SEC 150 mg, $139,922/$56,105 for UST 45 mg and $221,745/$101,004 for UST 90 mg. NNT and CPR results were similar for biologic-naive patients.

Conclusion: At week 24, ADA, GOL, and IFX had the lowest incremental CPR for both ACR20 and PAS75.

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Occlusivity and moisturization potential of a new lotion formulation of halobetasol propionate, 0.05%

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When a topical treatment for psoriasis and other corticosteroid-responsive dermatoses is indicated, patients often prefer a lotion to a cream. However, lotions are perceived to be less occlusive, and consequently less hydrating, than creams. Therefore, since ultratopical corticosteroids are a cornerstone of such topical treatments, a novel lotion formulation of halobetasol propionate, 0.05% (HBP lotion) that provides the beneficial occlusion and moisturization of a cream was developed. The objective of this study was to determine and compare the occlusivity and moisturization potential of HBP lotion and ultrate (HBP) cream when applied to skin in barrier integrity. Data were gathered using a randomized double-blind cross-over study in 16 healthy volunteers (aged 18-55 years). On Day 1, the stratum corneum barrier was challenged by dry shaving the skin surface of both volar forearms with a disposable razor and six test sites (3/arm; area = 25 cm²) were identified. 2 sites each for HBP lotion, ultrate cream, and dry-shaved controls. On Day 2, transepidermal water loss (TEWL) and conductance measurements were performed. Then, a single application of ~100 mg of each test article was applied to the designated test sites of the volar forearms in duplicate, and was maintained in situ for 6 hours by protecting the arms with a raised perforated guard secured with nonocclusive tape. TEWL and conductance measurements were performed 2, 4, and 6 hours postapplication of the test articles. TEWL values did not vary between HBP lotion and ultrate cream (2h: P = 12.4h: P = 0.8h: 0.37), which suggests that the two HBP formulations provide similar occlusivity and can participate equally in the management of dry and inflammatory skin conditions. Additionally, HBP Lotion treatment resulted in significantly greater conductance compared to: (1) dry-shaved controls at all time points (each, P < 0.001) and (2) ultrate cream at 2h and 4h (each, P < 0.001). Both HBP lotion and ultrate cream improved skin moisturization at 6h. However, at 2h, ultrate cream showed a more rapid improvement in moisturization potential compared to HBP lotion. Furthermore, the occlusivity of HBP lotion was maintained for at least 6 hours. In conclusion, HBP lotion provides the occlusivity and moisturization potential that is comparable to ultrate cream and may be a suitable alternative for patients who prefer to use a cream instead of a lotion. Supported 100% by Fermadale Laboratories.

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One-year biologic cost per patient with psoriatic diseases in a managed care population

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Background: The rising health care cost in specialty pharmacy has led providers to place economic factors into treatment decisions. Current evidence on biologic costs is lacking for some diseases.

Objective: To determine the annual drug and administration cost of US-approved biologics per patient with psoriasis (PsO) and/or psoriatic arthritis (PsA) in a managed care population comprising beneficiaries predominantly enrolled in a large managed Medicare health plan.

Methods: This is a retrospective cohort study using administrative data for individuals in the HealthCore Integrated Research Database (HIRDSM). The cohort included patients initiating a tumor necrosis factor inhibitor (TNFi) ([ETN]: adalimumab, [ADA], etanercept [ETN], golimumab [GOL], infliximab [INF]) or a non-TNFi (ustekinumab [UST]) between July 1, 2009 and Jan 31, 2011. Patient entry criteria were age ≥18, continuous enrollment during the 180 days prior to and 360 days postindex, and PsO and/or PsA diagnosis in the 6 months preindex. The index event date was defined as the biologic’s following 6 months of enrollment. Unit biologic and administration costs as of Jan 1, 2015 were applied to the real-world dosing and administration data to calculate annual per patient costs. Costs were inflation-adjusted by the median annual medical utilization cost.

Results: A total of 8981 patients with PsO and/or PsA met the eligibility criteria ([ADA]: n = 3,161; [ETN]: n = 4,721; [GOL]: 94; [INF]: n = 547; [UST]: 458; mean age 41.42% female). Among new users (n = 4093), non-TNFi users ([UST]) had numerically greater cost per patient ($36,745) compared with TNFi users ([ADA]: $27,949; [ETN]: $28,064; [GOL]: $26,046). Among established users (n = 4888), the cost per patient for non-TNFi users ($28,771) was within the cost range of the TNFi users ([ETN]: $28,125; [INF]: $31,813). ADA had numerically greater cost than each of the TNFi agents in both new ($36,574 vs $35,985) and established users ($35,823 vs $33,793) with [INF] vs [UST], respectively.

Conclusion: Although similar annual biologic cost per patient may be expected among established users of TNFi and non-TNFi, new TNFi users were found to incur at least 22% greater annual cost than new TNFi users. Age, stage cost varied considerably across psoriatic indications and individual agents.

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Oral Candida colonization: A case-control study in Asian patients with psoriasis

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Background: Various microorganisms including bacteria, virus, and fungi can act as superantigens to activate specific T cells and initiate the pathogenic cycle of psoriasis. The linkage between Candida and psoriasis has been investigated since 1990; however, data on oral Candida colonization in patients with psoriasis especially in Asian patients are limited and inconclusive.

Objective: This prospective study was aimed to investigate oral Candida colonization in patients with psoriasis in comparison with demographically matched healthy controls.

Methods: Sixty patients with psoriasis aged older than 18 years were recruited to closely match with sixty healthy controls for age and gender. All participants were recruited from the same geographic region (Bangkok, Thailand). Specimens were collected using oral rinse and tongue swab techniques to identify Candida colonization in oral cavity.

Results: Each group consisted of 28 men and 32 women. At the time of the study, 27 (45.0%) patients used only topical treatment and the remaining of the patients (55%) were on systemic treatment including methotrexate, acitretin, cyclosporine, and other biologics. The majority of pts ever-exposed only to ADA and/or ETA(based on pt-reported use) chose a 1-2 week dosing interval(26.4% and 29.6%); every 1-2 weeks(5.1% and 8.6%); every 1-2 months(20.7% and 22.2%) and every 3 months(27.8% and 22.2%) for those ever-exposed to UST respectively. The majority of pts ever-exposed to UST chose a 2-3 month dosing interval(20.4% and 21.6%); every 1-2 months(15.0% and 17.2%); every 3 months(16.2% and 22.2%); every 6 months(14.8% and 20.0%), and every 12 months(15.0% and 15.0%) for those ever-exposed to UST respectively. The majority of those with any UST experience chose every 1-2 weeks(35.0% and 40.0%) and every 4 weeks(24.4% and 28.8%). The majority of pts ever-exposed to UST chose a 2-3 month dosing interval(20.4% and 21.6%); every 1-2 months(15.0% and 17.2%); every 3 months(16.2% and 22.2%); every 6 months(14.8% and 20.0%), and every 12 months(15.0% and 15.0%) for those ever-exposed to UST respectively. The majority of those with any UST experience chose every 1-2 weeks(35.0% and 40.0%) and every 4 weeks(24.4% and 28.8%). Statistical analysis showed that the difference in drug survival between adalimumab and infliximab was statistically significant. Patients with PsA in general demonstrated significantly greater rates of drug survival (P = .001). Patients with comorbidity in general demonstrated a significantly shorter drug survival compared with patients without comorbidity (P = .033).

Conclusion: Psoriatic patients had significantly higher prevalence of oral Candida colonization than healthy controls. The presence of oral candidiasis was significantly associated with the use of systemic treatments. Further studies are warranted to determine the clinical significance of Candida colonization in patients with psoriasis.

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Pityriasis lichenoides chronica induced by adalimumab in a patient with psoriasis with response to methotrexate

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Introduction: Tumor necrosis factor alpha (TNFα) inhibitors have been demonstrated to be effective in treating immunemediated inflammatory diseases, such as psoriasis, rheumatoid arthritis and inflammatory bowel disease. However, these biologicals may induce infections, neoplasms, or autoimmune diseases. Cutaneous side effects have been reported, including dermatitis, psoriasis-like rash, vascularitis, keratoid folliculitis, dermatitis herpetiformis, alopecia, folliculitis, periorificial erythema, and candida annularis and sarcoidosis. Until now, there is only one report describing the appearance of pityriasis lichenoides chronica (PLC) in association with adalimumab treatment in a patient with severe psoriasis. We report the first cases of pityriasis lichenoides chronica (PLC) developed while on adalimumab and successfully treated with methotrexate.

Case report: A 45-year-old man hypertensive, diabetic and no drug allergies, with a history of severe, recalcitrant psoriasis for which he received biologic treatments (ustekinumab and etanercept) without control of the disease. He started adalimumab and within the second month, there was significant clinical improvement.

However, 10 weeks after commencing treatment, he developed new cutaneous lesions consisting of erythematous papules, with central scaling, affecting the trunk, the buttocks, and extremities, sparing the face, palms, and soles. These were asymptomatic and did not coincide with intercurrent illness or other known pharmacologic therapy. Microscopic examination of a skin biopsy showed findings consistent with PLC. No clonal rearrangement of the TCR was detected. It was decided, on the assumption of a synergistic action, to start methotrexate (MTX) therapy (15 mg/week) and adalimumab was continued because of the severity of psoriasis. Complete remission was achieved in 6 weeks with residual pigmentation and bowel disease was controlled. This was discontinued but 15 days later PLC recurred and MTX was again introduced and led to new remission.

Discussion: The pathogenesis of PLC is not well understood. However, CD4+ T helper cells are heavily implicated, and alterations in T-cell function and cytokine production, secondary to TNF inhibition, may be responsible for triggering the disease. The treatment of PLC relies on antibiotics and/or phototherapy. In case of failure, immunosuppressants are recommended. The course of PLC is variable; spontaneous remission is possible. MTX is effective for PLC, and represents an interesting therapeutic option because of the synergistic action of MTX and TNFα inhibitors in psoriasis.

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Predicting PASI90 response among adalimumab-treated patients with moderate to severe psoriasis

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Objective: A 90% reduction from baseline on the Psoriasis Area and Severity Index (PASI) has been used to assess the effectiveness of biologic treatments in psoriasis. This study compared PASI90 response between patients with psoriasis who were treated with adalimumab and placebo, and identified predictors of PASI90 response among the adalimumab-treated patients.

Methods: Patients with moderate to severe psoriasis who were randomized to adalimumab or placebo in 2 phase 3 clinical trials were included in the analyses (REVEAL, NCT00278788; CHAMPION, NCT00255820). The double-blind follow-up period in both studies was 16 weeks. The cumulative rate of achieving PASI90 response was compared between adalimumab and placebo arms using Kaplan-Meier analysis and a logrank test. A subgroup analysis was conducted for patients achieving PASI50 at any time during the 16 week follow-up period. A baseline predictive model for achievement of PASI90 response at Week 16 was developed among patients receiving adalimumab in REVEAL and validated using independent data from CHAMPION.

Results: In the pooled trial population (adalimumab n = 921; placebo n = 451), the mean age was 44 years and 67% were male. The cumulative rate of PASI90 response by Week 16 was 53.6% for adalimumab and 4.1% for placebo (P < 0.001). Among patients achieving PASI50, which occurred for 90.2% receiving adalimumab and 24.5% receiving placebo, the cumulative rate of PASI90 achievement by week 16 was 65.5% for adalimumab and 25.0% for placebo (P < 0.001). In data from adalimumab-treated patients in REVEAL (n = 787), significant predictors of PASI90 response included younger age (odds ratio per year [OR] 0.98), male gender (OR 1.40), and lower weight (<75 kg, OR 3.09; 75–100 kg, OR 2.66; reference >125 kg). The model provided moderate predictive value (C statistic 0.65) when validated among adalimumab-treated patients in CHAMPION (n = 104).

Conclusions: The majority of adalimumab-treated patients achieved PASI90 response, with those adalimumab-treated patients achieving PASI50 nearly two-thirds ultimately achieved a PASI90 response. In contrast, fewer than a quarter of placebo-treated patients with a PASI50 response achieved a PASI90 response. Younger age, male gender, and lower weight were associated with a greater chance of achieving PASI90 with adalimumab.

Design, study conduct, and financial support for the study were provided by AbbVie. Abbvie participated in the interpretation of data, review, and approval of the abstract; all authors contributed to the development of the publication.

Predictors of response to tofacitinib or etanercept in a phase 3 randomized, noninferiority study in patients with moderate to severe chronic plaque psoriasis

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Background: Tofacitinib is an oral Janus kinase inhibitor that is being investigated for the treatment of moderate to severe chronic plaque psoriasis.

Methods: In this post hoc analysis of data from OPT Compare (NCT01241591), efficacy at 12 weeks of tofacitinib (10 mg BD) vs etanercept (50 mg BIW) was evaluated and in subgroups according to the following baseline characteristics: age, gender, race, geographic region, PASI, PGA, affected BSA, weight, BMI, and treatment duration. Descriptive statistics for differences (and 95% CIs) in the percentage of PASI75 responders between the tofacitinib and etanercept groups were compared.

Results: Of the 1101 patients enrolled in this study who received study medication/placebo, 380 and 355 received tofacitinib 10 mg BD and etanercept 50 mg BIW, respectively. Baseline characteristics were similar between these two treatment groups: most patients were male (70–72%) and white (86–87%). Mean body weight was 85–89 kg, mean PASI score was 23 in both groups, mean affected BSA was 31–32%. In addition, 39–49% had received prior systemic agents, and 72% in both groups had received prior phototherapy. Overall, PASI75 and PASI90 responses at Week 12 were achieved by 63.6% and 36.1% of tofacitinib recipients and 58.8% and 32.2% of etanercept recipients, respectively. The percentage of PASI75 responders at Week 12 was similar between the tofacitinib and etanercept groups when analyzed by age, race, geographic region, baseline PASI, PGA, affected BSA, weight, BMI, and treatment duration. Descriptive statistics for differences (and 95% CIs) in the percentage of PASI75 responders between the tofacitinib and etanercept groups were compared.

Conclusion: Tofacitinib 10 mg BD was noninferior to etanercept vs etanercept were females (difference 16.6%, 95% CI 3.1%, 30.1%); heavier patients (90 to 120 kg; difference 13.3%, 95% CI 0.45%, 26.2%); and patients with higher BMI (30 to 40 kg/m²; difference 0.3 mg/dL; difference 12.8%, 95% CI 1.6%, 24.0%); and patients with higher baseline CRP (≥0.3 mg/dL; difference 12.8%, 95% CI 1.6%, 24.0%); and white (86–87%). Mean body weight was 85–89 kg, mean PASI score was 23 in both groups, mean affected BSA was 31–32%. In addition, 39–49% had received prior systemic agents, and 72% in both groups had received prior phototherapy. Overall, PASI75 and PASI90 responses at Week 12 were achieved by 63.6% and 36.1% of tofacitinib recipients and 58.8% and 32.2% of etanercept recipients, respectively. The percentage of PASI75 responders at Week 12 was similar between the tofacitinib and etanercept groups when analyzed by age, race, geographic region, baseline PASI, PGA, affected BSA, and treatment history. Subgroups with higher PASI75 response at Week 12 to tofacitinib vs etanercept were females (difference 16.6%, 95% CI 3.1%, 30.1%); patients with higher CRP (≥0.3 mg/dL; difference 12.8%, 95% CI 1.6%, 24.0%); heavier patients (90 to <120 kg, difference 15.3%, 95% CI 0.45%, 26.2%); and patients with higher baseline BMI (30 to <40 kg/m²; difference 15.9%, 95% CI 6.8%, 32.3%). No subgroup of patients responded better to etanercept than tofacitinib.

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3106 Pregnancy outcomes in women with psoriasis and psoriatic arthritis treated with ustekinumab
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Background: Ustekinumab (UST) is indicated for moderate to severe psoriasis (PSO) and psoriatic arthritis (PsA) in adult patients, with a Food and Drug Administration pregnancy class B designation. No adverse developmental outcomes (pre- and postnatal) were observed in preclinical (animal) studies of UST, and limited published data exist concerning the effects of UST on human pregnancies. Studies have suggested PSO may be a potential risk factor for adverse pregnancy outcomes. To characterize pregnancy outcomes in women treated with UST for approved indications, data from clinical trials, registries, and spontaneous reports are presented.

Methods: This dataset includes individual patient cases within the company safety database through 31 December 2014. Cases retrieved include prospectively reported first trimester pregnancy outcomes not previously known when first reported and retrospectively reported (ie, pregnancy outcome known when first reported) cases with maternal UST use for PSO or PsA during pregnancy or within 2 months prior to conception and with a known pregnancy outcome.

Results: Eighty-seven pregnancy reports (86 PSO, 2 PsA, some cases may report >1 indication, 58 prospective, 29 retrospective) were identified. Average maternal age was 31 years. Of the 87 reports, the majority of pregnancies (57/87, 65.5%) resulted in live births (LB, including 3 premature births). Congenital anomalies (CA) were reported in 28/87 (31.5%) cases. Spontaneous abortion (SA) was reported in 16 pregnancies (18.4%). Elective termination (ET) was reported in 14 pregnancies (16.1%). Of the 87 pregnancy reports, 16 reported exposure to UST in first trimester (2.3%), 2 in second trimester (0.5%), and 2 in third trimester (0.2%). Of 57 reported exposure in the first trimester: 23 LBs (including 3 premature), 6 SAs, and 8 ETs.

Conclusion: Review of pregnancy outcomes after maternal exposure to UST for PSO and PsA indicates 87 pregnancies with known outcomes: 57 LBs (including 3 premature) and 1 CA. The rate of SAs was generally comparable to the literature, SAs in this case series were associated with older maternal age (34.42 ± 4.66 years) was 5.2%. Male to female ratio was 1.4:1. Most of the patients were private.
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**Psoriatic arthritis mimicking SLE**

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A 40yo female presented with new onset unusual rash 6 weeks after beginning adalimumab. Her psoriasis had been controlled on acitretin, but due to lipids and liver abnormalities, a decision was made to switch treatment. Hepatitis C and alcohol consumption precluded use of methotrexate, and a decision was made to pursue biologics. Upon induction, she developed large red annular and polycyclic plaques on the trunk and forearms. Most had central clearing with a trailing edge of scale, and most were studded with pinpoint pustules. Labs were significant only for a stable but elevated alkaline phosphatase and positive anti nuclear antibody (1600 titer). Anti-double-stranded DNA, anti-SSA/Ro, anti-SSB/La, antinuclear antibodies, and anti-Smith antibodies were negative. A biopsy taken from one of these plaques revealed a superficial perivascular lymphocytic infiltrate, along with mounds of parakeratosis containing neutrophils, some extending beneath in a spongiform pattern. There was significant spongiosis, with irregular epidermal hyperplasia. Taken together, a diagnosis of psoriatic psoriasis was made. Drug-induced subacute cutaneous lupus erythematosus (DSCLES) presents clinically and histopathologically in a manner similar to idiopathic SCE, with photosensitive symptomatic, nonscarring annular and polycyclic, papulosquamous lesions, usually on sun-exposed skin. The characteristic plaques with trailing scale of SCE were pronounced in this case, however, a predominant involvement in sun-protected areas and findings of pustules within the plaques were unusual, and more typical of psoriasis. Interestingly, the psoralen variant of psoriasis is the most common subtype in patients receiving adalimumab for conditions other than psoriasis. Histologically, SCE is typified by basal layer vacuolar degeneration and thinning of the epidermis, neither of which was seen in this case. In contrast to the idiopathic form, systemic involvement in DSCLES is rare. In one study, 70/90% of patients had anti-Ro/SSA and anti-Sm antibodies, and up to 45% of cases were positive for antihistone antibodies. Patients on TNF-alpha inhibitors were 8x more likely to develop SCE compared to age- and sex-matched controls. The mechanism by which this patient's paradoxical SCE-like psoriasis flare while on treatment with an agent known to induce SCE is unclear, and evidence in the literature to support this occurrence is lacking.

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**Reduction in C-reactive protein levels with adalimumab therapy in patients with moderate to severe hand and/or foot psoriasis**

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**Introduction**: C-reactive protein (CRP) is a biomarker of systemic inflammation and predictor of cardiovascular risk. We evaluated post hoc the relationship between adalimumab (ADA) therapy and high sensitivity (hs)CRP levels in patients with moderate to severe hand and/or foot psoriasis from the 16-week placebo (PBO) controlled period of a phase 4 randomized trial (REACH).

**Methods**: Patients were randomized 2:1 to ADA 40 mg every other week (following 80 mg at week 0) from weeks 1–15 or matching PBO, followed by a 12-week, open-label extension. The primary endpoint was the proportion of patients achieving Physician’s Global Assessment of hands and/or feet (hiPGA) 0/1 (clear or almost clear) at week 16. In this post hoc analysis, changes in hs-CRP were measured as observed from baseline to week 16 among patients treated with ADA versus PBO. The impact of baseline characteristics (history of psoriatic arthritis [PsA] and body mass index [BMI]) and hiPGA responses on changes in hs-CRP levels were also evaluated.

**Results**: 72 patients (23 PBO, 49 ADA) were included in the analyses, for 63 patients (19 PBO, 44 ADA) hiCRP measurements were available both at baseline and at week 16. Despite a relatively low body surface area (BSA) % involvement (mean 7.7), median hs-CRP levels at baseline among patients with hand and/or foot psoriasis were 1.6 mg/L (PBO n = 19) and 2.2 mg/L (ADA n = 44). At week 16, overall median changes in hs-CRP were +0.10 mg/L (PBO n = 19) and 0.55 mg/L (ADA n = 44). Analyzed by hiPGA response at week 16, median changes in hs-CRP for hiPGA 0/1 responders were 0.0 mg/L (PBO n = 1) and 0.80 mg/L (ADA n = 14); and for non-responders, +0.30 mg/L (PBO n = 15) and 0.40 mg/L (ADA n = 23). The baseline median hs-CRP level was greater for patients with history of PsA (5.5 mg/L, n = 6) compared with those without PsA (1.8 mg/L, n = 57). At week 16, median changes in hs-CRP for patients with PsA were 2.35 mg/L (ADA n = 6) (no patients with a PsA history had been randomized to PBO); and without PsA were +0.10 mg/L (PBO n = 19) and +0.40 mg/L (ADA n = 38). Median hs-CRP levels were also reduced with ADA therapy regardless of baseline BMI.

**Conclusions**: Patients with moderate to severe hand and/or foot psoriasis, particularly those with PsA, had elevated hs-CRP levels at baseline despite low BSA involvement. Treatment with ADA 40 mg every other week resulted in greater reductions in hs-CRP levels among these patients compared with PBO regardless of baseline characteristics.

The authors and AbbVie scientists designed the study, and analyzed and interpreted the data. AbbVie funded the research and provided writing support. All authors contributed to the development of the content; all authors and AbbVie reviewed and approved the abstract.

**Commercial support**: None identified.
Relationship of serum vitamin D with psoriasis severity and adalimumab response in Chinese patients with moderate to severe plaque psoriasis from a phase 3, randomized, placebo-controlled, double-blind study

Introduction: There is a paucity of data assessing serum 25-hydroxyvitamin D (25[OH]D) levels in Chinese patients with moderate to severe psoriasis. In a phase 3 adalimumab (ADA) trial of Chinese patients with moderate to severe psoriasis, we examined post hoc if screening 25[OH]D levels correlated with baseline disease severity and responsiveness to ADA.

Methods: This multicenter study included a 12-week, double-blind, placebo (PBO)-controlled period (Period A) followed by a 12-week open-label period. Period A patients were randomized 4:1 to ADA 40 mg every other week following an initial 80 mg dose, or matching PBO. Serum 25[OH]D levels and PASI scores were measured at screening. Patients did not receive Vitamin D supplement. We calculated the Pearson correlation coefficient between screening 25[OH]D and screening PASI scores, and between screening 25[OH]D and % change of PASI from screening to week 12. Patients were subdivided into 4 quartiles based on their screening 25[OH]D levels. Adjusted treatment effects (PBO vs ADA) were compared by controlling for these quartiles as strata using Cochran-Mantel-Haenszel test.

Results: Of 425 ITT patients in Period A, 75.4% were men; all were Asian; mean age was 43.2 years; mean disease duration was 15 years. 25[OH]D levels and PASI scores were available for all ITT patients (87 PBO, 338 ADA). The mean screening 25[OH]D was 41.9 nmol/L (standard deviation [SD] 19.29) for PBO, and 45.1 nmol/L (SD 22.98) for ADA. The mean PASI score at screening was 25.3 (SD 8.85) for PBO and 27.7 (SD 8.85) for ADA, and at baseline, 25.6 (SD 10.98) for PBO and 28.2 (SD 12.00) for ADA. The PASI75 response rate at week 12 was 77.8% for ADA vs 11.5% for PBO (P < .001). The correlation coefficients between screening 25[OH]D and screening PASI scores were −0.082 (P = 0.92), and between screening 25[OH]D and % change of PASI scores from screening to week 12, 0.001 (P = 0.985). Significant correlation between 25[OH]D levels and PASI scores was not observed. In all 4 screening 25[OH]D quartiles, significantly (P < 0.001) more ADA-treated patients vs PBO achieved PASI75 response: 75.9% ADA vs 16.7% PBO (treatment difference 59.2% in the lowest quartile; 79.3% ADA vs 21.1% PBO [treatment difference 58.3%] in the highest.

Conclusion: ADA was effective in the treatment of Chinese patients with moderate-severe psoriasis. This analysis revealed no impact of serum 25[OH]D levels on psoriasis disease activity or on responsiveness to ADA treatment.

AbbVie Inc funded the study and participated in the study design, study research; collection, analysis and interpretation of data; and writing, reviewing and approving of this publication.

Relative efficacy and costs per responder for adalimumab versus secukinumab in the treatment of moderate to severe psoriasis

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Objective: With availability of multiple biologics for moderate to severe psoriasis, comparative effectiveness research has utility in clinical decision making. Without head-to-head studies, a need exists to determine relative efficacy among biologics accounting for differences in study populations. This study compared relative efficacy and resultant cost per responder between adalimumab (ADA) and secukinumab (SEC).

Methods: An indirect comparison was conducted using patient-level data from an ADA trial (REVEAL) and published aggregate data from the pivotal SEC trials. To adjust for cross-trial differences, individual patients in ADEPT were re-weighted to match the mean baseline characteristics in the FUTURE trials. Specifically, age, weight, gender, race, baseline methotrexate use, psoriasis body surface area, baseline PASI score, presence of dactylitis and enthesis, and HAQ-DI were included in the baseline matching. The ACR 20/50/70 and PASI 75/90 response rates relative to placebo at week 24 were compared. Numbers needed to treat (NNTs) to achieve one additional ACR 20 and PASI 75 responder were also calculated.

Results: After matching, mean baseline characteristics were balanced across the ADEPT and FUTURE 1 and 2 trial populations. Compared to SEC 150 mg, ADA demonstrated higher relative ACR 20/50/70 (mean differences: 9.5% [-4.3%, 23.3%], 3.0% [-0.1%, 16.0%], and 6.0% [-4.4%, 16.5%], respectively) and PASI 75/90 response rates (13.1% [-0.5%, 26.7%] and 6.7% [-6.4%, 19.9%]), respectively. Similarly, ACR 20/50/70 and PASI 75/90 were higher with ADA compared to SEC 300 mg (mean difference: 5.3% [-10.3%, 20.8%], 6.2% [7.7%, 20.2%], 6.0% [5.6%, 17.6%], and 7.3% [-1.0%, 24.7%], respectively). The NNTs to achieve one additional ACR 20 responder were 2.3 for ADA vs 3.0 for SEC 150 mg and 2.7 for SEC 300 mg. The NNTs to achieve one additional PASI75 responder were also lower for ADA (1.7 y SEC 150 mg (2.2) and SEC 300 mg (1.9).

Conclusions: In the absence of head to head trials comparing ADA and SEC, the current indirect comparison which adjusts for differences across trial populations provides valuable evidence for physicians and payers. After adjusting for cross-trial differences in baseline characteristics, ADA was associated with higher relative ACR and PASI rates and lower NNTs compared with SEC 150 mg or 300 mg at week 24 among patients with PsA.

Relative efficacy of adalimumab versus secukinumab in active psoriatic arthritis: A matching-adjusted indirect comparison

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Objective: The phase 5 FUTURE I and FUTURE II trials demonstrated efficacy of secukinumab (SEC) for active psoriatic arthritis (PsA). However, there are limited data comparing the effectiveness of SEC with established PsA treatments. This study compared the relative efficacy of adalimumab (ADA) 40 mg versus SEC 150 mg and 300 mg for the treatment of PsA.

Methods: An indirect comparison was conducted using individual patient data from the ADA pivotal trial (ADEPT) and published data from FUTURE I and 2. To adjust for cross-trial differences, individual patients in ADEPT were re-weighted to match the mean baseline characteristics in the FUTURE trials. Specifically, age, weight, gender, race, baseline methotrexate use, psoriasis body surface area, baseline PASI score, presence of dactylitis and enthesis, and HAQ-DI were included in the baseline matching. The ACR 20/50/70 and PASI 75/90 response rates relative to placebo at week 24 were compared. Numbers needed to treat (NNTs) to achieve one additional ACR 20 and PASI 75 responder were also calculated.

Results: After matching, mean baseline characteristics were balanced across the ADEPT and FUTURE 1 and 2 trial populations. Compared to SEC 150 mg, ADA demonstrated higher relative ACR 20/50/70 (mean differences: 9.5% [-4.3%, 23.3%], 3.0% [-0.1%, 16.0%], and 6.0% [-4.4%, 16.5%], respectively) and PASI 75/90 response rates (13.1% [-0.5%, 26.7%] and 6.7% [-6.4%, 19.9%]), respectively. Similarly, ACR 20/50/70 and PASI 75/90 were higher with ADA compared to SEC 300 mg (mean difference: 5.3% [-10.3%, 20.8%], 6.2% [7.7%, 20.2%], 6.0% [5.6%, 17.6%], and 7.3% [-1.0%, 24.7%], respectively). The NNTs to achieve one additional ACR 20 responder were 2.3 for ADA vs 3.0 for SEC 150 mg and 2.7 for SEC 300 mg. The NNTs to achieve one additional PASI75 responder were also lower for ADA (1.7 y SEC 150 mg (2.2) and SEC 300 mg (1.9).

Conclusions: In the absence of head to head trials comparing ADA and SEC, the current indirect comparison which adjusts for differences across trial populations provides valuable evidence for physicians and payers. After adjusting for cross-trial differences in baseline characteristics, ADA was associated with higher relative ACR and PASI rates and lower NNTs compared with SEC 150 mg or 300 mg at week 24 among patients with PsA.

Design, study conduct, and financial support for the study were provided by AbbVie. AbbVie participated in the interpretation of data, review, and approval of the abstract. All authors contributed to the development of the publication.
Background: Psoriasis is a chronic, immune-mediated inflammatory disease that affects approximately 3% of the US population and can be associated with serious comorbidities including obesity, diabetes, cardiovascular disease and other autoin- mune diseases. Secukinumab, a first-in-class IL-17A inhibitor, was recently approved for treatment of severe plaque psoriasis in the US, EU, and other countries around the world. While clinical trial data capture efficacy and safety for an average of 12 months under controlled circumstances, long-term data are still limited. Large long-term prospective registries will help to determine the treatment safety and effectiveness in the real world, and help improve clinical decision-making.

Methods: The Corrona Psoriasis registry was launched in April 2015 in collaboration with the National Psoriasis Foundation (NPF) to study the comparative safety of approved systemic psoriasis therapies in a national cohort of patients in a real world setting. Secondary objectives include analyses of epidemiology, comorbidities, treatment practices, and comparative effectiveness. The registry is designed as a prospective, multicenter, observational registry for patients with psoriasis. Eligibility criteria for enrollment include: ≥18 years of age, dermatologist-diagnosed psoriasis, and initiating or switching to a systemic therapy in the previous 12 months. Systemic therapy includes FDA-approved biologic and nonbiologic (methotrexate, cyclosporine, and apremilast only) treatments for psoriasis. Data are collected from both the participating dermatologist and patient approximately every 6 months during regular outpatient visits. The Registry collects data on patient demographics, lifestyle factors, comorbidities, medication use, adverse events, and detailed Physician and patient assessments including Psoriasis Area Severity Index (PASI), Investigator Global Assessment (IGA), body surface area (BSA), Dermatology Life Quality Index (DLQI), EQ-5D, and Work Productivity and Activity Impairment measures.

Results: Corrona and the NPF plan to recruit approximately 200 sites within the US with a target enrollment of 10,000 patients and an expected follow-up duration of at least 8 years.

Conclusions: This registry will establish a real-world database of the patient population and contribute to the clinical knowledge base of psoriasis research. Corrona is actively recruiting dermatology sites who are interested in participating in this registry.

This study is supported by Corrona, LLC. Initial funding for this registry is provided by AbbVie Pharmaceutical Corporation. Corrona, LLC has been supported through contracted subscriptions in the last two years by AbbVie, Amgen, AstraZeneca, BMS, and others.

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Response of persistent juvenile pityriasis rubra pilaris to secukinumab
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A 5-year-old white female presented with a generalized variably pruritic eruption present since the age 2. No other immediate family members were similarly affected. Physical examination revealed sharply marinated generalized orange-red plaques confluent on trunk with discrete islands of sparing on the face, neck, and extremities. This clinical picture and the diagnosis was confirmed with a skin biopsy revealing acanthosis with granular layer hyperplasia, subacanthotic parakeratosis, fusiform elongation of rete, edema, and a moderately dense inflammatory infiltrate. Treatment consisted of 1% coal tar/2% salicylic acid shampoo for scalp, tacrolimus only at night, and an emollient cream several times a day. 4 weeks later, PASI score was 90% improvement for face plaques and 60% for body lesions. Topical treatment was continued, switching to calcipotriol/betamethasone dipropionate ointment at night for one month and then every other day. After 4 months of treatment, complete remission occurred and patient continued to be free of disease at one year of follow-up.

Discussion: There are rare case reports of hyperkeratotic psoriasis, of which only one report reveals juvenile patient. Previous topical treatments in our patient including auranofin and intramuscular injections of auranofin and intramuscular injections of auranofin and oral infliximab for nail involvement have all been typically described in these patients. There are only six case reports of varicella infection followed by guttate or plaque psoriasis. This is the first known report of rupioid psoriasis secondary to a varicella primary infection that presented as Koebner phenomenon in a pediatric patient.

