OASIS DERMATOLOGY GROUP

Ph: (956) 971 - 0404
www.oasisderm.com

Melasma

Melasma, also known as chloasma or the "mask of pregnancy," is a common acquired hyperpigmentation disorder characterized by the development of brown or gray-brown patches, primarily on the face and neck. Although melasma is not harmful, it can significantly impact a person's cosmetic appearance and quality of life. This condition is more prevalent in women than in men, with a notable association with pregnancy, the use of oral contraceptives, hormone replacement therapy (HRT), and excessive sun exposure.

Pathophysiology and Clinical Features

Melasma is caused by an increase in melanin production within the skin, leading to hyperpigmented lesions. The condition can be classified based on the depth of pigment deposition, which affects both the appearance of the patches and the treatment approach. Melasma can be classified into three types:

- ***Epidermal Melasma****:* The excess pigment is located primarily in the epidermis (the outer layer of the skin), where it is more superficial. This form is typically characterized by well-demarcated, brownish patches. Epidermal melasma tends to respond more favorably to treatments and depigmenting agents.
- ***Dermal Melasma****:* In this form, the pigment is deposited deeper in the dermis, and the lesions often appear bluish-gray. Dermal melasma is more challenging to treat and often requires a combination of therapeutic modalities.
- ***Mixed Melasma****:* This type involves both epidermal and dermal components, making treatment more complicated and requiring more intensive management.

The development of melasma is primarily influenced by hormonal changes, particularly during pregnancy (often referred to as the "mask of pregnancy"), oral contraceptive use, and hormone replacement therapy. Additionally, ultraviolet (UV) light exposure, particularly from the sun, is a significant environmental factor contributing to the exacerbation or onset of melasma. Genetic predisposition also plays a role, with individuals of darker skin types (Fitzpatrick skin types IV-VI) being at higher risk.

Clinically, melasma appears as irregularly shaped, symmetrical brown to gray-brown patches on sun-exposed areas of the face, particularly the cheeks, upper lip, forehead, and chin. Although melasma is generally benign, it can cause psychological distress, particularly for individuals who seek to address the cosmetic concerns associated with the condition.

Treatment Approaches

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The treatment of melasma requires a multi-faceted approach tailored to the depth of pigmentation, the patient's skin type, and the presence of any underlying contributing factors. Below are the main therapeutic strategies currently used to manage melasma:

- ***Sun Protection**:* The most important aspect of managing melasma is minimizing sun exposure, as ultraviolet light exacerbates the condition. Daily use of a broad-spectrum sunscreen (SPF 30 or higher) is essential, as is avoidance of tanning beds and limiting sun exposure, particularly during peak sunlight hours (10 AM to 4 PM). Physical sunblocks containing zinc oxide or titanium dioxide are often recommended for better protection. The addition of a tinted ingredient, such as iron oxide, can also aid in protecting from visible light that contributes to hyperpigmentation seen in melasma.
- ***Topical Depigmenting Agents**:* Hydroquinone, a well-known depigmenting agent, remains one of the most widely used treatments for melasma. Hydroquinone works by inhibiting the enzyme tyrosinase, which is involved in melanin production. It can be used in concentrations ranging from 2% (over-the-counter) to higher strengths (prescription-based). In addition to hydroquinone, combination therapies with other agents such as tretinoin (a form of retinoid) and glycolic acid are commonly used. These agents can increase the efficacy of hydroquinone by promoting the turnover of skin cells and enhancing the penetration of depigmenting agents. However, these treatments should be introduced gradually to minimize irritation.
- ***Chemical Peels**:* Chemical peels are a popular treatment option for melasma, particularly when combined with other treatments like topical agents. Chemical peels typically involve the application of acid solutions, such as glycolic acid or trichloroacetic acid, to exfoliate the outer layer of skin and improve the appearance of hyperpigmented lesions. They can be particularly effective for epidermal melasma, although multiple sessions are usually required for optimal results.
- ***Microdermabrasion**:* Microdermabrasion, a non-invasive procedure that exfoliates the outer layer of skin, may also be used to improve the appearance of melasma. This technique involves the use of a device that sprays fine crystals onto the skin to remove dead skin cells. It can be effective in combination with topical depigmenting agents, though it is more commonly used for mild cases of melasma.
- ***Laser Therapy**:* Lasers, particularly fractional lasers and picosecond lasers, have been increasingly used for the treatment of melasma, especially for dermal and mixed forms. These lasers target the deeper layers of the skin, where the pigment is deposited, and help to break down melanin. While lasers can be highly effective, they carry a risk of worsening pigmentation in some patients, particularly those with darker skin types, and should be used with caution.
- ***Oral Medications**:* In refractory cases of melasma, oral medications such as tranexamic acid have shown promise. Tranexamic acid is an antifibrinolytic agent that can reduce melanin synthesis by inhibiting the activity of melanocytes. Recent studies have indicated that oral

tranexamic acid may be effective in treating melasma, particularly in cases that do not respond to topical treatment.

Challenges in Treatment and Prognosis

Treatment of melasma is often slow and requires patience. Most therapies, including topical depigmenting agents and chemical peels, typically show results after several months of consistent use. Additionally, the prognosis for treatment success largely depends on the depth and type of melasma. Epidermal melasma tends to respond more favorably to treatment, whereas dermal melasma is more resistant and may require a more aggressive, multi-modal approach.

It is also important to note that melasma has a high recurrence rate, particularly in individuals who continue to be exposed to UV radiation or reintroduce hormonal medications. As a result, maintenance therapy and ongoing sun protection are critical for preventing relapses.

Conclusion

Melasma is a common and distressing skin condition, particularly for individuals with darker skin tones or those undergoing hormonal changes, such as pregnancy or the use of oral contraceptives. While the condition is not harmful, it can significantly impact an individual's self-esteem and quality of life. Treatment involves a combination of sun protection, topical depigmenting agents, and procedural interventions, with outcomes largely depending on the type and depth of melasma. Despite the slow and gradual nature of treatment, recent advances in therapy, such as the use of tranexamic acid and targeted laser treatments, offer promising options for managing this challenging condition. Ongoing sun protection is essential to prevent recurrence and achieve long-term results.

References

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