

Treating Acne in Patients With Skin of Color

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■ Abstract

Patients with skin of color are more likely to develop acne and postinflammatory hyperpigmentation (PIH). Many therapies for acne have demonstrated efficacy in darker skin types and in the treatment of PIH.

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■ Keywords

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Acne has been reported as one of the most common dermatologic conditions in numerous racial/ethnic groups studied.^{1,2} Although differences in acne prevalence between racial/ethnic groups have not been well established, distinct variations in clinical presentation, exacerbating factors, and sequelae of acne are frequently observed in patients with skin of color (ie, Fitzpatrick skin types [FST] IV-VI). These distinctions inform patient care.

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Prevalence

At least one study (N=2,895)—an evaluation based on photographs—reported that acne is more common in African American and Hispanic women (37% and 32%, respectively) than in Continental Indian, Caucasian, and Asian women (23%, 24%, and 30%, respectively).³ Findings await confirmation by a comparable study.

Postinflammatory Hyperpigmentation

Postinflammatory hyperpigmentation (PIH), a darkened area of skin following trauma or cutaneous inflammation following acne, results from an abnormal release or overproduction of melanin (Figure).^{4,5} It is more common in African American and Hispanic women than in Continental Indian, Asian, or Caucasian women, according to a survey of 208 adult women with facial acne (49% non-Caucasian, 51% Caucasian).^{1,3} Nearly half (49.5%) of the non-Caucasian women reported “a lot” or “extensive” PIH, compared with 22.5% of Caucasian women.¹ A study of photographs from 2,895 females aged 10 to 70 years old also found that hyperpigmentation was more common in African American and Hispanic women (65% and 48%, respectively) than in Continental Indian, Asian, and Caucasian (10%, 18%, and 25%, respectively) women.³

PIH may be more distressing to people of color than to lighter-skinned patients; it was rated as “severely troublesome” by nearly half (48.5%) of non-Caucasian women with acne in one study.¹ Another analysis confirmed this finding.⁶ PIH-associated discoloration may persist well beyond the acne lesions that triggered it. Epidermal PIH may persist for 6 to 12 months; dermal PIH can last for years.^{5,7}



■ FIGURE Postinflammatory Hyperpigmentation

Source: Courtesy of Andrew F. Alexis, MD, MPH

A histological examination of acne lesions from black females showed marked inflammation, beyond what would be expected based on clinical examination. Skin taken from sites not near the acne lesions also displayed inflammation. Hyperpigmented macules with melanin granules were identified in the epidermis, with pigment-filled macrophages detected in the dermis.⁸ According to an analysis of patients seen at a single center specializing in the care of skin of color, acne hyperpigmented macules were identified in 65.3% of 239 African American patients, 52.7% of 55 Hispanic patients, and 47.4% of 19 Asian patients. These findings could account for the development of PIH in patients with skin of color.⁹

Patient History and Education

The use of certain hair oils and emollients to moisturize the hair and scalp can result in pomade acne, characterized by closely packed, closed comedones and small papules along the hairline.¹⁰ Makeup or skin care products may induce or worsen acne, or may irritate or dry the skin. Skin lightening or bleaching creams may irritate the skin or cause acne, especially if they contain steroids. Patient history should include a list of all skin, hair, and cosmetic products used. Some products may lead to dryness or irritation when combined with topical acne medications.¹¹ Educating patients to avoid substances that may contribute to their acne or PIH is an important aspect of therapy.

Daily sunscreen use can reduce the intensity of PIH, even in people with darker skin.¹² A study in African American and Hispanic individuals who did not use sunscreen found that 8 weeks of sunscreen use with sun protection factor 30 or 60 lightened facial and hand pigmentary abnormalities.¹³ Patients who do not use sunscreen should be educated to do so.¹⁴

In a study of patients of Afro-Caribbean ancestry, family history was associated with the formation of keloid scars in multiple sites rather than a single site.¹⁵

More than two-thirds of Caucasian and non-Caucasian women alike expected to see results from acne treatment within 2 weeks, according to a patient survey. Some expected benefits overnight.¹ To set expectations and promote adherence to therapy, patients should be educated that resolution of acne and PIH often takes several weeks.^{4,5}

Topical Therapy for Acne and PIH

Early, aggressive treatment is recommended in patients with skin of color to minimize the risk of PIH and scarring. This imperative must be balanced by the need to avoid skin irritation due to therapy, which can result in dyspigmentation and can worsen PIH.^{4,5,11} Treatment of acne is key to the management of PIH to prevent or reduce the risk of further dark marks. In patients with PIH and acne, consider therapies that address both conditions.

