Case in Point

Facial Skin Damage from Sun Exposure and an Unsuccessful Cosmetic Procedure

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This soldier presented with painful facial skin after seeking treatment at a dermatologic spa for skin hyperpigmentation she developed while serving in Iraq.

Although experts are aware that veterans can manifest ultraviolet radiation (UVR) damage as skin cancer (basal cell cancer, squamous cell cancer, or malignant melanoma) several years after the completion of service, what may be overlooked are the cosmetic consequences of service in harsh environments that may manifest earlier. Here, we report a case involving a 37-year-old soldier with untoward facial morbidity due to skin exposure during her service in Iraq.

INITIAL EXAM

A 37-year-old, female, Hispanic service member with denuded facial skin presented as an urgent consultation at the dermatology clinic of a large VA medical center. She reported that she had received a skin care treatment at a dermatology spa six days earlier, and that she had been seeking a medical solution to treat facial hyperpigmentation that developed during her recent 18-month assignment in Iraq.

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The patient reported that daily exposure to sunny and hot conditions in Iraq had caused her skin to become unevenly colored and roughly textured. She reported applying sunscreen to her face daily, but she said that, dressed in her uniform and gear, she would perspire in the hot climate. As a result, the sunscreen would combine and be wiped away with her sweat readily. Except for her goggles and helmet, her face was unprotected from solar UVR.

On her return home, the patient attempted to address her dissatisfaction with the service-related hyperpigmentation of her face. Having had an intense pulsed light (IPL) "photofacial" prior to her military service without incident, she decided to undergo a similar treatment at a different spa facility to address her newly developed skin condition.

She reported that the IPL photofacial had been administered by a technician without direct physician supervision. Immediately after the IPL treatment, she experienced intense pain and described her face at the time as "bright, almost glowing red." She remained at the spa for an additional two hours and was then released and advised to apply cold compresses to the affected area. During the next few days, her pain persisted and her facial skin became dusky red and pruritic. She used over-the-counter hydrocortisone cream 1% without relief. Six days after her visit to the spa, her skin denuded and, still in distress, she sought urgent care at the Long Beach VA facility.

Upon presenting to the dermatology clinic, the patient reported having no fevers, night sweats, or chills. Her past medical history was unremarkable, and she reported taking no medications other than the hydrocortisone cream. Physical examination revealed desquamation involving the cheeks, chin, and forehead. The periorbital area—corresponding to the area protected by her military goggles—was relatively hypopigmented compared with the rest of her facial pigmentation. The affected skin appeared pink and raw, and there were clear, rectangular demarcation lines from the IPL crystal edges, indicating the endpoint of the IPL treatment (Figure).

TREATMENT COURSE

Prophylactic antiviral therapy was initiated, and the patient was told to use dilute vinegar-water soaks to reduce the risk of infection. Additionally, she

was advised to apply petrolatum ointment and sunscreen and to avoid exposure to the sun. Since there were no signs or symptoms of infections, oral antibiotics were not prescribed.

The patient returned to the VA dermatology clinic for continued care. Several months after her initial presentation to the clinic, treatment with hydroquinone cream 4% was initiated, with the goal of lightening the hyperpigmented areas of her skin. She did experience improvement, but the demarcated lines remained visible on her face.

ABOUT THE CONDITION

Given our patient's Hispanic origin, she has darker skin (type III or IV), which is more prone to melasma.[1] This condition, which is characterized by symmetrical hypermelanosis that appears on sun-exposed areas of the skin,[1] may well be the initial problem that prompted our patient to seek cosmetic treatment.

The IPL photofacial that she received involves the use of IPL as a high-intensity light source. Unlike laser systems, IPL works with noncoherent light in a broad wavelength spectrum of 515 to 1,200 nm.[2] IPL allows for a wide range of potential combinations of wavelengths, pulse durations, pulse frequency, and fluence.[2] As a result, IPL can be used for skin rejuvenation and hair removal and in the treatment of a variety of conditions, including pigmented lesions and vascular lesions. Complications of IPL therapy include, but are not limited to, hyperpigmentation, hypopigmentation, and erythema.