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Safety and efficacy of adalimumab in combination with different doses of methotrexate in patients with psoriatic arthritis: Subanalysis of ADEPT
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Introduction: The ADEPT study demonstrated that adalimumab (ADA) treatment reduced disease activity in patients (pts) with psoriatic arthritis (PsA) (Mease PJ, et al. 2013). ADEPT trial revealed that higher doses of methotrexate (MTX) were associated with better disease control. The aim of this analysis was to explore the safety and skin efficacy of ADA in combination with methotrexate (MTX) in pts with PsA in ADEPT.

Methods: ADEPT (NCT00646588) was a 24-week randomized placebo (PBO)-controlled study of ADA 40 mg every other week in pts with moderate to severe PsA. Randomization was stratified by MTX use (yes/no) and extent of psoriasis (PsO; 3% or <3% of body surface area [BSA]). For this analysis, pts were grouped by baseline MTX (low-dose, ≤15 mg/week; high-dose, >15 mg/week). Efficacy endpoints were changes in PsO Area and Severity Index (PASI) response rates in pts with ≥50% affected BSA at baseline (nonresponder imputation). Adverse events (AEs) were monitored and reported as events per 100 pt-years (E/100PY).

Results: Of the 162 pts randomized to PBO and 151 randomized to ADA, 70 (43%) and 70 (46%), respectively, were taking MTX and had ≥3% BSA involvement at baseline. Overall, PASI50/75/90 response rates were significantly higher with ADA vs PBO (P < .001) at Weeks 12 and 24 regardless of MTX dose. PASI50/75/90 response rates with ADA at Week 24 were 100/92/75% in the low-dose MTX subgroup (n = 121), 82/65/41% in the high-dose MTX subgroup (n = 17), and 63/46/52% in the ADA-only (n = 41) subgroup. AE rates were highest among pts taking high-dose MTX for both PBO (915/100PY) and ADA (1028/100PY) arms. The most common and severe AE was increased transaminases in the ADA only and high-dose MTX subgroups, and lowest in the high-dose MTX PBO arm. Rates of discontinuation due to an AE were lowest in the high-dose MTX subgroup of the ADA arm. Conclusions: In pts with PsA, treatment with ADA monotherapy or in combination with MTX regardless of dose provided greater response rates in PBO vs PBO at Weeks 12 and 24 compared with PBO. AE rates were highest among pts receiving high-dose MTX alone or in combination with ADA.

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Safety and tolerability of apremilast up to 182 weeks: Pooled analyses from phase 3 clinical trials

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Background: Apremilast (APR), an oral phosphodiesterase 4 inhibitor, has been shown to be efficacious in the treatment of moderate to severe plaque psoriasis (ESTEEM 1 and 2) and psoriatic arthritis (FALACE 1-5) in randomized, placebo-controlled, phase 3 trials. Safety of APR was assessed over 3 years in these studies.

Methods: Safety findings are reported for the APR exposure period 0 to ≤182 weeks based on data available through February 14, 2015.

Results: In the pooled ESTEEM 1 and 2 analysis, the APR exposure period (all pts who received 400 mg) despite when initiated (0 to ≤182 wks) included 1,184 pts treated with APR 30 mg BD (APR0; 1902.2 pt-yrs). During the 0 to ≤52 wk APR exposure period, AEs occurring in ≥5% of pts included diarrhea, nausea, headache, and nasopharyngitis. Most cases of diarrhea and nausea were mild to moderate in severity, occurred during the first wk of dosing, and generally resolved within 1 month. During the 0 to ≤182 wk period, AEs occurring in ≥5% of pts were upper respiratory tract infection (6.7%) and nasopharyngitis (6.0%). Based on exposure-adjusted incidence rates (EAIR 100 pt-yrs), AEs/serious AEs and discontinuation of study drug due to AEs did not increase with long-term exposure compared with the 0 to ≤52 wk APR exposure period. For the overall exposure period, EAIR/100 pt-yrs for serious AEs was 5.9 (EAIR 0 to ≤52 wks 6.4) and for discontinuation due to AEs was 7.0 (EAIR 0 to ≤52 wks: 10.2). During the 0 to ≤182 wk APR exposure period, no increases in rates of MACE (APR 0.5), malignancies (APR 1.2), depression (APR 1.8), or suicide attempt (APR 0.1) were noted compared with the 0 to ≤52 wk APR exposure period. Infection (APR 0.0), reactivation of TB infection, or clinically meaningful effects on laboratory measurements were reported. Three deaths (1 per yr) occurred during the 0 to ≤182 wk APR exposure period. The mortality rate in the APR group (0.1 per 100 pt-yrs) was similar to that in the placebo group (0.1 per 100 pt-yrs). Among serious AEs with ≥2.0% of pts treated with APR, infection (2.7%) and dermatitis (2.4%) were the most common AEs. No new or unexpected drug-related serious AEs or deaths were observed in the 52- to 182-wk exposure period. Treatment-emergent adverse events (TEAEs) were reported in 23% of pts during the 0 to ≤182 wk APR exposure period, with a median (mean) cumulative percentage of baseline weight change of ≈−1.5% (≈1.0%) and ≈1.2% weight loss (>5%) was experienced by 21.9% of pts. Results of pooled safety analyses from the ESTEEM and PALACE 1-3 trials including 1905 pts treated with APR 30 mg BD pts (median exposure of 167.2 wks) over the same APR-exposure period were consistent with those from the ESTEEM pooled safety analysis.

Conclusions: APR30 demonstrated an acceptable safety profile and was generally well tolerated for up to 182 wks, with no new signals or increases in severity or frequency of AEs with long-term APR30 treatment.

Supported by Celgene Corporation.

Safety of adalimumab dosed every week and every other week in patients with hidradenitis suppurativa or psoriasis

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Introduction: Adalimumab (ADA) is approved for the treatment of moderate to severe plaque psoriasis (Ps) at a dose of 40 mg every other week (eow) and is being studied as a potential treatment for hidradenitis suppurativa (HS). We report the safety and efficacy profile of ADA dosing 40 mg eow and every week (ew) in these patient (pt) populations.

Methods: In 2 phase 3, double-blind, placebo-controlled studies, pts with HS who achieved PASI 75 with ADA dosing 40 mg eow and every week (ew) in period B (24 weeks). In an open-label extension (OLE)Methods: In 2 phase 3, double-blind, placebo-controlled studies, pts with HS who achieved PASI 75 with ADA dosing 40 mg eow and every week (ew) in period B (24 weeks). In an open-label extension (OLE) after achieving PASI 75 response, pts who dose escalated were deescalated to eow. Upon achieving a PASI75 response, pts who dose escalated were deescalated to eow. Afterwards, they were re-evaluated at 6 and 12 weeks and then every 12 weeks. Upon achieving PASI75 response, pts who dose escalated were deescalated to eow.

Results: Overall, 300 pts with HS in period B and 1605 pts in the OLE were included. In patients with HS, the AE rate was lower in the ew (163 (492.4) and in ew (167 (471.8) groups compared with Pbo (188 (591.2)). Serious AEs were reported at higher frequency in the ew (7 (21.1)) and ew (5 (14.1)) groups compared with the Pbo group (2 (6.3)); however, rates of AEs leading to discontinuation were comparable. Infection rates in the cow (4 (139.0)) and ew (4 (127.1)) groups were lower compared with the Pbo group (55 (175.0)). Other AEs of interest occurred infrequently. Among pts with Pbo, the rates of AEs and serious AEs were comparable between the cow and ew groups (any: cow 6623 (2573) v ew 517 (232.5) and serious cow 181 (6.5) v ew 717 (7.6)); the rate of AEs leading to discontinuation was higher in the ew (22 (7.6)) v cow (9 (2.9)). Infection rates were lower in the cow (23 (8.4)) v ew (14 (4.8)) compared with cow dosing (209 (72.8)). Rates of serious infections were comparable (cow 3 (1.2) v ew 2 (0.9)).

Conclusions: Regardless of treatment assignment, the incidence of AEs appears higher in pts with HS, compared with pts with Ps, which may be due to inherent characteristics of the HS population. In pts with HS or Ps, the safety of ADA dosing regimens was comparable and consistent with the expected AE profile of ADA.

Supported by AbbVie.
Secukinumab administration by autoinjector maintains efficacy in plaque psoriasis over 2 years: Results of the JUNCTURE study

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Introduction: Secukinumab, a fully human monoclonal antibody that selectively targets IL-17A, is highly efficacious in the treatment of moderate to severe psoriasis, starting at early time points, with a sustained effect and a favorable safety profile. Here, efficacy and safety data are reported after 2 years of treatment in the JUNCTURE study, a phase 3 study in which subjects self-administered secukinumab using an autoinjector.

Methods: Subjects were randomized 1:1:1 to secukinumab 500 mg, 150 mg or matching placebo. Treatments were given at Baseline (Wk 1) 1, 2, 3 and then every 12 weeks (Wk 24) from Wk 208, or Wk 12 for subjects on placebo. After Wk 12, subjects in the placebo group who achieved a PASI 75 response continued on placebo, while those who did not achieve a PASI 75 response were re-randomized 1:1 to secukinumab 300 mg or 150 mg. Coprimary endpoints were secukinumab efficacy and safety outcomes. At Wk 75 and IGA mod 2011 0/1 response rates were over time. Approximate Year 2 data correspond to data collected at the Week 112 site visit. Year 2 data from 88 subjects in the secukinumab 300 mg dose group, and 89 subjects in the 150 mg secukinumab dose group were analyzed using multiple imputation methodology.

Results: As reported previously, a high level of PASI 75, 90 and 100 responses were maintained to Year 1 (PASI 75, 90 and 100 responses for the 300 mg dose were 86.2%, 78.7% and 71.8%, respectively, and 74.5%, 53.9% and 35.6% for 150 mg at 52 weeks). Year 2 PASI 75 response rates were 81.4% for subjects receiving secukinumab 300 mg and 64.9% for those receiving 150 mg. Year 2 PASI 90 response rates were 72.1%, 54.7% and 42.6% for those receiving secukinumab 300 mg and 150 mg, respectively; corresponding PASI 100 scores were 45.8% and 25.3%.

Previously at Year 1, in subjects receiving secukinumab 300 mg and 150 mg, respectively; IGA mod 2011 0/1 scores were recorded for 55.2% and 41.1% of subjects with secukinumab 300 mg and in 58.4% receiving secukinumab 150 mg, and IGA mod 2011 0/1 response rates were 62.6% and 44.5%, respectively. New or unexpected safety signals were observed to Year 2.

Conclusions: Secukinumab treatment with an autoinjector achieved clear or almost clear skin in a majority of subjects with moderate to severe plaque psoriasis up to 2 years. The favorable safety profile of secukinumab was consistent with previous studies.

Supported by Novartis Pharma AG, Basel, Switzerland.
Secukinumab inhibits radiographic progression in patients with psoriatic arthritis. Results from phase 3 FUTURE 1 study stratified by concomitant methotrexate use

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Introduction: We report the effect of secukinumab, with and without concomitant methotrexate (MTX), on radiographic progression in psoriatic arthritis (PsA) patients in an exploratory subgroup analysis of the randomized, double-blind, placebo (PBO)-controlled study (FUTURE 1; NCT01392526).

Methods: 606 patients with active PsA were randomized to secukinumab or PBO. Patients on secukinumab received 10 mg/kg intravenous (i.v.) loading dose at baseline (BL), Weeks (Wks) 2 and 4, followed by subcutaneous (sc) secukinumab 150 mg (IV-150 mg) or 75 mg (IV-75 mg) every 4 wks (q4wk) from Wk 8. PBO was given on the same schedule. At Wk 16, PBO patients with 10% reduction in tender or swollen joint count (nonresponders) were randomized to secukinumab 75 or 150 mg sc q4wk. Responders received secukinumab 75 or 150 mg sc q4wk from Wk 24. van der Heijde modified total Sharp score (mTSS) and erosion and joint space narrowing (JSN) scores were determined at BL, Wks 16/24 (depending upon response) and Wk 52. Analysis of radiographic progression at Wk 24 used linear extrapolation for patients with X-ray assessments at Wk 16. Wk 52 analyses used evaluable data.

Results: In the overall study population, secukinumab significantly inhibited radiographic progression from BL to Wk 24 vs PBO. There was lower mean change in mTSS from BL to Wk 24 in patients on secukinumab compared to those on PBO, irrespective of concomitant MTX use. Inhibition of radiographic progression with secukinumab was sustained from Wk 24 to Wk 52. Improvements in mean change in erosion and JSN scores were also observed with secukinumab throughout the study.

Conclusions: Secukinumab provided significant and sustained inhibition of radiographic disease in patients with PsA. Within the limitations of suboptimal statistical power, the exploratory analysis does not suggest a clinically meaningful difference in radiographic progression between the secukinumab with MTX and secukinumab without MTX subgroups.

Supported by Novartis Pharma AG, Basel, Switzerland.

Secukinumab is effective in reducing dactylitis and enthesitis using multiple measures in patients with psoriatic arthritis: Results from two phase 3 randomized, multicenter, double-blind, placebo-controlled studies (FUTURE 1 and 2)

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Introduction: Dactylitis and enthesitis are common disabling manifestations of psoriatic arthritis (PsA). We report the effects of secukinumab on dactylitis and enthesitis in the phase 3 FUTURE 1 and 2 studies (NCT01392526 and NCT01756264, respectively).

Methods: In FUTURE 1, 606 patients with active PsA were randomized to placebo (PBO) or intravenous (i.v.) secukinumab 10 mg/kg at baseline (BL), Weeks (Wks) 2 and 4, and then subcutaneous (sc) secukinumab 150 mg (IV-150 mg) or 75 mg (IV75 mg) every 4 wks from Wk 8. In FUTURE 2, 397 patients were randomized to sc secukinumab (300, 150 or 75 mg) or PBO at BL, Wks 1, 2, 3, and 4, and then every 4 wks from Wk 8. The primary endpoint for both studies was ACR20 response at Wk 24; the proportion of patients with resolved dactylitis and enthesitis at Wk 24 were secondary endpoints. Dactylitis counts, Leeds Dactylitis Index (LDI) and Leeds Enthesitis Index (LEI) were also assessed.

Results: At BL, 324 (53.5%) and 372 (61.4%) patients in FUTURE 1 and 158 (35.5%) and 253 (64.6%) patients in FUTURE 2, respectively, had dactylitis and enthesitis. At Wk 24, patients with dactylitis and enthesitis in FUTURE 1 were secukinumab IV-150 and IV-75 mg and 300 and 150 mg sc groups and had complete resolution of dactylitis and enthesitis vs PBO in both studies. Corresponding reductions in LDI, LEI and mean dactylitis counts were observed.

Conclusions: Secukinumab reduced the number of dactylitic digits and enthesitis sites in patients with PsA and was associated with a greater proportion of patients achieving complete resolution of dactylitis and enthesitis vs PBO.

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3235
Secukinumab provides more effective relief from psoriasis impact on personal relationships and influence on clothes worn than etanercept and placebo

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Introduction and objectives: Secukinumab is highly efficacious in the treatment of moderate to severe plaque psoriasis, with fast onset, a sustained effect, and a favorable safety profile. The objective of the current pooled analysis is to evaluate its impact on personal relationships and clothes worn as measured by the Dermatology Life Quality Index (DLQI).

Materials and methods: Patients aged ≥18 years were randomized 1:1:1 in ERASURE to subcutaneous treatment groups (secukinumab 300 mg, secukinumab 150 mg, and placebo) and 1:1:1:1 in FIXTURE (including an etanercept 50 mg twice-weekly group). The DLQI was administered at baseline, Weeks 4, 8, 12, 24, 36, and 52, with total, subscale, and item scores computed at all visits. This analysis used data from Week 52 placebo data up to Week 12, and focused on the personal relationship subscale (q8 and q9) and items assessing the influence on clothes worn (q4), impact on relationships with friends/relatives (q8), and sexual difficulties (q9). Treatment differences in mean scores were evaluated using van Elteren proportions of DLQI subscale and item responders (score = 0, indicating no impact) using Chi-square statistics.

Results: Subjects on secukinumab (n = 572) achieved greater mean improvement in the personal relationship subscale and q4, q8, and q9 than subjects on placebo (n = 572; all P < 0.0001) and etanercept (n = 519; personal relationships: P < 0.05 at Weeks 8 & 12; q4, all P < 0.0001; q8, P < 0.05 at Weeks 8 & 12; q9, all P < 0.01). The response rates were higher for secukinumab 300 mg than for placebo (all P < 0.001; personal relationships Week 12 response rate: 48% vs 16%; q4: 58% vs 12%; q8: 45% vs 16%; q9: 37% vs 10%) and etanercept (personal relationships: all P < 0.05 except for Weeks 4 & 36; q4: all P < 0.001; q8, all P < 0.05 except for Weeks 4 & 36; q9: numerically higher starting at Week 8; personal relationships Week 12 response rates: 48% vs 38%, Week 52: 55% vs 47%; q4 Week 12: 58% vs 57%, Week 52: 66% vs 47%; q8 Week 12: 45% vs 33%, Week 52: 52% vs 38% vs 46%).

Conclusions: Secukinumab 300 mg provides greater improvements and more effective relief from psoriasis impact on personal relationships and clothing worn than etanercept and placebo.

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3237
Secukinumab provides more effective relief from skin-related quality-of-life impact than placebo in moderate to severe psoriasis

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Introduction and objectives: Secukinumab is highly efficacious in the treatment of moderate to severe plaque psoriasis, starting at early time points, with a sustained effect and a favorable safety profile. This pooled analysis focuses on evaluating the impact of secukinumab treatment versus placebo on skin-related quality of life (total score and subscales) as measured by the Dermatology Life Quality Index (DLQI).

Materials and methods: Patients aged ≥18 years were randomized 1:1:1 in ERASURE to subcutaneous treatment groups (secukinumab 300 mg, secukinumab 150 mg, and placebo) and 1:1:1:1 in FIXTURE (including an etanercept 50 mg twice-weekly group). The DLQI was administered at baseline and Weeks 4, 8, 12, 24, 36, and 52 with total, subscale, and item scores computed at all visits. This analysis used secukinumab 300 mg and placebo data from baseline to Week 12. DLQI response was defined as no effect of skin problems on health-related quality of life (total score of 0 or 1, subscale of 0, and item score of 0). The treatment effects on DLQI total scores, subscale scores (symptoms/feelings, daily activities, leisure, work/school, personal relationships, and treatment), and item scores were evaluated. Proportions of DLQI responders were also compared.

Results: Subjects treated with secukinumab 300 mg (n = 572) achieved greater mean improvement in DLQI total, subscale, and item scores than subjects treated with placebo (n = 572) from Week 4 through Week 12 (all P < 0.001). Secukinumab 300 mg achieved higher DLQI response rates for total, subscales, and items than placebo at all visits through Week 12 (all P < 0.001; Week 12 DLQI 0/1: 58% vs 8%; symptoms/feelings: 48% vs 4%; daily activities: 59% vs 12%; leisure: 56% vs 17%; work/school: 52% vs 21%; personal relationships: 48% vs 16%; treatment: 53% vs 18%; q1—itchy, sore, painful, stinging; q2—embarrassed; q3—shopping, home; q4—clothing worn; q5—social or leisure activities; q7—work or studying (except at Week 24); q9—sexual difficulties; q10—treatment problems)

Conclusions: Secukinumab provides greater improvements and relief from skin-related quality-of-life impact than placebo in moderate to severe psoriasis.

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3430 Secukinumab treatment does not induce blood pressure change in subjects with psoriasis and hypertension: results from the FIXTURE study

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Introduction: Psoriatic disease is known to be associated with various comorbidities, one of which is high blood pressure. Secukinumab, a fully human monoclonal antibody that selectively targets IL-17A, is highly efficacious in the treatment of moderate to severe psoriasis at early time points, with a sustained effect and a favorable safety profile. Here we analyze data from a large phase 3 study (FIXTURE) to assess the effect of secukinumab treatment on blood pressure in subjects with moderate to severe psoriasis.

Methods: In this double-blind, placebo-controlled study, subjects (N = 1506) with moderate to severe psoriasis were randomized (1:1:1) to secukinumab 300 mg (n = 312), secukinumab 150 mg (n = 315) and ETN (n = 305) groups.

Results: Demographics and baseline characteristics were comparable across all treatment arms. Baseline, diastolic blood pressure was 80.0 mm Hg in subjects receiving secukinumab 300 mg and 79.8 mm Hg in subjects receiving ETN. Baseline systolic blood pressure was 126.0 mm Hg and 126.1 mm Hg in subjects receiving secukinumab 300 mg, 150 mg or ETN, respectively. At Week 52 diastolic blood pressure was 80.5 mm Hg, 81.0 mm Hg and 80.2 mm Hg and systolic blood pressure was 126.1 mm Hg, 127.4 mm Hg and 125.9 mm Hg, respectively for subjects receiving secukinumab 300 mg, 150 mg and ETN, respectively, with a change from Baseline to Week 52 of -0.4, -1.0 and -0.6 mm Hg for subjects receiving secukinumab 300 mg, 150 mg and ETN, respectively. Mean sitting pulse at Baseline was 72.8 bpm, 74.6 bpm and 74.0 bpm for subjects receiving secukinumab 300 mg, 150 mg and ETN, respectively, with a change from Baseline to Week 52 of -0.6, -0.4 and -0.7 bpm, respectively.

Conclusions: Secukinumab treatment was not associated with clinically relevant changes in blood pressure or pulse in subjects with moderate to severe plaque psoriasis in the phase 3 FIXTURE study.

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3231 Secukinumab treatment provides faster and more effective relief from patient-reported quality-of-life impact than ustekinumab in subjects with moderate to severe plaque psoriasis

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Background: Secukinumab, a fully human monoclonal antibody (mAb) that selectively targets IL-17A, is highly efficacious in the treatment of moderate to severe plaque psoriasis, starting at early time points, with a sustained effect and a favorable safety profile. CLEAR is a phase 3b study comparing the efficacy/safety of secukinumab versus ustekinumab, an anti-IL-12/23 mAb, in adults with moderate to severe plaque psoriasis. This analysis examined the treatment effect on psoriasis-related pain, itching, and scaling.

Methods: This analysis used baseline to Week 16 data for patients aged ≥ 18 years randomized 1:1 to secukinumab treatment arms (secukinumab 300 mg and ustekinumab 45 mg or 90 mg according to body weight at baseline). Psoriasis-related pain, itching, and scaling over the last 24 hours were assessed using a 0-10 numerical rating scale with higher scores indicating greater severity. Mean treatment difference from Week 16 was examined via analyses of covariance adjusting for regional center, body weight, and baseline score. The percentage of subjects reporting complete relief of symptoms (score = 0) was compared between treatment arms. Time to complete relief was calculated from the period of randomization to the Week when a symptom score of 0 occurred. Median time to complete symptom relief was compared between treatment arms using Kaplan-Meier methods with a log-rank test.

Results: The full analysis set included 336 subjects randomized to secukinumab 300 mg and 339 subjects to ustekinumab. Mean changes from baseline to Week 16 for secukinumab versus ustekinumab were statistically significantly greater for secukinumab (P < 0.001). More secukinumab-treated subjects achieved complete pain (80.3% vs 69.7%), complete itching (74.6% vs 56.1%) and complete scaling (43.7% vs 29.6%) by Week 16 than ustekinumab-treated subjects (all P < 0.001). The median time to complete itching (12 vs 16 Weeks) and scaling (8 vs 16 Weeks) was significantly faster for secukinumab than for ustekinumab (both P < 0.001). The median time to pain relief was 8 Weeks for both treatment arms, but the Kaplan-Meier curves were statistically different, and the log rank test favored secukinumab (P = 0.006).

Conclusion: Secukinumab 300 mg alleviates patient-reported, psoriasis-related pain, itching, and scaling significantly faster and better than ustekinumab.

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3719 Secukinumab withdrawal leads to loss of treatment responses in a majority of subjects with plaque psoriasis with retreatment resulting in rapid regain of responses: A pooled analysis of two phase 3 trials

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Introduction: Here, we assessed the rates of regain of clinical responses following retreatment of subjects with moderate to severe psoriasis who had relapsed following per-protocol withdrawal of secukinumab. The key objectives were the estimation of the effect of secukinumab withdrawal on treatment responses, the proportion of subjects regaining treatment responses, and the time to regain responses using data from the ERASURE and FIXTURE studies. This abstract focuses on data up to 2 years.

Methods: In this analysis subjects who had PASI 75 responses at the end of the core studies (Week [Wk] 52) were randomized in the extension study 2:1, to continue on secukinumab treatment or to withdraw secukinumab. The median time to re-treatment of subjects with moderate to severe plaque psoriasis who did relapse and were re-treated, 94.8% of subjects re-captured PASI 75, 70.3% PASI 90, and 38.4% PASI 100 responses after twelve wks of re-treatment with secukinumab 300 mg. There were no new or unexpected safety findings in the withdrawal arm.

Conclusion: Secukinumab provided strong and sustained efficacy over 104 wks, clearing psoriasis while maintaining a favorable safety profile. In subjects relapsing after being withdrawn from therapy, retreatment with secukinumab restored efficacy in the vast majority of patients by 12 wks post rest of treatment.

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3376
Secukinumab, a new anti–IL-17A biologic therapy, induces rapid clinical, histologic, and molecular resolution of psoriasis while preserving full T cell activation potential
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Introduction: We report the histopathologic and molecular basis of disease resolution, and T cell activation in subjects treated with secukinumab.

Methods: Moderate to severe plaque psoriasis patients were administered 300 mg secukinumab (n = 24) or placebo (PBO) (n = 12) for 12 wks. PASI score and biopsies of lesional (LS) and non-lesional (NL) skin were obtained at Baseline (BL), Wk 1 or 4, and 12. Histologic changes were assessed for epidermal growth, differentiation, and maturation, mitotic rate, Tcells, and monocyte-derived cell types. Primary endpoint: % of subjects attaining skin histological disease reversal by Wk 12. Activation of circulating Tcells was evaluated ex vivo by quantifying cell activity markers. Transcript profiles were measured and compared to clinical and histological endpoints.

Results: Histologic disease reversal by Wk 12: 14/23 (61%), secukinumab; 0/12 (0%), PBO (P < 0.001). PASI90 response Wk 12: 14/24 (58%), secukinumab. Histological character of NL skin from Wk 1 to Wk 12 showed a significant reduction in IL-17a-pathway genes and beta-defensin-2, both in LS skin and in circulation. Expression of LS transcripts mirrored low response, but residual LS transcript expression persisted even in responders (a phenomenon termed “molecular scar”).

Conclusions: Secukinumab has rapid and profound effects on psoriasis skin histopathology and psoriatic signature genes, confirming that its target IL-17A is a major driver of pathophysiologic changes in psoriatic skin in a majority of patients. Securinumab skin immune cells and responses to global T-cell activation were not altered by secukinumab. The authors acknowledge the contribution to this research of Nicole Hartmann, Thomas Peters, and Anke Hasselberg.

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3377
Secukinumab-treated subjects experience low rates of Candida and recurrent Candida infections: A pooled analysis from phase 10 phase 2 and 3 clinical trials and postmarketing surveillance studies
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Introduction: Interleukin (IL)-17 signaling is important for mucocutaneous defense against Candida albicans and genetic deficiency of IL-17 results in compromised Candida immunity. Therefore, subjects receiving anti-IL17A therapies may be at increased risk of Candida infections. Clinical trials have shown that secukinumab, a fully human monoclonal antibody that selectively targets IL-17A, is highly efficacious in the treatment of moderate to severe psoriasis (PsO).

Methods: We conducted a pooled analysis of Candida infections from 10 randomized, phase 2/3 PsO studies in 3,430 subjects, including 1,410 subjects treated with secukinumab 500 mg, 1,395 with secukinumab 150 mg, and 525 subjects on etanercept (ETN).

Results: During the first year of treatment, 41/1410 (2.9%) subjects on secukinumab 500 mg, 21/1395 (1.5%) on secukinumab 150 mg and 4/525 (0.8%) of subjects on ETN experienced a Candida infection. Of these subjects, some experienced more than one episode of Candida (recurrent candidiasis): 14/41 (34%) on secukinumab 300 mg, 12/21 (57.1%) on secukinumab 150 mg, and 2/4 (50%) on ETN. The number of Candida infections in the first year was mostly 1 or 2 episodes occurred in one subject on secukinumab 500 mg and in one subject on ETN, and mostly occurred within the same location (oral, vulvovaginal, intertrigo). In about 75% of subjects with recurrent Candida, there were confounding factors, including antibiotic use, but there was no concomitant diabetes or immunosuppressants reported. All infections were nonserious, resolved spontaneously or responded to standard treatment, and none led to treatment discontinuation. Eight subjects with recurrent Candida in the first year on secukinumab 300 mg were enrolled into a long-term follow-up study; no apparent treatment-related trend was observed in lesion clearance or inflammation, and the majority of these subjects 5) did not experience any Candida infection in the second year of treatment.

Conclusions: Candida infections were uncommon in subjects with moderate to severe PsO treated with secukinumab, and recurrent infections were even less common. Both were more likely to happen in the first year of treatment and may have been dependent on confounding factors. The data further suggest that such infections are easily managed and do not impact the course of secukinumab therapy.

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2961 Single transition from adalimumab to ABP 501: Evaluation of immunogenicity in a phase 3 study in subjects with moderate to severe plaque psoriasis

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Background and objectives: ABP 501 is being developed as a biosimilar candidate to adalimumab, a fully human recombinant monoclonal antibody and has the same amino acid sequence as adalimumab. Antibodies to adalimumab are associated with lower serum adalimumab concentration. Here we report results of immunogenicity evaluation after single transition from adalimumab to ABP 501 in a phase 3 study of subjects with moderate to severe plaque psoriasis.

Methods: In this double-blind, active-controlled study subjects were randomized (ABP 501: n = 175; adalimumab: n = 175) to receive study treatment subcutaneously 80mg on week 1/day 1 and 40mg at week 2 and every 2 weeks thereafter. At week 24, subjects with ∆PSI 50 remained on study for up to 52 weeks and were rerandomized in a blinded fashion such that all subjects initially randomized to ABP 501 continued on ABP 501 (group A/A); those on adalimumab either continued on adalimumab (group B/B) or switched to ABP 501 (group B/A). Immunogenicity was assessed for each sample at weeks 1, 4, 10, 20, 32, 52 using validated electrochemiluminescent assays for ABP 501 and adalimumab: a sample was considered positive if either assay was positive. Noninferiority (NI) was evaluated by comparing median percentage changes from baseline in percent of positive samples with 21.7% margin of 21.7%. Incidence of neutralizing ADAs was 9.5% and 13.9% respectively.

Results: Through week 16, incidence of binding ADAs was 52.5% in ABP 501 and 63.6% in adalimumab groups, upper bound of 95% CI (18.2%, 2.0%) fell within NI margin of 21.7%. Incidence of neutralizing ADAs was 9.8% and 13.9% respectively. After single transition from adalimumab to ABP 501, at week 20 incidence of binding ADAs was 60.5%, 69.6% and 66.2% for groups A/A, B/B and A/B; 95% CI for difference between groups A/A and B/A was (19.6%, 4.5%) and between groups A/B and B/B was (16.5%, 11.3%); both upper bounds fell within the NI margin. Incidence of neutralizing ADAs was 9.5%, 13.9% and 15.4%. ADA incidence at week 52 was 68.4%, 74.7% and 72.7% in the groups A/A, B/A and B/B; 95% CI for difference between groups A/A and B/B was (15.7%, 7.6%) and between groups A/B and B/B was (13.5%, 13.0%); both upper bounds fell within the NI margin. Incidence of neutralizing ADAs was 15.8%, 20.3% and 24.7%.

Conclusions: Incidence of ADAs was similar and comparable between ABP 501 and adalimumab before and after rerandomization. Superiority to ABP 501 did not result in altered or increased immunogenicity over 52 weeks.

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3556 Six-year interim results from the ESPRIT 10-year postmarketing surveillance registry of adalimumab for moderate to severe psoriasis

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Introduction: ESPRIT, a 10 year (yr) international observational registry, is prospectively evaluating long-term effectiveness and safety of adalimumab (ADA) in patients (pts) treated for moderate to severe plaque psoriasis (NCT00799877). Interim safety and effectiveness over the first 6yrs of the registry are reported.

Methods: ESPRIT enrolled pts continuing ADA treatment from a current prescription or previous study participation. The All-Treated Population (All-Rx) received at least 1 ADA dose in the registry, including a subgroup of pts initiating ADA within 4 weeks of entering the registry (New-Rx). Pts are evaluated every 6 mos (months) (mos) postenrollment, then every 6 mos up to 10 yrs. The as-observed effectiveness parameter was Physician’s Global Assessment (PGA). A standardized mortality ratio of <1.0 indicates the observed number of deaths was below expected in an age, sex, country-matched population. Incidence rates (IR) for all treatment-emergent adverse events (AEs) are reported as events/100 pt yrs of total exposure, occurring from initial through last ADA dose, excluding AEs during treatment-emergent interruptions.

Results: From 26 Sept 2008 through 30 Nov 2014, 6056 pts were enrolled and dosed (All-Rx), including 2559 (42.3%) New-Rx. Median registry exposure was 993 days for All-Rx and 881 days for New-Rx (range 1-2257 days/group). 1057 (17.5%) All-Rx and 566 (22.1%) New-Rx discontinued the registry, most frequent reason was lost to follow-up (8.2% and 10.9%, respectively). For All-Rx at baseline, 57.7% were male; 97.7% non-Hispanic white; 81.3% employed; 72.8% had a household income > $50,000; median age was 47 yrs (range 18-94 yrs) and median weight was 87 kg (range 41-252 kg). The IR for All-Rx (All-Rx) was: overall 21.8; malignancies 0.9 (melanoma 0.1, lymphoma 0.1, active TB 0.1, TB conversion 0.1). Standard mortality ratio was 0.28 (95% CI 0.19, 0.40). Pts achieving PGA ‘clear’ or ‘minimal’ at 12, 24, 36, 48, 60, 72 mos of treatment were 2015/4586 (57.0%), 2277/3896 (58.4%), 1648/2774 (59.4%), 1206/1907 (63.2%), 440/704 (62.5%), 20/36 (55.6%), respectively.

Conclusions: No new safety signals were observed with ADA treatment during this interim. Observed number of treatment-emergent deaths was below that expected. As-observed effectiveness remained stable within 72 mos.