Several therapies recommended in the management of acne and/or PIH have data supporting their efficacy in patients with skin of color.

Topical Retinoids

These agents represent first-line acne therapy both in patients with skin of color and in Caucasian patients.^{2,11} Starting at a lower concentration (0.025% tretinoin, for example) or applying every other day is recommended in patients with skin of color to reduce the risk of irritation.

Topical retinoids are an attractive option in patients with skin of color because they can treat acne and may lighten areas of hyperpigmentation in black patients ($P < 0.001$ vs vehicle after 40 weeks of therapy). In one study, half of 24 subjects randomized to topical tretinoin 0.1% developed retinoid reactions where the medication was applied; reactions diminished in severity, duration, and frequency as the study progressed.¹⁶

Once-daily tazarotene 0.1% cream has demonstrated efficacy compared with vehicle in the treatment of PIH in 74 patients with skin of color.¹⁷

A recent post hoc analysis of data from a 12-week, phase 3 study of adapalene 0.3%/benzoyl peroxide 2.5% (ADAP 0.3%/BPO 2.5%) found that the active therapy was significantly superior to vehicle for reduction of both inflammatory and noninflammatory lesions. When the study population was analyzed by FST, the proportion of subjects achieving scores of clear or almost clear on the Investigator Global Assessment (IGA) with active therapy was superior to vehicle only for those with lighter skin (FST I-III; $n=128$, ADAP 0.3%/BPO 2.5%; $n=43$, vehicle).¹⁸ These authors noted that only a small number of subjects were randomized to vehicle in the FST IV-VI group ($n=89$, ADAP 0.3%/BPO 2.5%; $n=26$, vehicle), reducing the statistical power of the analysis. They also speculated that the presence of PIH lesions might have affected the IGA. This study did not examine the impact of therapy on PIH.

Topical Antibiotics

A post hoc analysis of data from a phase 3, 12-week, vehicle-controlled clinical trial of clindamycin 1.2%/BPO 3.75% gel found that efficacy in Hispanic subjects ($n=136$) with moderate to severe acne was similar to that of the general study population. The treatment was well tolerated in the Hispanic cohort; no treatment-related adverse events were reported, and no subjects discontinued therapy due to adverse events.¹⁹

Dapsone

Topical dapsone 5% is recommended for the treatment of inflammatory acne, especially in adult females.² In a study of 68 adult women with acne and skin of color (FST IV-VI), topical dapsone gel 5% monotherapy applied twice daily for 12 weeks significantly reduced the investigator-rated 5-point Global Acne Assessment Score (GAAS) from baseline (mean, -1.2 ; 95% confidence interval, -1.4 to -1.0 ; $P < 0.001$; 39% improvement). Nearly 43% of subjects had a GAAS of 0 or 1 at week 12. No treatment-related adverse events were observed.²⁰ Race (Caucasian/non-Caucasian) did not affect the efficacy of dapsone 7.5% gel in a pooled subgroup analysis of data from two phase 3 trials ($N=4,340$; moderate inflammatory and noninflammatory acne).²¹ A pooled analysis of data from two phase 3 trials of dapsone 7.5% and vehicle in patients ($N=4,327$) with moderate acne stratified by FST (I-III, IV-VI) supported these findings, reporting efficacy in both groups.²²

Azelaic Acid

A pilot study of azelaic acid 15% gel twice daily led to improvement of both acne and PIH in adults ($N=20$) with FST IV and mild or moderate acne and moderate or severe PIH.²³ After 16 weeks, 85% of patients had achieved at least a 2-point improvement in IGA for acne, and all (100%) had at least a 2-point improvement in IGA for PIH.²³

Hydroquinone

Topical hydroquinone is considered the gold standard therapy for skin lightening and is often the first therapy used in treating PIH.^{4,11} Hydroquinone 4% combined with 0.15% retinol and antioxidants can reduce lesion size, pigmentation, and disease severity in patients with hyperpigmentation on the face and body (FST II-VI).²⁴

To avoid unwanted lightening of normal skin, hydroquinone should be applied only to areas of PIH. In our practice, we limit the use of hydroquinone to lesions large enough to be amenable to spot application (>4 mm). For smaller areas, consider using topical retinoids or azelaic acid because these agents can be applied to normal as well as affected skin. Exogenous ochronosis, a blue-black darkening of the skin, is a risk of long-term hydroquinone use.²⁵

