Uneven pigmentation is one of the most common complaints skin care professionals hear in the treatment room, right up there with aging and acne concerns. Not surprisingly, these are typically interrelated — the client with concerns over her fine lines and wrinkles will likely complain about the spot or dark patches on her face. And the acne client may complain that the acne lesion leaves behind a dark mark that takes “forever” to fade.

Clearly, changes in skin pigmentation can surface due to many different factors and can be the most difficult issue to tackle in the treatment room. Perhaps one of the most challenging pigmentary conditions to treat is melasma, a common disorder of hyperpigmentation that affects more than 5 million Americans, most of whom are women. Once referred to as ‘the mask of pregnancy” due to its frequent appearance during pregnancy, melasma predominantly affects women with Fitzpatrick phototypes III through VI, or those with ancestry stemming from equatorial regions where ultraviolet radiation (UVR) is highest.

On the skin, it looks like brown or dark patches that appear typically on the forehead, cheeks and chin. Although sun exposure and hormones are closely associated with triggering or worsening melasma, much remains to be understood about the origin and development of the disorder.

Vital Pigment: Melanin

To understand disorders of pigmentation, it’s important to understand the fundamentals of human skin color and its protective function. Despite the tremendous range in human skin color, all of the variations we see are due to the presence of a pigment called melanin. Stemming from the Greek word melas, meaning black, melanin is actually composed of two forms: the brownish black eumelanin and the reddish yellow pheomelanin.

Studies have shown that melanin production gives rise to skin color that ultimately protects the individual from both solar radiation and vitamin D deficiency. Thus, our ancestors’ unique complexions evolved to be dark enough to protect DNA from UV damage and light enough to allow UVB to penetrate for Vitamin D synthesis, depending on the amount of UVR available. That’s why melanin is so vital to our health — too much and we risk Vitamin D deficiency and disease; too little and we risk skin cancer and death.

But skin color is beyond skin deep. The same embryonic tissue that gives rise to the neurons of the brain also gives rise to the melanin found in our skin, eyes and hair. Melanin production in the skin, or the process of melanogenesis, is under the influence of various internal and external factors. In addition to UVR, hormones and inflammatory signals can stimulate the melanocyte to either increase melanin production and/or increase transfer of melanin to keratinocytes. In both cases, the result is a darkening of
the skin. Because so many key players affect skin pigmentation, the changes seen can be transient (e.g., during pregnancy), permanent (e.g., intrinsic aging), environmental (e.g., upon UV exposure) and external (e.g., certain drugs or medications). While melasma was thought to be a pregnancy- and contraceptive-related disorder in the past, new research shows that for many people, including men, it is a chronic disorder that lasts for decades.

**Melasma: A New Understanding**

Historically, melasma was considered a disorder of hyperpigmentation in women who were experiencing hormonal changes. Today, we know it is more complicated than that. While we have yet to find the exact cause, current theories suggest that hormones, UV exposure and genetics are all major influencers of the disorder. Let’s begin with genetics. Melasma is more common in darker skin types, particularly Fitzpatrick skin types III and IV and is estimated to affect 8.8 percent of Hispanic females in the United States and about 40 percent of Southeast Asian women. The relatively new finding that this condition runs in families stems from studies on different ethnic populations. For example, 55 percent of pregnant Iranian women reported they had a family member with melasma, while 70 percent of Puerto Rican women reported the same family link. Interestingly enough, melasma runs in families regardless of whether a man or woman inherits the disease. One study showed that 70 percent of Latino men with melasma also had a family member with melasma. Clearly, there is a genetic component that is not exclusive to women.

In many people who get melasma without the hormonal component, a combination of factors including family history, age and UV exposure triggers the disease. Melasma usually occurs in sun-exposed areas, where UVR has either triggered or worsened pigmentation. Under the microscope, melasma skin can even resemble photodamaged skin, with hallmarks such as solar elastosis present. Inflammation is likely to play a big role in sun exposed skin, since UV-stimulated inflammatory signals, including cytokines and the peptide alpha--melanocyte-stimulating hormone (α-MSH), can also trigger melanogenesis. So with UV exposure, there is a direct and indirect way of stimulating the melanocyte to produce more pigment. As new research emerges, we may find that infrared or even visible light may be a triggering factor for those susceptible to getting melasma. And because sun exposure is a critical factor in the development of melasma for both men and women, educating the client on appropriate sun protection as part of their regular skin care regimen is the most important piece of advice you can give them.