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The authors and AbbVie scientists designed the study and analyzed and interpreted the data. AbbVie funded the research and provided writing support.
Skin microbiome in patients with psoriasis before and after balneotherapy with the thermal water of La Roche-Posay

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Background: Changes in the composition of microbial communities that colonize skin have been linked to several diseases including psoriasis. Nevertheless, the intraindividual dynamics and how these communities respond to balneotherapy remains poorly understood.

Objective: To comprehensively characterize microbial diversity and community composition associated with affected and unaffected skin of patients with psoriasis before and after balneotherapy using selenium-rich thermal water. Balneotherapy consisted with high pressure filmo showers and baths, facial and general pulverizations and drink of LRP-thermal water.

Methods: Skin microbial communities, of 54 patients with moderate to severe form of psoriasis vulgaris (PASI before balneotherapy = 20 ± 10.8) subjected to a 5 weeks selenium-rich water cure at the thermal care center of La Roche-Posay (LRP, France), were characterized by high-throughput sequencing of the 16S rRNA gene.

Results: Results of this case study showed PASI percent improvement was a sensitive binary outcome measure. PASI improvement at 84% of the study population responded to balneotherapy as indicated by a decrease in PASI after the 3 weeks (PASI after balneotherapy = 7.3 ± 5.5). Microbial communities associated with affected skin of these responders more closely resembled unaffected skin after balneotherapy which seems to make the communities more similar. Balneotherapy increased the abundance of Corynebacterium and Stenotrophomonas in both affected and unaffected skin.

Conclusions: We demonstrated that the comparison of affected and unaffected adjacent skin from the same psoriasis patient provides deeper insight into the bacterial communities involved in this skin dysbiosis. This data supports the interest of balneotherapy using selenium-rich thermal water which is highly effective in treatment of psoriasis vulgaris.

Limitations: This study does not include a healthy control healthy group.

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Sustained efficacy with apremilast in patients with nail and scalp psoriasis with continued or switched from etanercept treatment: 52-week results from the LIBERATE study

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Background: LIBERATE (Evaluation in a Placebo-Controlled Study of Oral Apremilast and Etanercept in Plaque Psoriasis) was a phase 3b study evaluating the efficacy and safety of apremilast or etanercept vs placebo in biologic-naive patients (pts) with moderate to severe plaque psoriasis. Efficacy over 52 wks in pts with nail and scalp psoriasis is reported.

Methods: 250 pts were randomized (1:1:1) to placebo (PBO, n = 84); apremilast 50 mg (APR, n = 85); or etanercept 50 mg qw (ETN, n = 85). At wk 16, pts continued APR or switched from PBO or ETN to APR; all pts received APR through wk 104. Pts with baseline (BL) Scalp Physician Global Assessment (ScPGA) score ≥3 (moderate to very severe) and Nail Psoriasis Severity Index (NAPSI) score ≥1 in the target nail were included in the analysis. This study was not powered for APR vs ETN comparisons.

Results: At BL, 166 (66.4%); PBO n = 58; APR n = 54; ETN n = 54) pts had an ScPGA score ≥3 and 148 (59.2%); PBO n = 46; APR n = 52; ETN n = 50) had a NAPSI score ≥1. At Wk 16, an ScPGA score of 0 or 1 was achieved by 25.9% (PBO), 44.4% (APR, P = 0.048 vs PBO), and 50.0% (ETN, P = 0.0085 vs PBO) of pts. At Wk 52, ScPGA 0 or 1 achieves was 48.5% (PBO/APR), 53.7% (APR/APR), and 57.4% (ETN/APR). Achievement of ScPGA score of 0 or 1 was sustained at Wk 52 in 46.6% (PBO/APR), 50.0% (APR/APR), and 61.1% (ETN/APR) of pts. The mean NAPSI score at BL was 4.14 (PBO), 4.18 (APR), and 4.30 (ETN). At Wk 16, mean percent change from BL in NAPSI score was −10.1% (PBO), −18.7% (APR, P < N.B vs PBO), and −37.7% (ETN, P < N.B vs PBO). At Wk 16, NAPSI-50 was achieved by 10.9% (PBO), 25.0% (APR, P = N.S vs PBO), and 48.0% (ETN, P < 0.001 vs PBO) of pts. At Wk 52, mean percent change from BL in NAPSI score was −52.7% (PBO/APR), −41.0% (APR/APR), and −58.1% (ETN/APR). NAPSI-50 was achieved in 34.8% (PBO/APR), 44.2% (APR/APR), and 70.0% (ETN/APR) of pts. At Wk 52, the mean change from BL in NAPSI score was −40.0% (PBO/APR), −42.8% (APR/APR), and −56.1% (ETN/APR). NAPSI-50 was achieved in 41.3% (PBO/APR), 46.2% (APR/APR), and 68.0% (ETN/APR) of pts.

Conclusion: Improvements in nail and scalp psoriasis were achieved with APR and ETN; these improvements were sustained with continued APR treatment over 52 wks and in pts who switched from ETN to APR.

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3030 The impact of psoriasis severity on work productivity and daily activities

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Introduction: Psoriasis, a chronic immune-mediated inflammatory skin condition, can significantly impact the physical, emotional and psychosocial well-being of those afflicted. However, regarding psoriasis severity, there is inconsistent evidence as to the impact on one’s ability to work, and limited evidence of the impact on daily activities. This study aimed to characterize the impact of disease severity on productivity and activities of daily living among a sample of Canadians with plaque psoriasis.

Methods: Cross-sectional patient-reported demographic and work productivity data (using the work productivity and activity impairment [WPAI] questionnaire) were collected from patients at eight Canadian dermatology clinics and individually linked with medical chart data. Adults with psoriasis currently working for pay or not working due to psoriasis were recruited, stratified according to psoriasis severity (by PASI score). Adults with psoriasis currently working for pay or not working due to psoriasis were recruited, stratified according to psoriasis severity (by PASI score). Beta regression modelling estimated the impact of severity on impairment accounting for relevant confounders.

Results: A total of 142 patients were included in the study, in the four severity categories (NCT01163254) were recruited into a single arm, open-label, vaccine substudy. At time of entry, all patients had completed ≥3 months’ continuous treatment with tofacitinib 10 mg BID and this treatment was maintained during this substudy. Pneumococcal and tetanus antibody titers and immunoglobulin G (IgG) concentrations were assessed at baseline (Day 1 of sub-study). T-cell-dependent pneumococcal and tetanus toxoid IgG titer for patients with baseline titer lower limit of quantitation) and tetanus toxoid antibody response to tetanus toxoid was observed in 90% of patients and in addition, 63% of patients had ≥4-fold antibody increase from baseline. 40% of patients had pre-

Conclusion: In this study of 42 tofacitinib-treated patients with psoriasis, the ability to respond to T-cell-dependent pneumococcal and tetanus toxoid vaccination was preserved in the majority of patients.

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The metabolic syndrome influences treatment outcomes in a Spanish cohort of patients with moderate-to-severe plaque psoriasis treated with anti-TNF

3431 Tofacitinib in patients with moderate to severe chronic plaque psoriasis: 2-year efficacy and safety in an open-label long-term extension study

3040 Treatment of guttate psoriasis with ustekinumab: A case series of 4 patients

Commercial support: None identified.
Treatment of plaque-type psoriasis with oral CF101: Data from a phase 3, randomized phase 3 trial

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Background: CF101 is an orally bioavailable small molecule drug presenting an antipsoriatic effect demonstrated in a phase II clinical trial in psoriasis patients. CF101 binds with high selectivity to the G-protein associated A3 adenosine receptor (A3AR), known to be overexpressed in skin tissue and peripheral blood mononuclear cells of patients with psoriasis.

Objectives: To evaluate the safety and efficacy of CF101 treatment in a phase II/III in patients with moderate to severe plaque-type psoriasis.

Methods: The study included 325 patients with moderate to severe plaque psoriasis randomized into 3 groups: 1 mg, 2 mg and placebo. All patients receiving placebo were switched to either 1 mg or 2 mg of CF101 after 12 weeks. Assessment of psoriasis area and severity index (PASI) score and physician global assessment (PGA) as well as safety have been performed at regular intervals throughout the study. Following an interim analysis on the first 103 patients, the 1 mg group has been dropped due to futility and then additional 220 patients were enrolled (2 mg and placebo).

Results: CF101 had an excellent safety profile in all tested dosages with a profile similar to that of placebo. The study did not meet the primary endpoint of PASI 75 on week 12 (2 mg: 8.5%; Placebo: 6.9%). However, positive data have been demonstrated on weeks 20 to 32 showing linear improvement in PASI 50 (63.5%), 75 (15.5%) and 90 (10.6%) within 0.01% week 32. In addition, patients treated with no prior systemic treatment, achieved PASI 90 scores of 27% vs 13% in patients previously treated with systemic therapy (P < 0.026). Historical placebo responses are very rare at PASI 90 and PASI 100.

Conclusions: CF101 was found to be very safe and well tolerated and has demonstrated evidence of efficacy in patients with moderate to severe plaque psoriasis after 20 to 32 weeks of treatment. The linear efficacy response observed with CF101 and the excellent safety profile support further development to treat patients with Psoriasis.

Commercial support: None identified.

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Treatment with ixekizumab over 60 weeks provides sustained improvements in health-related quality of life: Results from UNCOVER-1, a randomized phase 3 trial

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Background and objective: Ixekizumab (IXE) is a high affinity anti-IL-17A antibody shown to be highly effective in reducing psoriasis plaques and improving health-related quality of life (HRQoL) over a 12 week induction period in patients with moderate-to-severe psoriasis. The objective of this study was to assess the sustainability of improvements in key Ps symptoms in responders over 60 weeks of treatment with IXE.

Methods: In this phase 3, multicenter, double-blind, placebo (PBO)-controlled trial, patients were randomized to receive subcutaneous 80-mg IXE as one injection every 2 weeks (IXE Q2W; N = 433) or every 4 weeks (IXE Q4W; N = 433) or every 12 weeks (IXE Q12W; N = 433) or every 24 weeks (IXE Q24W; N = 433) for a duration of 12 weeks, following an initial 160-mg starting dose. At Week (Wk) 12 IXE-treated patients scored as high responders (sPGA 0/1; N = 127), and PBO (N = 226) for an additional 48 weeks (end point Wk 60). HRQoL was assessed using the Itch Numeric Rating Scale (Itch NRS, 0 = no itching, 10 = worst itch imaginable). Skin pain was measured using a visual analog scale (VAS, 0 = no skin pain, 100 = severe skin pain) and patient bothersomeness was assessed using the Ps Skin Appearance Bothersomeness measure (PSAB; for each of 3 items: 0 not at all bothered, 10 extremely bothered). Between group comparisons were made using mixed effects models; within group comparisons were made using t-tests after imputing missing data using last observation carried forward. Response rates used the nonresponder imputation method.

Results: At Wk 60, significant improvements in itch, skin pain, and PSAB were observed between IXE Q4W (P < .001) or IXE Q12W (P < .05) vs PBO. Among patients treated with IXE Q4W during the maintenance period, the mean change from BL (score: 6.7) to Wk 12 was -5.7 (P < .001) vs BL; and remained the same at Wk 60 (P > .001 vs BL). The percentage of patients maintaining an Itch NRS score of 0 was similar between Wk 12 (52.4%) and Wk 60 (50.2%). Skin pain was also significantly reduced from BL (score: 45.9) to Wk 12 (change from BL: -21.8; P < .001 vs BL) and remained the same at Wk 60 (P > .001 vs BL). The rate of patients reporting no skin pain remained similar from Wk 12 (55.0%) through Wk 60 (52.4%). Finally, changes in PSAB scores from BL (score: 23.9) remained consistent from Wk 12 (-20.9; P < .001 vs BL) through Wk 60 (-22.8; P < .001 vs BL).

Conclusions: IXE provides effective and sustained improvement in itch, skin pain, and PASI outcomes over 60 weeks.

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Treatment with ixekizumab over 60 weeks provides sustained improvements in itch and other patient reported outcomes: Results from UNCOVER-1, a phase 3 trial

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Background: Itching is the most common and bothersome symptom of psoriasis (Ps). Ixekizumab (IXE) is an anti-IL-17A monoclonal antibody with high binding affinity shown effective in the reduction of Ps plaques and itch over a 12 week period. The objective of this study was to assess the sustainability of improvements in key Ps symptoms in responders over 60 weeks of treatment with IXE.

Methods: In this phase 3, multicenter, double-blind, placebo (PBO)-controlled trial, patients were randomized to receive subcutaneous 80-mg IXE as one injection every 2 weeks (IXE Q2W; N = 433) or every 4 weeks (IXE Q4W; N = 433) or every 12 weeks (IXE Q12W; N = 433) or every 24 weeks (IXE Q24W; N = 433) for a duration of 12 weeks, following an initial 160-mg starting dose. At Week (Wk) 12 IXE-treated patients scored as high responders (sPGA 0/1; N = 127), and PBO (N = 226) for an additional 48 weeks (end point Wk 60). HRQoL was assessed using the Itch Numeric Rating Scale (Itch NRS, 0 = no itching, 10 = worst itch imaginable). Skin pain was measured using a visual analog scale (VAS, 0 = no skin pain, 100 = severe skin pain) and patient bothersomeness was assessed using the Ps Skin Appearance Bothersomeness measure (PSAB; for each of 3 items: 0 not at all bothered, 10 extremely bothered). Between group comparisons were made using mixed effects models; within group comparisons were made using t-tests after imputing missing data using last observation carried forward. Response rates used the nonresponder imputation method.

Results: At Wk 60, significant improvements in itch, skin pain, and PSAB were observed between IXE Q4W (P < .001) or IXE Q12W (P < .05) vs PBO. Among patients treated with IXE Q4W during the maintenance period, the mean change from BL (score: 6.7) to Wk 12 was -5.7 (P < .001) vs BL; and remained the same at Wk 60 (P > .001 vs BL). The percentage of patients maintaining an Itch NRS score of 0 was similar between Wk 12 (52.4%) and Wk 60 (50.2%). Skin pain was also significantly reduced from BL (score: 45.9) to Wk 12 (change from BL: -21.8; P < .001 vs BL) and remained the same at Wk 60 (P > .001 vs BL). The rate of patients reporting no skin pain remained similar from Wk 12 (55.0%) through Wk 60 (52.4%). Finally, changes in PSAB scores from BL (score: 23.9) remained consistent from Wk 12 (-20.9; P < .001 vs BL) through Wk 60 (-22.8; P < .001 vs BL).

Conclusions: IXE provides effective and sustained improvement in itch, skin pain, and PASI outcomes over 60 weeks.

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Treatement with ixekizumab over 60 weeks provides sustained improve-
ments in work productivity and activity levels: Results from UNCOVER-1, a pla-
ty trial in patients with moderate to severe psoriasis
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Background: Psoriasis (Ps) negatively impacts work-related activities. Ixekizumab (IXE), an anti-IL-17A monoclonal antibody with high binding affinity, has been shown effective in reducing Ps severity in patients with moderate-to-severe Ps over a 12-week induction period. The objective of this study was to assess the sustainability of improvements in work productivity in high responders over 60 weeks of treatment with IXE.

Methods: In a phase 3, multicenter, double-blind, placebo-controlled trial (UNCOVER-1), patients were randomized to receive subcutaneous 80 mg IXE as 1 injection every 2 weeks (IXE Q2W, N=453) or every 4 weeks (IXE Q4W, N=432), for a duration of 12 weeks following an initial 160 mg starting dose. At Week 12, IXE-treated patients scored as high responders (sPGA 0/1; N=682) were randomized, and a subset of patients (n=229) continued IXE Q4W treatment for 48 weeks (end point of Week 60). Work productivity, expressed as percent impairment due to Ps, was measured by the Work Productivity and Activity Impairment Ps (WPAI-PSO) Questionnaire from which 4 scores are derived: absenteeism (Abs; % work time missed), presenteeism (Pres; % impairment at work), work productivity loss (WPL), activity impairment (AI; % impairment in activities outside of work). Employed patients responded to the first 3 items; all patients responded to the activity impairment item. Treatment effects were evaluated using within group t-tests after importing the missing data using last observation carried forward.

Results: High responder patients (sPGA 0/1) who continued on IXE Q4W treatment during the maintenance period (n=229) reported a significant change in their WPAI scores at Week 12 from baseline (Baseline scores — Abs: 3.8, Pres: 21.7, WPL: 19.1, AI: 27.5 vs Pres: -0.1 for baseline). These significant reductions in WPAI scores were sustained throughout the maintenance period (Week 60 change from baseline: Abs: -3.2, Pres: -17.8, WPL: -19.0, AI: -28.4, P < 0.05 vs baseline for all).

Conclusions: High responder patients continued on IXE Q4W showed significant improvement in their work productivity and activity levels at Week 12 and reported little variation in the maintenance period. These data demonstrate that treatment with IXE provides patients with the sustained ability to improve their work-related attendance, productivity, and overall activity levels.

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Two multicenter, randomized, double-blind, parallel group comparison studies of halobetasol propionate lotion, 0.05% versus vehicle lotion in adult subjects with plaque psoriasis
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Topical corticosteroids are one of the cornerstones of treatment of psoriasis and other corticosteroid-responsive dermatoses. The objective of the study was to compare the efficacy and safety of novel formulations of halobetasol propionate (0.05% (HBP Lotion) and vehicle (VEH Lotion)) when applied twice daily in adult subjects with plaque psoriasis. Two phase 3, multicenter, double-blind, randomized (1:1), vehicle-controlled studies were conducted in 443 male or female adult subjects with plaque psoriasis involving 2-12% body surface area. Subjects applied the test article to all psoriasis plaques twice daily for 14 days (±50 g/week). An Investigator’s Global Assessment (IGA) was performed as an overall assessment of disease severity of the entire treatment area as 0=clear; 1 = almost clear; 2 = mild; 3 = moderate, and 4 = severe/very severe at Baseline and Days 8 and 15. Individual sign/symptoms of diseases were also graded on a similar scale. All enrolled subjects were included in the intent-to-treat population. Treatment “success” was defined as an IGA score of 0 (clear) or 1 (almost clear) with at least a two grade improvement in severity relative to Baseline. The results support the safety and effectiveness of the topical application of HBP Lotion twice daily for 2 weeks in the treatment of plaque psoriasis. The HBP Lotion group had a statistically greater proportion of subjects with IGA success (Study 1: 49/110, 45.5%; Study 2: 49/110, 44.5%) than the VEH Lotion group (Study 1: 7/111, 6.3%; Study 2: 8/112, 7.1%) at Day 15 (P < 0.001). The HBP Lotion group also had statistically greater proportions of subjects with success than the VEH Lotion group for reduction of scaling, erythema, and plaque elevation at Day 15 (each, P < 0.001). The incidences of local skin reactions (telangiectasia, skin atrophy, burning/stinging, and folliculitis) and adverse events were low and generally similar for both treatment groups and to that reported for other marketed formulations. Adverse reactions with an incidence ≥1% included application site pain (HBP Lotion: Study 1 = 0%, Study 2 = 1.8%; VEH Lotion: Study 1 = 5.6%, Study 2 = 0.9%). These results demonstrate that treatment with HBP Lotion is well-tolerated and has a clinically beneficial effect on psoriasis in adult subjects. Supported 100% by Ferndale Laboratories.

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Type IV pityriasis rubra pilaris presenting as desquamating plaques
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Pityriasis rubra pilaris (PRP) is an inflammatory papulosquamous dermatosis that is characterized by palmoplantar hyperkeratosis. We report a case of type IV circumscribed juvenile PRP in an 8-year-old Hispanic girl. Our patient presented with hyperkeratotic plaques on the hands, feet, and knees bilaterally. Histopathology revealed psoriasis-like hyperplasia of the epidermis with extensive geometric parakeratosis. Based on clinical and histopathologic findings, diagnosis was consistent with pityriasis rubra pilaris, type IV. The patient was treated with triaminolone 0.1% ointment and tazarotene 0.1% with improvement. Pityriasis rubra pilaris (PRP) is an inflammatory papulosquamous dermatosis rarely seen in children. Griffiths divided PRP into 5 classes based on clinical features. Type III PRP is the most common form in children. Type IV juvenile PRP is characterized by well-demarcated hyperkeratotic plaques limited to the hands, feet, knees, and elbows. This class does not have a tendency to progress to erythroderma or turn into classical PRP. Due to relative rarity, randomized controlled trials are lacking. Most cases of juvenile PRP are started on topical treatment and only given oral therapy if topical fails. Topical treatments include corticosteroids, calcipotriene, calcineurin inhibitors, keratolytics, and tretinoin. It seems acceptable for patients with juvenile PRP to initiate topical therapies before considering oral medication.

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Ustekinumab improved health-related quality of life in patients with psoriasis treated in a real-world setting: Results from PSOLAR
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Objective: To evaluate the impact of adalimumab (ADA), etanercept (ETN), infliximab (IFX) vs ustekinumab (UST) on patient (pt) reported outcomes in PSOLAR at 6 and 12 months (mos) of treatment.
Methods:Pts who started and remained on first biologic therapy on registry at 6/12 mos were evaluated. Treatment groups were mutually exclusive, and pts using concomitant systemic PsO therapies were excluded. An analysis of covariance (ANCOVA) with adjustment for baseline (BL) characteristics, was performed to compare the mean improvement in DLQI and the proportion of pts achieving a clinically meaningful change (i.e., reduction ≥ 5 points) in DLQI stratified by BL score (i.e., DLQI < 10 and DLQI≥10) for ADA, ETN, IFX vs UST at 6/12 mos.
Results: Of the 2541 pts initiating a first biologic on registry, 2076 had complete data on DLQI. ADA (662), ETN (257), IFX (116), and UST (1041). BL characteristics were generally comparable across treatment groups, except IFX group had more severe PsO at 6 and 12 mos, respectively, the overall mean improvement in DLQI from BL was 4.5 and 4.9 for ADA, 6.2 and 5.4 for ETN, 6.5 and 6.9 for IFX, and 6.9 and 7.5 for UST. Among the pts with a DLQI score ≥ 10 at BL, the proportion achieving a clinically meaningful reduction (≤ 5) at 6 mos was 45.3% for ADA, 41.5% for ETN, 53.8% for IFX, and 54.7% for UST. Among pts with DLQI score ≥ 10 at BL, the proportions of pts achieving a reduction (≥ 5) at 6 mos (76.9% for ADA, 82.8% for ETN, 76.1% for IFX, and 86.7% for UST). For both DLQI < 10 and DLQI≥10 groups, responses were generally comparable at 12 mos vs 6 mos within each treatment group. The adjusted analysis demonstrated that mean change from BL at 6 mos for UST were significantly better than the other treatment groups (ADA, ETN, and IFX: 1.053 [95%CI 0.940, 1.167; P = 0.01], 1.061 [95%CI, 1.056, 1.066; P = 0.02], and 1.027 [95%CI 1.027, 2.065; P = 0.04]). At 12 mos, DLQI improvement in the UST group was significantly better vs ADA and ETN, but did not reach significance vs IFX.
Limitations: Due to lack of randomization in this observational study, results were adjusted for identified relevant confounding factors. Residual confounding could still exist for unmeasured variables, eg, adherence to therapy, dosing adjustments.
Conclusions: In PSOLAR, skin-related HRQoL was significantly better in pts treated with UST vs ADA and ETN at 6 and 12 mos and significantly better than IFX but not at 12 mos.
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Cosmetic use of poly-L-lactic acid for injections for nonfacial areas
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Introduction: Poly-L-lactic acid is an aliphatic polyester, biocompatible, fully absorbable and immunologically inert substance. Its action mechanism is based on the increase of dermal tissue by stimulating collagen production, and the results last for up to two years. The application of this substance in the face is well-known, however there are few publications on its use in other areas of the body.
Objective: To report 10 cases treated successfully with poly-L-lactic acid to rejuvenate the medial and anterior region of the arms and the thighs.
Materials and methods: 10 patients were treated with 3 sessions each, at four weeks intervals, on their age ranged from 35 to 65 years. Six patients had their arms treated and four patients, their thighs. Poly-L-lactic acid was reconstituted on the day prior to its use with 8 ml of sterile distilled water and preserved at room temperature. Immediately before use, the vial was shaken vigorously and, by counting and drawing volumes of the vial (8 ml) and a solution (8 ml of distilled water and 4 ml of 2% lidocaine), the final Poly-L-lactic acid dilution per vial was 20 ml. The product was applied using 1 ml syringe and the linear retrograde technique, injecting approximately 0.1 ml into the deep dermis in parallel cylinders or crossed cylinders (like “X”). Approximately 5 ml of the product was used per arm, 10 ml per thigh. After the application, vigorous massage was performed in the treated area, and the patients were instructed to use the same massage technique at home, for 5 minutes, five times a day for 5 days.
Results: Four weeks after the first application, there was noticeable improvement in the texture of the skin in the treated area; there was a reduction in sagging and in the ‘orange peel’ appearance of cellulitis. However, the results were more evident after the second application. The third and final application only slightly improved, and remained unaltered after 12 months. No important side effects were detected. The observed side effects were pain during the application, local erythema and edema at the site of punctures, and transient hematomas.
Conclusion: This article described very promising results in the treatment of sagging in arms and thighs, but more studies are necessary, with more patients and longer follow-up, to better quantify treatment results, and to establish parameters for the standardization of applications in the arms, thighs and other areas of the body.
Commercial support: None identified.

5275
Repetitive genitale syringomas: Minimally invasive approach with serial microexcisions and suture-adhesive repair
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Syringomas are relatively uncommon, benign adnexal tumors, a small subset of which occur on the genitalia. Although syringomas are generally asymptomatic and do not carry a risk of malignant transformation, therapy is often sought for cosmetic reasons. We present a case of repetitive penile syringomas successfully treated with multiple (micro)excisions and suture-adhesive repair. The patient was a 75-year-old male presented for treatment of asymptomatic but persistent genital lesions. On examination, there were 50 white dermal papules on the surface of the penile shaft. The remainder of the skin exam was unremarkable. He denied any history of keratosis, lichen simplex chronicus, or lichen planus. After discussions, the patient elected to pursue therapy for cosmetic reasons. We performed multiple (micro)excisions and used adhesive suture. The first procedure was performed on the anterior and lateral surface of the penis. Poly-L-lactic acid was injected to rejuvenate the medial and anterior region of the arms and the thighs. A 0.5 cm incision was made in the subcutaneous plane with local anesthesia, and the syringomawas excised. The dermis was approximated with interrupted 5-0, Fast Absorbing Plain Gut suture followed by application of topical 2-0ctyl cyanoacrylate skin adhesive (Dermabond Advanced) along the incision line. Lesions of less than 2 mm were left to heal by secondary intention. At follow-up, all sites had healed well with imperceptible scars and no tenderness. The patient was satisfied with the appearance of the penis, and is returning for further rounds of treatment. Results of the current case are encouraging and we propose a minimally invasive approach in reticular and subcutaneous syringomas, with excellent cosmetic results and acceptable recurrence rates. We have not encountered any cases of malignant transformation in our retrospective study, and we believe this one case is contributory to the existing body of knowledge.
Commercial support: None identified.

SURGERY—COSMETIC

2924
Case report: A novel modality using microtechnology for the treatment of Fox-Fordyce disease
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Fox-Fordyce disease (FFD, also known as apocrine milia) is a rare dermatologic condition characterized by multiple flesh-colored perifollicular papules distributed symmetrically on the upper body. Ablation and examination of perifollicular, periarolar regions, and also in less common locations such as the preauricular area, umbilicus, and medial thighs. FFD typically presents as discrete, dome-shaped, firm and smooth papules in a grouped configuration. The diagnosis is typically made clinically, by histologic examination of the lesions showing hyperkeratosis, parakeratosis, perifollicular xanthomatosis, and spongiosis. This condition mainly affects young females between 15 and 35 years of age. The disease is often severely pruritic and may be exacerbated by sympathetic stimulation such as stress, exercise, and menstruation. The disease affects young females between 15 and 35 years of age. The disease is often severely pruritic and may be exacerbated by sympathetic stimulation such as stress, exercise, and menstruation. Castroviejo ophthalmic scissors, larger clusters of lesions (≥ 1 cm) were removed via microexcisions and suture-adhesive repair.

Commercial support: None identified.

HIV FACIAL LIPOTROPHIC TREATMENT WITH A VOLUMIZING HYALURONIC ACID FILLER

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Background: HIV facial lipotrophic (HIV FLA) is a medical condition that occurs secondary to highly active anti-retroviral therapy (HAART), and affects quality of life and adherence to HAART medication regimen. There is an unmet need for treatment of HIV FLA due to limitations with FDA-approved fillers for this indication: poly-L-lactic acid (Sculptra, Galderma) and calcium hydroxyapatite (Radiesse, Merz). Hyaluronic acid (HA) represents a different class of filler than the two HIV FLA FDA-approved classes with significant advantages for patients. A 20 mg/ml HA filler (Voluma, Allergan) may provide immediate aesthetic correction and fewer adverse effects compared to current FDA-approved treatments for HIV FLA. Another benefit of this filler includes the ability to use hyaluronidase to "correct" or "modify" HA therapy.

Methods: Subjects received one treatment (mid-face and temples) and one optional touch-up. All subjects have received their 3-month follow-up evaluation. Final study endpoints are at 12 months. Carruthers Lipotrophy Severity Scale (CLSS) and Global Aesthetic Improvement Scale (GAIS) were used to evaluate efficacy. Subjects were scored pre-treatment, immediately post-treatment, and at all follow-up visits. CLSS is a 4-point scale (1 to 4): 1 as "mild and localized HIV FLA" and 4 as "HIV FLA extending up to the eye sockets." A Snellen chart was used to assess visual acuity immediately pre-, immediately post and 15 minutes posttreatment.

Results: Baseline HIV FLA severity was CLSS grade 2 (n = 16; average 6.2 cc HA received), grade 3 (n = 5; average 9.9 cc HA received), and grade 4 (n = 1; 266 cc HA received). Immediately post-first treatment, there was significant decrease for CLSS score (P < .001, Wilcoxon signed rank test) and 19/20 subjects achieved CLSS score of 1. At 3-month follow-up, there was significant decrease for CLSS score compared to baseline (P < .001) and all 20 subjects achieved CLSS score of 1. GAIS scored 100% (95% CI 0.85, 1, binomial confidence interval) of subjects as "very much improved." There were no treatment-related adverse events, vision or neurological changes. Conclusion: Midstudy results demonstrate excellent safety and efficacy and support use of this HA filler for treatment of HIV FLA. We hope future randomized controlled trials will demonstrate long-term safety and efficacy of this HA filler for treatment of HIV FLA with the desired ultimate goal of FDA-approval of this HA filler for treatment of HIV FLA.

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Autologous fat injection (AFI) for facial augmentation has become a popular cosmetic procedure at local plastic surgery clinics. It is considered safe, with no severe adverse reactions compared to synthetic filler injection. However, we encountered the patient with periorbital lipogranuloma, a rare side effect of AFI for forehead augmentation. A 46-year-old woman presented with swelling on the left upper eyelid for 3 weeks. She had received cosmetic AFI on the forehead at local plastic surgery clinics twice; 7 and 4 months previously. The fat tissue was harvested from her abdomen with a 32-gauge needle at the first injection and stored frozen for the second injection. Histopathologically, a foreign body reaction with lipid vacuoles, multinucleated giant cells, and fibrosis was observed at subcutaneous layer. The patient was diagnosed with lipogranuloma following AFI for subjects as "very much improved." There were no treatment-related adverse events, vision or neurological changes. Conclusion: Midstudy results demonstrate excellent safety and efficacy and support use of this HA filler for treatment of HIV FLA. We hope future randomized controlled trials will demonstrate long-term safety and efficacy of this HA filler for treatment of HIV FLA with the desired ultimate goal of FDA-approval of this HA filler for treatment of HIV FLA.

The effect of needle size on pain perception in patients treated with botulinum toxin A injections: A split-face, patient- and injector-blinded randomized controlled trial

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Background: Transcutaneous injection through smaller hollow bore needles may decrease patient discomfort, but current evidence is equivocal. Objective: This study compares injection discomfort with the use of 30 versus 32-gauge needles.

Method: In this double-blinded, split-face, randomized controlled trial, one side of the subject’s forehead received botulinum toxin in saline injected with a 52-gauge needle; other side, with a 30-gauge needle. In addition, each subject received randomized injections of saline to their upper inner arms. Subjects were between the ages of 25 to 70, in good health, female, and with moderate dynamic forehead/glabellar wrinkles. This study took place between November 2013 and February 2014 at an urban university dermatology clinic.

Results: Twenty subjects completed the study. Primary outcomes measured patient-reported pain on a visual analog scale (VAS) on either side of the face and arms, and the proportion of patients with clinically significant pain. Secondary outcomes included patient-reported characterization of the pain at both sites. Overall, facial and arm injections were nominally but not significantly more painful with 30-gauge needles (face: 4.16 vs 3.41, P = .35; arm: 1.60 vs 1.21, P = .45). For facial injections, 40% of subjects reported clinically significant pain (VAS ≥ 5.4) with the use of 30-gauge needles versus 15% of subjects with the use of 52-gauge needles (OR: 3.80, CI: 1.05-13.78, P = .0424). Arm injections did not exhibit a difference in pain associated with needle type. There was no difference in character of pain associated with needle bore.

Conclusion: For facial injections of neurotoxin in saline, 30-gauge needles were associated with a greater incidence of clinically significant pain than 32-gauge needles. For patients prone to experience clinically significant pain upon facial injections, use of 32-gauge needles may minimize this discomfort.

Commercial support: None identified.

The facial adipose system: Its role in facial aging and approaches to volume restoration

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Background: Volume loss in facial adipose tissue plays a critical role in the aesthetics of facial aging. Furthermore, the facial adipose system is a complex network of distinct compartments, and a detailed understanding of these compartments is essential for optimal facial volume restoration.

Objective: To review the facial adipose system, age-related changes, and the role of volume restoration products for facial rejuvenation.

Methods: Publications including cadaver dissection studies and more recent studies using computed tomography were reviewed to provide an up-to-date understanding of the facial adipose system anatomy and age-related changes. Current volume restoration treatment options including hyaluronic acid, calcium hydroxyapatite, and poly-L-lactic acid are discussed.

Results: Facial aging is associated with volume loss in superficial and deep adipose compartments, including those of the forehead, cheek, lip, chin, and jowl areas. Volume restoration products can be used to address the age-related changes of the facial adipose compartments.

Conclusion: Understanding the complex network of facial adipose compartments and their age-related changes allows for the optimal use of injectable volume restoration products for facial rejuvenation that can be customized to the anatomical needs of each patient.