Procedural Therapies for PIH

Topical agents, considered to be first-line choices for PIH, are more likely to be efficacious in epidermal than dermal lesions. Superficial chemical peels and laser therapy offer alternatives for treating dermal lesions and in those that respond inadequately to topical options.²⁶ Caution must be exercised because these interventions can cause or exacerbate PIH.³ Medium-depth peels are associated with a higher risk of postprocedure PIH than superficial chemical peels. Deep peels are contraindicated in patients with skin of color due to the effects on skin pigment and risk of scarring.⁴

Superficial Chemical Peels

Adding serial glycolic acid peels (every 3 weeks) to a topical regimen containing hydroquinone 2%, tretinoin 0.05%, and hydrocortisone 1% improved the results of facial PIH treatment in 30 patients with FST III-V, compared with the topical regimen alone.²⁵ Patients were treated for 18 weeks. The mean Hyperpigmentation Area and Severity Index score at 12 and 21 weeks showed significantly greater improvement with the peels.²⁷ Salicylic acid peels have demonstrated efficacy in PIH when combined with topical therapy but not as monotherapy.^{4,28-31}

In our practice, we instruct patients to stop retinoid therapy 1 week prior to chemical peel therapy to reduce the risk of crusting, erosion, and PIH. BPO, azelaic acid, or dapsone can be used up to the day of the peel.

Laser Therapy

The quality of the evidence for the use of lasers in the treatment of PIH for patients with skin of color is low; most data come from small, nonrandomized clinical trials, case reports, and case studies.⁴

Summary

PIH and scarring occur more often in patients with skin of color than in Caucasian patients. These sequelae may be more distressing to the patient than acne. The need for early, aggressive treatment of acne to prevent PIH and scarring must be balanced with the need to avoid skin irritation, which itself can cause dyspigmentation. Many therapies for acne have been studied in patients with skin of color. Treatments that address both acne and PIH are good choices for patients with both conditions.

References

- Callender VD, Alexis AF, Daniels SR, et al. Racial differences in clinical characteristics, perceptions and behaviors, and psychosocial impact of adult female acne. *J Clin Aesthet Dermatol.* 2014;7:19-31.
- Zaenglein AL, Pathy AL, Schlosser BJ, et al. Guidelines of care for the management of acne vulgaris. *J Am Acad Dermatol.* 2016;74:945-973.e33.
- Perkins AC, Cheng CE, Hillebrand GG, Miyamoto K, Kimball AB. Comparison of the epidemiology of acne vulgaris among Caucasian, Asian, Continental Indian and African American women. *J Eur Acad Dermatol Venereol.* 2011;25:1054-1060.
- Kaufman BP, Aman T, Alexis AF. Postinflammatory hyperpigmentation: Epidemiology, clinical presentation, pathogenesis and treatment. *Am J Clin Dermatol.* 2017. doi: 0.1007/540257-017-0333-6.
- Yin NC, McMichael AJ. Acne in patients with skin of color: Practical management. *Am J Clin Dermatol.* 2014;15:7-16.

