Removal of forearm lentigines in dyschromatosis universalis hereditaria with a 755-nm Q-switched alexandrite laser

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Key words: dyschromatosis universalis hereditaria; lentigines; Q-switched alexandrite laser.

INTRODUCTION

Characterized by hyperpigmented and hypopigmented macules forming a reticulate pattern, dyschromatosis universalis hereditaria (DUH) was first described by Toyamo in Japan. Subsequent cases have been reported from other areas including Europe, China, Saudi Arabia, Tunisia, India, and Nigeria.[1] A variable autosomal inheritance has been described, and a few sporadic cases have been reported. Spontaneous regression has not been recorded. Only one case involving treatment modality was reported in 2011.[2]

Abbreviations used:

DUH: dyschromatosis universalis hereditaria
IPL: intense pulsed light

CASE REPORT

A 20-year-old woman presented with progressive and asymptomatic mottled hyperpigmentation involving almost the entire body since the age of 5 years. On examination, she was of normal stature and average build. She was noted to have diffuse and symmetric mottled hyperpigmented and hypopigmented macular dyspigmentation involving the face, neck, trunk, back, buttocks, arms, and legs sparing palms, soles, nails, and oral mucosa. Areas of small

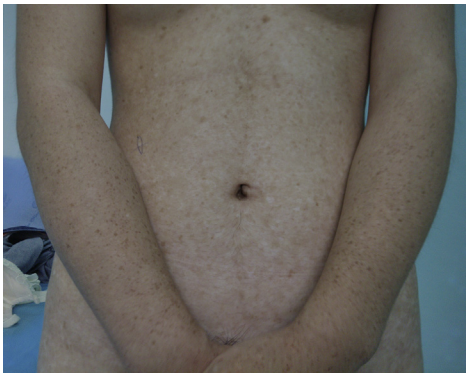

Fig 1. Hyperpigmented and hypopigmented macular dyspigmentation on abdomen and forearms formed a reticulate pattern.

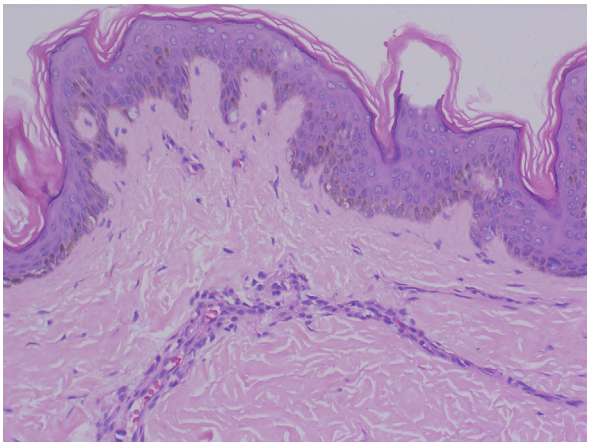

Fig 2. Increased melanin granules and pigmentation in the basal cell layer of the epidermis (indicated by the arrows).(Hematoxylin-eosin stain; original magnification: ×200.)

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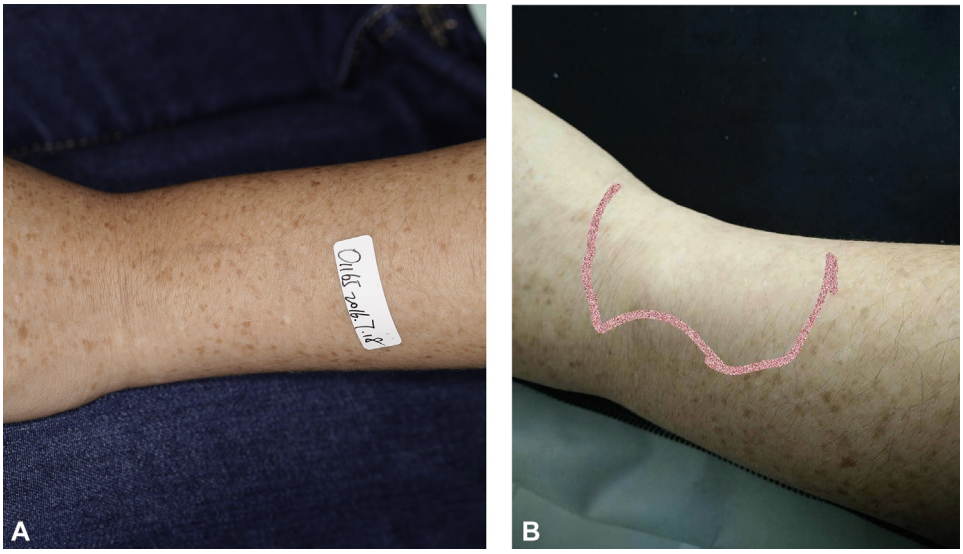