Commercial support: None identified.
A case of idiopathic scrotal calcinosis in a 23-year-old Filipino who underwent partial scrotectomy.

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Introduction: Scrotal calcinosis is a rare benign disorder of the scrotal skin that can cause disfigurement thus immediate management is sought. A multispecialty collaboration is recommended for a more comprehensive management.

3578
A case of multiple nevus lipomatosus superficialis in a fourteen year old female

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Introduction: Nevus lipomatosus superficialis is a rare benign hamartomatous skin lesion. It is classified into 2 types: solitary and multiple. The multiple type, as seen in the patient, appears within the first 2 decades of life. Lesions consist of multiple, whitish firm and nontender nodules over the scrotum, gradually increasing in size and number causing concerns of disfigurement. Serum calcium level is normal. Excision biopsy of a nodule was done which revealed well-circumscribed calcium deposits that are the typical histologic features of idiopathic scrotal calcinosis. Due to the multiple lesions covering about 60% of the scrotum, the patient was comanaged with urology service and partial scrotectomy was done.

Conclusion: Scrotal calcinosis is a rare benign disorder of the scrotal skin that can cause disfigurement thus immediate management is sought. A multispecialty collaboration is recommended for a more comprehensive management.

3824
A novel method for preparing recipient site in epidermal graft in acral vitiligo using electrodissection

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Introduction: Acral vitiligo is considered one of the challenging dermatoses facing dermatosurgeons. Although several surgical procedures are used for treating such cases, yet they need special experience to avoid graft rejection. These procedures also are time consuming and need special and expensive equipment for preparing recipient site.

Aim of the study: Creation of a simple, easy, effective, time saving and less costly method for preparation of recipient site in epidermal graft procedures.

Patients and methods: Epidermal graft was obtained by cupping of normal skin in the thigh area, served as donor site, of twenty four patients suffering from stable acral vitiligo. Electro dissection equipment was used for dermocutaneous dermal graft at recipient areas. Follow up of patients continued for 6 months postprocedural.

Results: Repigmentation was obtained in twenty one cases successfully. Preparation of recipient sites was done effectively and successfully in all cases without graft rejection.

Conclusion: Electrodissection may provide a new, simple and effective method for preparing recipient site in epidermal grafts treating acral vitiligo.

Commercial support: None identified.

3851
A novel pulse-string suture and dehydrated human amnion/chorion membrane allograft closure technique for the repair of defects following Mohs micrographic and excisional surgery

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Purpose: To determine the efficacy, scar satisfaction, and ease of wound care of the combination of pulse-string suture and dehydrated human amnion/chorion membrane (dHACM) allograft closure technique for the repair of Mohs micrographic (MMS) and excisional surgery defects in a medically fragile patient population.

Design: In this retrospective review, 4 elderly patients with multiple comorbidities, polypharmacy, and social issues who desired surgical management of sizeable, symptomatic skin cancers utilizing closure methods that avoided extensive reconstruction and minimize wound care responsibilities were identified. Case 1 was an 84-year-old with a left temporal scalp basal cell carcinoma (BCC) requiring 4 MMS stages leaving an 18 cm² defect. Partial closure and central pulse-string decreased it to 2.0 cm². Case 2 was an 85-year-old with an occipital scalp BCC. After 3 MMS stages, the defect measured 15.0 cm² and after pulse-string suture was 4.4 cm². Case 3 was a 101-year-old with a right dorsal hand squamous cell carcinoma. After 2 MMS stages, a defect of 10.5 cm² remained. Pulse-string technique decreased it to 5.2 cm². Case 4 was an 80-year-old who underwent wide local excision for a recurrent scalp melanoma leaving a 7.28 cm² defect and cinched with pulse-string suture to 3.4 cm². All defects were covered in trimmed dHACMs with sterile pressure dressings. After 5 weeks, patients began a series of low-level pulsed dye laser (PDL) treatments. All cases had complete repigmentation within 5-9 weeks.

Discussion: All defects healed rapidly without complications. Rationale for employing both surgical and allograft methods of reconstruction stemmed from the goal to facilitate wound healing. The pulse-string suture can decrease defect size and is fast, distributes wound tension, provides hemostasis, and minimizes healing duration while maintaining function. dHACM facilitates healing in wounds refractory to aggressive management and reduces healing times. PDL was utilized for its antimicrobial and potential wound healing properties. Conclusion The use of combination pulse-string suture and dHACM closure technique for reconstruction of surgical defects following micrographic or excisional surgery led to high patient satisfaction, excellent cosmetic outcomes, acceptable healing times, and low wound care burden. This closure method may be a consideration for the repair of cutaneous surgical defects in select medically challenged patient populations.

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2420
A retrospective study of Mohs micrographic surgery trends over 20 years in a university medical center
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Background: Mohs micrographic surgery was first developed in the 1950s by Dr. Fredric Mohs. It did not become a widespread surgical technique until the 1970s and 1980s, and in the last couple of decades there has been a significant increase in the amount of Mohs surgery performed. As a result, a large amount of data is available to better understand the patients who receive Mohs surgery and their outcomes. The aim of this report is to understand trends and changes that have occurred in the patient population and outcomes in Mohs surgery over the last 20 years
Methods: This is a retrospective cohort study of patients treated with Mohs micrographic surgery. All patients who were in the Mohs Surgery registry who received Mohs surgery at the University of Virginia in 1991, 2001, and 2011 were included in the study totaling 1959 patients. Our database comes from the cumulative experience of four Mohs surgeons.
Results: We found an increase in the male to female ratio of Mohs patients in 2001 and 2011 to 1.7:1 compared to 1.5:1. We found that the age of patients receiving Moh’s surgery was similar over the last 20 years with an average age at date of surgery of 66 years in 1991, 67.1 years in 2001, and 68 years in 2011. We also found that lesions treated with Moh’s surgery changed from being 85% basal cell carcinomas in 1991 to 75% and 76% in 2001 and 2011, respectively. We found that there was a decrease in the average number of stages with 30% of surgeries being one stage in 1991, compared to 55% in 2001 and 71% in 2011. We also found a change in lesion location with the scalp increasing from 2% to 6%, the nose decreasing from 25% to 2%, from 1991 to 2011. The rest of the facial areas remained about the same in frequency. The incidence of skin cancer treated on the head and neck compared to the rest of the body was 35% in 1991, 32% in 2001, and 91% in 2011. Other studies support our results of over 90% of Mohs surgery being performed on the head and neck area2.
Conclusions: The profile of patients who undergo Mohs surgery has changed over the last 20 years. We have observed changes not only in the age and the gender ratio of patients, but also in the lesion location and the number of stages required to remove the lesion. This could reflect the increased acceptance of Mohs surgery as well as the experience of the Mohs surgeon.

Commercial support: None identified.

3543 Aesthetic outcomes of a combination melolabial interpolation flap and local tissue flap for large nasal defects
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Introduction: Large nasal defects, particularly those involving multiple cosmetic subunits, present a reconstructive challenge to the Mohs surgeon. The paramedian forehead flap (PMFF) has become the repair-of-choice for such defects. However, the PMFF does not have optimal reconstructive modality for such defects, due either to patient preference or other contraindications. The combination of a melolabial interpolation flap and a local tissue flap may serve as a reasonable alternative to PMFF in an aesthetic manner, and may serve as a reasonable alternative to PMFF in appropriate cases.

Commercial support: None identified.

2768 Bilateral Webster flap for closure of large defects of the nasal dorsum
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Large defects of the nasal dorsum are notorious for presenting reconstructive challenges, as the dermatologic surgeon must approach the repair of such defects in a manner that restores symmetry of the nose and avoiding alteration in shape or function. Many surgical techniques have been described to facilitate closure of sizeable nasal dorsum defects in an aesthetic manner, but few cases in an aesthetic manner, but few cases in aesthetic outcomes. The aim of this report is to understand trends and changes that have occurred in the patient population and outcomes in Mohs surgery over the last 20 years
Methods: This is a retrospective cohort study of patients treated with Mohs micrographic surgery. All patients who were in the Mohs Surgery registry who received Mohs surgery at the University of Virginia in 1991, 2001, and 2011 were included in the study totaling 1959 patients. Our database comes from the cumulative experience of four Mohs surgeons.
Results: We found an increase in the male to female ratio of Mohs patients in 2001 and 2011 to 1.7:1 compared to 1.5:1. We found that the age of patients receiving Moh’s surgery was similar over the last 20 years with an average age at date of surgery of 66 years in 1991, 67.1 years in 2001, and 68 years in 2011. We also found that lesions treated with Moh’s surgery changed from being 85% basal cell carcinomas in 1991 to 75% and 76% in 2001 and 2011, respectively. We found that there was a decrease in the average number of stages with 30% of surgeries being one stage in 1991, compared to 55% in 2001 and 71% in 2011. We also found a change in lesion location with the scalp increasing from 2% to 6%, the nose decreasing from 25% to 2%, from 1991 to 2011. The rest of the facial areas remained about the same in frequency. The incidence of skin cancer treated on the head and neck compared to the rest of the body was 35% in 1991, 32% in 2001, and 91% in 2011. Other studies support our results of over 90% of Mohs surgery being performed on the head and neck area2.
Conclusions: The profile of patients who undergo Mohs surgery has changed over the last 20 years. We have observed changes not only in the age and the gender ratio of patients, but also in the lesion location and the number of stages required to remove the lesion. This could reflect the increased acceptance of Mohs surgery as well as the experience of the Mohs surgeon.

Commercial support: None identified.

2560 Clinical characteristics of lower extremity surgical wound infections in dermatologic surgery: The case for doxycycline prophylaxis based upon a 2-year retrospective review
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Introduction: The lower extremities are recognized as having an increased risk for surgical site infections (SSI) following dermatologic surgery. Frequently, a prophylactic course of postoperative cephalexin is prescribed as SSI prophylaxis in this location. We evaluated numerous clinical characteristics of lower extremity dermatologic surgery complicated by SSI in patients treated at University of California, San Diego (UCSD) in 2013 and 2014. Furthermore, we compared the infection frequency in the context of a transition from prophylactic cephalexin to doxycycline. We employed a quality improvement initiative at our institution to identify if prophylactic doxycycline would reduce lower extremity infection rate.
METHODS: A retrospective chart review was employed to analyze both wide local excisions (WLE) and Mohs surgery cases performed on the lower extremity from January 1, 2013 and December 31, 2014. Results: 279 cases of cutaneous surgery on the lower extremity were included. The mean patient age was 70 years (std ± 14 years). 64% of procedures were Mohs surgeries and 36% were WLE. Mohs surgery (7%) was associated with significantly lower infection rate compared to WLE (17%) (P = 0.01). P. aeruginosa prophylaxis was used in 40% of cases, doxycycline in 25%, and no prophylaxis in 29%. The rate of SSI occurrence in the first 9 months of 2014 was 12% compared to a SSI rate of 2% in the last three months of 2014 (P = 0.04). When controlling for prophylactic antibiotics, Mohs procedures continued to show significantly reduced infection rate (P = 0.03). However, doxycycline lost its significance when controlling for procedure type (P = 0.39).
Commercial support: None identified.

Commercial support: None identified.
Comparison of flap length and hair bearing skin required by ipsilateral and contralateral paramedian forehead flaps to reconstruct specific cosmetic subunits of the nose

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Background: Paramedian forehead flaps are used to repair large surgical defects on the nose. To create a flap with sufficient length and arc position to reach the inferior subunits, the pedicle is positioned to include the right or left supratrochlear vessels. For midline wounds, a right or left pedicle will produce an equivalent outcome. Asymmetry is introduced by wounds off the midline. An ipsilateral pedicle is thought to be closer to the wound, but is subject to greater rotational shortening to reach a laterally positioned wound. A contralateral pedicle is thought to be farther away, but incurs less rotational shortening. The prevailing theory is the ipsilateral pedicle’s distance of rotational shortening is less than the distance added by a contralateral position. This study was designed to evaluate which pedicle position requires the shortest flap and least hair bearing skin for each cosmetic subunit.

Methods: A vertical line passing through the medial canthus will intersect the orbital rim at the location of the supratrochlear artery ± 3 mm medially or laterally. This landmark was used for the following measurements: vertically to the hairline and to the center of five ipsilateral and contralateral cosmetic subunits: lateral root, lateral dorsum, lateral tip, sidewall, andalar lobule. Using a tape measure, the distance from ipsilateral and contralateral pedicles to each cosmetic subunit was recorded bilaterally in 21 healthy volunteers.

Results: The percentage of shorter ipsilateral flaps varies by cosmetic subunit: lateral root 98%, lateral dorsum 83%, lateral tip 88%, sidewall 90%, andalar lobule 93%. The percentage of flaps requiring use of hair bearing skin also varies by cosmetic subunit and pedicle position: lateral root 6/48% (% ipsilateral/% contralateral), lateral dorsum 2/4.4/8, lateral tip 47/6/64.3, sidewall 4/10/67, andalar lobule 88/1/69.0.

Discussion: For wounds involving cosmetic subunits off the midline, the ipsilateral flap is predominantly shorter. Ipsilateral rotational shortening is less than the added positional distance of a contralateral flap. Ipsilateral flaps more often avoid hair bearing scalp than contralateral flaps. More extensive undermining of the pedicle can be performed to relieve the additional torque on an ipsilateral blood supply. Pedicle undermining also repositions the pedicle inferiorly, and is able to avoid hair bearing skin on the great majority of ipsilateral flaps for most cosmetic nasal subunits.

3542 Incidence and risk factors of blood splatter in dermatologic surgery: Need for facial protection
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Background: Blood splatter in dermatologic surgery is common, yet there is not a clear recommendation on facial protection. The use of masks with visors has increased in recent years to improve protection against mucocutaneous bloodborne virus transmission, although their utility is unknown and their use variable. Aim: Assess the protection provided by masks with visor in dermatologic surgery.

Objectives: (i) Assess the presence of blood on the fabric, external and internal part of the visor of facial masks (ii) detect risk factors for blood platter.

Methods: Single-center prospective, observational study of all surgeries undertaken during 3 consecutive weeks in a UK teaching hospital. Each operator used a mask with visor for each procedure. If an assistant operator was present, their masks were assessed too. Presence of hemoglobin was confirmed with Kastle-Meyer test and the number of droplets recorded. Patient baseline information and data of each surgery were recorded. Univariate and multivariate analysis was undertaken to assess risk factors for blood splatter.

Results: (i) 545 surgeries were undertaken in the study period. A total of 410 masks with visor were collected. In 31% (15.12%), presence of hemoglobin was confirmed. 85.9% had blood splatter on the visor only, 14.5% on the fabric and visor and only one (1.6%) on the fabric only. The mean number of droplets on the external part of the visor was 7.2 (SD 7.5) and in 4 of these patients, there was blood splatter on the internal part of the visor. (ii) Multivariate analysis detected use of cautery (OR 30.67 (CI 95% 1.91-492.47)), particularly bipolar electrocautery, and length of the surgery (OR 1.04 (CI 95% 1.02-1.07)) as risk factors for blood splatter. Use of full protection/antiplaque therapy, grade of the operator, type, site and length of the surgery were not significant factors.

Conclusions: Our study has shown that blood splatter is more common on the visor than on the fabric of a facial mask and therefore use of masks with an integral visor is recommended. However, splatter can occasionally be present on the entire mask. Use of full protection is not guaranteed to prevent blood splatter. This study also demonstrates that use of cautery and length of the procedure are determinant factors for an increased risk of blood splatter.

Commercial support: None identified.
Keystone flap: Use in lower limb

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Background: The reconstruction of skin defects in legs become a challenge to dermatologists to certain dimensions of the wound. When the size is larger than 1.5 cm, primary wound closure or use of local flaps is not possible by the lack of volume and laxity in the adjacent skin surface. Therefore, an alternative method to treat these wounds is skin grafting that is often associated with topdr postoperative courses; the patient will be required to rest after the operation causing sometimes not only different kinds of skin and side effects, but also poor cosmetic results. This keystone flap technique, term borrowed from the top center stone, curvilinear shaped trapezoidal design, used in Roman arches, was first described in 2003 by Behan and modified by Stretch in 2008. This technique was initially proposed for infrapatellar defects reconstruction. This island flap based on perforating vessels, is easy to design and implement. Besides that, it does not require postoperative immobilization and has favorable cosmetic results.

Methods: We report a case of an 80-year-old male patient with hypertension, heart disease and anticoagulated. The patient has a 3 cm long, erosive and infiltrated lesion, located in the middle third of his right leg with 2 years of evolution. A biopsy confirms the diagnosis of an infiltrative basal cell carcinoma. The keystone flap technique is chosen to remove it. For that, a parallel arc to one edge of the wound, the inner edge of the flap, is drawn, at a distance equal to the width of the defect. This arc will be the outer line of the flap. The lateral edges of the arc are two lines perpendicular to the inner edge. The dissection below the arc is performed subcutaneously and bluntly, in order to preserve the vascularization of perforators, veins and nerves connections. Sometimes the trapezoidal flap is closed directly with VY advancement end.

Results: The surgery was performed under local anesthesia and without any complications. Both short- and medium-term results were satisfactory.

Conclusion: Keystone flap technique is a good option for surgical treatment of lower limb injuries. It is easily reproducible and presents a low rate of complications. Most patients make a good and early recovery and the cosmetic results are satisfactory because of the similar characteristics of the adjacent tissue used in it.

Commercial support: None identified.

Major ear reconstruction using Kirschner wires

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Excision of tumors of the auricle can result in large defects sometimes requiring major reconstructive procedures. Due to loss of skin and cartilage, recreating the complex anatomic architecture of this structure is a challenge for the dermatologic surgeon, and traditional techniques can be used to reconstruct the auricle. Auricular costal cartilage grafting is usually considered the best choice to replace the cartilaginous framework. Nevertheless, it is associated with significant morbidity. Alternatively, the use of Kirschner wires in major ear reconstruction. A 31-year-old man was recently submitted to wide excision of extensive basal cell carcinoma of the auricle, resulting in a large defect involving the upper two thirds of the ear. The auricular reconstruction with Kirschner wires was performed at the time of the initial excision. The auricular framework was recreated with two Kirschner wires which were folded and cut in order to restore the curved shape of the ear. The anterior aspect of the ear was reconstructed with the remaining skin and the posterior aspect was covered with the excised costal cartilage graft. The patient was discharged from the hospital on postoperative day 7, with the costal cartilage graft sutured in place. The patient had an uncomplicated healing and no significant complications. Postoperative care, necrosis of the distal portion of the fasciotemporal flap as well as the contiguous skin graft was developed, exposing the distal extremity of the wire, which was easily corrected by excision of the necrotic area and immediate direct closure. Kirschner wire is a rigid stainless steel wire widely used in orthopedic surgery for fixation of multiple types of fractures. The use of this synthetic material for repair smaller chondrocutaneous auricular defects was already described by our team. This is a simple, fast and delicate procedure that avoids the potential complications of the costal cartilage grafting and the psychological burden of the use of a fake auricular prosthesis.

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2771 Plaque type syringoma mimicking a microcystic adnexal carcinoma

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Background: Syringomas, benign tumors derived from the acroerysirium, histologically are composed of tadpole shaped epithelial strands and ducts. The histologic appearance may includes morphoeic basal cell carcinoma, microcystic adnexal carcinoma (MAC) and desmoplastoic trichoeepithelioma.

Case report: A 67-year-old man with a biopsy proven infiltrative basal cell carcinoma on his nasal sidewall presented for Mohs surgery. Physical exam was significant only for a hypopigmented biopsy site. The first stage revealed basaloid cords and ductal structures, concerning for a MAC. Seven subsequent stages were performed with the ductal structures present in each. After the 8th stage, the surgery was stopped despite positive margins, because of the large size of the defect and the absence of perineural or muscular invasion. Permanent sections of the initial stage, submitted to the dermatopathology department, showed an infiltrative basal cell carcinoma and an adjacent syringoma that extended broadly throughout the upper dermis on each subsequent Mohs stage.

Discussion: Syringomas typically present as small periorbital papules; however, multiple clinical presentations have been described in the literature including the plaque type variant, in which the lesion is larger than a classic syringoma. Histologically, syringomas are composed of tadpole shaped epithelial strands and ducts within a fibrotic stroma. They are usually small, well circumscribed and confined to the superficial dermis; however, the plaque type may be less well circumscribed and multifocal. Syringomas must be distinguished from tumors with similar histologic features including, MAC, an aggressive adenocarcinoma with follicular and ductal differentiation that often presents as a firm plaque or nodule on the central face. Histologically MAC is comprised of keratin filled cysts, tadelop shape epithelial strands and ducts within a sclerotic stroma. They have an infiltrative growth pattern that often extends deeply into fat and muscle. Perineural invasion is common. These tumors are poorly circumscribed and often display extensive subclinical extension resulting in large postoperative defects.

Conclusion: Plaque type syringomas share histologic features with MAC and as a result, patients may be inadvertedly treated for both. Treatment choice, further workup and presence or absence of perineural involvement can provide clues to the correct diagnosis.

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2729 Patients prefer professional attire for their dermatologist in the medical, surgical, and wound care setting

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Introduction: Physician attire affects patient perception of their physician. Previous reports suggest patients have no preference regarding dermatologists’ use of a tie, and most prefer the dermatologist to wear a white coat. We assessed patient preference in dermatologist attire in the dermatological medical, surgical and wound care setting.

Methods: In a cross-sectional study, we administered a modified, validated survey to adult patients at the University of Miami outpatient dermatology general, Mohs and wound healing clinics. We surveyed subjects’ perceptions of and preferences for the pictured dermatologists based on physician attire: business attire- a suit and tie; professional attire- white coat and tie; surgical attire- scrubs, and casual attire; T-shirt and jeans. Chi-squared tests compared responses to questions across subject age, race, sex and clinic and pictured dermatologist race, gender and attire. Multivariate logistic regression models evaluated if subject and, or pictured physician characteristics pertaining to the surgeon, staff, facilities, and perioperative course.

Results: 158 of 162 invited patients participated in the study. Surrogate specific factors receiving mean ratings of above-average importance were good surgical skills and ability to completely treat the tumor. Staff and facility-related factors receiving mean ratings of above-average importance were staff taking care to do the surgery safely and nurses making the patient feel comfortable. In the postoperative period, above-average importance was assigned to the tumor being completely gone and to receiving clear wound care instructions. Mean patient satisfaction was 9.8, and surgeon satisfaction, 8.1.

Conclusions: In MMS, patients value most factors pertaining to complete tumor removal, postoperative safety, and communication, particularly regarding postoperative care.

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2738 Study of shrinkage of surgical specimens of artificial human and mouse skin

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Introduction: The shrinkage of surgical specimens (SS) of human skin is known, however, has never been studied in an artificial skin model (AS) neither mouse skin (MS).

Objectives: To quantify the degree of shrinkage of SS and determine when it occurs in an in vitro (AS) and animal model (MS). Surgical defect modifications will also be evaluated.

Methodology: We collected 50 SS of AS synthesized with fibrin-agarose biomaterials and 21 SS of MS. The following data were collected: width and length before surgical excision (before SE), at 5 minutes postsurgery (ex vivo) and after 24 h of fixation in 10% buffered formalin (postfixation). Also, we measured the width and length of the surgical defect immediately after surgical excision. Histologic staines were performed in order to compare MS SS and AS SS for a comparative view.

Results: The shrinkage between before SE to postfixation SS was 14.5% and 8.5% in AS and 26% and 25.1% in MS of width and length respectively (P < 0.01). Moreover, the surgical defect was enlarged in all cases. The shrinkage was mainly observed between measurements before SE and ex vivo, representing 99.8% and 88.5% in AS and 100% and 99.01% in MS of width and length (P < 0.01). The results are similar to those observed in previous studies on human skin. The MS had greater number of fibroblasts, collagen higher density, larger number of mast cells in the dermis and more number of muscle fibers, compared to the AS. Also in the AS had no vascularization, collagen fibers nor mast cells and the amount of proteoglycans was scarce.

Limitations: AS is not structurally identical to human and the small number of SS of AS vary the results of this comparative study.

Conclusions: The simplified tissue structure of the AS, which contracts less than MS, makes it a model for understanding the causes and factors that influence the shrinkage of cutaneous SS. The similarities in the clinical behavior of AS to human skin would reinforce its use as a substitute for this.
2429
Underutilization of Mohs microscopic surgery for less common cutaneous malignancies in the United States
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Purpose: Consensus guidelines have defined select less common skin cancers appropriate for Mohs micrographic surgery (MMS) in all locations. We aimed to define patterns of MMS utilization and to identify factors affecting treatment selection in a United States population-based analysis.

Materials and methods: We identified 15,121 patients with nonmetastatic non-melanoma skin cancer of histologies deemed appropriate for MMS in all locations by AAD/ACMS/ASDSA/ASMS appropriate use criteria managed with surgical resection of the primary lesion between 1998-2012 from the National Cancer Database. Univariate and multivariate analyses were performed to identify sociodemographic, treatment, and tumor characteristics predictive of MMS utilization.

Results: Of the included 15,121 patients, 1,193 (8%) received MMS. The overall use of MMS increased from 0% in 1998 to 14% in 2012, (P < .0001). Utilization of MMS was negatively influenced by: treatments at community cancer programs, facilities in the Northeast region, lower educational quartiles, uninsured status, and administration of radiotherapy. Tumors on high-risk areas of the face, lower patient comorbidity score, and microscytic adnexal carcinoma histology were associated with higher likelihood of receiving MMS. After correcting for tumor size, tumor location, and histology using multivariate logistic regression, MMS remained an independent predictor of achieving negative surgical margins (OR 3.15, 95% CI 2.74-4.56, P < .0001).

Conclusions: MMS remains an underutilized surgical modality in less common skin cancers deemed appropriate by clinical practice guidelines. There is considerable variation in surgical treatment patterns by both sociodemographic, treatment, and tumor characteristics. Patients receiving MMS are more likely to achieve negative surgical margins and less likely to receive radiotherapy.

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SURGERY—LASER

2848
A randomized within-patient study of the efficacy and safety of the 1550-nm erbium-doped nonablative fractional laser versus trichloroacetic acid (TCA 15%) peel for the treatment of striae distensae in patients of skin of color
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Introduction: Striae distensae (SD) are common atrophic scars of the dermis. Fractional lasers have shown potential for SD treatment in limited studies. In skin of color (Fitzpatrick skin types IV-VI), laser usage is high risk for pigmentary changes, scarring, and persistent erythema and thereby restricts treatment options.

Objective: To determine whether the 1550-nm erbium-doped fractional nonablative laser (Fraxel DUAL, Solta Medical, Hayward, CA) is safe and effective for SD in skin of color compared to trichloroacetic acid (TCA 15%) peel.

Materials and methods: Twenty volunteers of skin of color with abdominal SD were randomized to have one side of the abdomen treated with laser and the other side treated with peel. Patients had 3 treatment sessions in 4 week intervals with a final follow-up at week 16. At each visit, photography, adverse event assessment, Dermatology Life Quality Index survey, and patient, nonblinded, and blinded clinician Visual Analog Scale (VAS) grading of SD were performed. The VAS was a scale of 0-4, ranging from 0 = no improvement to 4 = excellent improvement.

Results: At treatment visit 2, stretch mark scores after laser therapy were higher than the peel (70.6% vs 47% with mild-to-moderate improvement, respectively, P = .058). By treatment visit 3, this difference was more pronounced (88.5% vs 52.9% with moderate-to-good improvement, respectively, P = .01). At follow-up, SD scores postlaser therapy continued to be higher than peel (70.6% vs 35.5% with good-to-excellent improvement, respectively, P = .04). In the laser group, there was a significant improvement in quality of life (median scores decreased from 6 to 3, P = .01).

Discussion: The 1550-nm erbium-doped fractional laser has shown potential as a viable treatment modality for SD in limited studies. Fewer studies have been done in skin of color. This study is the first to do a within-patient comparison of the fractional laser with a standard treatment (TCA) for SD in this population. Improvement was observed with both procedures; however, improvement with laser in both quality of life and VAS measures were significantly superior. Over the course of this study, only self-limited side effects were seen in both treatment groups.

Conclusion: The 1550-nm erbium-doped fractional nonablative laser can be a beneficial treatment for striae distensae in Fitzpatrick skin types IV-VI with minimal side effects that can improve quality of life when compared to TCA 15%-peel.

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2979
Absence of koebnerization following ablative laser therapy in patients with plaque psoriasis
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Purpose/objectives: The adverse effects of ablative laser procedures performed in patients with plaque psoriasis have not been reported to date. The present study reports the incidence of koebnerization in patients with plaque psoriasis who underwent ablative laser treatment with different devices.

Materials/methods: The medical records of 38 patients with plaque psoriasis treated with ablative laser therapy over the past twelve years were reviewed. Patient characteristics including duration and severity of psoriasis, baseline psoriasis treatment, laser modality and settings, facial areas treated and number of sessions were collected. The primary outcome of interest was incidence of koebnerization. Results: None of the 38 patients with plaque psoriasis treated with ablative laser therapy experienced subsequent koebnerization. Twelve patients had a series of treatments performed (two or three) and none exhibited a Koebner response after any of the sessions. The median percent body surface area was 2% at the time of laser treatment and 15% at worst over the duration of the patients’ illness. Seven patients were on oral systemic medications, fourteen were on biologic agents and three were on combination therapy at the time of the ablative laser procedure. None of the patients experiencing skin infections, delayed healing or scarring irrespective of their psoriasis therapy.

Conclusions: Koebnerization did not occur on the face, neck or scalp in patients with plaque psoriasis who underwent ablative laser therapy, irrespective of psoriasis severity or types of psoriasis medications patients were receiving. Although these results are encouraging, the risk of koebnerization should be discussed with psoriatic patients who wish to undergo ablative laser procedures.

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Clinical evaluation of 1060-nm diode laser vacuum-assisted handpiece without topical anesthetic in all Fitzpatrick skin types—Multisite study

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Background: Laser hair removal is one of the largest aesthetic indications globally. The ability to perform a safe and effective treatment is limited by pain, lengthy treatments, and side effects, particularly in darker skin types. We evaluated a novel 1060-nm diode laser handpiece with vacuum suction, longer pulses, large spot in various treatment areas. The primary study objectives included evaluation of hair removal, immediate skin response to treatment and adverse events. Secondary outcomes included length of the treatment, subject perception of treatment, and alterations of hair coarseness and color.

Methods: This is an open-label, single treatment arm, prospective, multicenter study. Patients were assigned to receive seven laser treatments every 5-7 weeks with each anatomic sub area receiving different treatment parameters and pulse stacking. Patients were treated with a 22x35mm spot size with the following settings: 1 pulse at 9.12 J/cm². 2 pulses at 6-12 J/cm² each, or 3 pulses at 6-12 J/cm² depending on pain tolerance. The maximum total fluence for any patient for one pulse train was 36 J/cm². Test spots were performed. Pulse durations ranged from 30-50 ms per single pulse. Pulse trains (2-5 pulses), were delivered with the minimal time interval between pulses of 450 ms, making the total pulse duration up to 1.5 seconds.

Results: A total of 26 patients (3 male and 23 female) were enrolled with an average age of 36.3 years (range 23-50) and a total of 37 treatment areas bilaterally. Fitzpatrick skin types included II (4), III (6), IV (13), V (2), and VI (1). All patients treated. Each subject using any numbering cream, with an average pain score of 3.8 out of 10, with a significant increase in pain with increasing total energy. The overall reduction in hair was 49%. Trends indicate that higher fluence is associated with better clearance. Following 6 treatments, the axilla had the best response, with average clearance of 69.3%. The laser was effective for dark hair in all phototypes treated (II-VI) with a trend toward better response in darker skin. No serious adverse event occurred.

Conclusion: The treatment using 1060-nm diode laser was found to be safe and effective for permanent hair removal with minimal discomfort and side effects.

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Evaluation of the safety and efficacy of the 1.5 mm 1064nm, long-pulsed Nd:YAG for the treatment of fine leg veins

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Background: Telangiectasias (TE) are cutaneous vessels less than 1 mm. Many available long pulsed Nd:YAG lasers used to treat TE utilize large spot sizes that may cause collateral damage to adjacent skin. Recently, a 1.5 mm long pulsed 1064 nm Nd:YAG laser with multiple sequential pulsing (MSP) was developed to treat vessels less than 0.5 mm. When treating vascular lesions, MSP allows the initial pulse to target oxyhemoglobin and subsequent pulse(s) deoxyhemoglobin, epidermal cooling between pulses, and enhanced safety.

Methods: This is a single center, prospective, open-label study. The primary objective is to evaluate the efficacy of the 1.5 mm tip for fine leg veins. Secondary objectives evaluated procedure safety, subjects’ discomfort and satisfaction. Subjects were eligible if female, 18-64 y.o., and skin types IV. Exclusion criteria included: pregnancy; breastfeeding; photosensitivity; tattoo, nevi, and/or dermatitis in the area; history of deep vein thrombosis; and/or coagulative disorder requiring medication. Each subject could receive treatment on 1-3 separate areas. Two treatments were performed 4-6 weeks apart. Subjects returned to follow-up visits at 1, 3, and 6 months after the 2nd treatment.

Results: A total of 15 females, 52±6 y.o., completed treatment and returned for 1 and 3 months follow-up (6 month data pending). The distribution of skin types was as follows: II (4), III (5), and IV (6). Fluence and pulse width were adjusted until the endpoint of vessel blanching and/or transient purpura was obtained. All areas experienced mild erythema and transient purpura occurred in 30.8% and 8.8% of the treatment areas immediately after the 1st and 2nd treatments, respectively. The average pain score (VAS 0-10) during illumination was 0.5 and 1.5 during the 1st and 2nd treatments, respectively. At 3 month follow-up, physician-evaluated improvements was as follows: 52.4% very significant (75-100% clearance), 28.6% moderate (25-49%) clearance and 19.0% did not respond. At the same time point, subject-rated improvement was as follows: 19.0% none, 4.8% slight, 14.3% moderate, 42.9% significant, and 19.0% very significant. Posttreatment mild erythema & hyperpigmentation occurred in 8.5% and 53.5% of subjects, respectively.

Conclusion: A long pulsed 1064 nm ND:YAG laser with MSP using a 1.5 mm spot can effectively and safely treat fine leg veins. Study limitations include a small sample size and learning curve needed to discover the optimal device parameters.