For a trained medical professional, the properties of IPL allow for great variability in selecting individual treatment parameters and adapting to various skin types and indications. As this case illustrates, however, it is important to evaluate patients for intense sun exposure before administering IPL. Despite the fact that our patient had previously undergone the same IPL treatment without complication, her second, postdeployment treatment did not have similarly benign consequences. Her history of sun exposure in Iraq and resulting hyperpigmentation is most likely the factor that led to this outcome.

This raises questions about the medical qualifications needed to properly understand and administer these treatments. Brody and colleagues studied the nonphysician practice of dermatologic surgery and reported an increase in the number of adverse effects (including scarring, burns, and hypopigmentation) when nonphysician operators (defined as cosmetic technicians, estheticians, and employees of medical or dental professionals) performed the procedures.[3] Despite reports like this, there is still a great need for awareness about nonphysician operators performing procedures outside their scope of training.

LARGER PROBLEMS OF UVR EXPOSURE

The American Cancer Society recognizes skin cancer as the most common cancer in the United States, with more than one million cases diagnosed annually.[4] Up to an estimated 90% of the global burden of disease from melanoma and other skin cancers are due to UVR exposure.[5] According to the World Health Organization, an estimated 60,000 deaths worldwide are caused by too much UVR exposure each year.[5] Of those 60,000 deaths, an estimated 48,000 are caused by malignant melanoma and 12,000 are caused by skin carcinomas.[5]

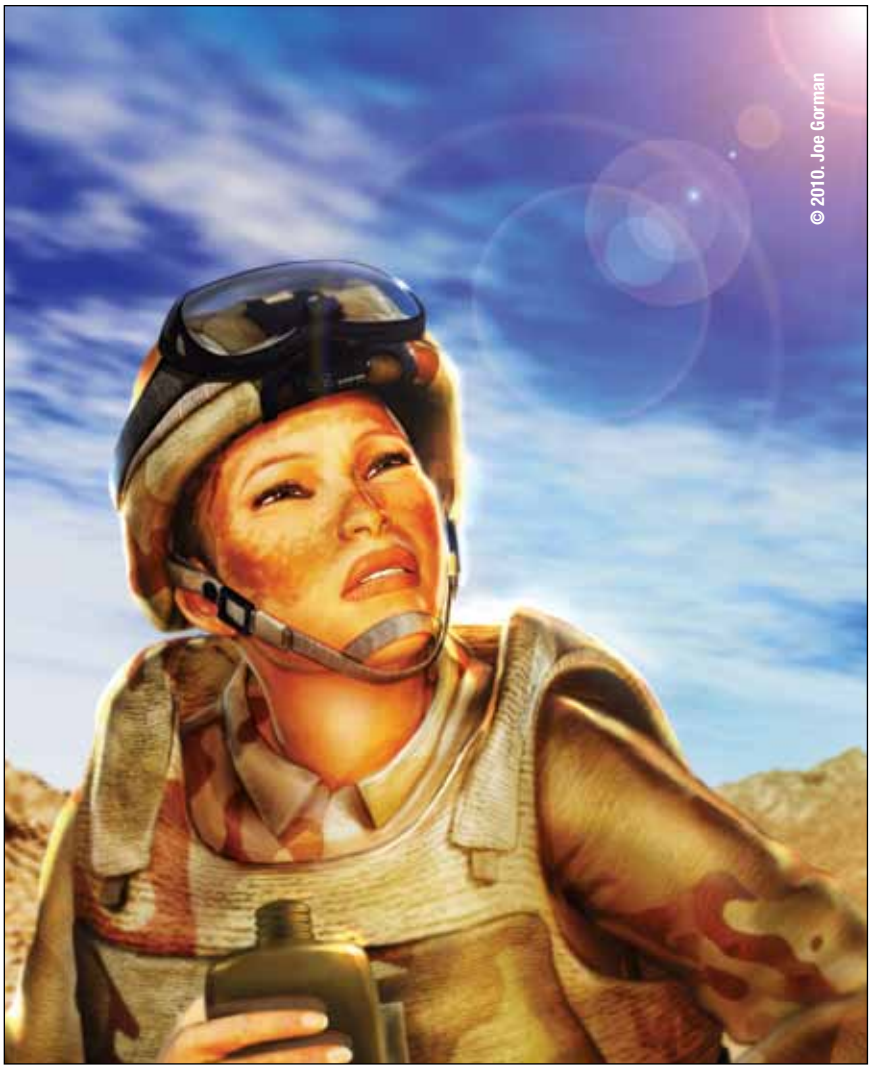
Knowing the harm that comes from UVR exposure, federal practitioners need to help raise awareness of this danger among troops. Addressing the men and women of the military in a recent article in the "Off Duty" section of ArmyTimes, staff writer C. Mark Brinkley compared the sun to a deadly assassin and sunscreen to body armor, telling his readers to "up-armor your skin."[6] Health care providers can do their part by reinforcing this message.