**Hormonal triggers**

Pregnancy is a time where you can expect the unexpected. In addition to the variety of skin changes a woman can experience during pregnancy, some degree of hyperpigmentation affects nearly all women. However, in some women the level of hyperpigmentation is noticeably increased. Melasma occurs in 10–15 percent of pregnant women and in 10–25 percent of women taking oral contraceptives. For decades, melasma was known as “the mask of pregnancy,” with the assumption that it must be caused by increases in female hormones due to pregnancy or the Pill. The reality is that we still do not clearly understand the hormonal link to melasma.
Melasma skin is more estrogen-responsive than non-melasma skin. However other hormones involved in a woman's menstrual cycle and pregnancy, including progesterone and α-MSH, can also stimulate pigmentation. And just as melasma skin is more estrogen-responsive, it's also been shown to be more progesterone-responsive than normal skin. The notion that oral contraceptives can lead to skin changes is not a new one. Back in 1967, Resnik showed that melasma developed in women as a direct result of taking oral contraceptives. Today, several forms of hormonal contraceptives are available: combination oral contraceptives, progestin-only oral contraceptives, combination patch contraceptives, combination vaginal ring and the newer progestin contraceptive implant. The combination methods have forms of estradiol and progesterone to stop a woman from ovulating. The progestin-only methods typically affect the cervical and uterine environment so that pregnancy is avoided. In all cases, sex hormones are introduced, which play many different roles in our body and ultimately lead to skin changes in some.

If you browse skin care forums online, you’ll see many women recommending trying a progestin-only form of contraception for alleviating melasma. However, there’s no proof this helps. In fact, Resnik reduced the estrogen component of the oral contraceptive to see whether it could alleviate melasma signs, but it did not affect it. Even so, the only way to alleviate contraceptive-induced melasma is to stop the medication. While pregnancy-induced melasma will usually fade within a year after delivery, contraceptive-induced melasma will persist as long as the medication is used. In some cases, this can take years to fully resolve. In addition to the sex hormones, thyroid hormone may also play a role in melasma development, as people with melasma are four times as likely to have a thyroid abnormality than those with normal skin pigmentation. In summary, while a number of hormones are involved in triggering melasma, their elevated levels are not always found in melasma skin, meaning they are not the ultimate factor in developing the disease.

A Vascular Disorder?

Whether it be on a man or a woman, melasma shows up on sun-exposed areas of the face as a flat, distinct areas of discoloration. These dark patches typically appear on the forehead, cheeks and chin in a symmetrical fashion. Interestingly, vascular diseases like Rosacea also appear on these central facial regions. Scientists looking at the role blood vessels play in the development of melasma have found that melasma skin has more numerous and larger blood vessels than non-melasma skin, in both men and women. Not surprisingly, the vascular disease rosacea is also a common affliction among women. Hopefully new research will emerge looking at the role hormones play in both vascular and pigmentary changes to get a better understanding of this frustrating condition.

The Three Ps

When it comes to treating a client with melasma, try to adhere to the three Ps for maximal results: patience, persistence and precaution. Both you and your client will need patience in getting results and you will need to manage your client’s expectations.

Because melasma is a persistent condition, it will take regular visits to your skin care center as well as daily care to resolve, and may even worsen at times. Remember that hormones continuously trigger the
condition, so treatment of hormone-induced melasma should only begin after the client has finished breastfeeding or changed their contraceptive medication. And finally, precaution is crucial because you could inadvertently worsen the melasma pigmentation by triggering inflammation in the skin.

Chemical peels can improve the appearance of epidermal melasma skin, but utmost care is needed when choosing the correct peel formulation and treatment protocol to avoid hyperpigmentation. Clients that tend to get melasma are also more sensitive to UV and harsh chemicals, which can all trigger hyperpigmentation, so recommending the correct daily care products is also crucial for treatment outcome. Even though they will come in regularly for a treatment, remember their skin can be different at each visit. Take extra care when your client is under stress, as the stress hormone cortisol can sensitize skin and trigger inflammation. Since melasma pigmentation can worsen during times of stress, you may want to tackle the inflammation before the pigmentation in this instance.

Melasma, being a highly visible disorder, causes significant distress. With your arsenal of topical skin-lightening ingredients, laser technologies and your education, you as a skin therapist can have a powerful effect not only on the skin’s appearance, but also on the client’s life and happiness.

References: