Update on Photodermatoses: Diagnosis and Management

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Disclosure

• *Investigator:*
  - Estée Lauder
  - Ferndale
  - Allergan
Learning Objectives

• Recognize important and new development in photodermatoses
• Diagnose and manage patients with photodermatoses
Photodermatoses

- Polymorphous light eruption
- Actinic prurigo
- Hydroa vacciniforme
- Chronic actinic dermatitis
- Solar urticaria
- Drug-induced photosensitivity
- Erythropoietic protoporphyria

Photodermatoses

- Polymorphous light eruption
PMLE: Pathophysiology
(van de Pas, CB. JID 2/04; 122:295. London)

• PMLE patients are more resistant to UV-induced immunosuppression
PMLE: Treatment

- Seek shade
- Broad spectrum sunscreens
FDA new guidelines (12/12)
PMLE: Treatment

- Seek shade
- Broad spectrum sunscreens
- NB-UVB
  - Start in spring
  - 50% MED-B, or 100-200 mJ/cm²
  - Increase by 5-10% per treatment
  - 2-3 x per week for 15 treatments
  - Weekly sun exposure (10-2PM); 20-30 min for rest of summer
PMLE: Treatment

• Seek shade
• Broad spectrum sunscreens
• NB-UVB
• Oral corticosteroid
  – Prednisone, 0.6-1 mg/kg/d
  – 5-7 days
PMLE: Treatment

- Seek shade
- Broad spectrum sunscreens
- NB-UVB
- Oral corticosteroid
- Hydroxychloroquine (200 mg bid)
- Azathioprine (2-2.5 mg/kg/d)
- ? Polypodium leucotomos (480-1200 mg/d)
Photodermatoses

- Polymorphous light eruption
- Actinic prurigo
Actinic Prurigo

• Familial (75%) American Indian
• Female: male = 3:1
• Photosensitivity usually to UVA
• Face, nose, ears
• Chelitis, conjunctivitis, photophobia
Actinic Prurigo & PMLE

(Macfarlane, L, ... Ibbotson, S. Br J Dermatol 2016; 174:1411. Dundee)

Common in AP, but not in PMLE

- Excoriation, scars
- Chelitis & conjunctivitis
- Involvement of covered sites (UK, Scotland)
- Eruption in winter (UK)
- Lesions lasting > 4 wks
## Actinic Prurigo & HLA

*(Lane, PPP, 1997; Wiseman, MC. JAAD 6/01; Macfarlane, L, ... Ibbotson, S. Br J Dermatol 2016; 174:1411. Dundee)*

<table>
<thead>
<tr>
<th>Location/Ethnicity</th>
<th>HLA</th>
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<tbody>
<tr>
<td>England, Scotland (Caucasian)</td>
<td>DR4 (subtype DRB1*0407)</td>
</tr>
<tr>
<td>Mexico</td>
<td>DR4 (subtype DRB1*0407)</td>
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<tr>
<td>North Am Indian</td>
<td>A24, Cw4</td>
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<tr>
<td>Columbia</td>
<td>Cw4, Cw3, B40</td>
</tr>
<tr>
<td>Canadian Inuit (Eskimo)</td>
<td>DR4 (subtype DRB1*14)</td>
</tr>
</tbody>
</table>
Actinic Prurigo: Treatment
(Valbuena, M, Lim, HW. Clin Decision Support: Dermatology. 2012)

• Photoprotection
• Move to lower altitudes if possible
• Topical and oral corticosteroids
• NB-UVB, PUVA
• Thalidomide (100-200 mg/d)
• ? TNF-α inhibitor
Photodermatoses

- Polymorphous light eruption
- Actinic prurigo
- Hydroa vacciniforme
Hydroa Vacciniforme

(Chantron, R, Lim, HW, Shwayder, T. JAAD 12/12; 67:1093 and 1113. Detroit)

- Childhood onset
- Vesicles on sun exposed skin → scarring
- Improves in adolescence
- Rare: adult-onset; familial.
- ↓ MED-A, rarely ↓ MED-B
- Positive provocative test with UVA
- Tx: Hydroxychloroquine, UVB, PUVA
Hydroa Vacciniforme
(G. Gupta, JAAD 2/2000; 42:208)

- Spontaneous clearing: 60% in 9 yrs (M: 11 yrs, F: 5 yrs)
- 53%: Abnormal response to UVA
- 40%: Positive provocative testing to UVA
- 3/5 pts: Benefited from NB-UVB
EBV-associated HV-like Eruption