Figure. Side view of the patient's face, showing clear demarcation of her affected skin six days after the intense pulsed light treatment.

Additionally, however, there is a need for sunscreen products that better address the conditions faced by our troops. Even when soldiers on duty diligently apply sunscreen, perspiration causes the sunscreen to run—both reducing the protection to the skin and creating eye irritation.[6] In our patient's case, wiping off her melted sunscreen led to additional direct sun exposure. Furthermore, returning veterans have reported to dermatologists in our clinic that the sunscreen formulations available to them on deployments, including those containing zinc oxide and titanium dioxide, act as a magnet for blowing sand.

CONCLUSION

For many veterans of the current conflicts, there will be unforeseen medical consequences of their military service in harsh environments that need to be addressed. In some



cases, veterans initially may seek treatment from nonphysician operators or from health care providers outside the VHA and only later present to a VA health care facility. In the case of our patient, by the time she presented to a VA clinic, her condition was far more serious than it had been before her decision to undergo treatment at the dermatology spa. While this case highlights a dermatologic complication, any VA health care provider could face a situation in which he or she needs to care for a patient who has been treated insufficiently or improperly by a non-VA provider. It may be challenging to mitigate the effects of such treatment, but it is our duty as VA practitioners to provide the best possible care for the honorable men and women who serve our country in the armed forces.

It is also our duty to maintain ongoing dialogue between the DoD and the VHA regarding service-related medical issues that manifest after termination of soldiers' active service but that should be addressed during the period of active duty. For instance, it is apparent that the sunscreen currently being issued may have failings that will result in long-term health problems that could be avoided if promptly, and properly, confronted.

Author disclosures

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REFERENCES

1. Sarvjot V, Sharma S, Mishra S, Singh A. Melasma: A clinicopathological study of 43 cases. *Indian J Pathol Microbiol*. 2009;52(3):357–359.
2. Raulin C, Greve B, Grema H. IPL technology: A review. *Lasers Surg Med*. 2003;32(2):78–87.
3. Brody HJ, Gerroneumus RG, Farris PK. Beauty versus medicine: The nonphysician practice of dermatologic surgery. *Dermatol Surg*. 2003;29(4):319–324.
4. American Cancer Society. Cancer Facts and Figures 2008. Atlanta, GA: American Cancer Society; 2008. http://www.cancer.org/downloads/STT/2008CAFFfinalsecured.pdf. Accessed January 15, 2010.
5. Health Consequences of Excessive Solar UV radiation. World Health Organization web site. http://www.who.int/mediacentre/news/notes/2006/np16/en/index.html. Accessed January 15, 2010.
6. Brinkley CM. How to protect your body's natural armor. ArmyTimes.com; July 2006. http://www.armytimes.com/offduty/health/military_sunscreenmain_070806w/. Accessed January 15, 2010.