Amiodarone-Induced Pigmentation Resolves After Treatment With the Q-Switched Ruby Laser

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The Cutting Edge: Challenges in Medical and Surgical Therapeutics

REPORT OF CASES

A 55-year-old woman presented with a 3-year history of diffuse blue-gray pigmentation on the nose, cheeks, and upper lips with sparing of the skin flexures. She had been treated with amiodarone for approximately 10 years because of severe cardiac arrhythmia with a cumulative dose of more than 900 g and a maintenance dose of 250 mg/d. She was taking no other medication. Results of light microscopy of a biopsy specimen from the discolored skin showed granular yellow-brown pigment in the cytoplasm of dermal melanophages at the junction of the papillary and reticular dermis (Figure 1 and Figure 2). Results of iron stain testing were negative.

THERAPEUTIC CHALLENGE

The only known therapy for amiodarone-induced pigmentation is discontinuation of drug treatment. However, the severity of the patient’s heart disease did not allow a reduced dose of amiodarone or a switch to another drug. The patient experienced the cosmetically stigmatizing blue-gray pigmentation of the face.

Editor’s Note: The impressive fading of amiodarone-induced hyperpigmentation with the Q-switched ruby laser in this patient could probably be duplicated with the Q-switched Nd:YAG laser as well as the Q-switched alexandrite laser. The ability to fade any specific dermal pigment depends on its absorption spectrum. Therefore, a test spot with one of the Q-switched lasers in patients with objectionable drug-induced dermal hyperpigmentation makes sense. Treatment should be deferred until after the drug has been stopped to prevent recurrence of the hyperpigmentation and a sufficient period of time has elapsed to allow as much of the hyperpigmentation as possible to fade spontaneously.

Figure 1. Results of light microscopy of a biopsy specimen taken from the discolored skin shows granular yellow-brown pigment in the cytoplasm of dermal melanophages at the junction of the papillary and reticular dermis (hematoxylin-eosin, original magnification × 90).

SOLUTION

A small area on the nose was chosen for a therapeutic test with the Q-switched ruby laser at an energy fluence
of 8 J/cm², wavelength, 694 nm; spot size, 5 mm; and pulse duration, 40 nanoseconds. Within 4 weeks, the pigmentation disappeared in the treated site with no change in nontreated areas (Figure 3, top). The remaining hyperpigmentation on the nose, cheeks, and upper lips was treated using the same parameters with equivalent resolution of the hyperpigmentation after a single treatment. There were no adverse effects of the laser therapy. Pigmentation did not recur during the follow-up period of 1 year (Figure 3, bottom).

COMMENT

The class III antiarrhythmic drug amiodarone, an iodinated benzofurane derivative, has been used in the management of intractable cardiac arrhythmias in Europe since 1964. Skin reactions are common, usually presenting as photosensitivity and less frequently as a blue-gray pigmentation on sun-exposed areas of the skin. In most cases, a photosensitivity reaction in sun-exposed areas occurs prior to pigmentation. Blue-gray discoloration is seen in 2% to 24% of patients and appears to be related to a daily amiodarone dose of more than 200 mg. Skin deposits are observed 7 to 60 months after the start of therapy. Results of light microscopy of the discolored skin show aggregates of granular yellow-brown pigment in the cytoplasm of dermal histiocytes at the junction of the papillary and reticular dermis. Results of staining are moderately positive for periodic acid–Schiff and strongly positive for Ziehl-Neelsen and Fontana stain. Electron microscopy studies of affected skin reveal lysosomal membrane-bound dense bodies within the cytoplasm of histiocytes, believed to be lipofuscin. Pigmentation usually fades spontaneously within 1 year after cessation of treatment with the drug, but there are some patients in whom the hyperpigmentation persists.

The Q-switched ruby laser uses very high-energy pulses that produce specific thermally mediated injury to exogenous and endogenous pigment and pigment-containing cells. Q-switched ruby laser therapy is effective in treating dermal pigmentation, particularly blue-black tattoos and some pigmented lesions. Recently, clearing of minocycline-induced pigmentation after treatment with the Q-switched ruby laser was reported. Although medically benign, amiodarone-induced pigmentation may be cosmetically disfiguring. Currently, there are no effective therapies to reverse this condition except discontinuation of drug treatment. As this was not possible in our patient, treatment with the Q-
A Q-switched ruby laser was performed, resulting in resolution of the colored lesions after a single treatment. Laser therapy was very well tolerated. Hypopigmentation or scarring did not occur. Thus, we recommend Q-switched ruby laser for the treatment of amiodarone-induced hyperpigmentation. Even if recurrences are to be expected since amiodarone therapy cannot be discontinued, our patient had real benefit from the laser treatment.

REFERENCES


Clinicians, local and regional societies, residents, and fellows are invited to submit cases of challenges in management and therapeutics to this section. Cases should follow the established pattern. Submit 4 double-spaced copies of the manuscript with right margins nonjustified and 4 sets of the illustrations. Photomicrographs and illustrations must be clear and submitted as positive color transparencies (35-mm slides) or black-and-white prints. Do not submit color prints unless accompanied by original transparencies. Material should be accompanied by the required copyright transfer statement, as noted in “Instructions for Authors.” Material for this section should be submitted to George J. Hruza, MD, Cutaneous Surgery Center, Suite 16411, 1 Barnes Hospital Plaza, St Louis, MO 63110. Reprints are not available.