Melasma

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Introduction

Hyperpigmentation of the skin is a common com plaint among patients consulting with dermatologists.

Melasma, one of the most common causes of acquired hyperpigmentation, presents as circumscribed brown macules that is most often occurs on the face.

Epidermiology

The disease far more common in people of Hispanic, Oriental, and Indo-Chinese origin who live in location that receive intense UV radiation. 90% of the patients are women.

Pathogenesis

The precise cause remain unknown. Muliple factors have been implicated. These factor include, most importantly, genetic predisposition and ultraviolet light exposure, but also high estrogen status (pregnancy, and contraceptive treatment), and cosmetics.

Clinical findings

The lesions of melasma occur exclusively in sun-exposed skin, mostly on face. Macules that are brown, dark brown, gray or even blue in color.

There are three major pattern of distribution. The 'Centrofacial' pattern is the most common presentation. It occures in about two-thrids of melasma patients. It includes involvement of the forehead, nose, chin, and medial cheeks. The 'malar' pattern appears in about 20% of cases; lesions are limited to the cheeks and nose. The 'mandibular' pattern occurs in about 15% of patients and involves the skin overlying the ramus of the mandible. Other sun-exposed areas such as the neck and forearms may be involved.

Pathology

There are three histology subtypes of melasma. The 'apidermal' type with the pigment predominantly in the basal and suprabasal epithemis. The 'dermal' type with melanin-laden macrophages in a perivascular distribution. And the 'mixed' type with epidermal and dermal melanin pigments.

Electron microscopy reveals large numbers of single disaggregated melanosomes with in kelatinocyte. This is a pattern normally seen in black skin. Dopa-positive melanocyte are increase in number, and melanin production in these melanocyte is also increased. When compared to unaffected skin.

Treatment

Although melasma is one of the major cosmetic concerns in Asian populations, the therapy for melasma has generally been difficult.

Topical therapy

Topical hydroquinone (HQ) is the most common useful treatment of melasma. Two mechanism of action include competition for tyrosine oxidation by acting as an alternate substrate for tyrosinase and selective damage to melanosome and melanocytes. HQ is a safe drug with highly effective in a short period of use. In appropriate combination of HQ with mild potency corticosteriod and tretinoin provide more effective. Side effecfs of HQ include irritant and allergic contact dermatitis, post inflammatory hyperpigmentation and rarely, exogenous ochronosis. HQ itself, however, unstable. It has used for a long year. Thus, there is a need to develop a more stable, more effective and less irritating agents. Many topical whitening agens have been develop with more stable than HQ such as kojic acid, Vitamin C, licorice extract, arbutin, mulburry extract nicrosamide but almost of these less effective than HQ.

Topical tretinoin has been used successfully but clinically improvement is at least 24 weeks. It has kenatolytic properties and enhancement of the rate of epidermal turnover. Use of tretinoin cream (0.1%) for 40 weeks has been shown to lead to improvement of this condition in 68% of the patients treated.

Azelaic acid 20%was shown to be as effective as 4% HQ. It inhibits tyrosinase activity and produces ultra structural damage to normal melanocytes. It has irritating effect like HQ. Adverse effects include mild erythema, pruritus, scaling, and burning.

Kojic acid, a tyrosinase inhibitor, may be effective in the treatment of melasma, It is more stable and less irritalion than HQ, but less stronger.

Vitamin C in many various forms such as ascorbic acid, magnesium - L - ascoabyl - 2 - phosphate (VC-PMG) effect as inhibit tyrosinase acitivity.

Licorice is a plant extract from root of Glycyrrhiza specics. Recent study has shown that certain components, or flavonoids also has an effective tyrosinase inhibitors and can, thus act as bleaching agents.

Liquirtin, also a flavonoid, has the ability to cause depigmentation reported that 80% of cases had an excellent response.

Arbutin is an tyrosinase inhibitor, more stable but also less effective than HQ.

Many combination therapy have been used to enhance its effectiveness. The best-known combination is Kligman's formula (tretinoin 0.1%, HQ 5%, and dexamethasone 0.1%). A variation of this formula containing tretinoin 0.1%, HQ 5%, and hydrocortisone 1% was use successfully. Other

combination include HQ, tretinoin with or without corticosteroid, azelaic acid and tretinoin, azelaic acid and glycolic acid have been reported with variation effectiveness.

Chemical peels

The mechanism of action is the removal of epidermal melanin. Superficial and medium-depth chemical peel have also been used with varying degree of successful. However, it has been more cautious when performing in darker skin, including the risk of post inflammatory hyperpigmentaton and aggrevation of melasma itself. Although several peeling agents have been studies, including trichloacetic acid, resorcinol, alpha-hydroxy acid, and beta-hydroxy acid, the glycolic acid remain the most popular. Chemical peel may use as adjunctive treatment for melasma, as they are easy to administration, scarring is uncommon, and postpeel persistant hyperpigmentation is rare.

Dermabrasion

Dermabrasion has been reported to achived clearance of melasma without recurrence. It can result the keloid formation, milia, loss of skin texture and especially posinflammatory hyperpigmentation. It is a possible therpy but is not a standard treatment modality.

Lasers

Over the years there have been several different types of laser treatments tried as treatment options for melasma, with varying results.

Lasers, specifically target melanin, such as dye 510 nm pigmented lesion dye, ruby, alexandrite, and Nd:YAG, have been reported. Most studied to Q-swithed ruby laser reported poor results, with recurrent soon after treatment. The combination laser therapy with pulsed carbondioxide laser followed by Q-switched alexandrite laser has been reported successfully in dermal type melasma. PIH was commonly found in darker skin types. The erbium:YAG lasers is highly absorbed by water-containing tissue. This property enables to abrate skin with minimize residual thermal damage, thereby potentially minimizing the risk of PIH. It has been reported that erbium:YAG laser resurfacing effective improve melasma; however, the most universal appearance of transient PIH need to treat with bleching agents. The fractional resurfacing as a new treatment modality for melasma. It may prove to be effective and safe for lightenig of the epidermal and dermal melasma. Further studies with long term follow up periods and multiple patient are warranted.

Intense pulse light (IPL)

IPL has been reported successful in treating refractory melasma patients. A clearance of was obtained for superficial lesions, however, those with deep pigmented lesions showed only a fair or poor clearance. PIH was observed in more pulses in deep lesions. Majority of patients had mild to moderate pain and burning sensation. However, burns, scarring, and hypopigmentation were not observed in those studies.

The use of chemical peels, dermabrasions, IPL, and laser therapy, although these modalities have had some degree of efficacy; however, also have significant risk of post in flammatory hypo-or hyperpigmentation, scarring and even keloid formation. These treatments should only be considered for recalcitrant melasma.

In addition, in order to treat melasma with success, emphasis must be placed on the importance of avoiding excess sun exposure and wearing protective broad spectrum sunscreen. Of note, it is also crucial that the patients be educated about other factor that exacerbate melasma such as pregnancy, oral contraceptives, and certain hormone therapy.

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