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Melasma

THE COMPARISON

- A** Melasma on the face of a Hispanic woman, with hyperpigmentation on the cheeks, bridge of the nose, and upper lip.
- B** Melasma on the face of a Malaysian woman, with hyperpigmentation on the upper cheeks and bridge of the nose.
- C** Melasma on the face of an African woman, with hyperpigmentation on the upper cheeks and lateral to the eyes.

Melasma (also known as *chloasma*) is a pigmentary disorder that causes chronic symmetric hyperpigmentation on the face. In patients with darker skin tones, centrofacial areas are affected.¹ Increased deposition of melanin distributed in the dermis leads to dermal melanosis. Newer research suggests that mast cell and keratinocyte interactions, altered gene regulation, neovascularization, and disruptions in the basement membrane cause melasma.² Patients present with epidermal or dermal melasma or a combination of both (mixed melasma).³ Wood lamp examination is helpful to distinguish between epidermal and dermal melasma. Dermal and mixed melasma can be difficult to treat and require multimodal treatments.

Epidemiology

Melasma commonly affects women ages 20 to 40 years,⁴ with a female to male ratio of 9:1.⁵ Potential triggers of melasma include hormones (eg, pregnancy, oral contraceptives, hormone replacement therapy) and exposure to UV light.^{2,5} Melasma occurs in patients of all racial and ethnic backgrounds; however, the prevalence is higher in patients with darker skin tones.²

Key clinical features in people with darker skin tones

Melasma commonly manifests as symmetrically distributed, reticulated (lacy), dark brown to grayish brown patches on the cheeks, nose, forehead, upper lip, and chin in patients with darker skin tones.⁵ The pigment can be tan brown in patients with lighter skin tones. Given that postinflammatory hyperpigmentation and other pigmentary disorders can cause a similar appearance, a biopsy sometimes is needed to confirm the diagnosis, but melasma is diagnosed via physical examination in most patients. Melasma can be misdiagnosed as postinflammatory hyperpigmentation,



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solar lentigines, exogenous ochronosis, and Hori nevus.⁵

Worth noting

Prevention

- Daily sunscreen use is critical to prevent worsening of melasma. Sunscreen may not appear cosmetically elegant on darker skin tones, which creates a barrier to its use.⁶ Protection from both sunlight and visible light is necessary. Visible light, including light from light bulbs and device-emitted blue light, can worsen melasma. Iron oxides in tinted sunscreen offer protection from visible light.
- Physicians can recommend sunscreens that are more transparent or tinted for a better cosmetic match.
- Severe flares of melasma can occur with sun exposure despite good control with medications and laser modalities.

Treatment

- First-line therapies include topical hydroquinone 2% to 4%, tretinoin, azelaic acid, kojic acid, or ascorbic acid (vitamin C). A popular topical compound is a steroid, tretinoin, and hydroquinone.^{1,5} Over-the-counter hydroquinone has been removed from the market due to safety concerns; however, it is still first line in the treatment of melasma. If hydroquinone is prescribed, treatment intervals of 6 to 8 weeks followed by a hydroquinone-free period is advised to reduce the risk for exogenous ochronosis (a paradoxical darkening of the skin).
- Chemical peels are second-line treatments that are effective for melasma. Improvement in epidermal melasma has been shown with chemical peels containing Jessner solution, salicylic acid, or α -hydroxy acid. Patients with dermal and mixed melasma have seen improvement with trichloroacetic acid 25% to 35% with or without Jessner solution.¹
- Cysteamine is a topical treatment created from the degradation of coenzyme A. It disrupts the synthesis of melanin to create a more even skin tone. It may be recommended in combination

with sunscreen as a first-line or second-line topical therapy.

- Oral tranexamic acid is a third-line treatment that is an analogue for lysine. It decreases prostaglandin production, which leads to a lower number of tyrosine precursors available for the creation of melanin. Tranexamic acid has been shown to lighten the appearance of melasma.⁷ The most common and dangerous adverse effect of tranexamic acid is blood clots, and this treatment should be avoided in those on combination (estrogen and progestin) contraceptives or those with a personal or family history of clotting disorders.⁸
- Fourth-line treatments such as lasers (performed by dermatologists) can destroy the deposition of pigment while avoiding destruction of epidermal keratinocytes.^{1,9,10} They also are commonly employed in refractive melasma. The most common lasers are nonablative fractionated lasers and low-fluence Q-switched lasers. The Q-switched Nd:YAG and picosecond lasers are safe for treating melasma in darker skin tones. Ablative fractionated lasers such as CO₂ lasers and erbium:YAG lasers also have been used in the treatment of melasma; however, there is still an extremely high risk for postinflammatory dyspigmentation 1 to 2 months after the procedure.¹⁰
- Although there is still a risk for rebound hyperpigmentation after laser treatment, use of topical hydroquinone pretreatment may help decrease postoperative hyperpigmentation.^{1,5} Patients who are treated with the incorrect laser or overtreated may develop postinflammatory hyperpigmentation, rebound hyperpigmentation, or hypopigmentation.

Health disparity highlight

Melasma, most common in patients with skin of color, is a common chronic pigmentation disorder that is cosmetically and psychologically burdensome,¹¹ leading to decreased quality of life, emotional functioning, and self-esteem.¹² Clinicians should counsel

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line therapies, although they are rarely started in combination. This study's findings suggest that combination pharmacotherapy, especially with a presynaptic α 2-autoreceptor antagonist (eg, mirtazapine, trazodone) and a monoamine reuptake inhibitor (eg, an SSRI, SNRI, or a TCA), is superior to monotherapy, both at the time of treatment initiation and in patients with previous inadequate pharmacologic response.

CAVEATS

Potential limitations due to publication bias

Concerns about publication bias and significant study heterogeneity may limit the generalizability of these findings. However, conclusions were robust in a subgroup analysis that was restricted to publications with low risk for bias.

CHALLENGES TO IMPLEMENTATION

None to report

There are no major challenges to implementing this combination treatment. Importantly, there were no differences in tolerability between monotherapy and combination treatment. **JFP**

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Dx ACROSS THE SKIN COLOR SPECTRUM

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patients and work closely on long-term management. The treatment options for melasma are considered cosmetic and may be cost prohibitive for many to cover out of pocket. Topical treatments have been found to be the most cost-effective.¹³ Some compounding pharmacies and drug discount programs provide more affordable treatment pricing; however, some patients are still unable to afford these options. **JFP**

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