Fig 3. **A**, Left forearm before treatment. **B**, Area treated with 755-nm Q-switched alexandrite laser (within the pink line) on the left forearm 11 months after a single laser treatment.

hypopigmented macules alternated with zones of pigmented macules of variable sizes and shapes. The lesions were predominantly on the forearms, abdomen, and back. There was no atrophy, erythema, or telangiectasia (Fig 1). Dermatoglyphics pattern was preserved. Hair, teeth, and other mucosae were normal. The family history was unremarkable.

Systemic examination found no abnormalities. Skin biopsy of hypopigmented lesions on the right abdomen found a normal epidermis and perivascular lymphocytes and melanocytes within the papillary dermis. Skin biopsy of hyperpigmented lesions on the left forearm showed increased melanin granules and pigmentation in the basal cell layer of the epidermis and perivascular lymphocytes and melanocytes within the papillary dermis (Fig 2). The generalized distribution of the hyperpigmented and hypopigmented macules and biopsy results were consistent with the diagnosis of DUH.

We treated a 5-cm × 1-cm area on the left forearm with a 755-nm Q-switched alexandrite laser, 3-mm spot size, 5.2-J/cm^2 fluence, and 5-Hz frequency. The patient noticed initial darkening of lentigines and then light peeling and fading over 10 to 14 days. No erythema, edema, blister, paleness, bleeding, or ecchymosis were noticed. An ice pack was applied for approximately 30 minutes postoperatively. The patient was instructed to avoid sun exposure and to apply sunblock daily. Significant improvement was noted after 1 treatment without any scarring or undesirable pigmentary changes. Compared with the lentigines before the treatment (Fig 3, *A*), no recurrence was noted at the 11-month follow-up after 1 treatment session (Fig 3, *B*).

DISCUSSION

DUH is a rare genodermatosis characterized by hyperpigmented and hypopigmented macules forming a generalized reticulate or mottled pattern. There are cases reported with varying phenotypes involving the oral mucosa, tongue, palms, soles, hair, and nails.[3,4] Systemic abnormalities include renal failure,[5] primary ovarian failure, hypothyroidism,[6] and oral leukokeratosis.[7]

Traditional therapeutic modalities for pigmentary lesions included surgical excision, dermabrasion, electrodessication, and chemical peeling. These treatments may have side effects such as scarring or dyspigmentation, which limit their use in generalized pigmentary disorders such as DUH. Intense pulsed light (IPL) is found to be a cost-effective and safe treatment modality for hyperpigmentation. We did not test treat this patient's forearm with IPL, because IPL has been used mainly for cosmetic purposes or facial rejuvenation in our department, and we did not have the experience of treating sites other than the face. Also, it may require multiple treatment sessions to achieve satisfactory results. IPL would be considered if the patient continued with treatments over other anatomic sites, such as the face. We considered that IPL had limited effects for complicated skin problems and combination therapies with IPL and laser or other cosmetic technologies might be needed.

The Q-switched alexandrite laser at a 755-nm or 752-nm wavelength and 5- to 7-J/cm^2 fluence, used on a bimonthly or trimonthly basis, is reported to be an effective and safe treatment for facial and labial

lentigines associated with Peutz-Jeghers syndrome,[8] cutaneous reticulated acropigmentation of Kitamura,[9] and lips, oral mucosa, and finger pigmentary disorders of Laugier-Hunziker syndrome.[10]

The only previously reported use of the Q-switched alexandrite laser treatment for the hyperpigmented macules of DUH produced dramatic improvement on the face and lips of a Japanese woman with a 45-year history of DUH. We treated a test area on the forearm using the Q-switched alexandrite laser, and the treatment proved to be effective, well tolerated, and long lasting. We recommend that this modality be considered in the treatment of other sites. Further study is needed to determine the optimal number of treatment sessions and the interval between treatments.

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