(Ruiz-Maldonado, R, JAAD 1/95; 32:37; Mexico
Tanaka, C. BJD 2012 Jan;166(1):216-1. Japan
Sangueza, M, et al. JAAD 7/13; 69:112. Milwaukee and Bolivia

- Mexico, South America, Asia, Europe
- Edema of nose, lips, periorbital area; erythema, vesicles, ulceration, scars on sun-exposed and sun-protected areas
- Fever, wasting, hepatosplenomegaly, vasculitis, panniculitis
- May progress to lymphoma or leukemia
- Atypical lymphocytic infiltrate (CD8+) with angiotropism and angiocentricity.
Photodermatoses

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Chronic Actinic Dermatitis

Diagnostic Criteria

- Chronic photodermatitis
- Low phototest results to UVA &/or to UVB &/or to visible light
- Histology:
  - dermal lymphohistiocytic infiltrate
  - +/- epidermal spongiosis
  - +/- atypical mononuclear cells
CAD: Treatment

- Sunscreen, sun protection
- Topical tacrolimus
- Mycophenolate mofetil
- Azathioprine
- Oral corticosteroids (for flares)
- Cyclosporine
- Hydroxychloroquine
- Hydroxyurea
Photodermatoses

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- Solar urticaria
Solar Urticaria: Action Spectrum

- Visible
- UVA
- UVB
Solar Urticaria

(Beattie PE. Arch Dermatol 9/03; 139:1149. Dundee)

• Probability of resolution of those with SU alone:
  - 5 yrs: 15%
  - 10 yrs: 24%
  - 15 yrs: 46%
Solar Urticaria: Therapy

(Dawe RS, BJD 7/97; 137:144; Calzavara-Pinton P. JAAD 2012 Jul;67(1):e5-9)

- Antihistamine
- UVA (or UVA!)
  - Start with 50-70% MUD, increase by 10-15%;
  - Exposed area only;
  - Daily for 15-20 tx;
  - 2-3 x wk for rest of sunny months
- Cyclosporine (3-5 mg/kg)
- IVIg (400 mg/kg/d x 5 d = 2 gm/kg)
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Voriconazole

(Cowen, EW. JAAD 1/10; 62:31. Bethesda, Durham, SF.
Miller, DD. Arch Dermatol 3/10; 146:300. SF)

- Broad spectrum antifungal (Aspergillus, Candida, Fusarium, Scedosporium spp.)
- Inhibits cytochrome P450.
- Side effects: visual disturbances, ↑ LFTs, GI upset
- > 12 wks: photosensitivity (act spectr: UVA), pseudoporphyria, photoaging, lentigines, premature dermatoheliosis
- > 12 months: Increased SCC, melanoma
22 yo man. SCC. Lentigines

Cowen, EW. JAAD 1/10; 62:31

22 yo man. Erythema. Lentigines
Vemurafenib
(Su, F. NEJM 1/19/12; 366:207. Nutley, NJ, USA)

- A selective inhibitor of oncogenic BRAF (BRAF V600E)
- Approved in US and Switzerland for metastatic melanoma
- Side effects: arthralgia, rash, fatigue, and photosensitivity
- 15-30% of patients develop SCC and keratoacanthoma
  - Associated with mutations in RAS
Vemurafenib – Phototesting

(Dummer, R. NEJM 2/2/12; 366:480-481. Zurich)

UVB (8-99 mJ/cm²)

UVA (10-40 J/cm²)

Action spectrum: UVA
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**α-MSH & Analogues**


Afamelanotide (Scenesse®):

- Similar to α-MSH, linear 13 amino acid peptide.
- The 4th and 7th amino acids of α-MSH have been replaced in afamelanotide.
- Binds to MC1R
Afamelanotide (Scenesse®):

- Resistant to enzymatic breakdown, prolonging its duration of action at MC1R → stimulation of melanocyte proliferation and upregulation of tyrosinase activity
- Melanin:
  - Is a neutral density filter
  - Scavenges reactive oxygen species
Afamelanotide for Erythropoietic Protoporphyria

Afamelanotide for EPP: EU & US

- Randomized, double-blind, placebo-controlled study
- EU (74 pts): 5 subcutaneous implants, every 60 days
- US (94 pts): 3 implants
- Duration of pain-free time following sun exposure was longer in the treatment gr.
- Improved quality of life
- Adverse effects: headache, nausea, nasopharyngitis, and back pain
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