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3078
Prospective comparison of the dual wavelength long-pulsed 755-nm alexandrite/1064-nm neodymium:YAG laser versus 585-nm pulsed dye laser treatment for rosacea
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Background: Rosacea is a common cutaneous disorder presenting with erythema, flushing, telangiectasia, papules and pustules, but current treatments include oral/topical agent and vascular laser therapy are not satisfactory. Objective: To compare the effectiveness of the dual wavelength long-pulsed 755-nm alexandrite/1064-nm Nd:YAG laser (LPAN) with 585-nm pulsed dye laser (PDL) for rosacea. Methods: This was a single-blind randomized controlled trial. Full face received 4 consecutive monthly treatments with LPAN or PDL, and followed up to 6 months postcompletion of the treatment protocol. Clinical outcomes were evaluated by spectrophotometry, digital photographs, and patient satisfaction surveys. Results: Thirty rosacea patients, all skin types III to V, 57% women, mean age 49 years, completed the study and were analyzed. There was no significant difference between LPAN and PDL in the mean reduction of the erythema values by spectrophotometry (P = 0.517; 3.1% vs 2.8%) and erythema improvement by photographic assessment (P = 0.225; 83.3% vs 78.6%), respectively. However, patients with more than 50% improvement by photographic assessment was higher in LPAN than that in PDL (P = 0.025; 14.3% vs 8.5%). Limitations: Laser settings are not standardized between two devices. Conclusions: Both LPAN and PDL are effective in the treatment for rosacea. Compared with PDL, LPAN may be more effective in rosacea treatment.

Commercial support: None identified.

3902
Reducing anxiety levels in parents of children undergoing general anesthesia for laser treatment of vascular and pigmented birthmarks
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Background: Laser therapy has become widely accepted as the treatment of choice for a variety of vascular and pigmented birthmarks. Laser treatment cannot be safely and properly performed in infants and children using local anesthesia alone. The use of general anesthesia (GA) in children certainly causes anxiety to their parents. Objective: To determine whether viewing a preoperative CD video helped parents of children scheduled for laser treatment under GA feel less anxious. Methods: An eight-minute CD video was produced. A number of issues of common concerns were addressed including general information about pediatric anesthesia, preoperative preparation, induction techniques, potential of anesthetic complications and the interviews of the parents whose children underwent laser treatments under GA. During a clinic visit, 1 to 2 months before an electively scheduled outpatient procedure, each parent was assessed his or her anxiety level using Amsterdam Preoperative Anxiety and Inventory Scale (APAIS) at immediately before and after watching the video. Results: There were 6 (30%) boys and 14 (70%) girls, with a median age of 1.4 (min = 0.2, max = 10) years old who underwent laser treatment of their birthmarks. Laser procedures were performed for port wine stain in 11 (55%) children, nusus of Ota in 6 (30%), superficial hemangiomas in 1 (5%), lymphangioma in 1 (5%) and phacomatosis pigmentovascularis in 1 (5%). Thirty-three parents of twenty children completed the questionnaire with the baseline of high anxiety to the administration of general anesthesia and laser procedures (APAIS = 23). A significant reduction in APAIS (from 23 to 16, P < .001) was noted after watching the video. The worry about the GA (P < .001) and laser treatment (P < .001) significantly reduced after viewing the video. Conclusions: Watching a preoperative CD video providing essential information on pediatric anesthesia can significantly reduce level of anxiety in parents of children undergoing laser treatment under GA.

Commercial support: None identified.
The effect of preoperative topical anesthetic cream on the ablative width and coagulative depth between both group (MAY 2016 JAM ACAD DERMATOL) and subcision with CO2 gas was satisfactory and safe for acne scar.

Introduction: The duration and degree of downtime following fractional ablative laser resurfacing limit daily life activity. In addition, postinflammatory hypopigmentation remains significant side effect especially in darker skin patient. Light emitting diodes or LEDs have hypopigmenting properties and reduce erythema and accelerate wound healing. Thus, it may be the promising method to improve these conditions. The aims of this study were to evaluate efficacy of LEDs in reducing erythema, improving skin barrier function and reducing post inflammatory hypopigmentation after fractional ablative laser resurfacing.

Methods: Twenty-eight healthy subjects with rhytides or acne scars were enrolled and treated with single episode of fractional CO2 laser. Immediately after laser treatment, one side of their face was randomly selected and treated with combination of 590 nm and 850 nm LEDs. Erythema index and transdermal water loss were measured on the daily follow up period of seven days after treatment. Postinflammatory hypopigmentation was evaluated at 2, 3 weeks and 1, 2, 3 months follow up using photographs and melanin index.

Results: There was no significant reduction in duration of postlaser erythema, erythema index and transdermal water loss in LED-treated sides comparing with untreated controls (P = 0.89, 0.96, 0.75 respectively). The duration of postlaser erythema was 5.5 ± 2.2 days for LED-treated sides and 5 ± 2.1 days for untreated controls. Postinflammatory hypopigmentation seemed to be lower in treatment group (LED = 52.2%, control = 65.2%), however, statistically significant difference could not be found (P = 36). There was no significant difference in melanin index between two groups either (P = 54).

Conclusion: Single episode of the combination 590 and 830 nm LED treatment immediately post fractional laser resurfacing was not effective in reducing erythema, enhancing skin barrier function as well as reducing post inflammatory hyperpigmentation. Multiple treatments might be required.

Commercial support: None identified.

References:

3886 The efficacy and safety of combination therapy using deep penetrated CO2 fractional laser and subcision with CO2 gas for acne scar

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Background: Various treatment modalities have been used to treat acne scars. Deep penetrated CO2 fractional laser (SCAAR FXTM) can make up to a 4 mm impact into the dermis by needle with high pressure can cause breakage of fibrotic collagen and releasing more oxygen when intradermally injected. CO2 gas subcision can be used to enhance skin barrier function as well as reducing post inflammatory hyperpigmentation immediately post fractional laser resurfacing was not effective in reducing erythema, enhancing skin barrier function as well as reducing post inflammatory hyperpigmentation. Multiple treatments might be required.

Commercial support: None identified.

Methods: Twelve patients with skin phototype III and V with acne scars were treated with single episode of fractional CO2 laser. Immediately after laser treatment, one side of their face was randomly selected and treated with combination of 590 nm and 850 nm LEDs. Erythema index and transdermal water loss were measured on the daily follow up period of seven days after treatment.

Introduction: Postinflammatory hypopigmentation was evaluated at 2, 3 weeks and 1, 2, 3 months follow up using photographs and melanin index.

Methods: Twenty-eight healthy subjects with rhytides or acne scars were enrolled and treated with single episode of fractional CO2 laser. Immediately after laser treatment, one side of their face was randomly selected and treated with combination of 590 nm and 850 nm LEDs. Erythema index and transdermal water loss were measured on the daily follow up period of seven days after treatment. Postinflammatory hypopigmentation was evaluated at 2, 3 weeks and 1, 2, 3 months follow up using photographs and melanin index.

Results: There was no significant reduction in duration of postlaser erythema, erythema index and transdermal water loss in LED-treated sides comparing with untreated controls (P = 0.89, 0.96, 0.75 respectively). The duration of postlaser erythema was 5.5 ± 2.2 days for LED-treated sides and 5 ± 2.1 days for untreated controls. Postinflammatory hypopigmentation seemed to be lower in treatment group (LED = 52.2%, control = 65.2%), however, statistically significant difference could not be found (P = 36). There was no significant difference in melanin index between two groups either (P = 54).

Conclusion: Single episode of the combination 590 and 830 nm LED treatment immediately post fractional laser resurfacing was not effective in reducing erythema, enhancing skin barrier function as well as reducing post inflammatory hyperpigmentation. Multiple treatments might be required.

Commercial support: None identified.

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References:

3865 Treatment of earlobe keloids with intralesional photodynamic therapy

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Keloid scars are not an infrequent cause of consultation in dermatology, often causing pain, itch and cosmetic disfiguration. Their treatment (surgical, intralesional corticosteroids, intralesional cautery) may not always be successful. Photodynamic therapy (PDT) has been used for keloid treatment with some good results.

Introduction: In this study we evaluated the safety and efficacy of photodynamic therapy with erythrol bilirubin complex (EBC) 1% and 2% for treating earlobe keloids. Erythrol bilirubin complex (EBC) is an intratumoral PTT agent that is activated by a hand-held 630 nm light source.

Methods: Sixteen patients with earlobe keloids were treated with single episode of intralesional photodynamic therapy with 1% and 2% EBC. All patients were treated with 2 mg/kg body weight of hematoporphyrin derivative and 1% and 2% EBC, respectively. Anterior and posterior keloids were treated with single dose of 1% EBC and 2% EBC, respectively. Intralesional PTT was performed using a 630 nm light source.

Results: All patients had complete resolution of keloids after one treatment session. No adverse effects or recurrence were observed. Intralesional photodynamic therapy is a safe and effective treatment for earlobe keloids.
A localized hypersensitivity injection-site reaction to subcutaneous immunoglobulin

2873 American tegumentary leishmaniasis, a diagnosis challenge

2642 Beyond the chronic ulcers

WOUND HEALING AND ULCERS

3289 An interesting case of pyoderma gangrenosum

Commercial support: None identified.

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2333
Comparing the efficacies of alginate, foam, hydrocolloid, hydrofiber, and hydrogel dressings in the management of diabetic foot ulcers vs venous leg ulcers: A systematic review and metaanalysis examining how to dress for success
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Background. Diabetic foot ulcers (DFUs) and venous leg ulcers (VLUs) are chronic wounds frequently encountered by dermatologists. Choosing appropriate wound dressings can effectively promote wound healing and potentially reduce the significant morbidity and financial burden experienced by patients.
Objective: To evaluate wound healing efficacies of synthetic active dressings (alginate, foam, hydrocolloid, hydrofiber, hydrogel) in DFU and VLU management.
Methods: A systematic literature search was conducted using the PubMed, Embase, Cochrane Library, CINAHL, and clinicaltrials.gov online databases from database inception to 10 May 2015. Data from 51 randomized controlled trials (RCTs) were used for our systematic review and metaanalysis. Twelve RCTs examined DFUs and nineteen RCTs investigated VLUs. Fixed and random effects modeling were used to calculate pooled risk ratios for complete ulcer healing from pairwise dressing comparisons. For our review, dressing efficacy was defined as the proportion of ulcers completely healed at the end of study follow-up for each dressing.
Results: Hydrogels were more effective in healing DFUs than basic wound contact dressings, with a relative risk (RR) of 1.80 (95% confidence interval [CI], 1.27 to 2.56). The other dressing comparisons showed statistically significant differences between the interventions examined in terms of achieving complete DFU healing. Although equally efficacious, nonadherent dressings (£14.85 [95% CI, £12.10 to £17.61]) were more cost effective than hydrofiber dressings (£43.60 [95% CI, £35.04 to £52.16]) for DFUs in terms of mean total cost per patient of the dressings themselves. All VLU pairwise dressing comparisons showed equivalent dressing efficacies in terms of promoting complete ulcer healing.
Limitations: Small study populations in several RCTs, relatively short follow-up time, high risk of bias in seven RCTs due to nonblinded outcomes assessment, potential publication bias, inability to generalize findings to other types of chronic wounds, small number of RCTs for each pairwise dressing comparison.
Conclusion: Overall, most synthetic active dressings and traditional wound dressing efficacies are equally efficacious in treating DFUs and VLUs. For treating DFUs, hydrogels are more efficacious than basic wound contact dressings, and nonadherent dressings are more cost effective than hydrofiber dressings. Ultimately, dressing choice should be tailored to the wound and the patient.

Commercial support: None identified.

2405
Conservative management of superficial granulomatous pyoderma gangrenosum with oral doxycycline
A. Nichole Sullivan, MD, The University of Chicago, Chicago, IL, United States; Kristin E. Hoffman, MD, Indiana University Department of Dermatology, Indianapolis, IN, United States.
Importance: Pyoderma gangrenosum (PG) is one of the neutrophilic dermatoses characterized by chronic ulcers. Superficial granulomatous pyoderma gangrenosum (SPG) is a rare, chronic variant of PG. Unlike the other more aggressive subtypes of PG, SPG responds well to conservative management and often does not require systemic immunosuppression.
Observations: We present a case of SPG in a female patient who was treated at our institution over the past year. Following a deep inferior epigastric perforator flap breast reconstruction, the surgical wounds of the breast and lower abdomen developed ulcerations consistent with SPG. Histology demonstrated skin ulceration, underlying abscess formation, and necroinflammatory exudate. Initial control of the lesions was achieved with aggressive, systemic immunosuppression, however subsequent side effects, hospitalizations, and further complications prompted complete cessation of systemic immunosuppressive therapies. The patient was ultimately transitioned to more conservative therapy with oral doxycycline, which has been well tolerated with near dramatic improvement of the lesions.
Conclusions and relevance: Identifying SPG as a unique variant of PG is important for clinical management. Although SPG can be treated with systemic immunosuppression, this case demonstrates that conservative management, specifically doxycycline, is appropriate first-line therapy.

Commercial support: None identified.

ABSTRACTS

3660
Dermatitis artefacta after misdiagnosis of paracoccidioidomycosis
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Introduction: Dermatitis artefacta is a rare syndrome of psychosomatic origin, which issued individual behaviors produce unsightly changes to the skin such as abrasions or ulcers. The management of this issue is difficult to diagnose and prolonged treatment. It is framed in the group of psychiatric disorders with dermatological consequences. Composed of unusual injuries, angulated or geometric configuration, abrupt onset, and preferably located in the most accessible parts of the hands. Concomitant depression or psychotic episodes requiring drug therapy, but even in the absence of these indications psychotropic drugs are helpful.
Case report: Male patient, 56 years old, retired, presenting skin lesions in frame aspect, beginning and evolution in six months, after clinical diagnosis of para-coccidioidomycosis, their agreement to start drug treatment, because most have difficulty in accepting that they are carriers of a psychiatric pathology.
Discussion: Patient with Ekbom syndrome frame, obsessive phobic state in which you think, imagine or believe is infested by parasites in the skin. In halluci-nal state, removes skin debris, identifying them as parasites. There are a variety of associated psychiatric disorders, such as anxiety, phobia, hypochondria, inorganic and organic delusional disorder and may be aggravated by depression or psychosis. The treatment of choice is antipsychotics being pimozide, the principal. In the treatment of delusional patient, as in the case above, the biggest challenge is to get the patient agreement to start drug treatment because most have difficulty in accepting that they are carriers of a psychiatric pathology.

Commercial support: None identified.

3626
Early intervention in acute burn scars with low intensity pulse dye laser and combination medical therapy
Patricia Todd, MD, Loyola University Medical Center, Maywood, IL, United States; Elizabeth Elington, Loyola University Medical Center, Maywood, IL, United States; Elizabeth Elington, Loyola University Medical Center, Maywood, IL, United States; Anthea Warden, MD, Loyola University Medical Center, Maywood, IL, United States; David Elers, MD, Loyola University Medical Center, Maywood, IL, United States.
Burn scars are a significant cause of aesthetic and functional morbidity. The optimal time for initiation of scar improvement therapy is controversial. Previous paradigms for scar management advised waiting at least one year prior to initiating invasive therapies such as laser or surgery. Recently, shortening this interval to as early as 3 months has been suggested. Preemptive scar modification with noninvasive procedures while the wound is still healing is not routine but may be of value in high mobility anatomic sites which are predisposed to hypertrophic scarring. We present a case in which early intervention with pulsed PDL (595 nm, fluence 7.5 J, 5 mm spot size; 6 msec pulse duration). Healing erosions were not lasered. By 8 weeks at her second PDL session erthyma was decreased with minimal textural changes and limited range of motion. As a rule of thumb, this case demonstrates a positive burn scar outcome evidenced by significant improvement in erythema, negligible textural distortion, and no development of joint contractures following treatment with aggressive antiinflammatory measures and early institution of PDL. Despite our success in this unique case, this represents an opportunity for the application of burn scar management, including early intervention with pulsed PDL, and possibly other technologies for burn injuries, healing, and scar formation as well as therapeutic options is needed.

Commercial support: None identified.
Introduction: Epidermal fractional skin grafting is a new treatment using an harvesting automated system. The indications for this type of graft are acute and chronic wounds presenting with a small amount of exudate, a good granulation tissue and a partial thickness staging. This report is presenting our clinical experience on 10 patients with hard to heal wounds.

Methods: 10 patients (6F and 4M) with a mean age 65.5 (range 49-89 year) with typical and atypical skin wounds were treated with epidermal fractional skin grafting technique. The grafts have been obtained with an harvesting system that combines vacuum and heat and results in thin sections, with constant orientation of epidermal skin from dermoepidermal junction. The donor area on the inner thigh was first cleansed with isopropyl alcohol and then the vacuum head and harvester were applied for 30 minutes. The microdrones obtained were harvested into micrografts through a nonadherent dressing, then transferred to the recipient site and covered with an absorbent foam dressing.

Results: The follow-up was performed on day 7, 14, 21 and 28. Between day 7 and day 14 we observed micrograft engraftment. At three weeks wound healing was observed in 6 out of 10 patients (60 %) and a reduction in the wound area greater than 50% was observed in 4 out of 10 patients (40 %). 10 out of 10 ulcers (80 %) improved the wound bed score.

Conclusions: Clinical improvement, the absence of pain during the procedure, minimum amount of scarring on donor site and the simplicity of the technique have shown that epidermal fractional skin grafting technique can provide a valid alternative to manage hard to heal wounds.

Commercial support: None identified.
5347

NH201 has profound antiinflammatory and therapeutic effects in patients with diabetic foot ulcers

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The effective management of diabetic foot ulcers continues to be a challenge for physicians, further complicated by infections that are prone to occur in the diabetic foot and worsen the prognosis of the disease. The presence of ulcers in the diabetic foot has been shown increase the risk of amputation by almost six fold, accounting for 65% of all non-traumatic amputations in the United States. Current treatment options have limited efficacy. Many wounds fail to heal due to antibiotic resistance, resulting in increased infections and inadequately controlled disease. We have developed NH201, a novel topical preparation based on extensive mechanism of action studies. NH201 was manufactured as a liquid wound gavage product produced at a GMP facility at cGMP grade. To investigate the clinical and microbiological efficacy of NH201, we conducted an exploratory open-label clinical study in 48 adult chronic diabetic foot ulcer patients. Additionally, we tested the absorption of NH201 from patient wounds over the course of 6 weeks. Patient eligibility was evaluated during screening using established guidelines from the Diabetic Foot Ulcer Study Group. Eligibility required patients that would be admitted or attending over a consecutive ten-week period, and included patients aged greater than 18 years, with a confirmed diagnosis of diabetes mellitus type 1 or 2 for at least 3 years (based on American Diabetes Association guidelines), and with at least one foot ulcer present. The wounds were swabbed at baseline and 1 month and were greater than 1 cm². History, clinical findings, diabetes status, vascular status, risk factors, and laboratory values were recorded from each patient at baseline. For treatment, patients received wound care with NH201 daily for twice daily. Patients were then evaluated at regular 2 week intervals throughout 10 weeks of therapy. Primary and secondary endpoints of the study were the median time to wound closure, assessed using the Kaplan-Meier life table analysis, improvement in pain VAS scores, resolution of wound infection, and safety assessments. Following treatment with NH201, the median time to complete wound closure was 5.5 weeks for grade I, 6 weeks for grade II, and 9 weeks for grade III. Overall, 69% of patients had complete wound closure at 6 weeks. For the response trend (P < 0.0458), and for the trend of response (P < 0.0074). To assess the effects of NH201 on clinical symptoms and signs of diabetic ulcer, the secondary endpoints of the study also included assessments of changes in pain. Pain VAS scores significantly decreased following treatment with NH201, and improvement in pain was sustained at 10 weeks (P < 0.05). Additionally, one of the secondary endpoints of the study also included assessments for the change in status of infection following treatment with NH201, diagnosed by microbiological swabs, and correlated with clinical examinations, including evaluating for purulent and non-purulent drainage. Ulcers were swabbed at baseline and repeated at each visit until two consecutive negative swabs were obtained. Wound swap cultures were found to be negative for microorganisms at the end of treatment for all patients treated with NH201. All patients enrolled in the study were monitored for signs of treatment related adverse events including but not limited to abnormal clinical findings, infection, and worsening of foot ulcer. Of the 48 patients enrolled in the study, 46 tolerated and had no adverse effects were observed throughout the 10-week trial. Additionally, strains of resistant microorganisms were isolated from patient wounds and were tested for susceptibility to NH201. The resistance to tetracycline, amoxicillin, and trimethoprim-sulfamethoxazole, metronidazole, and minocycline resulted in either minimal or no improvement. After 2-3 years of treatment with continued wound care and multiple bacterial cultures, the ulcer healed, with no evidence of a late relapsing pyoderma gangrenosum. The plaque slowly continued to grow despite doxycycline therapy. Two biopsies demonstrated findings consistent with a ruptured follicular cyst. Both biopsied areas subsequently ulcerated and gradually spread, which worsened after debridement. After several months of wound care and a two-week prednisone taper, the ulceration closed, but subsequently ulcerated a few weeks later. The patient was advised to undergo lesional excision prior to presenting to our practice. The patient instead received intralaseal steroids to the ulcer border. After 1-2 months, the ulcer healed almost completely.

Conclusion: Our case demonstrates the importance of diagnosing vegetative PG in order to avoid causing potential harm. Vegetative PG differs from classic ulcerative PG in terms of the lack of undermined borders clinically and presence of sinus tracts histologically. Vegetative PG lacks the disease associations seen with ulcerative PG and usually responds to less aggressive treatments than those required to treat vegetative PG.

Commercial support: None identified.

2947

The biological impact of an oak bark extract/saliclylic acid/benzoic acid ointment on murine excision and burn wound healing

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Managing both acute and chronic wounds continues to pose a formidable challenge and economic burden. However, the rate at which new wound care products are entering the market is not on par with the expansion of this crisis. We therefore sought to evaluate a commercially available ointment containing 3% oak bark extract, 3% salicylic acid, and 6% benzoic acid (BHP), which has shown efficacy in treating a variety of inflammatory dermatoses and bacterial and fungal infections. Given that these properties may be advantageous in the setting of poor wound closure. In the current investigation, BAlb/c mice were divided into two wound model groups and either received two 5 mm full-thickness thermal burns or four full-thickness excisional wounds using a 5 mm punch biopsy. Daily BHP treatment significantly attenuated initial burn wound expansion and accelerated wound closure as compared to silver sulfadiazine (SSD)-treated mice and untreated controls. Wound histology on day 17 revealed a more organized and less inflammatory cell rich dermis, with increased collagen deposition based on trichrome staining seen in the BHP group versus SSD and controls. Tissue cytokine analysis after 3 and 7 days of treatment demonstrated decreased pro-inflammatory cytokines IL-6 and TNFalpha in BHP as compared to controls. For excision wounds, daily BHP did not clinically accelerate wound closure compared to petrolatum and untreated controls. However, histologic evaluation of wounds at time of closure on day 11 revealed significantly greater reparation of BHP wounds when compared to petrolatum and organized collagen deposition as compared to controls. Furthermore, cytokine analysis revealed a significant decrease in tissue IL-6 compared to the other groups. The predicted potential for BHP as an antiinflammatory agent in both wound settings, ultimately facilitating maturation of the developing scar. Given the physical and biologic differences between thermal-induced and excision wounds, it is not surprising that the clinical findings were inconsistent between the two models and indicate that the impact of BHP is dependent on whether the wound is treated the with the appropriate wound bed, with significantly increased and organized collagen deposition based on trichrome staining seen in the BHP group versus SSD and controls. Tissue cytokine analysis after 3 and 7 days of treatment demonstrated decreased pro-inflammatory cytokines IL-6 and TNFalpha in BHP as compared to controls. For excision wounds, daily BHP did not clinically accelerate wound closure compared to petrolatum and untreated controls.

Commercial support: None identified.

3883

Teetering on a scalpel's edge: The four year road to diagnosing vegetative pyoderma gangrenosum

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Introduction: Correctly diagnosing vegetative pyoderma gangrenosum (PG), a rare variant of PG, is critical given the associated pathergy, but it can be challenging since many cases of PG is a diagnosis of exclusion with clinical and histologic features that differ from classic ulcerative PG. We present a patient who had been diagnosed with a ruptured follicular cyst by numerous dermatologists prior to being referred to our institution.

Case report: A 42-year-old woman presented with a four year history of painful ulcerations on her left anterior lower leg. Initially, she developed an erythematous papule on her left lower leg, which produced scant yellowish-red drainage and subsequently ulcerated after it was squeezed. Multiple biopsies demonstrated findings consistent with a ruptured follicular cyst. Trials of cephalixin, trimethoprim-sulfamethoxazole, metronidazole, and minocycline resulted in either minimal or no improvement. After 2-3 years of treatment with continued wound care and multiple bacterial cultures, the ulcer healed, with no evidence of a late relapsing pyoderma gangrenosum. The plaque slowly continued to grow despite doxycycline therapy. Two biopsies demonstrated findings consistent with a ruptured follicular cyst. Both biopsied areas subsequently ulcerated and gradually spread, which worsened after debridement. After several months of wound care and a two-week prednisone taper, the ulceration closed, but subsequently ulcerated a few weeks later. The patient was advised to undergo lesional excision prior to presenting to our practice. The patient instead received intralaseal steroids to the ulcer border. After 1-2 months, the ulcer healed almost completely.

Conclusion: Our case demonstrates the importance of diagnosing vegetative PG in order to avoid causing potential harm. Vegetative PG differs from classic ulcerative PG in terms of the lack of undermined borders clinically and presence of sinus tracts histologically. Vegetative PG lacks the disease associations seen with ulcerative PG and usually responds to less aggressive treatments than those required to treat vegetative PG.

Commercial support: None identified.
Tissue TNF-alpha reduction with adalimumab-treated venous ulcer healing

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Venous leg ulcers (VLUs) have higher tumor necrosis-alpha (TNF-alpha) levels compared to normal skin, and refractory VLUs have higher TNF-alpha levels compared to VLUs of shorter duration. As up to 75% of VLUs fail to heal with standard care, we sought to evaluate the role of anti-TNF-alpha therapy for patients with refractory VLUs. After institutional review board approval, subjects with recalcitrant VLUs were enrolled. Refractory VLUs were defined as ulcers present on the lower leg for greater than 6 months with an area greater than 5 cm² with 2 of the following: varicosities, venous dermatitis, atrophie blanche, hyperpigmentation or lipodermatosclerosis. Subjects were treated with 80 mg of subcutaneous adalimumab at week 0 and 40 mg at week 2 along with compression therapy and were followed for six weeks. Wound biopsies taken at weeks 0 and 4 were stained with anti-TNF-alpha antibodies. Immunohistochemistry was performed utilizing monoclonal anti-TNF-alpha antibodies (Abcam, MA) at a 1:50 dilution. Sections were contrasted with Fast Red chromogen (Leica Biosystems, IL). Dermatopathologists blinded to clinical information made qualitative and quantitative assessments of TNF-alpha staining. Intensity of cytoplasmic TNF-alpha staining was graded on a 0 (no staining) to 5 (maximal intensity) scale. The number of positive staining cells per representative high-powered-field was scored from 0 to 4 (0 = 0 cells, 1 = 1-30 cells, 2 = 31-60 cells, 3 = 61-90 cells, and 4 = >90 cells). An overall score was calculated for each VLU by multiplying the intensity by the number of positive cells values. Four of 5 subjects had evaluable histologic data. The average initial ulcer size of 12.08 cm² ± 6.3. All patients tolerated the treatments without complaints, adverse reactions, or increase in wound size. Average 4-week percent-wound size reduction was 20.5% ± 6.4. Two patients had wound size reduction more than 25%, and their percent-wound size reduction correlated to percent TNF-alpha staining score reductions (P = 0.02, R² = 0.999); while the TNF-alpha score of subjects with 4-week percent-wound reduction less than 16% did not improve. Overall, a four-week wound size reduction was noted, and in patients with percent-four-week wound size reduction greater than 25%, this positively correlated to percent-TNF-alpha staining score reduction.

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3051 Treatment of recalcitrant chronic GVHD ulcers using combined silver collagen matrix and silver foam dressings may impact antibiotic resistance and hospitalizations in patients with chronic GVHD

Timothy Almazan, MD, City of Hope Comprehensive Cancer Center, Duarte, CA, United States; Jaeyung, MD, PhD, City of Hope Comprehensive Cancer Center, Duarte, CA, United States

Background: Chronic graft versus host disease (GVHD) affects nearly half of all allogeneic transplant recipients and is a significant cause of morbidity and mortality. The formation of skin ulcers at the site of sclerotic, cutaneous GVHD may lead to bacterial super-infections and frequent patient hospitalizations. There is a paucity of published data regarding effective treatment options for chronic GVHD-related ulcers, and whether such treatments impact infection rates, antibiotic resistance, and rates of patient hospitalization.

Observations: Three patients with lower extremity ulcers associated with sclerotic, chronic GVHD presented for wound care in our dermatology clinic. In a two-year period, patients were admitted for a total of 211 hospital days, 75% of which were due to ulcer-related bacterial infections. Notable organisms included Pseudomonas aeruginosa and MRSA (patient 1), multi-drug resistant Morganella morganii and MRSA (patient 2), and Acinetobacter baumannii (patient 3). Failed topical agents and therapies attempted in the treatment of patient’s ulcers included: clobetasol 0.05% ointment, collagenase ointment, bismuth tribromophenate petrolatum gauze, topical clindamycin, and photopheresis. All patients were observed to have either complete or near complete ulcer resolution after collagen silver matrix was applied directly to the ulcer bed, in combination with a silver sponge dressing placed over it. Compression was applied using a self-adherent wrap. Dressings were changed every 3-4 days. After an average of 2 months of treatment, all three patients experienced re-epithelialization of their ulcers and were observed to have decreased rates of ulcer-related infections and hospitalizations.

Discussion: Silver-containing, collagen scaffold dressings are bactericidal and assist in replenishing some of the structure, components, and signaling mechanisms needed for wound healing. Adjunctive compression therapy reverses tissue edema and improves blood and lymphatic flow to and from the ulcer. Our observations suggest that a combination of collagen silver matrix, silver sponge dressing, and compression may be a synergistic, useful method to achieve near complete or complete ulcer regression in patients with chronic GVHD related ulcers. In turn, this particular treatment approach may play a key role in decreasing rates of GVHD ulcer-related infections and hospitalizations.

Commercial support: None identified.

3259 Topical phenytoin for leprosy ulcer

Parthiban Ramasamy, MBBS, MD, Lifecare Medical Centre, Coimbatore, India

Trophic ulceration, a common complication of leprosy, is disabling, distressing, and demoralizing for patients. Factors such as focal hyposthesia, repeated trauma, autonomic disturbance of vessels, secondary infections, and osteomyelitis has always been the major obstacle in the management. Phenytoin, an antiepileptic drug, can cause enhanced growth of fibroblasts and promote the healing of ulcers of various etiologies. Phenytoin is involved in the healing process at several levels, including stimulating fibroblast proliferation, enhancing the formation of granulation tissue, decreasing collagenase activity, promoting deposition of collagen, decreasing bacterial contamination, and decreasing wound exudates.

Commercial support: None identified.
Disclosure of relevant financial relationships

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Brehler, Randolf, MD; Grants - Novartis (Investigator)

Brehler, Randolf, MD; Honoraria - Novartis (Consultant)

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Brickman, Chaim, MD; Salary - Alcobra (Consultant)

Brickman, Chaim, MD; Salary - Bioblast (Consultant)

Brickman, Chaim, MD; Salary - Inotek Pharmaceuticals Corporation (Consultant)

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Budde, Klemens; Honoraria - Pfizer (Consultant)

Budde, Klemens; Honoraria - Pfizer (Investigator)

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Bukhao, Michael; Grants - Boehringer Ingelheim (Investigator)

Bukhao, Michael; Grants - Celgene (Investigator)

Bukhao, Michael; Grants - Centocor (Investigator)

Bukhao, Michael; Grants - Coherus (Investigator)

Bukhao, Michael; Grants - DUSA (Investigator)

Bukhao, Michael; Grants - DUSA Pharmaceuticals (Investigator)

Bukhao, Michael; Grants - Eli Lilly (Investigator)

Bukhao, Michael; Grants - LEO Pharma (Investigator)

Bukhao, Michael; Grants - LeoPharma (Investigator)

Bukhao, Michael; Grants - Merck (Investigator)

Bukhao, Michael; Grants - Novartis (Investigator)

Bukhao, Michael; Grants - Novum (Investigator)

Bukhao, Michael; Honoraria - Boehringer Ingelheim (Consultant)

Bukhao, Michael; Honoraria - Leo Pharma (Consultant)

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Cather, Jennifer; Grants - Amgen (Investigator)
Cather, Jennifer; Grants - Amgen Inc (Investigator)
Cather, Jennifer; Grants - Celgene (Investigator)
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Cather, Jennifer: Grants - Pfizer (Investigator)  
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Cather, Jennifer: Grants - Sandoz (Investigator)  
Cather, Jennifer: Grants - Tolmar (Investigator)  
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Cathers, Jennifer, MD: Grants - Allergan Inc (Investigator)  
Cathers, Jennifer, MD: Grants - Celgene (Investigator)  
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Cathers, Jennifer, MD: Grants - Tolmar Pharmaceuticals, Inc (Investigator)  
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Conrad, Curdin: Honoraria - Eli Lilly (Consultant)
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Conrad, Curdin: Honoraria - Janssen-Cilag (Consultant)
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Conrad, Curdin: Honoraria - MSD (Consultant)
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Contreras-Ferrer, Patricia: No financial relationship exists with commercial interests.
Contreras-Ruiz, José, MD: No financial relationship exists with commercial interests.
Cook-Bolden, Fran, MD: No financial relationship exists with commercial interests.
Cork, Michael, MBBS, PhD: No financial relationship exists with commercial interests.
Cortes, Jorge, MD: No financial relationship exists with commercial interests.
Costa de Sa, Andrea: No financial relationship exists with commercial interests.
Costa, Adilson, MD, PhD: No financial relationship exists with commercial interests.
Costanzo, Anotonio, MD: Honoraria - Amgen (Consultant)
Cotta, Claudia, MD, PhD: No financial relationship exists with commercial interests.
Cotter, Lisa: No financial relationship exists with commercial interests.
Cotter, Murray, MD, PhD: No financial relationship exists with commercial interests.
Cotton, Colleen, MD: No financial relationship exists with commercial interests.
Coughlin, Carrie C., MD: No financial relationship exists with commercial interests.
Courderot-Masuyer, Carol: Honoraria - Laboratoires Expanscience (Consultant)
Coutinho, Inês, MD: No financial relationship exists with commercial interests.
Cowan, Edward W., MD, MHS: No financial relationship exists with commercial interests.
Cox, Charlotte: No financial relationship exists with commercial interests.
Coyle, Meaghan, PhD: No financial relationship exists with commercial interests.
Craft, Noah, MD, PhD: Salary - Genentech (Consultant)
Crawford, Michael, MBBCch: No financial relationship exists with commercial interests.
Crawford, Richard, MD: No financial relationship exists with commercial interests.
Creighton-Smith, Malcolm: No financial relationship exists with commercial interests.
Cretu, Stefana, MD: No financial relationship exists with commercial interests.
Criado, Paulo Ricardo, MD, PhD: No financial relationship exists with commercial interests.
Croft, Sarah, DO, MS: No financial relationship exists with commercial interests.
Cronin, Morgan N.: No financial relationship exists with commercial interests.
Cronstein, Bruce, MD: Other Financial Benefit - Allos (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Amgen (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Antares Pharmaceutical (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - AstraZeneca (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Avidimer Therapeutics (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Bristol-Myers Squibb (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Celizome (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Combinatorx (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Cypress Laboratories (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Endocyte (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Gismo Therapeutics (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Hoffman-LaRoche (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - King Pharmaceutical (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Kyowa Hakka (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Medivector (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Novartis (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Prometheus Laboratories (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Prometheus Pharmaceuticals (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Regeneron (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Savient (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Sepracor (Consultant)
Cronstein, Bruce, MD: Other Financial Benefit - Tap Pharmaceuticals (Consultant)
D’Amore, Peter, MD; No financial relationship exists with commercial interests.