- Gorelick J, Daniels SR, Kawata AK, et al. Acne-related quality of life among female adults of different races/ethnicities. *J Dermatol Nurses Assoc.* 2015;7:154-162.
- Lacz NL, Vafai J, Kihiczak NI, Schwartz RA. Postinflammatory hyperpigmentation: A common but troubling condition. *Int J Dermatol.* 2004;43:362-365.
- Halder RM, Holmes YC, Bridgeman-Shah S, Kligman AM. A clinicohistopathologic study of acne vulgaris in black females [abstract]. *J Invest Dermatol.* 1996;106:888.
- Taylor SC, Cook-Bolden F, Rahman Z, Strachan D. Acne vulgaris in skin of color. *J Am Acad Dermatol.* 2002;46(2 suppl understanding):S98-S106.
- Davis EC, Callender VD. A review of acne in ethnic skin: Pathogenesis, clinical manifestations, and management strategies. *J Clin Aesthet Dermatol.* 2010;3:24-38.
- Callender VD, Barbosa V, Burgess CM, et al. Approach to treatment of medical and cosmetic facial concerns in skin of color patients. *Cutis.* 2017;100:375-380.
- Maymone MBC, Neamah HH, Wirya SA, Patzelt NM, Zancanaro PQ, Vashi NA. Sun-protective behaviors in patients with cutaneous hyperpigmentation: A cross-sectional study. *J Am Acad Dermatol.* 2017;76:841-846.e2.
- Halder R, Rodney I, Munhutu M, et al. Evaluation and effectiveness of a photoprotection composition (sunscreens) on subjects of skin of color [abstract]. *J Am Acad Dermatol.* 2015;72(suppl):AB215.
- Davis EC, Callender VD. Postinflammatory hyperpigmentation: A review of the epidemiology, clinical features, and treatment options in skin of color. *J Clin Aesthet Dermatol.* 2010;3:20-31.
- Bayat A, Arscott G, Ollier WE, McGrouther DA, Ferguson MW. Keloid disease: Clinical relevance of single versus multiple site scars. *Br J Plast Surg.* 2005;58:28-37.
- Bulengo-Ransby SM, Griffiths CE, Kimbrough-Green CK, et al. Topical tretinoin (retinoic acid) therapy for hyperpigmented lesions caused by inflammation of the skin in black patients. *N Engl J Med.* 1993;328:1438-1443.
- Grimes P, Callender V. Tazarotene cream for postinflammatory hyperpigmentation and acne vulgaris in darker skin: A double-blind, randomized, vehicle-controlled study. *Cutis.* 2006;77:45-50.
- Alexis AF, Cook-Bolden FE, York JP. Adapalene/benzoyl peroxide gel 0.3%/2.5%: A safe and effective acne therapy in all skin phenotypes. *J Drugs Dermatol.* 2017;16:574-581.
- Alexis AF, Cook-Bolden F, Lin T. Treatment of moderate-to-severe acne vulgaris in a Hispanic population: A post-hoc analysis of the efficacy and tolerability of clindamycin 1.2%/benzoyl peroxide 3.75% gel. *J Clin Aesthet Dermatol.* 2017;10:36-43.
- Alexis AF, Burgess C, Callender VD, et al. The efficacy and safety of topical dapsone gel, 5% for the treatment of acne vulgaris in adult females with skin of color. *J Drugs Dermatol.* 2016;15:197-204.
- Draeos ZD, Rodriguez DA, Kempers SE, et al. Treatment response with once-daily topical dapsone gel, 7.5% for acne vulgaris: Subgroup analysis of pooled data from two randomized, double-blind studies. *J Drugs Dermatol.* 2017;16:591-598.
- Taylor SC, Cook-Bolden FE, McMichael A, et al. Efficacy, safety, and tolerability of topical dapsone gel, 7.5% for treatment of acne vulgaris by Fitzpatrick skin phototype. *J Drugs Dermatol.* 2018;17:160-167.
- Kircik LH. Efficacy and safety of azelaic acid (AzA) gel 15% in the treatment of post-inflammatory hyperpigmentation and acne: A 16-week, baseline-controlled study. *J Drugs Dermatol.* 2011;10:586-590.
- Cook-Bolden FE, Hamilton SF. An open-label study of the efficacy and tolerability of microencapsulated hydroquinone 4% and retinol 0.15% with antioxidants for the treatment of hyperpigmentation. *Cutis.* 2008;81:365-371.
- Hydroquinone 4% cream [package insert]. Bronx, NY: Perrigo; 2017.
- Vashi NA, Wirya SA, Inyang M, Kundu RV. Facial hyperpigmentation in skin of color: Special considerations and treatment. *Am J Clin Dermatol.* 2017;18:215-230.
- Sarkar R, Parmar NV, Kapoor S. Treatment of postinflammatory hyperpigmentation with a combination of glycolic acid peels and a topical regimen in dark-skinned patients: A comparative study. *Dermatol Surg.* 2017;43:566-573.
- Joshi SS, Boone SL, Alam M, et al. Effectiveness, safety, and effect on quality of life of topical salicylic acid peels for treatment of postinflammatory hyperpigmentation in dark skin. *Dermatol Surg.* 2009;35:638-644.
- Grimes PE. The safety and efficacy of salicylic acid chemical peels in darker racial-ethnic groups. *Dermatol Surg.* 1999;25:18-22.
- Mohamed Ali BM, Gheida SF, El Mahdy NA, Sadek SN. Evaluation of salicylic acid peeling in comparison with topical tretinoin in the treatment of postinflammatory hyperpigmentation. *J Cosmet Dermatol.* 2017;16:52-60.
- Ahn HH, Kim IH. Whitening effect of salicylic acid peels in Asian patients. *Dermatol Surg.* 2006;32:372-375.