Postinflammatory Hyperpigmentation: Treatment and Prevention
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Disclosure of relevant relationships with industry

Advisory Board/Consultant – Allergan, L'Oreal, Unilever, Valeant
Investigator – Allergan
Equipment – Valeant
Editor – 2 textbooks (Published by Springer and Wiley-Blackwell)

Off-Label Use of Medications will be discussed
Treatment Success? – “Clear/Almost Clear”
Postinflammatory Hyperpigmentation - Pathogenesis

- Inflammatory mediators, including prostaglandins (e.g., prostaglandin E2) and leukotrienes (e.g., (LTC4 and LTD4) stimulate epidermal melanocytes
- Disruption of the basal layer leads to dermal deposition of melanin and engulfment by macrophages

Postinflammatory Hyperpigmentation – Treatment Considerations

1. Treat underlying dermatosis
2. Broad-spectrum sunscreen/sun protective behavior
3. Tincture of time
   +/-
   * Topical skin lightening agents
   * Chemical peels/other in-office procedures
   * Cover up cosmetics

Case 1

* Active treatment of PIH
Triple combination cream (fluocinolone acetonide 0.01%, hydroquinone 4%, tretinoin 0.05%)*

- Multi-center randomized study comparing triple combination cream to each of its dyads over an 8 week treatment period (n=792)
- 13% of patients were Clear in 8 weeks
- 45% of patients were Clear or Almost Clear in 8 weeks
- Not powered to detect a significant difference between all dyads

*Off-label use


Limitations of Hydroquinone

- Risk of “halo” of hypopigmentation on perilesional skin
- Irritant contact dermatitis
- Exogenous ochronosis (rare)


Retinoids in the Treatment of PIH

Tretinoin 0.1% Cream

(n=54)

Retinoids in the Treatment of PIH

- **Baseline**
- **Week 6**
- **Week 18**

Tazarotene 0.1% Cream (n=74)

Grimes R, Calender Y. Cutis 2006;77:45-50.

Retinoids in the Treatment of PIH

- **In two-thirds of cases, patients experienced reductions in both number of hyperpigmented macules and density of hyperpigmentation**


Retinoids in the Treatment of PIH
Azelaic Acid in the Treatment of PIH

- Efficacy and safety of azelaic acid 15% in the treatment of postinflammatory hyperpigmentation: A 16-Week, baseline-controlled study
  - 20 adults with acne and PIH (SPT IV-VI)
  - Azelaic acid 15% gel used twice daily
  - 100% of subjects had at least a 2-point improvement in IGA scores at Week 16
  - 31% had no PIH at Week 16


Multimodal non-HQ cosmetics in the Treatment of PIH


Chemical Peels

“Honey, I’ve had a little something done…”

Sex in the City Season 5, Episode 5 (HBO)
Chemical Peels in the Treatment of PIH

- Adjuncts to topical therapy
- Removal of epidermal melanin
- Increased penetration of topical skin lightening agents

Chemical Peels in the Treatment of Hyperpigmentation

- Glycolic acid 30–70%
- Salicylic acid 20–30%
- Trichloroacetic acid 10–30%
- Jessner’s solution

Treatment of Postinflammatory Hyperpigmentation With a Combination of Glycolic Acid Peels and a Topical Regimen in Dark-Skinned Patients: A Comparative Study

By [Author Name(s)]

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Chemical Peels in the Treatment of PIH

Baseline (43 yo woman Planning pregnancy)

15 weeks (bi-weekly glycolic acid peels + clindamycin gel qid + azelaic acid 15% gel qhs)
Chemical Peels in the Treatment of PIH

- Salicylic acid peels for PIH:
  - Open label pilot study of 25 patients with Fitzpatrick SPT V or VI – 5 of whom had PIH
  - 5 salicylic acid peels (20%-30%) at 2 week intervals with HQ 4% pre-treatment
  - 4/5 patients had >75% improvement
  - 1/5 patients had 51-75% improvement