Da Forno, Phil, MBBS; No financial relationship exists with commercial interests.

Dabiri, Ganary, MD, PhD; No financial relationship exists with commercial interests.

Dahl, Amanda; No financial relationship exists with commercial interests.

Dahl, Mark, MD; No financial relationship exists with commercial interests.

Daigle, D., MS; No financial relationship exists with commercial interests.

Dalenc, Florence, MD; No financial relationship exists with commercial interests.

Dall’Oglio, Federica, MD, PhD; No financial relationship exists with commercial interests.

Daly, Jennifer; No financial relationship exists with commercial interests.

Daly, Susan, PhD; Salary - Johnson & Johnson Consumer, Inc (Employee)

Damer, Vidya MS; Salary - MAI group (Employee)

Darmodaran, Anita, PhD; Salary - Unilever R&D (Employee)

Danby, F. William, MD; No financial relationship exists with commercial interests.

Danesh, Melissa; No financial relationship exists with commercial interests.

DANG, MAI THY, MD; No financial relationship exists with commercial interests.

Danial-Farran, Nada; No financial relationship exists with commercial interests.

Daniel, Alyssa, MD; No financial relationship exists with commercial interests.

Daniel, Dolly, MBBS, MD; No financial relationship exists with commercial interests.

Dao, Jr., Harry, MD; No financial relationship exists with commercial interests.

Daoud, Alexander; No financial relationship exists with commercial interests.

Darling, Thomas, MD, PhD; No financial relationship exists with commercial interests.

Darwesheh, Nora, MD; No financial relationship exists with commercial interests.

Das, Arjun Lal, MBBS, MD; No financial relationship exists with commercial interests.

Dass, Shreya; No financial relationship exists with commercial interests.

Datoum, Maria Suzanne, MD; No financial relationship exists with commercial interests.

Daudén, Esteban, MD, PhD; No financial relationship exists with commercial interests.

Daunton, Adam MBChB; No financial relationship exists with commercial interests.

Daveluy, Steven, MD; No financial relationship exists with commercial interests.

Davey, Jessica, MD; No financial relationship exists with commercial interests.

David, Michael, MD; No financial relationship exists with commercial interests.

Davidson, Warren, MD, MHS; Honoraria - AstraZeneca (Advisory Board)

Davidson, Warren, MD, MHS; Honoraria - AstraZeneca (Speaker)

Davidson, Warren, MD, MHS; Honoraria - Boehringer Ingelheim (Speaker)

Davidson, Warren, MD, MHS; Honoraria - Novartis (Speaker)

Davis, Charles, MD; No financial relationship exists with commercial interests.
Davis, Marcia, MD: No financial relationship exists with commercial interests.
Davis, Mark, MD: No financial relationship exists with commercial interests.
Davison, Meredith, MPH, PhD: No financial relationship exists with commercial interests.
Dawson, Keith, MS: Salary - Genentech (Employee)
Dawson, Keith, MS: Stock Options - Genentech (Stock Holder)
Dawson, Keith, MS: Stock Options - Genentech/Roche (Stock Holder)
Day, Debra, RN: No financial relationship exists with commercial interests.
Day, Jennifer, MD: No financial relationship exists with commercial interests.
Dayan, Steven, MD: Salary - Celgene Corporation (Employee)
Dayan, Steven, MD: Honoraria - Allergan (Consultant)
Dayan, Steven, MD: Honoraria - Allergan (Investigator)
Dayan, Steven, MD: Honoraria - Kythera (Consultant)
Dayan, Steven, MD: Honoraria - Kythera (Speaker)
Dayan, Steven, MD: Honoraria - Valeant (Consultant)
Dayan, Steven, MD: Honoraria - Valeant (Investigator)
Dayan, Steven, MD: Honoraria - Valeant (Speaker)
De Argila, Diego, PhD: No financial relationship exists with commercial interests.
De Asís Cuestas, Sofía, MD: No financial relationship exists with commercial interests.
de Belilovsky, Clarence: Honoraria - Laboratoires Expanscience (Consultant)
de Belilovsky, Clarence: Salary - Laboratoires Expanscience (Employee)
De Carvalho Nakamura, Robertha, MD: No financial relationship exists with commercial interests.
De Cuyper, Dirk: Salary - UCB Pharma (Employee)
De David Dornelles, Manoela, MD: No financial relationship exists with commercial interests.
De Eusebio Murillo, Esther: No financial relationship exists with commercial interests.
de Faria Sanchez, Paula Cristina, MD: No financial relationship exists with commercial interests.
de la Cruz, Claudia: Grants - AbbVie (Investigator)
de la Cruz, Claudia: Grants - Coherus (Investigator)
de la Cruz, Claudia: Grants - Eli Lilly (Investigator)
de la Cruz, Claudia: Honoraria - AbbVie (Advisory Board)
de la Cruz, Claudia: Honoraria - Janssen (Advisory Board)
de la Cruz, Claudia: Honoraria - Novartis (Advisory Board)
de la Cruz, Claudia: Honoraria - Novartis (Investigator)
de la Cruz, Claudia: Honoraria - Novartis (Speaker)
de la Cruz, Claudia: Honoraria - Pfizer Inc (Advisory Board)
De La Torre, Carlos, MD, PhD: No financial relationship exists with commercial interests.
De Luca, Jacqueline, MD: No financial relationship exists with commercial interests.
de Marcon, Immacolata Maria: No financial relationship exists with commercial interests.
de Mendizabal, Nieves: Salary - Eli Lilly and Company (Employee)
de Oliveira Filho, Jayme, PhD: No financial relationship exists with commercial interests.
de Paiva, João Marcos Goes, MD: No financial relationship exists with commercial interests.
de Paula, Carmen Dea Ribeiro, MD: No financial relationship exists with commercial interests.
de Quadros, Maurício, MD: No financial relationship exists with commercial interests.
de Sa Neto, Simone, MD: No financial relationship exists with commercial interests.
de Souza Aquino, Patricia, MD: No financial relationship exists with commercial interests.
de Souza Morais Andrade, Leonardo, MD: No financial relationship exists with commercial interests.
de Souza Morais Andrade, Leonardo, MD: No financial relationship exists with commercial interests.
de Villa, Damiê, MD, MS: No financial relationship exists with commercial interests.
de Vries, Petrus: Honoraria - Novartis Oncology (Advisory Board)
de Vries, Petrus: Honoraria - Novartis Oncology (Investigator)
de D, Dipankar, MD: No financial relationship exists with commercial interests.
debanne, Sara, PhD: No financial relationship exists with commercial interests.
Debrenach, Maya, MD: No financial relationship exists with commercial interests.
deen, Kristyn, MBBS: No financial relationship exists with commercial interests.
DeKlotz, Cyndee M. C., MD: No financial relationship exists with commercial interests.
DeKlotz, Cynthia, MD: No financial relationship exists with commercial interests.
DeKlotz, Cynthia Carver, MD: No financial relationship exists with commercial interests.
DeKlotz, Cynthia Marie Carver, MD: No financial relationship exists with commercial interests.
Del Pozo, Luis Javier, MD: No financial relationship exists with commercial interests.
Del Rosso, James Q., DO: Grants - Galderma Laboratories, L.P. (Investigator)
Del Rosso, James Q., DO: Honoraria - Galderma Laboratories, L.P. (Advisory Board)
Del Rosso, James Q., DO: Honoraria - Galderma Laboratories, L.P. (Consultant)
Del Rosso, James Q., DO: Honoraria - Galderma Laboratories, L.P. (Speaker)
Delgadillo, Rameses: No financial relationship exists with commercial interests.
Delisle, Bernard, MD: No financial relationship exists with commercial interests.
Della Giustina, Andreia, MD: No financial relationship exists with commercial interests.
Dellavalle, Andreae, PhD: No financial relationship exists with commercial interests.
Delobel, Patrice, PhD: No financial relationship exists with commercial interests.
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Deng, April: No financial relationship exists with commercial interests.
DeNigris, John: No financial relationship exists with commercial interests.
Denny, Ellen, PhD: Salary - Eli Lilly and Company (Employee)
Denny, George: Salary - Epharmix (Consultant)
Depcik-Smith, Natalie, MD: No financial relationship exists with commercial interests.
DeShazo, Rosemary, MD: No financial relationship exists with commercial interests.
Deshpande, Gaurav: Grants - Amgen, Inc (Other)
DeSilva, Bernadette, MBCh: No financial relationship exists with commercial interests.
Desimone, Jennifer, MD: No financial relationship exists with commercial interests.
Dey, Debashish: Salary - Eli Lilly and Company (Employee)
Dhandha, Maulik, MD: No financial relationship exists with commercial interests.
Dhillon, Sara, MD: No financial relationship exists with commercial interests.
Dhoat, Sasha, MD: No financial relationship exists with commercial interests.
Dhurat, Rachita, MBBS, MD: No financial relationship exists with commercial interests.
Diaconu, Doina: No financial relationship exists with commercial interests.
Diao, Diana: No financial relationship exists with commercial interests.
Diaz-González, Jose Manuel, MD: No financial relationship exists with commercial interests.
DiCauudo, David, MD: No financial relationship exists with commercial interests.
DiCauudo, David J., MD: No financial relationship exists with commercial interests.
DiFrancesco, Anita: Salary - Samumed, LLC (Employee)
Dika, Emi, MD, PhD: No financial relationship exists with commercial interests.
DiMaio, Dominick, MD: No financial relationship exists with commercial interests.
Dimitris, Rigopoulos, MD: Honoraria - Polichem SA (Consultant)
Dimitrov, Dimitre, MD: No financial relationship exists with commercial interests.
DiNatale, Lisa: Salary - Avon Products (Employee)
Dini, Valentina, MD, PhD: No financial relationship exists with commercial interests.
Dinneen, Annette, MD: No financial relationship exists with commercial interests.
Dirix, Luc: No financial relationship exists with commercial interests.
Disa, Joseph, MD: No financial relationship exists with commercial interests.
Divine, Jennifer, MD: No financial relationship exists with commercial interests.
Doan, Hung, MD, PhD: No financial relationship exists with commercial interests.
Dodiuk-Gad, Roni, MD: No financial relationship exists with commercial interests.
Dodiuk-Gad, Roni P., MD: No financial relationship exists with commercial interests.
Dofitas, Belen, MD: No financial relationship exists with commercial interests.
Dogan, Bilal, MD: No financial relationship exists with commercial interests.
Dogra, Sunil, MD: No financial relationship exists with commercial interests.
Domingos, Marta de Oliveira, MD: No financial relationship exists with commercial interests.
Domínguez Cherit, Judith Guadalupe, MD: No financial relationship exists with commercial interests.
Domloge, Nouha, MD: No financial relationship exists with commercial interests.
Donigan, Jessica M., MD: No financial relationship exists with commercial interests.
Dörnyez, Levent, MD: No financial relationship exists with commercial interests.
Dorizas, Andrew, MD: No financial relationship exists with commercial interests.
Dornelles, Manoela De David, MD: No financial relationship exists with commercial interests.
Dornelles, Manuela de David, MD: No financial relationship exists with commercial interests.
dos Reis, Natalia Ivanoff, MD: No financial relationship exists with commercial interests.
dos Santos, Inajara Silveira, MD: No financial relationship exists with commercial interests.
Doty, Jessica, MD: No financial relationship exists with commercial interests.
Dow, Stella, MD, PhD: No financial relationship exists with commercial interests.
Dover, Jeffrey, MD: No financial relationship exists with commercial interests.
Dowdy, Anna MS: Salary - Procter & Gamble (Employee)
Downie, Jeanine, MD: Honoraria - Allergan, Inc (Advisory Board)
Downie, Jeanine, MD: Honoraria - Allergan, Inc (Consultant)
Downie, Jeanine, MD: Honoraria - Allergan, Inc (Investigator)
Downs, Anthony, MBBS: No financial relationship exists with commercial interests.
Downs, Thomas: No financial relationship exists with commercial interests.
DraeLos, Zoe, MD: Grants - Novartis (Investigator)
DraeLos, Zoe Diana, MD: Grants - Allergan, Inc (Investigator)
Dréno, Brigitte, MD, PhD: Grants - Galderma Research & Development, SNC (Investigator)
Dréno, Brigitte: Honoraria - Bristol-Myers Squibb (Consultant)
Dréno, Brigitte: Honoraria - GlaxoSmithKline (Consultant)
Dréno, Brigitte: Honoraria - Roche (Consultant)
Dréno, Brigitte: Other Financial Benefit - Bristol-Myers Squibb (Other)
Dréno, Brigitte: Other Financial Benefit - GlaxoSmithKline (Other)
Dréno, Brigitte: Other Financial Benefit - Roche (Other)
Drew, Janice: Salary - Dermira Inc (Employee)
Droppelmann, Katherine: No financial relationship exists with commercial interests.
Drucker, Aaron: Honoraria - Astellas (Speaker)
Drucker, Aaron: No Compensation Received - Regeneron Pharmaceuticals Inc (Investigator)
Drucker, Aaron: No Compensation Received - Sanofi (Investigator)
Du, Ana: No financial relationship exists with commercial interests.
Du, Yiqi, MD: No financial relationship exists with commercial interests.
Duarte-Williamson, Emilia: No financial relationship exists with commercial interests.
Dubina, Meghan, MD: No financial relationship exists with commercial interests.
Duffy, Robert; No financial relationship exists with commercial interests.

Duhovic, Chris, MBChB; No financial relationship exists with commercial interests.

Dulmage, Brittany, MD; No financial relationship exists with commercial interests.

Dummer, Reinhard; Grants - Bristol-Myers Squibb (Other)

Dummer, Reinhard; Grants - GlaxoSmithKline (Other)

Dummer, Reinhard; Grants - Merck Sharp & Dohme (Other)

Dummer, Reinhard; Grants - Novartis (Investigator)

Dummer, Reinhard; Grants - Novartis (Other)

Dummer, Reinhard; Grants - Bristol-Myers Squibb, Roche, and GlaxoSmithKline (Consultant)

Dummer, Reinhard; Grants - Bristol-Myers Squibb, Roche, and GlaxoSmithKline (Consultant)

Dummer, Reinhard; Grants - Roche, Novartis, BMS, MSD (Consultant)

Dummer, Reinhard; Honoraria - Amgen (Consultant)

Dummer, Reinhard; Honoraria - BMS (Consultant)

Dummer, Reinhard; Honoraria - Bristol-Myers Squibb (Consultant)

Dummer, Reinhard; Honoraria - GlaxoSmithKline (Consultant)

Dummer, Reinhard; Honoraria - GSK (Consultant)

Dummer, Reinhard; Honoraria - Merck Sharp & Dohme and Amgen (Consultant)

Dummer, Reinhard; Honoraria - Merck Sharp & Dohme (Consultant)

Dummer, Reinhard; Honoraria - Merck Sharp & Dohme, Amgen (Consultant)

Dummer, Reinhard; Honoraria - MSD (Consultant)

Dummer, Reinhard; Honoraria - Novartis (Consultant)

Dummer, Reinhard; Honoraria - Novartis (Investigator)

Dummer, Reinhard; Honoraria - Roche (Consultant)

Dummer, Reinhard; Honoraria - Roche, GSK, Novartis, BMS, MSD (Consultant)

Dunnick, Cory, MD; No financial relationship exists with commercial interests.

Dunnick, Cory A., MD; No financial relationship exists with commercial interests.

Dupuis, Elaine, MBA, MD; No financial relationship exists with commercial interests.

Duquia, Rodrigo Pereira, MD, PhD; No financial relationship exists with commercial interests.

Duran, Juanita, MD; No financial relationship exists with commercial interests.

Durosier, Vincent, MD; Salary - Pierre Fabre Dermo-Cosmétique (Employee)

Dutriaux, Caroline; No financial relationship exists with commercial interests.

Dutronc, Yves; Salary - Eli Lilly and Company (Employee)

Dutronc, Yves; Stock - Eli Lilly and Company (Employee)

Dutronc, Yves, MD; Salary - Eli Lilly (Employee)

Dutronc, Yves, MD; Salary - Eli Lilly and Co (Employee)

Dutronc, Yves, MD; Salary - Eli Lilly and Company (Employee)

Dutronc, Yves, MD; Stock - Eli Lilly (Stock Holder)

Dutz, Jan P., MD; No financial relationship exists with commercial interests.

Duvic, Madeleine, MD; No financial relationship exists with commercial interests.

Dvorakova, Veronika, MBChB; No financial relationship exists with commercial interests.

Dy-Rabo, Kirsten Diane, MD; No financial relationship exists with commercial interests.

Dyer, Joseph, DO; No financial relationship exists with commercial interests.

Dziunycz, Piotr, MD; No financial relationship exists with commercial interests.

Eberlin, S., MS, PhD; No financial relationship exists with commercial interests.

Echevarria-Garcia, Begona, MD, PhD; No financial relationship exists with commercial interests.

Eckert, Laurent; Salary - Sanofi (Employee)

Eckert, Laurent; Stock - Sanofi (Stock Holder)

Edison, Brenda; Salary - NeoStrata Company, Inc (Employee)

Edison, Brenda L.; Salary - NeoStrata Company, Inc (Employee)

Edson-Heredia, Emily, MPH; Salary - Eli Lilly and Company (Employee)

Edson-Heredia, Emily, MPH; Stock - Eli Lilly and Company (Employee)

Edson-Heredia, Emily, MS; Salary - Eli Lilly and Company (Employee)

Edwards, Christopher, MD; Other Financial Benefit - Celgene (Investigator)

Edwards, Christopher, MD; Other Financial Benefit - Celgene Corporation (Advisory Board)

Egeberg, Alexander, MD; Salary - Pfizer (Employee)

Ehrlich, Alison, MD, MHS; No financial relationship exists with commercial interests.

Ehst, Benjamin, MD, PhD; No financial relationship exists with commercial interests.

Eichenfield, Lawrence S., MD; Honoraria - Anacor (Consultant)

Eid, Mary, MD; No financial relationship exists with commercial interests.

Eid, Renata, MD; No financial relationship exists with commercial interests.

Eilers, David, MD; No financial relationship exists with commercial interests.

Eilers, Robert, MD; No financial relationship exists with commercial interests.

Empunth, Sasima, MD; No financial relationship exists with commercial interests.

Eiris Salvado, Noemi, MD; No financial relationship exists with commercial interests.

Eisenberg, Debra; Grants - Amgen, Inc (Other)

Ekklasis, Erfon; No financial relationship exists with commercial interests.

El Feghaly, Rana, MD; No financial relationship exists with commercial interests.

El-Fakahany, Hasan, MD; No financial relationship exists with commercial interests.

El-Hassan, Safa, MBBS; No financial relationship exists with commercial interests.

Elaba, Zendec, MD; No financial relationship exists with commercial interests.

Eleryan, Misty, MD; No financial relationship exists with commercial interests.

Elison, Mark, MD; No financial relationship exists with commercial interests.
Eliason, Mark J., MD: No financial relationship exists with commercial interests.
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Ellis, Rachel, MD: No financial relationship exists with commercial interests.
Ellison, Sarah, MD: No financial relationship exists with commercial interests.
Ellis, Carolyn DO: No financial relationship exists with commercial interests.
Elshafie, Mona, MBBS: No financial relationship exists with commercial interests.
Elshafie, Mona, MBBS: No financial relationship exists with commercial interests.
Elston, Dirk, MD: No financial relationship exists with commercial interests.
Enault, Jeremy, PhD: No financial relationship exists with commercial interests.
Endly, Dawnielle, DO: No financial relationship exists with commercial interests.
Endo, Justin, MD: No financial relationship exists with commercial interests.
Eng, William, MD: No financial relationship exists with commercial interests.
Enkeleida, Nikai, MBA, MS: Salary - Eli Lilly and Company (Employee)
Epstein, David, PhD: No financial relationship exists with commercial interests.
Erfe, Marie Crisel, MD: No financial relationship exists with commercial interests.
Erickson, Janelle, PhD: Salary - Eli Lilly (Employee)
Erickson, Janelle, PhD: Salary - Eli Lilly and Company (Employee)
Erickson, Janelle, PhD: Stock - Eli Lilly (Stock Holder)
Escalas, Juan, MD: No financial relationship exists with commercial interests.
Escandon, Julita, MD: No financial relationship exists with commercial interests.
Escudero, Maria del Mar, MD: No financial relationship exists with commercial interests.
Esguerra, David, DO: No financial relationship exists with commercial interests.
Español Agustín: No financial relationship exists with commercial interests.
España, Agustín, MD: No financial relationship exists with commercial interests.
Espinoza Allette: No financial relationship exists with commercial interests.
Esquivel Pedroza, Lilly, MD: No financial relationship exists with commercial interests.
Esselin, Nicolas, PhD: No financial relationship exists with commercial interests.
Esteve Martínez, Altea, MD: No financial relationship exists with commercial interests.
Esteves, Eduarda, MD: No financial relationship exists with commercial interests.
Estevez, Montse: No financial relationship exists with commercial interests.
Ethington, Elizabeth: No financial relationship exists with commercial interests.
Etzkorn, Jeremy, MD: No financial relationship exists with commercial interests.
Etzler, Chloé, MD: No financial relationship exists with commercial interests.
Eustace, Karen: No financial relationship exists with commercial interests.
Eyada, Moustafa, MD: No financial relationship exists with commercial interests.
Eyerich, Killian, MD, PhD: No financial relationship exists with commercial interests.
Eyerich, Stefanie, PhD: No financial relationship exists with commercial interests.
Eyler, Jennifer T., MD: No financial relationship exists with commercial interests.
Ezra, Navid, MD: No financial relationship exists with commercial interests.
Fabi, Sabrina, MD: Grants - Allergan (Investigator)
Fabi, Sabrina, MD: Grants - Kythera (Investigator)
Fabi, Sabrina, MD: Grants - Revance (Investigator)
Fabi, Sabrina, MD: Honoraria - Allergan (Advisory Board)
Fabi, Sabrina, MD: Honoraria - Allergan (Consultant)
Fabi, Sabrina, MD: Honoraria - Allergan (Speaker)
Fabi, Sabrina, MD: Honoraria - Biopelle, Inc (Consultant)
Fabi, Sabrina, MD: Honoraria - Biopelle, Inc (Speaker)
Fabi, Sabrina, MD: Honoraria - Galdhera (Advisory Board)
Fabi, Sabrina, MD: Honoraria - Galdhera (Other)
Fabi, Sabrina, MD: Honoraria - Galdhera (Speaker)
Fabi, Sabrina, MD: Honoraria - Kythera (Other)
Fabi, Sabrina, MD: Honoraria - Kythera (Speaker)
Fabi, Sabrina, MD: Honoraria - Lumenis (Consultant)
Fabi, Sabrina, MD: Honoraria - Lumenis (Speaker)
Fabi, Sabrina, MD: Honoraria - Ulthera, Inc (Advisory Board)
Fabi, Sabrina, MD: Honoraria - Ulthera, Inc (Consultant)
Fabi, Sabrina, MD: Honoraria - Ulthera, Inc (Speaker)
Fabi, Sabrina, MD: Honoraria - Valeant Pharmaceuticals (Other)
Fabi, Sabrina, MD: Honoraria - Valeant Pharmaceuticals (Speaker)
Fabi, Sabrina, MD: Honoraria - Zeltiq (Speaker)
Fabi, Sabrina, MD: Other Financial Benefit - Ulthera, Inc (Investigator)
Fabre, Vilma, MD: No financial relationship exists with commercial interests.
Fabricio, Lincoln, MD: Honoraria - AbbVie (Other)
Fabricio, Lincoln, MD: Honoraria - Bayer (Other)
Fabricio, Lincoln, MD: Honoraria - Biderma (Other)
Fabricio, Lincoln, MD: Honoraria - Galdhera (Other)
Fabricio, Lincoln, MD: Honoraria - GSK/Stiefel (Other)
Fabricio, Lincoln, MD: Honoraria - Isdin (Other)
Fabricio, Lincoln, MD: Honoraria - La Roche-Posay (Other)
Fabricio, Lincoln, MD: Honoraria - Leo Pharma (Other)
Fabricio, Lincoln, MD: Honoraria - Pfizer (Other)
Fabris Pasini Rodrigues, Dalva, MD: No financial relationship exists with commercial interests.
Facchini, G., MS, PharmD: No financial relationship exists with commercial interests.
Fagundo, Eva, MD: No financial relationship exists with commercial interests.
Fahy, Caoimhe M. R., MBCh, PhD: No financial relationship exists with commercial interests.
Fakharzad, Steve, MD: Salary - Janssen Scientific Affairs, LLC (Employee)
Falk, Thomas Michael, PhD: No financial relationship exists with commercial interests.
Fallon Friedlander, Sheila, MD: No financial relationship exists with commercial interests.
Fanti, Pier Alessandro, MD: No financial relationship exists with commercial interests.

Farah, Kamyar, PhD; Salary - Janssen Scientific Affairs, LLC (Employee)

Farberg, Aaron, MD; Other Financial Benefit - Johnson and Johnson Consumer, Inc (Consultant)

Farhangian, Michael; No financial relationship exists with commercial interests.

Fatani, Dr. Mohammad ScD; No financial relationship exists with commercial interests.

Fathi, Ramin, MD; No financial relationship exists with commercial interests.

Fatani, Dr. Mohammad ScD; No financial relationship exists with commercial interests.

Faust, Elizabeth; Other Financial Benefit - Analysis Group, which received payment from AbbVie Inc to assist with the research process (Employee)

Fava, Maurizio; Grants - Eli Lilly and Company (Investigator)

Fava, Maurizio; Honoraria - Eli Lilly and Company (Advisory Board)

Fava, Maurizio; Honoraria - Eli Lilly and Company (Consultant)

Fava, Maurizio; Other Financial Benefit - Eli Lilly and Company (Speaker)

Favaro, Juliana, MD; No financial relationship exists with commercial interests.

Fávaro, Juliana, MD; No financial relationship exists with commercial interests.

Favero, Fabrizio; No financial relationship exists with commercial interests.

Favoretto Dias, Natasha Med; No financial relationship exists with commercial interests.

Fawcett, Jonathan, PhD; No financial relationship exists with commercial interests.

Fayos, Zetta, MD; No financial relationship exists with commercial interests.

Febrer Bosch, Isabel, MD; No financial relationship exists with commercial interests.

Feinstein, Anthony, MBCh, PhD; No financial relationship exists with commercial interests.

Feldman, Ron, MD, PhD; No financial relationship exists with commercial interests.

Feldman, Steven, MD, PhD; Grants - Abbott Labs (Speaker)

Feldman, Steven, MD, PhD; Grants - Amgen (Consultant)

Feldman, Steven, MD, PhD; Grants - Anacor Pharmaceuticals, Inc (Consultant)

Feldman, Steven, MD, PhD; Grants - Celgene (Investigator)

Feldman, Steven, MD, PhD; Grants - Galderma (Investigator)

Feldman, Steven, MD, PhD; Grants - Janssen (Consultant)

Feldman, Steven, MD, PhD; Grants - Stiefel/GSK (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Baxter (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Caremark (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Gerson Lehrman Group (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Guidepoint Global (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Hanall Pharmaceutical Co Ltd (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Kikaku (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Leo Pharma (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Lilly (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Merck & Co Inc (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Merz (Consultant)

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Feldman, Steven, MD, PhD; Other Financial Benefit - Quirent (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Suncare Research (Consultant)

Feldman, Steven, MD, PhD; Other Financial Benefit - Taro (Speaker)

Feldman, Steven, MD, PhD; Other Financial Benefit - Xenoprot (Consultant)

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Feldman, Steven, MD, PhD; Royalty - UpToDate (Other)

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Giuli Santi, Claudia, MD, PhD: No financial relationship exists with commercial interests.

Giuli Santi, Claudia, PhD: No financial relationship exists with commercial interests.

Gladman, Dafna: Grants - AbbVie, Bristol-Myers Squibb, Celgene, Johnson & Johnson, MSD, Novartis, Pfizer, and UCB Pharma Other.

Gladman, Dafna, MD: Grants - AbbVie (Investigator)

Gladman, Dafna, MD: Grants - Amgen (Investigator)

Gladman, Dafna, MD: Grants - Celgene (Investigator)

Gladman, Dafna, MD: Grants - Janssen (Investigator)

Gladman, Dafna, MD: Grants - Novartis (Investigator)

Gladman, Dafna, MD: Grants - Pfizer (Investigator)

Gladman, Dafna, MD: Grants - UCB Pharma (Investigator)

Gladman, Dafna, MD: Honoraria - AbbVie (Consultant)

Gladman, Dafna, MD: Honoraria - Amgen (Consultant)

Gladman, Dafna, MD: Honoraria - Bristol-Myers Squibb (Consultant)

Gladman, Dafna, MD: Honoraria - Celgene (Consultant)

Gladman, Dafna, MD: Honoraria - Eli Lilly and Company (Consultant)

Gladman, Dafna, MD: Honoraria - Janssen (Consultant)

Gladman, Dafna, MD: Honoraria - Novartis (Consultant)

Gladman, Dafna, MD: Honoraria - Pfizer (Consultant)

Gladman, Dafna, MD: Honoraria - UCB Pharma (Consultant)

Gladman, Dafna, MD: Honoraria - UCB Pharma (Consultant)

Gladman, Dafna, MD: Honoraria - Amgen (Consultant)

Gladman, Dafna, MD: Honoraria - Bristol-Myers Squibb (Consultant)

Gladman, Dafna, MD: Honoraria - Celgene (Consultant)

Gladman, Dafna, MD: Honoraria - Eli Lilly and Company (Consultant)

Gladman, Dafna, MD: Honoraria - Janssen (Consultant)

Gladman, Dafna, MD: Honoraria - Novartis (Consultant)

Gladman, Dafna, MD: Honoraria - Pfizer (Consultant)

Gladman, Dafna, MD: Honoraria - UCB Pharma (Consultant)

Gladman, Dafna, MD: Honoraria - Amgen (Consultant)

Gold, Michael, MD: Grants - Galderma (Consultant)

Gold, Michael, MD: Grants - Galderma (Consultant)

Gold, Michael, MD: Grants - Invasix (Investigator)

Gold, Michael, MD: Grants - Kythera (Consultant)

Gold, Michael, MD: Grants - Merz (Consultant)

Gold, Michael, MD: Grants - Merz North America, Inc (Investigator)

Gold, Michael, MD: Grants - Suneva (Investigator)

Gold, Michael, MD: Grants - Syneron (Consultant)

Gold, Michael, MD: Grants - Venus Concept (Consultant)

Gold, Michael, MD: Honoraria - Merz North America, Inc (Consultant)

Gold, Michael, MD: Honoraria - Venus Concepts (Consultant)

Gold, Michael, MD: Salary - Tennessee Clinical Research Center (Employee)

Gold, Michael, MD: Salary - Tennessee Clinical Research Center (Investigator)

Gold, Michael H., MD: Other Financial Benefit - NeoStrata Company, Inc (Investigator)

Goldblum, Orin: Salary - Eli Lilly and Company (Employee)

Goldblum, Orin, MD: Salary - Eli Lilly and Co (Employee)

Goldblum, Orin, MD: Salary - Eli Lilly and Company (Employee)

Goldblum, Orin, MD: Stock - Eli Lilly and Company (Employee)

Golden, Jackelyn B.: No financial relationship exists with commercial interests.

Goldman, Mitchel, MD: Grants - Merz North America, Inc (Investigator)

Goldman, Mitchel, MD: Other Financial Benefit - Auxilium (Consultant)

Goldman, Mitchel, MD: Honoraria - Merz North America, Inc (Consultant)

Goldman, Mitchel, MD: Other Financial Benefit - Auxilium (Other)

Goldman, Mitchel, MD: Other Financial Benefit - Ulthera, Inc (Investigator)

Goldstein, Leanne: No financial relationship exists with commercial interests.

Golembesky, Amanda: Salary - UCB Pharma (Employee)

Golembesky, Amanda: Stock - UCB Pharma (Stock Holder)

Gomes, Ciro Martins, MD, PhD: No financial relationship exists with commercial interests.

Gómez, Francisco, MD: No financial relationship exists with commercial interests.

Gómez de la Fuente, Enrique, MD, PhD: No financial relationship exists with commercial interests.

Gómez-Flores, Minerva, MD: No financial relationship exists with commercial interests.

Gómez-Flores, Minerva, MD, PhD: No financial relationship exists with commercial interests.

Gómez-Flores, Minerva, MD: No financial relationship exists with commercial interests.

Gómez-Flores, Minerva, MD, PhD: No financial relationship exists with commercial interests.

Gómez-García, Francisco, MD: No financial relationship exists with commercial interests.

Gómez-Requena Muñoz, Laura, MD: No financial relationship exists with commercial interests.

Gómez-Requena, Laura, MD: No financial relationship exists with commercial interests.

