

It's personal

Expansive treatment regimen available for acquired pigmentary disorders.

Few disease phenotypes are as visually compelling, or as challenging to treat, as chronic hyperpigmentation. But now it's getting personal. The increase in the treatment of acquired pigmentary disorders — approximately 1.5 million dermatology visits annually in the U.S. — has provided a wealth of background information and new opportunities to personalize a corrective regimen.

That was welcome news for dermatologists who attended Friday's session, Fo22 – Fifty Shades of Brown: Science, Symptoms, and Strategies for Acquired Pigmentary Disorders. Sandy Sharon Tsao, MD, FAAD, who led the session, credits rapid advances in molecular and biologic therapeutics and breakthroughs in device technology with bringing hope to patients. Dr. Tsao is an assistant professor of dermatology at Harvard Medical School in Boston.

"Every individual has a unique ethnic background, history of environmental exposures, history of response to injuries, and family history. The personalization in diagnosing dyschromias is in determining these unique factors to help tailor your treatment plan to that individual," Dr. Tsao said.

Getting it right, globally

Acquired pigmentary disorders, such as post-inflammatory hyperpigmentation and melasma, represent some of the most common cutaneous concerns globally. For many years, according to session presenter, Arianne Shadi Kourosh, MD, MPH, FAAD, associate professor of dermatology at Harvard Medical School, the treatment approach focused on targeting the tyrosinase enzyme in the pathway of melanin production. In recent years, however, researchers are looking at other pathways, including the interaction of melanocytes with keratinocytes.

"It is also important that other environmental triggers and exacerbating factors beyond ultraviolet radiation and their role in worsening hyperpigmentation have become a greater focus of research and public education, such as visible light, heat or infrared radiation, and pollution," Dr. Kourosh said. "For years, I have been concerned and lecturing about the role of pollution in dyschromia and skin aging, especially in caring for people who traveled to our clinic from countries in the world with high pollution levels. Now with rising air pollution in certain regions of the U.S. (hitting peak levels in the northeast in 2023), it could be an increasingly relevant trigger for patients."

Proper diagnosis is the first step toward treating the disorder. And that requires

What's right for your patient?

Current and future medical, surgical, or combination treatment strategies have evolved.

Current treatment strategies include preventative measures, topical medications, oral medications, peeling agents, resurfacing procedures, PRP, and microneedling technologies.



More recently, the use of oral antioxidants has come into play as preventative agents. These include vitamin E, polypodium leucotomos, niacinamide, pyconogenol, grapeseed extract, and glutathione.



Preventative measures including recognizing the role that visible and ultraviolet light play in exacerbating dyschromia is vital to minimizing further development of pigmentary changes. Maximizing sun protective measures is critical, including daily broad-spectrum tinted sunscreen use with physical blocking agents, like titanium dioxide, zinc oxide, and iron oxide. Sun-protective clothing is paramount.

a thorough patient history, Dr. Tsao said. Dermatologists should be asking patients about the duration of the pigmentary changes, exploring whether there is a known underlying causal etiology for the changes, if injury is an isolated or ongoing event, treatment and response history, family history, a physical exam with attention to the location of the pigmentary changes, and ethnicity.

"Consideration of ethnic background comes into play when considering specific medical dyschromia, including ashy dermatosis, lichen planopilaris post-inflammatory hyperpigmentation, and melasma," Dr. Tsao said. "These conditions present more commonly in patients of specific ethnic backgrounds, requiring a broader consideration for underlying diagnoses."

Risk assessment

Individuals with darker skin phototypes may be at higher risk of exacerbating their dyschromia when exposed to ultraviolet or visible light as well as excessive heat, according to Dr. Tsao. Patients with darker skin phototypes respond more vigorously to many treatment options, with a higher risk of post-inflammatory hyperpigmentation and scar formation, which must be considered when determining a treatment plan.

"Understanding how to determine the risk/benefit profile, having the correct treatment agents and devices in your office, and how to provide the appropriate treatments is critical for safe and effective outcomes," Dr. Tsao said.



Sandy Sharon Tsao, MD, FAAD, assistant professor of dermatology at Harvard Medical School in Boston



Arianne Shadi Kourosh, MD, MPH, FAAD, associate professor of dermatology at Harvard Medical School

Combination treatments

Specifically, combining preventative measures, maximizing topical therapies, and using conservative treatments such as peels and laser/energy-based devices will maximize treatment outcomes. A thorough understanding of the interactions of combination therapies is necessary to minimize potential side effects.

Making an effective, tailored treatment plan for each unique patient requires:

- Taking a thorough history
- Ensuring a correct diagnosis for the underlying dyschromia
- Evaluating past treatment responses
- Understanding the risk profile of each treatment
- Identifying triggers

Identifying triggers is key

Without removal of triggers, the problem could perpetuate and even the best therapies could be limited in their impact. Addressing triggers for a person's hyperpigmentation is critical to tailoring the right treatment plan.

New and breakthrough treatment

Currently, a combination of topical and oral medical therapies as well as laser treatments and chemical peels are used with varied efficacy depending on the causes and levels of depth in the skin affected in the dyschromia, according to Dr. Kourosh. With laser treatments and chemical peels, the heat or irritation caused by some of these procedural treatments (if they are not in the hands of a highly skilled dermatologist) can worsen the problem.

"This is especially concerning for my patients with darker skin types who are more vulnerable to hyperpigmentation from these treatments and who have suffered and been burned in some cases by practitioners who were not sufficiently trained in the care of their skin. New treatments are in the pipeline and more are needed," she said.

Dr. Tsao offered more on recent scientific breakthroughs in the understanding of normal melanocyte biology and abnormal pigment physiology

have been key to treatment regimens, including advances in the understanding of abnormal pigment physiology. This focuses on the effects of UV as well as visible light-induced skin injury, and the influence of inflammation and skin barrier dysfunction.

These changes include increased expression of VEGF, increased dermal vessels, basement membrane damage, increased WNT expression, increased mast cell production, increased fibroblast senescence, oxidative stress, and increased estrogen and progesterone receptors. In the future, Dr. Tsao said, a better understanding of the role of these changes will allow for the development of more targeted therapies.

The emotional toll

Dr. Kourosh reminds dermatologists of the emotional toll the disorder takes on patients as well as the need for public health education on the problems that arise from cultural pressures surrounding colorism and the unsafe skin bleaching practices in our society.

"I have developed a deep appreciation and empathy for struggles these patients face, feeling disfigured especially in the challenging cases that persist despite all of our current therapies," she said.

"We need to improve treatments for pigmentary problems, while also improving medical education and public education to protect patients from misinformation and threats to the health of their skin and well-being, and promote a more diverse ideal of beauty and healthy skin." ●