Grimes P. Dermatol Surg 1999 21:1

Chemical Peels in the Treatment of PIH

Baseline vs. 15 weeks


Chemical Peels in the Treatment of PIH

  - 10 subjects; Fitzpatrick IV-VI; randomized to receive two 20% salicylic acid peels followed by three 30% salicylic acid peels to half of the face.
  - Subjects’ rating of improvement (VAS) - greater on tx side than control (p<.004)
  - Blinded investigator rating of improvement (VAS) - approached but did not reach statistical significance (p=.11)
Chemical Peels in the Treatment of PIH

- Oral minocycline x 4 months
- Topical tazarotene 0.05%
- Cream qhs-qhs
- Topical 1% Clinda 5% BPO
- Salicylic acid peels 20% x2, 30%
  x2 [starting at week 12]

Grimes PE. In: R.C. Tung and M.G. Rubin (Eds.), Chemical Peels (p.41).
Philadelphia: Elsevier Inc. 2011

Chemical Peels in the Treatment of PIH

s/p Glycolic acid 70% peel

Culprit: Exfoliative regimen at home prior to procedure

- Superficial peeling agents (especially salicylic acid and glycolic acid)
- Interval: q2-4 weeks
- Consider hydroquinone 4% concurrently

- Discontinue retinoids, exfoliative treatments 1 week prior to peel
- Start low, work up slowly

Chemical Peels in Skin of Color
Recommended Approaches

- Diffuse hyperpigmented macules secondary to acne vulgaris -
  
  **Full face treatment approaches:**
  - Topical retinoid
  - Consider topical azelaic acid
  - Serial superficial chemical peels (e.g. salicylic acid 20%-30%)
  - Sun protection
  - Tincture of time
Case 2

- Treat underlying cause
  - Non-hydroquinone topical agents in conjunction with serial chemical peels

Baseline
CC: Hyperpigmentation x 15 y

Folliculitis:
Cleocin gel qAM

PIH:
Azelaic acid 15% qPM
Salicylic acid peels 30% x4

For 15 years
Allergic to hydroquinone

10 months
Cleocin gel qAM + Azelaic acid 15% qPM
Salicylic acid peels 30% x4
Case 3
Laser treatment of PIH

Lasers/Lights – friends/foes in the battle against hyperpigmentation
When to use lasers/lights?

- After failure of topical agents, chemical peels
- When disorders amenable to laser are seen concomitantly (e.g. PIH and acne scarring)
- Patient preference for fewer treatments or more rapid results or “high tech” approaches
Intense Pulse Light in SPT IV-VI

Baseline 7 months after 3 treatments

- 1,550 nm Erbium-doped fractional laser
- 880 to 1,100 (MTZ/cm²)
- 10 passes

Baseline 3 months after 3 treatments

Nonablative fractional laser q 3 weeks × 5 sessions
HQ20%/RAM 0.05%/TAC 0.1% cream qhs on week 2 and week 3 after each laser tx.
PIH as a Complication of Fractional Laser

- PIH observed in up to 40% and 92% of patients treated with non-ablative and ablative fractional lasers, respectively (in a review of published studies)


PIH as a Complication of Fractional Laser

Baseline

1 month post 5 treatments


Reducing Risk of PIH Following Fractional Lasers

- Conservative treatment densities (e.g. with SR1550 fractional laser TL range of 4-8)
- Treatment interval ≥ 4 weeks
- Pre- and post treatment with hydroquinone 4% cream beginning 2-4 weeks prior to treatment and continuing 1 month post final treatment [anecdotal]
- Broad spectrum sunscreen SPF ≥ 30
Nonablative Fractional 1550 nm Erbium-doped laser

Settings: treatment level 4 (200Mtz/cm²)/ 40 MJ
Baseline 4 weeks post 4 tx


• Fitz I-IV, VI – melasma, PIH, photodamage (n=23)
• 4-6 treatments with 5mJ and 5%, 7.5%, or 10% coverage; 8 passes
• Approx. 55% of subjects reported marked to significant improvement at 1 and 3 months post treatment


Putting it together

Managing PIH

Putting it together
≤6 months

- Control of Inflammatory dermatosis
- Management of pigmented abnormalities
  - consider topical “bleaching” agents
  - chemical peels
  - consider lasers with caution (3rd line)

≥6 months

- Broad spectrum sunscreen (SPF 30 or higher)
- Cover-up cosmetics

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KEEP CALM IN A RACE IS NOT A SPRINT