Gómez-Requena-Muñoz, Laura, MD: No financial relationship exists with commercial interests.
Gonçalo, Margarida, MD, PhD: No financial relationship exists with commercial interests.
Gonçalves, Joana, MD: Salary - Celgene Corporation (Employee)
Gong, Yankun: Salary - Novartis (Employee)
González López, Marcos, MD, PhD: No financial relationship exists with commercial interests.
González Márquez, Tita Nallely, MD: No financial relationship exists with commercial interests.
González Olivares, Monica, MD: No financial relationship exists with commercial interests.
González Vela, Carmen, MD, PhD: No financial relationship exists with commercial interests.
González, Iris, MD: No financial relationship exists with commercial interests.
Gonzalez, Roger, MD: No financial relationship exists with commercial interests.
González-de-Mesa-Ponte, Maria-Jose, MD: No financial relationship exists with commercial interests.
Gonzalez-Gonzalez, Maribet, MD: No financial relationship exists with commercial interests.
González-Hernández, Sorahaya, MD: No financial relationship exists with commercial interests.
González-Muñoz, Patricia, MD: No financial relationship exists with commercial interests.
González-Padilla, Marcelino, MD, PhD: No financial relationship exists with commercial interests.
González-Saldivar, Gloria, MD: No financial relationship exists with commercial interests.
Gonzalez-Villanueva, Iris: No financial relationship exists with commercial interests.
Goodale, Elizabeth, DVM: No Compensation Received - Principia Biopharma Inc (Investigator)
Gooderham, Melinda: Grants - AbbVie (Investigator)
Gooderham, Melinda: Grants - Amgen (Investigator)
Gooderham, Melinda: Grants - Celgene (Investigator)
Gooderham, Melinda: Grants - Dermira (Investigator)
Gooderham, Melinda: Grants - Eli Lilly (Investigator)
Gooderham, Melinda: Grants - Galderma (Investigator)
Gooderham, Melinda: Grants - Galderma Laboratories (Investigator)
Gooderham, Melinda: Grants - Janssen (Investigator)
Gooderham, Melinda: Grants - Kyowa Hakko Kirin Pharma (Investigator)
Gooderham, Melinda: Grants - LEO Pharma (Investigator)
Gooderham, Melinda: Grants - Lilly (Investigator)
Gooderham, Melinda: Grants - Medimmune (Investigator)
Gooderham, Melinda: Grants - Merck (Investigator)
Gooderham, Melinda: Grants - Novartis (Investigator)
Gooderham, Melinda: Grants - Pfizer (Investigator)
Gooderham, Melinda: Grants - Regeneron (Investigator)
Gooderham, Melinda: Grants - Roche (Investigator)
Gooderham, Melinda: Grants - Takeda (Investigator)
Gooderham, Melinda: Grants - Takeda Pharmaceuticals (Investigator)
Gooderham, Melinda: Grants - Takeda Pharmaceuticals USA (Investigator)
Gooderham, Melinda: Honoraria - AbbVie (Speaker)
Gooderham, Melinda: Honoraria - Amgen (Speaker)
Gooderham, Melinda: Honoraria - Boehringer Ingelheim (Advisory Board)
Gooderham, Melinda: Honoraria - Celgene (Speaker)
Gooderham, Melinda: Honoraria - Eli Lilly (Speaker)
Gooderham, Melinda: Honoraria - Galderma (Speaker)
Gooderham, Melinda: Honoraria - Janssen (Consultant)
Gooderham, Melinda: Honoraria - Kyowa Hakko (Consultant)
Gooderham, Melinda: Honoraria - LEO Pharma (Speaker)
Gooderham, Melinda: Honoraria - Lilly (Speaker)
Gooderham, Melinda: Honoraria - Novartis (Consultant)
Gooderham, Melinda: Honoraria - Novartis (Speaker)
Gooderham, Melinda, MD, MS: Grants - AbbVie, Amgen, Boehringer Ingelheim, Dermira, Eli Lilly, Galderma Laboratories, LP, Janssen (Investigator)
Gooderham, Melinda, MD: Grants - AbbVie, Amgen, Boehringer Ingelheim, Dermira, Eli Lilly, Galderma, Janssen, Kyowa Hakko Kirin Pharma (Investigator)
Gooderham, Melinda, MD: Grants - Celgene Corporation (Investigator)
Gooderham, Melinda, MD: Grants - Kyowa hakko Kirin Pharma, Inc, Leo Pharma, Inc, Medimmune, Merck & Co, Novartis Pharmaceuticals (Investigator)
Gooderham, Melinda, MD: Grants - Leo Pharma, Medimmune, Merck & Co, Novartis, Pfizer, Regeneron, Roche Labs, Takeda (Investigator)
Gooderham, Melinda, MD: Grants - Pfizer, Regeneron, Roche Laboratories, Takeda (Investigator)
Gooderham, Melinda, MD: Honoraria - AbbVie, Actelion, Amgen, Astellas Pharma US, Celgene, Eli Lilly, Galderma, Leo Pharma, Novartis (Speaker)
Gooderham, Melinda, MD: Honoraria - AbbVie, Actelion, Amgen, Astellas Pharma US, Inc, Celgene, Eli Lilly, Galderma Laboratories, LP (Speaker)
Gooderham, Melinda, MD: Honoraria - Boehringer Ingelheim (Advisory Board)
Gooderham, Melinda, MD: Honoraria - Janssen, Novartis (Consultant)
Gooderham, Melinda, MD: Honoraria - Leo Pharma Inc, Novartis Pharmaceuticals Corp (Investigator)
Gooderham, Melinda, MD, MS: Grants - AbbVie/AbbVie (Investigator)
Gooderham, Melinda, MD, MS: Grants - Amgen (Investigator)
Gooderham, Melinda, MD, MS: Grants - Boehringer Ingelheim (Investigator)
Gooderham, Melinda, MD, MS: Grants - Celgene (Investigator)
Gooderham, Melinda, MD, MS: Grants - Dermira (Investigator)
Gooderham, Melinda, MD, MS: Grants - Eli Lilly (Investigator)
Gooderham, Melinda, MD, MS: Grants - Galderma (Investigator)
Gooderham, Melinda, MD, MS: Grants - Galderma Laboratories (Investigator)
Gooderham, Melinda, MD, MS: Grants - Janssen (Investigator)
Gooderham, Melinda, MD, MS: Grants - Kyowa Hakko Kirin Pharma (Investigator)
Gooderham, Melinda, MD, MS: Grants - LEO Pharma (Investigator)
Gooderham, Melinda, MD, MS: Grants - Lilly (Investigator)
Gooderham, Melinda, MD, MS: Grants - Medimmune (Investigator)
Gooderham, Melinda, MD, MS: Grants - Merck (Investigator)
Gooderham, Melinda, MD, MS: Grants - Novartis (Investigator)
Gooderham, Melinda, MD, MS: Grants - Pfizer (Investigator)
Gooderham, Melinda, MD, MS: Grants - Regeneron (Investigator)
Gooderham, Melinda, MD, MS: Grants - Roche (Investigator)
Gooderham, Melinda, MD, MS: Grants - Takeda (Investigator)
Gooderham, Melinda, MD, MS: Honoraria - AbbVie/AbbVie (Speaker)
Gordon, Kenneth B.; Honoraria - Boehringer Ingelheim (Advisory Board)
Gordon, Kenneth B.; Honoraria - Celgene (Speaker)
Gordon, Kenneth B.; Honoraria - Eli Lilly (Speaker)
Gordon, Kenneth B.; Honoraria - Galderma (Speaker)
Gordon, Kenneth B., MD, MS; Honoraria - Janssen (Consultant)
Gordon, Kenneth B.; Honoraria - Leo (Speaker)
Gordon, Kenneth, MD; Honoraria - AbbVie, Amgen, Celgene, Eli Lilly, Janssen, Novartis, Pfizer (Consultant)
Gordon, Kenneth, MD; Grants - AbbVie (Investigator)
Gordon, Kenneth, MD; Grants - Amgen, Celgene, Eli Lilly, Janssen (Investigator)
Gordon, Kenneth, MD; Grants - Amgen (Investigator)
Gordon, Kenneth, MD; Grants - Celgene (Investigator)
Gordon, Kenneth, MD; Grants - Eli Lilly and Company (Investigator)
Gordon, Kenneth, MD; Grants - Janssen (Investigator)
Gordon, Kenneth, MD; Grants - Janssen (Investigator)
Gordon, Kenneth, MD; Honoraria - AbbVie (Consultant)
Gordon, Kenneth, MD; Honoraria - Amgen, Celgene, Eli Lilly, Novartis, Pfizer (Consultant)
Gordon, Kenneth, MD; Honoraria - Amgen (Consultant)
Gordon, Kenneth, MD; Honoraria - Boehringer Ingelheim (Consultant)
Gordon, Kenneth, MD; Honoraria - Celgene (Consultant)
Gordon, Kenneth, MD; Honoraria - Dermira (Consultant)
Gordon, Kenneth, MD; Honoraria - Eli Lilly (Consultant)
Gordon, Kenneth, MD; Honoraria - Eli Lilly and Company (Consultant)
Gordon, Kenneth, MD; Honoraria - Janssen (Consultant)
Gordon, Kenneth, MD; Honoraria - Janssen, Dermira, Boehringer Ingelheim (Consultant)
Gordon, Kenneth, MD; Honoraria - Novartis (Consultant)
Gordon, Kenneth, MD; Honoraria - Pfizer (Consultant)
Gordon, Kenneth, MD; Other Financial Benefit - Abbvie (Other)
Gordon, Kenneth, MD; Other Financial Benefit - Amgen (Other)
Gordon, Kenneth, MD; Other Financial Benefit - Celgene (Other)
Gordon, Kenneth, MD; Other Financial Benefit - Eli Lilly (Other)
Gordon, Kenneth, MD; Other Financial Benefit - Janssen (Other)
Gordon, Kenneth B.; Grants - AbbVie (Investigator)
Gordon, Kenneth B.; Grants - Amgen (Investigator)
Gordon, Kenneth B.; Grants - Celgene Corp (Investigator)
Gordon, Kenneth B.; Grants - Eli Lilly (Investigator)
Gordon, Kenneth B.; Grants - Janssen (Investigator)
Gordon, Kenneth B.; Honoraria - AbbVie (Consultant)
Gordon, Kenneth B.; Honoraria - Amgen (Consultant)
Gordon, Kenneth B.; Honoraria - Boehringer Ingelheim (Consultant)
Gordon, Kenneth B.; Honoraria - Celgene Corp (Consultant)
Gordon, Kenneth B.; Honoraria - Eli Lilly (Consultant)
Gordon, Kenneth B.; Honoraria - Novartis (Consultant)
Gordon, Kenneth B.; Honoraria - Pfizer (Consultant)
Gordon, Kenneth B.; Honoraria - Pfizer Inc (Consultant)
Gordon, Kenneth, MD; Grants - Janssen Research and Development, LLC (Investigator)
Gordon, Samantha; No financial relationship exists with commercial interests.
Gorinstein, Boris, PhD; Stock Options - NuVision Pharmaceuticals (Founder)
Gorzelowski, Alicia, MD; No financial relationship exists with commercial interests.
Gospodinov, Dimitar, MD; No financial relationship exists with commercial interests.
Gostomski, Justine MS; Salary - NeoStrata Company, Inc (Employee)
Gotlieb, Alice, MD, PhD; Honoraria - Abbott, Abbvie, Actelion, Akros Pharma, Amgen, Astellas Pharma, Beiersdorf, BMS, Canfite, Celgene, (Consultant)
Gotlieb, Alice, MD, PhD; Honoraria - Abbott, Abbvie, Actelion, Akros Pharma, Amgen, Astellas Pharma, Beiersdorf, BMS, Canfite, Celgene, (Investigator)
Gotlieb, Alice, MD, PhD; Honoraria - Coronado BioSciences, CSL Behring, GSK, Immune Control, Incyte, Janssen-Ortho, (Consultant)
Gotlieb, Alice, MD, PhD; Honoraria - Coronado BioSciences, CSL Behring, GSK, Immune Control, Incyte, Janssen-Ortho, (Investigator)
Gotlieb, Alice, MD, PhD; Honoraria - Lerner Medical Devices, Lilly ICOS, Merck, Novartis, Novo Nordisk, Pfizer, Teva, UCB, (Consultant)
Gotlieb, Alice, MD, PhD; Honoraria - Lerner Medical Devices, Lilly ICOS, Merck, Novartis, Novo Nordisk, Pfizer, Teva, UCB, (Investigator)
Gotlieb, Alice, MD, PhD; Honoraria - Vertex Pharmaceuticals, and Xenoprot. (Consultant)
Gotlieb, Alice, MD, PhD; Honoraria - Vertex Pharmaceuticals, and Xenoprot. (Investigator)
Gotlieb, Alice; Grants - Abbott Labs (Investigator)
Gotlieb, Alice; Grants - Abbott, Abbvie, Actelion, Akros Pharma, Amgen, Astellas Pharma, Beiersdorf, BMS, Canfite, Celgene, C (Investigator)
Gotlieb, Alice; Grants - AbbVie (Investigator)
Gotlieb, Alice; Grants - Amgen (Investigator)
Gotlieb, Alice; Grants - Amgen Inc (Investigator)
Gotlieb, Alice; Grants - Celgene (Investigator)
Gotlieb, Alice; Grants - Centocor (Investigator)
Gotlieb, Alice; Grants - Coronado (Investigator)
Gotlieb, Alice; Grants - Eli Lilly (Investigator)
Gotlieb, Alice; Grants - Eli Lilly and Company (Consultant)
Gotlieb, Alice; Grants - Janssen (Investigator)
Gotlieb, Alice; Grants - Levia (Investigator)
Gotlieb, Alice; Grants - Merck (Investigator)
Gotlieb, Alice; Grants - Novartis (Investigator)
Gotlieb, Alice; Grants - Pfizer (Investigator)
Gotlieb, Alice; Grants - Xenoprot (Investigator)
Gotlieb, Alice; Honoraria - Lerner Medical Devices, Lilly ICOS, Merck, Novartis, Novo Nordisk, Pfizer, Teva, UCB (Consultant)
Gotlieb, Alice; Honoraria - Lerner Medical Devices, Lilly ICOS, Merck, Novartis, Novo Nordisk, Pfizer, Teva, UCB (Investigator)
Gotlieb, Alice; Honoraria - Abbott Labs (Consultant)
Gotlieb, Alice; Honoraria - Abbott, Abbvie, Actelion, Akros Pharma, Amgen, Astellas Pharma, Beiersdorf, BMS, Canfite, Celgene (Consultant)
Gotlieb, Alice; Honoraria - Abbott, Abbvie, Actelion, Akros Pharma, Amgen, Astellas Pharma, Beiersdorf, BMS, Canfite, Celgene (Investigator)
Gottlieb, Alice; Honoraria - Abbott, Abbvie, Actelion, Akros Pharma, Amgen, Astellas Pharma, Beiersdorf, BMS, Canfite, Celgene, C (Consultant)
Gottlieb, Alice; Honoraria - AbbVie (Advisory Board)
Gottlieb, Alice; Honoraria - Abbott (Consultant)
Gottlieb, Alice; Honoraria - Actelion (Advisory Board)
Gottlieb, Alice; Honoraria - Akros (Advisory Board)
Gottlieb, Alice; Honoraria - Akros (Consultant)
Gottlieb, Alice; Honoraria - Amgen (Consultant)
Gottlieb, Alice; Honoraria - Amgen Inc (Advisory Board)
Gottlieb, Alice; Honoraria - Amgen Inc (Consultant)
Gottlieb, Alice; Honoraria - Astellas (Advisory Board)
Gottlieb, Alice; Honoraria - Astellas (Consultant)
Gottlieb, Alice; Honoraria - Beiersdorf (Consultant)
Gottlieb, Alice; Honoraria - Beiersdorf Inc (Advisory Board)
Gottlieb, Alice; Honoraria - Beiersdorf Inc (Consultant)
Gottlieb, Alice; Honoraria - Bristol Myers Squibb (Advisory Board)
Gottlieb, Alice; Honoraria - Bristol Myers Squibb (Consultant)
Gottlieb, Alice; Honoraria - Canfite (Advisory Board)
Gottlieb, Alice; Honoraria - Canfite (Consultant)
Gottlieb, Alice; Honoraria - Catabasis (Advisory Board)
Gottlieb, Alice; Honoraria - Catabasis (Consultant)
Gottlieb, Alice; Honoraria - Celgene (Advisory Board)
Gottlieb, Alice; Honoraria - Celgene (Consultant)
Gottlieb, Alice; Honoraria - Centocor (Advisory Board)
Gottlieb, Alice; Honoraria - Centocor (Consultant)
Gottlieb, Alice; Honoraria - Coronado (Advisory Board)
Gottlieb, Alice; Honoraria - Coronado (Consultant)
Gottlieb, Alice; Honoraria - CoronaBioSciences, CSL Behring, GSK, Immune Control, Incyte, Janssen-Ortho (Consultant)
Gottlieb, Alice; Honoraria - CoronaBioSciences, CSL Behring, GSK, Immune Control, Incyte, Janssen-Ortho (Investigator)
Gottlieb, Alice; Honoraria - CSL Behring Biotherapies for Life (Advisory Board)
Gottlieb, Alice; Honoraria - CSL Behring Biotherapies for Life (Consultant)
Gottlieb, Alice; Honoraria - Dermispor (Consultant)
Gottlieb, Alice; Honoraria - Dermispor Ltd (Advisory Board)
Gottlieb, Alice; Honoraria - Dermispor Ltd (Consultant)
Gottlieb, Alice; Honoraria - Eli Lilly (Consultant)
Gottlieb, Alice; Honoraria - Eli Lilly and Company (Advisory Board)
Gottlieb, Alice; Honoraria - Eli Lilly and Company (Consultant)
Gottlieb, Alice; Honoraria - Eli Lilly (Advisory Board)
Gottlieb, Alice; Honoraria - Eli Lilly (Consultant)
Gottlieb, Alice; Honoraria - Janssen (Advisory Board)
Gottlieb, Alice; Honoraria - Janssen (Consultant)
Gottlieb, Alice; Honoraria - Karyopharm (Advisory Board)
Gottlieb, Alice; Honoraria - Karyopharm (Consultant)
Gottlieb, Alice; Honoraria - Meiij Seika Pharma (Advisory Board)
Gottlieb, Alice; Honoraria - Meiij Seika Pharma (Consultant)
Gottlieb, Alice; Honoraria - Mitsubishi (Advisory Board)
Gottlieb, Alice; Honoraria - Mitsubishi (Consultant)
Gottlieb, Alice; Honoraria - Novartis (Advisory Board)
Gottlieb, Alice; Honoraria - Novartis (Consultant)
Gottlieb, Alice; Honoraria - Parsons (Advisory Board)
Gottlieb, Alice; Honoraria - Parsons (Consultant)
Gottlieb, Alice; Honoraria - Takeda (Advisory Board)
Gottlieb, Alice; Honoraria - Takeda (Consultant)
Gottlieb, Alice; Honoraria - Tanabe Pharma Development America (Advisory Board)
Gottlieb, Alice; Honoraria - Tanabe Pharma Development America (Consultant)
Gottlieb, Alice; Honoraria - TEVA (Advisory Board)
Gottlieb, Alice; Honoraria - TEVA (Consultant)
Gottlieb, Alice; Honoraria - UCB (Advisory Board)
Gottlieb, Alice; Honoraria - UCB Pharma (Advisory Board)
Gottlieb, Alice; Honoraria - UCB Pharma (Consultant)
Gottlieb, Alice; Honoraria - Vertex (Advisory Board)
Gottlieb, Alice; Honoraria - Vertex (Consultant)
Gottlieb, Alice; Honoraria - Vertex Pharmaceuticals, and Xenonport (Consultant)
Gottlieb, Alice; Honoraria - Vertex Pharmaceuticals, and Xenonport (Investigator)
Gottlieb, Alice; Honoraria - Xenopoint (Advisory Board)
Gottlieb, Alice; Honoraria - Xenopoint (Consultant)
Gottlieb, Alice, MD; Grants - Abbott (Investigator)
Gottlieb, Alice, MD; Grants - Abbott (Advisor)
Gottlieb, Alice, MD; Grants - Agen (Investigator)
Gottlieb, Alice, MD; Grants - Agen (Advisor)
Gottlieb, Alice, MD; Grants - Celgene (Advisor)
Gottlieb, Alice, MD; Grants - Celgene (Consultant)
Gottlieb, Alice, MD; Grants - Centocor (Advisor)
Gottlieb, Alice, MD; Grants - Centocor (Consultant)
Gottlieb, Alice, MD; Grants - Coronado (Advisor)
Gottlieb, Alice, MD; Grants - Coronado (Consultant)
Gottlieb, Alice, MD; Grants - Eli Lilly (Advisor)
Gottlieb, Alice, MD; Grants - Eli Lilly (Investigator)
Gottlieb, Alice, MD; Grants - Janssen Scientific Affairs, LLC (Advisor)
Gottlieb, Alice, MD; Grants - Janssen Scientific Affairs, LLC (Investigator)
Gottlieb, Alice, MD; Grants - Levia (Advisor)
Gottlieb, Alice, MD; Grants - Levia (Consultant)
Gottlieb, Alice, MD; Grants - Lilly (Advisor)
Gottlieb, Alice, MD; Grants - Lilly (Consultant)
Gottlieb, Alice, MD; Grants - Merck (Advisor)
Gottlieb, Alice, MD; Grants - Merck (Consultant)
Gottlieb, Alice, MD; Grants - Novartis (Advisor)
Gottlieb, Alice, MD; Grants - Novartis (Consultant)
Gottlieb, Alice, MD; Grants - Pfizer (Advisor)
Gottlieb, Alice, MD; Grants - Pfizer (Consultant)
Gottlieb, Alice, MD; Grants - Xenoport (Advisor)
Gottlieb, Alice, MD; Grants - Xenoport (Consultant)
Gottlieb, Alice, MD; Grants - Xenoport (Other)
Gottlieb, Alice, MD; Grants - Xenoport (Advisor)
Gottlieb, Alice, MD; Honoraria - Abbott Labs, AbbVie, Akros Pharma, Amgen, CSL Behring, DUSA Pharmaceuticals, GlaxoSmithKline (Consultant)
Gottlieb, Alice, MD; Honoraria - Abbott Labs, Actelion, Astellas Pharma, Beiersdorf, Coronado Biosciences, Janssen-Ortho, Pfizer (Advisory Board)
Gottlieb, Alice, MD; Honoraria - Actelion (Consultant)
Gottlieb, Alice, MD; Honoraria - Akros (Consultant)
Gottlieb, Alice, MD; Honoraria - Amgen (Consultant)
Gottlieb, Alice, MD; Honoraria - Astellas (Consultant)
Gottlieb, Alice, MD; Honoraria - Beiersdorf (Consultant)
Gottlieb, Alice, MD; Honoraria - BMS (Consultant)
Gottlieb, Alice, MD; Honoraria - Catabasis (Consultant)
Gottlieb, Alice, MD; Honoraria - Catabasis (Consultant)
Gottlieb, Alice, MD; Honoraria - Celgene (Consultant)
Gottlieb, Alice, MD; Honoraria - Centocor (Consultant)
Gottlieb, Alice, MD; Honoraria - CSL Board of Directors
Gottlieb, Alice, MD; Honoraria - Dermispor (Other)
Gottlieb, Alice, MD; Honoraria - Dermispor (Consultant)
Gottlieb, Alice, MD; Honoraria - GSK (Consultant)
Gottlieb, Alice, MD; Honoraria - Incyte, Lilly ICOS, Meiij Seika Pharma, Mitsubushi Pharma, Sanofi-Aventis, Seiji Seika Pharma (Consultant)
Gottlieb, Alice B., MD, PhD: Grants - Pfizer (Investigator)
Gottlieb, Alice B., MD, PhD: Grants - Xenopoe (Investigator)
Gottlieb, Alice B., MD, PhD: Honoraria - Abbott, Abbvie, Actelion, Akros Pharma, Amgen, Astellas Pharma, Beiersdorf, BMS, Canfite, Celgene, (Consultant)
Gottlieb, Alice B., MD, PhD: Honoraria - Abbott Labs (Abbvie) (Consultant)
Gottlieb, Alice B., MD, PhD: Honoraria - Bristol Myers Squibb Co (Consultant)
Gottlieb, Alice B., MD, PhD: Honoraria - Canfite (Consultant)
Gottlieb, Alice B., MD, PhD: Honoraria - Catabasis (Consultant)
Gottlieb, Alice B., MD, PhD: Honoraria - Celgene Corp (Consultant)
Gottlieb, Alice B., MD, PhD: Honoraria - Cencomor (Janssen) (Consultant)
Gottlieb, Alice B., MD, PhD: Honoraria - Coronado (Consultant)
Gottlieb, Alice B., MD, PhD: Honoraria - Coroado BioSciences, CSL Behring, GSK, Immune Control, Incyte, Janssen-Ortho, (Consultant)
Gottlieb, Alice B., MD, PhD: Honoraria - Coroado BioSciences, CSL Behring, GSK, Immune Control, Incyte, Janssen-Ortho, (Investigator)
Gottlieb, Alice B., MD, PhD: Honoraria - CSL Behring Biotherapies for Life (Consultant)
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Papp, Kim A.: Honoraria - Astellas (Advisory Board)
Papp, Kim A.: Honoraria - Astellas (Consultant)
Papp, Kim A.: Honoraria - Astellas (Speaker)
Papp, Kim A.: Honoraria - Baxter (Consultant)
Papp, Kim A.: Honoraria - Boehringer Ingelheim (Advisory Board)
Papp, Kim A.: Honoraria - Boehringer Ingelheim (Consultant)
Papp, Kim A.: Honoraria - Celgene (Advisory Board)
Papp, Kim A.: Honoraria - Celgene (Consultant)
Papp, Kim A.: Honoraria - Eli Lilly (Advisory Board)
Papp, Kim A.: Honoraria - Eli Lilly (Consultant)
Papp, Kim A.: Honoraria - Forward Pharma (Consultant)
Papp, Kim A.: Honoraria - Galderma (Consultant)
Papp, Kim A.: Honoraria - Galderma, Genentech, Janssen, Kyowa, Meiji Seika Pharma, Merck, Mitsubishi Pharma, Mylan, Novartis (Consultant)
Papp, Kim A.: Honoraria - Genentech (Consultant)
Papp, Kim A.: Honoraria - Janssen (Advisory Board)
Papp, Kim A.: Honoraria - Janssen (Consultant)
Papp, Kim A.: Honoraria - Janssen (Speaker)
Papp, Kim A.: Honoraria - Janssen, Merck, Mylan, Novartis, Pfizer, UCB (Advisory Board)
Papp, Kim A.: Honoraria - Kyowa (Consultant)
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Papp, Kim A.: Honoraria - Merck (Advisory Board)
Papp, Kim A.: Honoraria - Merck (Consultant)
Papp, Kim A.: Honoraria - Merck (Speaker)
Papp, Kim A.: Honoraria - Mitsubishi Pharma (Consultant)
Papp, Kim A.: Honoraria - Mylan (Advisory Board)
Papp, Kim A.: Honoraria - Mylan (Consultant)
Papp, Kim A.: Honoraria - Novartis (Advisory Board)
Papp, Kim A.: Honoraria - Novartis (Consultant)
Papp, Kim A.: Honoraria - Novartis (Speaker)
Papp, Kim A.: Honoraria - Pfizer (Advisory Board)
Papp, Kim A.: Honoraria - Pfizer (Consultant)
Papp, Kim A.: Honoraria - Pfizer (Speaker)
Papp, Kim A.: Honoraria - Pfizer, Regeneron Pharmaceuticals, Serono, Takeda, UCB (Consultant)
Papp, Kim A.: Honoraria - Regeneron Pharmaceuticals (Consultant)
Papp, Kim A.: Honoraria - Regeneron Pharmaceuticals (Consultant)
Papp, Kim A.: Honoraria - Serono (Consultant)
Papp, Kim A.: Honoraria - Takeda (Consultant)
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Papp, Kim A.: No Compensation Received - AstraZeneca (Consultant)
Papp, Kim A.: No Compensation Received - Celgene (Other)
Papp, Kim A.: No Compensation Received - Celgene, Janssen, Novartis, Pfizer (Other)
Papp, Kim A.: No Compensation Received - Dermira (Consultant)
Papp, Kim A.: No Compensation Received - Janssen (Other)
Papp, Kim A.: No Compensation Received - Kirin (Consultant)
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Pariser, David, MD: Grants - Peplin Inc (Investigator)
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Puig, Lluis, MD; Grants - Janssen (Other)
Puig, Lluis, MD; Honoraria - Eli Lilly and Company (Investigator)
Puig, Lluis, MD; Honoraria - Merck-Serona (Consultant)
Puig, Lluis, MD; Honoraria - Merck-Serona (Investigator)
Puig, Lluis, MD; Honoraria - Merck-Serona (Other)
Puig, Lluis, MD; Honoraria - Merck-Serona (Speaker)
Puig, Lluis, MD; Honoraria - Pfizer (Consultant)
Puig, Lluis, MD; Honoraria - Pfizer (Speaker)
Puig, Lluis, MD; Honoraria - Pfizer (Investigator)
Puig, Lluis, MD; Honoraria - Pfizer (Other)
Puig, Lluis, MD; Honoraria - Pfizer (Advisory Board)
Puig, Lluis, MD; Honoraria - Pfizer (Consultant)
Puig, Lluis, MD; Honoraria - Pfizer (Speaker)
Puig, Lluis, MD; Honoraria - Pfizer (Investigator)
Puig, Lluis, MD; Honoraria - Pfizer (Other)
Puig, Lluis, MD; Honoraria - Pfizer (Advisory Board)
Puig, Lluis, MD; Honoraria - Pfizer (Consultant)
Puig, Lluis, MD; Honoraria - Pfizer (Speaker)
Puig, Lluis, MD; Honoraria - Pfizer (Investigator)
Puig, Lluis, MD; Honoraria - Pfizer (Other)
Puig, Lluis, MD; Honoraria - Pfizer (Advisory Board)
Puig, Lluis, MD; Honoraria - Pfizer (Consultant)
Puig, Lluis, MD; Honoraria - Pfizer (Speaker)
Puig, Lluis, MD; Honoraria - Pfizer (Investigator)
Puig, Lluis, MD; Honoraria - Pfizer (Other)
Puig, Lluis, MD; Honoraria - Pfizer (Advisory Board)
Puig, Lluis, MD; Honoraria - Pfizer (Consultant)
Puig, Lluis, MD; Honoraria - Pfizer (Speaker)
Puig, Lluis, MD; Honoraria - Pfizer (Investigator)
Puig, Lluis, MD; Honoraria - Pfizer (Other)
Puig, Lluis, MD; Honoraria - Pfizer (Advisory Board)
Puig, Lluis, MD; Honoraria - Pfizer (Consultant)
Puig, Lluis, MD; Honoraria - Pfizer (Speaker)
Puig, Lluis, MD; Honoraria - Pfizer (Investigator)
Puig, Lluís, MD, PhD: No Compensation Received - VBL (Investigator)
Puig, Lluís: Grants - AbbVie (Investigator)
Puig, Lluís: Grants - Amgen (Consultant)
Puig, Lluís: Grants - Eli Lilly and Company (Investigator)
Puig, Lluís: Grants - Novartis (Investigator)
Puig, Lluís: Grants - Pfizer (Investigator)
Puig, Lluís: Grants - VBL (Investigator)
Puig, Lluís: Honoraria - AbbVie (Consultant)
Puig, Lluís: Honoraria - Almirall (Consultant)
Puig, Lluís: Honoraria - Bauer (Consultant)
Puig, Lluís: Honoraria - Boehringer (Consultant)
Puig, Lluís: Honoraria - Celgene (Consultant)
Puig, Lluís: Honoraria - Eli Lilly and Company (Consultant)
Puig, Lluís: Honoraria - Gebro (Consultant)
Puig, Lluís: Honoraria - Janssen (Consultant)
Puig, Lluís: Honoraria - Leo Pharma (Consultant)
Puig, Lluís: Honoraria - Merck-Serono (Consultant)
Puig, Lluís: Honoraria - MSD (Consultant)
Puig, Lluís: Honoraria - Novartis (Consultant)
Puig, Lluís: Honoraria - Pfizer (Consultant)
Puig, Lluís: Honoraria - Sandoz (Consultant)
Puig, Lluís: Honoraria - VBL (Consultant)
Puig, Lluís: Other Financial Benefit - Celgene (Speaker)
Puig, Lluís: Other Financial Benefit - Janssen (Speaker)
Puig, Lluís: Other Financial Benefit - MSD (Speaker)
Puig, Lluís: Other Financial Benefit - Novartis (Speaker)
Puig, Lluís: Other Financial Benefit - Pfizer (Speaker)
Puig, Luis, MD, PhD: Grants - AbbVie (Investigator)
Puig, Luis, MD, PhD: Grants - Amgen (Investigator)
Puig, Luis, MD, PhD: Grants - Eli Lilly and Company (Investigator)
Puig, Luis, MD, PhD: Grants - Janssen (Investigator)
Puig, Luis, MD, PhD: Grants - MSD (Investigator)
Puig, Luis, MD, PhD: Grants - Novartis (Investigator)
Puig, Luis, MD, PhD: Grants - Pfizer (Investigator)
Puig, Luis, MD, PhD: Grants - VBL (Investigator)
Puig, Luis, MD, PhD: Honoraria - AbbVie (Advisory Board)
Puig, Luis, MD, PhD: Honoraria - Amgen (Advisory Board)
Puig, Luis, MD, PhD: Honoraria - Boehringer (Advisory Board)
Puig, Luis, MD, PhD: Honoraria - Celgene (Advisory Board)
Puig, Luis, MD, PhD: Honoraria - Eli Lilly and Company (Advisory Board)
Puig, Luis, MD, PhD: Honoraria - Janssen (Advisory Board)
Puig, Luis, MD, PhD: Honoraria - Leo Pharma (Advisory Board)
Puig, Luis, MD, PhD: Honoraria - Novartis (Other)
Puig, Luis, MD, PhD: Other Financial Benefit - AbbVie (Investigator)
Puig, Luis, MD, PhD: Other Financial Benefit - Amgen (Investigator)
Puig, Luis, MD, PhD: Other Financial Benefit - Novartis (Other)
Puig, Susana, MD, PhD: No financial relationship exists with commercial interests.
Pujo, Ramón Maria: No financial relationship exists with commercial interests.
Puildo-Perez, Ana: No financial relationship exists with commercial interests.

Puildo-Perez, Ana, MD: No financial relationship exists with commercial interests.
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Purdy, Kerri, MD: Honoraria - Janssen (Speaker)
Purdy, Kerri, MD: No financial relationship exists with commercial interests.

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Quinn, Timothy, MD: No financial relationship exists with commercial interests.
Quinn, Annette, RN: No financial relationship exists with commercial interests.
Qureshi, Abrar: Honoraria - Abbvie (Consultant)
Qureshi, Abrar: Honoraria - Abbvie, Amgen, The Centers for Disease Control, Janssen, Merck, Novartis, Pfizer (Consultant)
Qureshi, Abrar: Honoraria - Amgen (Consultant)
Qureshi, Abrar: Honoraria - CDC (Consultant)
Qureshi, Abrar: Honoraria - Janssen (Consultant)
Qureshi, Abrar: Honoraria - Merck (Consultant)
Qureshi, Abrar: Honoraria - Novartis (Consultant)
Qureshi, Abrar: Honoraria - Pfizer (Consultant)
Qureshi, Abrar: No Compensation Received - Amgen (Investigator)
Qureshi, Sarah: No financial relationship exists with commercial interests.

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Rademaker, Alfred, PhD: Honoraria - American Association of Cancer Research (Other)
Rademaker, Alfred, PhD: Honoraria - Georgetown University Cancer Center (Advisory Board)
Rademaker, Alfred, PhD: Honoraria - Journal of the American Medical Association (Consultant)
Rademaker, Alfred, PhD: Honoraria - National Institutes of Health (Consultant)
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Reich, Kristian, MD: Honoraria - Amgen, Biogen, BI, Centocor, Covagen, Forward, GSK, Janssen, Leo, Medac, Merck (Consultant)
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Reich, Kristian, MD: Honoraria - Abbvie, Amgen, Biogen, BI, Centocor, Covagen, Forward, GSK, Janssen, Leo, Lily, Medac, Merck (Consultant)

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Reich, Kristian, MD: Honoraria - Abbvie, Amgen, Biogen, BI, Centocor, Covagen, Forward, GSK, Janssen, Leo, Lily, Medac, Merck (Consultant)

Reich, Kristian, MD: Honoraria - Abbvie, Amgen, Biogen, BI, Centocor, Covagen, Forward, GSK, Janssen, Leo, Lily, Medac, Merck (Consultant)
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Reich, Kristian, MD: Honoraria - Abbvie, Amgen, Biogen, BI, Centocor, Covagen, Forward, GSK, Janssen, Leo, Lily, Medac, Merck (Consultant)
Reich, Kristian, MD: Honoraria - Abbvie, Amgen, Biogen, BI, Centocor, Covagen, Forward, GSK, Janssen, Leo, Lily, Medac, Merck (Consultant)

Reich, Kristian, MD: Honoraria - Abbvie, Amgen, Biogen, BI, Centocor, Covagen, Forward, GSK, Janssen, Leo, Lily, Medac, Merck (Consultant)
Reich, Kristian, MD: Honoraria - Abbvie, Amgen, Biogen, BI, Centocor, Covagen, Forward, GSK, Janssen, Leo, Lily, Medac, Merck (Consultant)

Reich, Kristian, MD: Honoraria - Abbvie, Amgen, Biogen, BI, Centocor, Covagen, Forward, GSK, Janssen, Leo, Lily, Medac, Merck (Consultant)
Reich, Kristian, MD: Honoraria - Abbvie, Amgen, Biogen, BI, Centocor, Covagen, Forward, GSK, Janssen, Leo, Lily, Medac, Merck (Consultant)
Reich, Kristian, MD; Honoraria - Merck Sharp & Dohme Corp (Consultant)

Reich, Kristian, MD; Honoraria - Merck, Novartis, Ocean Pharma, Pfizer, Regeneron, Takeda, UCB, Xenpoport (Consultant)

Reich, Kristian, MD; Honoraria - Novartis (Advisory Board)

Reich, Kristian, MD; Honoraria - Novartis (Consultant)

Reich, Kristian, MD; Honoraria - Novartis (Speaker)

Reich, Kristian, MD; Honoraria - Ocean Pharma (Advisory Board)

Reich, Kristian, MD; Honoraria - Ocean Pharma (Consultant)

Reich, Kristian, MD; Honoraria - Pfizer (Advisory Board)

Reich, Kristian, MD; Honoraria - Pfizer (Consultant)

Reich, Kristian, MD; Honoraria - Pfizer (Speaker)

Reich, Kristian, MD; Honoraria - Regeneron (Advisory Board)

Reich, Kristian, MD; Honoraria - Regeneron (Consultant)

Reich, Kristian, MD; Honoraria - Regeneron, Takeda, UCB Pharma, Xenopore (Speaker)

Reich, Kristian, MD; Honoraria - Regeneron (Other)

Reich, Kristian, MD; Honoraria - Takeda (Consultant)

Reich, Kristian, MD; Honoraria - Takeda (Speaker)

Reich, Kristian, MD; Honoraria - UCB Advisory Board (Consultant)

Reich, Kristian, MD; Honoraria - UCB (Consultant)

Reich, Kristian, MD; Honoraria - UCB Pharma (Consultant)

Reich, Kristian, MD; Honoraria - Xenopore (Advisory Board)

Reich, Kristian, MD; Honoraria - Xenopore (Consultant)

Reich, Kristian, MD; Honoraria - Xenopore (Speaker)

Reich, Kristian, MD; Other Financial Benefit - AbbVie (Advisory Board)

Reich, Kristian, MD; Other Financial Benefit - AbbVie (Other)

Reich, Kristian, MD; Other Financial Benefit - Amgen (Other)

Reich, Kristian, MD; Other Financial Benefit - Biogen (Other)

Reich, Kristian, MD; Other Financial Benefit - Boehringer Ingelheim (Other)

Reich, Kristian, MD; Other Financial Benefit - Boehringer Ingelheim Pharma (Other)

Reich, Kristian, MD; Other Financial Benefit - Celgene (Other)

Reich, Kristian, MD; Other Financial Benefit - Centocor (Other)

Reich, Kristian, MD; Other Financial Benefit - Covagen (Other)

Reich, Kristian, MD; Other Financial Benefit - Eli Lilly and Company (Other)

Reich, Kristian, MD; Other Financial Benefit - Eli Lilly and Company (Speaker)

Reich, Kristian, MD; Other Financial Benefit - Forward Pharma (Other)

Reich, Kristian, MD; Other Financial Benefit - GlaxoSmithKline (Other)

Reich, Kristian, MD; Other Financial Benefit - Janssen-Cilag (Other)

Reich, Kristian, MD; Other Financial Benefit - Janssen-Cilag (Other)

Reich, Kristian, MD; Other Financial Benefit - Leo (Other)

Reich, Kristian, MD; Other Financial Benefit - Lilly (Other)

Reich, Kristian, MD; Other Financial Benefit - Medac (Other)

Reich, Kristian, MD; Other Financial Benefit - Merck (Other)

Reich, Kristian, MD; Other Financial Benefit - Merck Sharp & Dohme Corp (Other)

Reich, Kristian, MD; Other Financial Benefit - Norvartis (Other)

Reich, Kristian, MD; Other Financial Benefit - Novartis (Other)

Reich, Kristian, MD; Other Financial Benefit - Ocean Pharma (Other)

Reich, Kristian, MD; Other Financial Benefit - Pfizer (Other)

Reich, Kristian, MD; Other Financial Benefit - Regeneron (Other)

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Reich, Kristian, MD; Other Financial Benefit - Takeda (Other)

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Reich, Kristian, MD; Other Financial Benefit - Xenoport (Other)

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Reich, Kristian, MD, PhD; Honoraria - Amgen, GSK, Pfizer, Lilly, Merck, Centocor, Janssen (Advisory Board)

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Reich, Kristian, MD, PhD; Honoraria - Biogen (Speaker)

Reich, Kristian, MD, PhD; Honoraria - Boehringer Ingelheim Pharma (Consultant)

Reich, Kristian, MD, PhD; Honoraria - Celgene (Speaker)

Reich, Kristian, MD, PhD; Honoraria - Celgene Corporation (Consultant)

Reich, Kristian, MD, PhD; Honoraria - Centocor (Speaker)

Reich, Kristian, MD, PhD; Honoraria - Covagen (Consultant)

Reich, Kristian, MD, PhD; Honoraria - Forward Pharma (Consultant)

Reich, Kristian, MD, PhD; Honoraria - GlaxoSmithKline (Speaker)

Reich, Kristian, MD, PhD; Honoraria - Janssen-Cilag (Speaker)

Reich, Kristian, MD, PhD; Honoraria - LEO Pharma (Speaker)

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Reich, Kristian, MD, PhD; Honoraria - Merck Sharp & Dohme Corp (Speaker)

Reich, Kristian, MD, PhD; Honoraria - Novartis (Speaker)

Reich, Kristian, MD, PhD; Honoraria - Ocean Pharma GmbH (Speaker)

Reich, Kristian, MD, PhD; Honoraria - Pfizer (Speaker)

Reich, Kristian, MD, PhD; Honoraria - Regeneron (Speaker)

Reich, Kristian, MD, PhD; Honoraria - Takeda (Consultant)

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Reich, Kristian, MD, PhD; Honoraria - Xenopore (Advisory Board)

Reich, Kristian, MD, PhD; Other Financial Benefit - medac (Investigator)

Reid, Sophia, MD; No financial relationship exists with commercial interests.

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Ren, Ee Chee, PhD; No financial relationship exists with commercial interests.

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Reyes-Baraona, Francisco: No financial relationship exists with commercial interests.

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Rhee, Susan: Stock Options - AbbVie Inc (Employee)

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Rice, Michelle: No financial relationship exists with commercial interests.

Rich, Phoebe: Grants - AbbVie (Investigator)

Rich, Phoebe: Grants - Amgen (Investigator)

Rich, Phoebe: Grants - Celgene (Investigator)

Rich, Phoebe: Grants - Eli Lilly (Investigator)

Rich, Phoebe: Grants - Galderma (Investigator)

Rich, Phoebe: Grants - Janssen-Ortho (Investigator)

Rich, Phoebe: Grants - Merck (Investigator)

Rich, Phoebe: Grants - Novartis (Investigator)

Rich, Phoebe: Grants - Pfizer (Investigator)

Rich, Phoebe: Honoraria - Pedicurem (Consultant)

Rich, Phoebe, MD: Other Financial Benefit - Novartis (Other)

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Ritchlin, Christopher, MD, MPH: Grants - AbbVie (Investigator)

Ritchlin, Christopher, MD, MPH: Grants - Amgen (Investigator)

Ritchlin, Christopher, MD, MPH: Grants - UCB Pharma (Investigator)

Ritchlin, Christopher, MD, MPH: Honoraria - AbbVie (Consultant)

Ritchlin, Christopher, MD, MPH: Honoraria - Amgen (Consultant)

Ritchlin, Christopher, MD, MPH: Honoraria - Boehringer Ingelheim (Consultant)

Ritchlin, Christopher, MD, MPH: Honoraria - Eli Lilly and Company (Consultant)

Ritchlin, Christopher, MD, MPH: Honoraria - Novartis (Consultant)

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Rivkin, Alexander, MD: Honoraria - Allergan (Consultant)

Rivkin, Alexander, MD: Honoraria - Allergan (Speaker)

Rivkin, Alexander, MD: Honoraria - Galderma (Advisory Board)

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Rivkin, Alexander, MD: Honoraria - Merz (Advisory Board)

Rivkin, Alexander, MD: Honoraria - Merz (Consultant)

Rivkin, Alexander, MD: Honoraria - Suneva (Advisory Board)

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Rivkin, Alexander, MD: Honoraria - Suneva (Speaker)

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Sofen, Howard, MD: Grants - Janssen (Investigator)

Sofen, Howard, MD: Grants - Lilly (Investigator)

Sofen, Howard, MD: Grants - Merck (Investigator)

Sofen, Howard, MD: Grants - Novartis (Investigator)

Sofen, Howard, MD: Grants - Pfizer (Investigator)

Sofen, Howard, MD: Grants - Pfizer Inc (Investigator)

Sofen, Howard, MD: Honoraria - Janssen (Consultant)

Sofen, Howard, MD: Honoraria - Janssen (Speaker)

Sofen, Howard, MD: Honoraria - Lilly (Consultant)

Sofen, Howard, MD: Honoraria - Lilly (Speaker)

Sofen, Howard, MD: Honoraria - Novartis (Consultant)

Sofen, Howard, MD: Honoraria - Novartis (Speaker)

Sofen, Howard, MD: Honoraria - Novartis, Janssen, Lilly (Consultant)

Sofen, Howard, MD: Honoraria - Novartis, Janssen, Lilly (Speaker)

Sofen, Howard, MD: Honoraria - Novartis, Janssen, Lilly (Speaker)

Sofen, Howard, MD: Honoraria - Pfizer Inc (Consultant)

Sofen, Howard, MD: Grants - Eli Lilly and Company (Investigator)

Sofen, Howard, MD: Honoraria - Amgen (Consultant)

Sofen, Howard, MD: Honoraria - Celgene (Consultant)

Sofen, Howard, MD: Honoraria - Eli Lilly and Company (Consultant)

Sofen, Howard, MD: Honoraria - Janssen (Consultant)

Sofen, Howard, MD: Honoraria - Novartis (Consultant)

Sofen, Howard, MD: Honoraria - Pfizer (Consultant)

Sofen, Howard, MD: Other Financial Benefit - Amgen (Consultant)

Sofen, Howard, MD: Other Financial Benefit - Amgen (Investigator)

Sofen, Howard, MD: Other Financial Benefit - Celgene (Consultant)

Sofen, Howard, MD: Other Financial Benefit - Celgene (Investigator)

Sofen, Howard, MD: Other Financial Benefit - Eli Lilly and Company (Consultant)

Sofen, Howard, MD: Other Financial Benefit - Eli Lilly and Company (Investigator)

Sofen, Howard, MD: Other Financial Benefit - Janssen (Consultant)

Sofen, Howard, MD: Other Financial Benefit - Janssen (Investigator)

Sofen, Howard, MD: Other Financial Benefit - Merck (Consultant)

Sofen, Howard, MD: Other Financial Benefit - Merck (Investigator)

Sofen, Howard, MD: Other Financial Benefit - Novartis (Consultant)

Sofen, Howard, MD: Other Financial Benefit - Pfizer (Consultant)

Sofen, Howard, MD: Other Financial Benefit - Novartis (Other)

Sofen, Howard, MD: Other Financial Benefit - Pfizer (Consultant)

Sofen, Howard, MD: Other Financial Benefit - Pfizer (Investigator)

Sofen, Howard, MD: Other Financial Benefit - Valeant (Consultant)

Sofen, Howard, MD: Other Financial Benefit - Valeant (Investigator)

Soh, Jonathan: No financial relationship exists with commercial interests.

Sokkar, Rita: No financial relationship exists with commercial interests.

Solorzano Mariscal, Rocio: No financial relationship exists with commercial interests.

Solotikin, Kathleen, MSN: Salary - Eli Lilly and Company (Employee)

Solovastrou, Laura, MD: No financial relationship exists with commercial interests.

Sonderup, Jessica: No financial relationship exists with commercial interests.

Sondgeroth, Jason: No financial relationship exists with commercial interests.

Song, Jinlin: Other Financial Benefit - AbbVie (Consultant)

Song, KyeYong, MD, PhD: No financial relationship exists with commercial interests.

Song, Margaret, MD: No financial relationship exists with commercial interests.

Song, Yan: Other Financial Benefit - Analysis Group, which received payment from AbbVie Inc to assist with the research process (Employee)

Sood, Apra, MD: No financial relationship exists with commercial interests.

Sotiriadis, Dimitrios, MD, PhD: No financial relationship exists with commercial interests.

Sotoodian, Bahman, MD: No financial relationship exists with commercial interests.

Soung, Jennifer, MD: Grants - Celgene Corporation (Investigator)

Soung, Jennifer, MD: Grants - Janssen, Amgen, Pfizer, Allergan, Regeneron, Genzum, Eli Lilly, Genentech, Mertz, Kadmon (Investigator)

Soung, Jennifer, MD: Honoraria - Amgen, AbbVie, Celgene (Speaker)

Soung, Jennifer, MD: Honoraria - Celgene (Advisory Board)

Southall, Michael, PhD: Salary - Johnson & Johnson Consumer, Inc (Employee)

Souza, Ana Isla, MD: No financial relationship exists with commercial interests.

Souza, cacilda, MD, PhD: Honoraria - AbbVie (Other)

Souza, cacilda, MD, PhD: Honoraria - Janssen-Gilag (Other)

Souza, cacilda, MD, PhD: Honoraria - Leo Pharma (Other)

Souza, cacilda, MD, PhD: Honoraria - Pfizer (Other)

Souza, Maria Natalia, MD: No financial relationship exists with commercial interests.

Soyer, H. Peter, MD: No financial relationship exists with commercial interests.

Sparagana, Steven: Honoraria - Lundbeck (Investigator)

Sparagana, Steven: Honoraria - Novartis (Investigator)

Spaunhurst, Katrina, MD: No financial relationship exists with commercial interests.
Speiser, Jodi, MD: No financial relationship exists with commercial interests.
Spelman, Lynda, MD: Honoraria - Amgen (Investigator)
Spiker, Alison, MD: No financial relationship exists with commercial interests.
Spitale, Robert, PhD: No financial relationship exists with commercial interests.
Srisuwanwattana, Ploychompoo, MD: No financial relationship exists with commercial interests.

Stark, Jeffrey: Salary - UCB Pharma (Employee)
Stasko, Thomas, MD: No financial relationship exists with commercial interests.
Staubach, Petra, MD: No financial relationship exists with commercial interests.
St. Claire, Kayla: No financial relationship exists with commercial interests.
Stefaniwsky, Lilia, MBA: No financial relationship exists with commercial interests.
Stein Gold, Linda, MD: Grants - Allergan (Investigator) 
Stein Gold, Linda, MD: Grants - Anacor (Investigator) 
Stein Gold, Linda, MD: Grants - Galderma Laboratories (Investigator) 
Stein Gold, Linda, MD: Grants - LEO Pharma (Investigator) 
Stein Gold, Linda, MD: Grants - Novartis Pharmaceuticals (Investigator) 
Stein Gold, Linda, MD: Grants - Stiefel (Investigator) 
Stein Gold, Linda, MD: Grants - Topicca (Investigator) 
Stein Gold, Linda, MD: Grants - Valeant (Investigator) 
Stein Gold, Linda, MD: Honoraria - AbbVie (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Actavis (Speaker) 
Stein Gold, Linda, MD: Honoraria - Allergan (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Aqua (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Ferndale Laboratories (Consultant) 
Stein Gold, Linda, MD: Honoraria - Foamix (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Galderma Laboratories (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - LEO Pharma (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Lilly ICOS (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Medicis Pharmaceutical (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Merz (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Pfizer (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Roche Laboratories (Other) 
Stein Gold, Linda, MD: Honoraria - Stiefel (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Taro Pharm (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Valeant (Advisory Board) 
Stein Gold, Linda, MD: Grants - Galderma Research & Development, SNC (Investigator) 
Stein Gold, Linda, MD: Grants - Therapeutics Inc (Investigator) 
Stein Gold, Linda, MD: Honoraria - Allergan (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Anacor (Speaker) 
Stein Gold, Linda, MD: Honoraria - Galderma (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Gelma (Speaker) 
Stein Gold, Linda, MD: Honoraria - Galderma Laboratories, L.P. (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Galderma Laboratories, L.P. (Speaker) 
Stein Gold, Linda, MD: Honoraria - Leo (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Leo (Speaker) 
Stein Gold, Linda, MD: Honoraria - Leo Pharma (Consultant) 
Stein Gold, Linda, MD: Honoraria - Lilly (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Novartis (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Novartis (Speaker) 
Stein Gold, Linda, MD: Honoraria - Pfizer (Advisory Board) 

Stein Gold, Linda, MD: Honoraria - Roche (Other) 
Stein Gold, Linda, MD: Honoraria - Taro (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Taro (Consultant) 
Stein Gold, Linda, MD: Honoraria - Taro (Speaker) 
Stein Gold, Linda, MD: Honoraria - Valeant (Advisory Board) 
Stein Gold, Linda, MD: Honoraria - Valeant (Speaker) 
Steinhoff, Natalie DO: No financial relationship exists with commercial interests.
Stémart, Alain: Salary - Aixial Pharma (Employee)
Stephens, Alexis, DO: No financial relationship exists with commercial interests.
Stenroberg, Flavia, MD: No financial relationship exists with commercial interests.
Stewart, Emily, MD: No financial relationship exists with commercial interests.
Stewart, Kevin, MD: No financial relationship exists with commercial interests.
Stewart, Kristen, MD: No financial relationship exists with commercial interests.
Stitozzi, Claudia, PhD: No financial relationship exists with commercial interests.
Stingl, Georg: No financial relationship exists with commercial interests.
Stolshek, Bradley: Salary - Amgen, Inc (Employee)
Stolshek, Bradley: Stock - Amgen, Inc (Stock Holder)
Stone, Christopher, MBChB: No financial relationship exists with commercial interests.
Storer, Molly, MS: No financial relationship exists with commercial interests.
Stork, Jiri, MD, PhD: No financial relationship exists with commercial interests.
Stoyko, Ivaylo, MD: Salary - Eli Lilly and Company (Employee)
Strand, Vibeke: Other Financial Benefit - AbbVie, Alder, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Consultant)
Strand, Vibeke: Other Financial Benefit - AbbVie, Alder, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Consultant)
Strand, Vibeke: Other Financial Benefit - Abbvive, Alder, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Advisory Board)
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Consultant) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Consultant) 
Strand, Vibeke: Other Financial Benefit - Abbvive, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvive, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Consultant) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Consultant) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Consultant) 
Strand, Vibeke: Other Financial Benefit - Abbvive, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvive, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvive, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Consultant) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer and UCB (Consultant) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Advisory Board) 
Strand, Vibeke: Other Financial Benefit - Abbvie, Amgen, BMS, Celgene, Genentech, Janssen, Novartis, Pfizer, and UCB (Advisory Board) 
Stoyko, Ivaylo, MD: Salary - Eli Lilly and Company (Employee) 

Stoyko, Ivaylo, MD: Salary - Eli Lilly and Company (Employee)
Strand, Vibeke, MD; Honoraria - Eupraxia (Consultant)
Strand, Vibeke, MD; Honoraria - Flexion (Consultant)
Strand, Vibeke, MD; Honoraria - Genentech/Roche (Consultant)
Strand, Vibeke, MD; Honoraria - GSK (Consultant)
Strand, Vibeke, MD; Honoraria - Hospira (Consultant)
Strand, Vibeke, MD; Honoraria - Idera (Consultant)
Strand, Vibeke, MD; Honoraria - Incyte (Consultant)
Strand, Vibeke, MD; Honoraria - Iroko (Consultant)
Strand, Vibeke, MD; Honoraria - Janssen (Consultant)
Strand, Vibeke, MD; Honoraria - Jazz Pharmaceuticals (Consultant)
Strand, Vibeke, MD; Honoraria - Mesoblast (Consultant)
Strand, Vibeke, MD; Honoraria - Novartis (Consultant)
Strand, Vibeke, MD; Honoraria - Pfizer (Consultant)
Strand, Vibeke, MD; Honoraria - Regeneron (Consultant)
Strand, Vibeke, MD; Honoraria - Sandoz (Consultant)
Strand, Vibeke, MD; Honoraria - Sanofi - Genzyme (Consultant)
Strand, Vibeke, MD; Honoraria - SKK (Consultant)
Strand, Vibeke, MD; Honoraria - Takeda (Consultant)
Strand, Vibeke, MD; Honoraria - UCB (Consultant)
Strand, Vibeke, MD; Honoraria - Vertex (Consultant)
Strand, Vibeke, MD; Other Financial Benefit - AbbVie (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Amgen (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - BiogenIdec (Consultant)
Strand, Vibeke, MD; Other Financial Benefit - BMS (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Carbylan (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Crealta (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Crescendo (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Eli Lilly and Company (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Genentech/Roche (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - GSK (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Idera (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Incyte (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Janssen (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Jazz Pharm (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - MerckSerono (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Novartis (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Pfizer (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Regeneron (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Sandoz (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Sanofi (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - Takeda (Advisory Board)
Strand, Vibeke, MD; Other Financial Benefit - UCB (Advisory Board)
Strand, Vibeke, MD; Stock Options - Iroko (Advisory Board)
Strasswimmer, John; No financial relationship exists with commercial interests.
Strasswimmer, John, MD, PhD; No financial relationship exists with commercial interests.
Strober, Bruce, MD; Grants - AbbVie, Janssen (Other)
Strober, Bruce, MD; Honoraria - AbbVie (Speaker)
Strober, Bruce; Other Financial Benefit - AbbVie, Amgen, Celgene, Dermira, Forward Pharma, Janssen, Leo, Eli Lilly, Maruho, Medac, Novartis (Consultant)
Strober, Bruce, MD; Honoraria - Pfizer, Stiefel/GlaxoSmithKline, UCB, Boehringer Ingelheim (Consultant)
Strober, Bruce; Other Financial Benefit - CORRONA Psoriasis Registry (Consultant)
Strober, Bruce, MD; Grants - Janssen Scientific Affairs, LLC (Consultant)
Strober, Bruce, MD, PhD; Grants - AbbVie (Investigator)
Strober, Bruce, MD, PhD; Grants - AbbVie (Other)
Strober, Bruce, MD, PhD; Grants - Amgen (Investigator)
Strober, Bruce, MD, PhD; Grants - Eli Lilly and Company (Consultant)
Strober, Bruce, MD, PhD; Grants - Janssen (Other)
Strober, Bruce, MD, PhD; Grants - Merck (Investigator)
Strober, Bruce, MD, PhD; Grants - Novartis (Investigator)
Strober, Bruce, MD, PhD; Honoraria - AbbVie (Consultant)
Strober, Bruce, MD, PhD; Honoraria - AbbVie (Speaker)
Strober, Bruce, MD, PhD; Honoraria - Amgen (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Celgene (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Boehringer Ingelheim (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Corrona Psoriasis Registry (Consultant)
Strober, Bruce, MD, PhD; Honoraria - CORRONA Psoriasis Registry (Other)
Strober, Bruce, MD, PhD; Honoraria - Corrona, LLC (Other)
Strober, Bruce, MD, PhD; Honoraria - Dermira (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Eli Lilly (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Eli Lilly and Company (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Forward Pharma (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Janssen (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Janssen Biotech Inc (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Leo (Consultant)
Strober, Bruce, MD, PhD; Honoraria - LEO Pharma (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Maruho (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Medac (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Medac Pharma (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Merck (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Norvatis (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Novartis (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Pfizer (Consultant)
Strober, Bruce, MD, PhD; Honoraria - Stiefel GlaxoSmithKline (Consultant)
Strober, Bruce, MD, PhD: Honoraria - Stiefel/GlaxoSmithKline (Consultant)
Strober, Bruce, MD, PhD: Honoraria - UCB (Consultant)
Strober, Bruce, MD, PhD: Honoraria - UCB Pharma (Consultant)
Strober, Bruce, MD, PhD: No Compensation Received - Novartis Pharmaceuticals (Consultant)
Strober, Bruce, MD, PhD: Other Financial Benefit - AbbVie (Investigator)
Strober, Bruce, MD, PhD: Other Financial Benefit - Amgen (Investigator)
Strober, Bruce, MD, PhD: Other Financial Benefit - Celgene (Investigator)
Strober, Bruce, MD, PhD: Other Financial Benefit - CORRONA Psoriasis Registry (Other)
Strober, Bruce, MD, PhD: Other Financial Benefit - Eli Lilly (Investigator)
Strober, Bruce, MD, PhD: Other Financial Benefit - Janssen (Investigator)
Strober, Bruce, MD, PhD: Other Financial Benefit - Lilly (Investigator)
Strober, Bruce, MD, PhD: Other Financial Benefit - Merck (Investigator)
Strober, Bruce, MD, PhD: Other Financial Benefit - Novartis (Investigator)
Strober, Bruce, MD, PhD: Other Financial Benefit - XenoPort (Investigator)
Strober, Bruce, MD, PhD: Residency or Fellowship Program - AbbVie (Other)
Strober, Bruce, MD, PhD: Residency or Fellowship Program - Janssen (Other)
Strober, Bruce, MD, PhD: Salary - Novartis (Employee)
Strohal, Robert: Honoraria - AbbVie (Consultant)
Strohal, Robert: Honoraria - APS Pharma (Investigator)
Strohal, Robert: Honoraria - Flen Pharma (Advisory Board)
Strohal, Robert: Honoraria - Flen Pharma (Consultant)
Strohal, Robert: Honoraria - Flen Pharma (Investigator)
Strohal, Robert: Honoraria - Lohmann und Rauscher (Consultant)
Strohal, Robert: Honoraria - Lohmann und Rauscher (Speaker)
Strohal, Robert: Honoraria - Novartis (Consultant)
Strohal, Robert: Honoraria - Pfizer Inc (Advisory Board)
Strohal, Robert: Honoraria - Pfizer Inc (Consultant)
Strohal, Robert: Honoraria - Pfizer Inc (Speaker)
Strohal, Robert: Honoraria - Schülke & Meyer (Advisory Board)
Strohal, Robert: Honoraria - Schülke & Meyer (Consultant)
Strohal, Robert: Honoraria - Schülke & Meyer (Speaker)
Strohal, Robert: Honoraria - Syntagenix (Advisory Board)
Strohal, Robert: Honoraria - Ugo (Advisory Board)
Strohal, Robert: Honoraria - Ugo (Consultant)
Strohal, Robert: Honoraria - Ugo (Speaker)
Strowd, Lindsay, MD: No financial relationship exists with commercial interests.
Strutton, Geoffrey, MBBS: No financial relationship exists with commercial interests.
Stryjewski, Barbara, MD: No financial relationship exists with commercial interests.
Stull, Carolyn: No financial relationship exists with commercial interests.
Stumpf, Ticiana, MD: No financial relationship exists with commercial interests.
Styczynski, Peter, PhD: No financial relationship exists with commercial interests.
Su, Wei, MD: No financial relationship exists with commercial interests.
Suárez Valladares, Maríaja Jesús, MD: No financial relationship exists with commercial interests.
Suárez-Fariñas, Mayte: No financial relationship exists with commercial interests.
Suárez-Fernández, Ricardo, MD, PhD: No financial relationship exists with commercial interests.
Suárez-Fernández, Ricardo, MD, PhD: No financial relationship exists with commercial interests.
Subiabre Ferrer, Daniela, MD: No financial relationship exists with commercial interests.
Subiabre-Ferrer, Daniela, MD: No financial relationship exists with commercial interests.
Subrt, Adrian, MD: No financial relationship exists with commercial interests.
Sudtikoonaseth, Poonnawis, MD: No financial relationship exists with commercial interests.
Suh, Dong Hye, MD, PhD: No financial relationship exists with commercial interests.
Suh, Dong Hye, MD, PhD: No financial relationship exists with commercial interests.
Suh, Dong Woo, MD: No financial relationship exists with commercial interests.
Suh, Dong Woo, MD: No financial relationship exists with commercial interests.
Suh, Hae-Jin, MD: No financial relationship exists with commercial interests.
Suh, Kee Suck, MD: No financial relationship exists with commercial interests.
Suh, Kee Suck, MD, PhD: No financial relationship exists with commercial interests.
Sullivan, A. Nichole, MD: No financial relationship exists with commercial interests.
Sullivan, Marguerite: No financial relationship exists with commercial interests.
Summerbell, R. C., PhD: Salary - Sporometrics Inc (Employee)
Summers, Jan, PhD: No financial relationship exists with commercial interests.
Sundaram, Hema, MD: Grants - Biopelle (Investigator)
Sundaram, Hema, MD: Grants - Biopelle, Inc (Investigator)
Sundaram, Hema, MD: Grants - CosmeoFrance (Investigator)
Sundaram, Hema, MD: Grants - Evolus, Inc (Investigator)
Sundaram, Hema, MD: Grants - Merz Aesthetics, Inc (Investigator)
Sundaram, Hema, MD: Grants - Merz North America, Inc (Investigator)
Sundaram, Hema, MD: Grants - Suneva Medical (Consultant)
Sundaram, Hema, MD: Grants - Suneva Medical, Inc (Investigator)
Sundaram, Hema, MD: Honoraria - Allergan (Consultant)
Sundaram, Hema, MD: Honoraria - Alma Lasers (Consultant)
Sundaram, Hema, MD: Honoraria - Biopelle (Consultant)
Sundaram, Hema, MD: Honoraria - Biopelle, Inc (Consultant)
Sundaram, Hema, MD: Honoraria - CosmeoFrance (Consultant)
Sundaram, Hema, MD: Honoraria - Eclipse Medical (Consultant)
Sundaram, Hema, MD: Honoraria - Galderma (Consultant)
Sundaram, Hema, MD: Honoraria - HaoHai Healthcare (Consultant)

Sundaram, Hema, MD: Honoraria - Merz Aesthetic (Consultant)

Sundaram, Hema, MD: Honoraria - Merz Aesthetics, Inc (Consultant)

Sundaram, Hema, MD: Honoraria - Merz North America, Inc (Consultant)

Sundaram, Hema, MD: Honoraria - SkinCeuticals LLC (Consultant)

Sykes, Jonathan M., MD: Honoraria - Suneva Medical, Inc

Sykes, Jonathan M., MD: Honoraria - SkinCeuticals LLC

Sykes, Jonathan M., MD: Honoraria - Allergan (Consultant)

Sykes, Jonathan M., MD: Honoraria - Astellas (Consultant)

Sykes, Jonathan M., MD: Honoraria - Biogenetica International Labo (Consultant)

Sykes, Jonathan M., MD: Honoraria - Janssen Research and Development, LLC (Employee)

Szepietowski, Jacke: Grants - Abbott/AbbVie, Actavis, Amgen BASF, Astellas, Berlin-Chemie/Menarini, Biogenetica International Labo (Investigator)

Szepietowski, Jacek: Grants - Actelion (Investigator)

Szepietowski, Jacek: Grants - Amgen (Investigator)

Szepietowski, Jacek: Grants - Janssen-Cilag (Investigator)

Szepietowski, Jacek: Grants - Mitsubishi Pharma (Investigator)

Szepietowski, Jacek: Grants - Novartis (Investigator)

Szepietowski, Jacek: Grants - Regeneron (Investigator)

Szepietowski, Jacek: Grants - Takeda (Investigator)

Szepietowski, Jacek: Honoraria - Astellas (Speaker)

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