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CORRESPONDENCE

A case of leukoderma probably caused by a soap containing neem oil

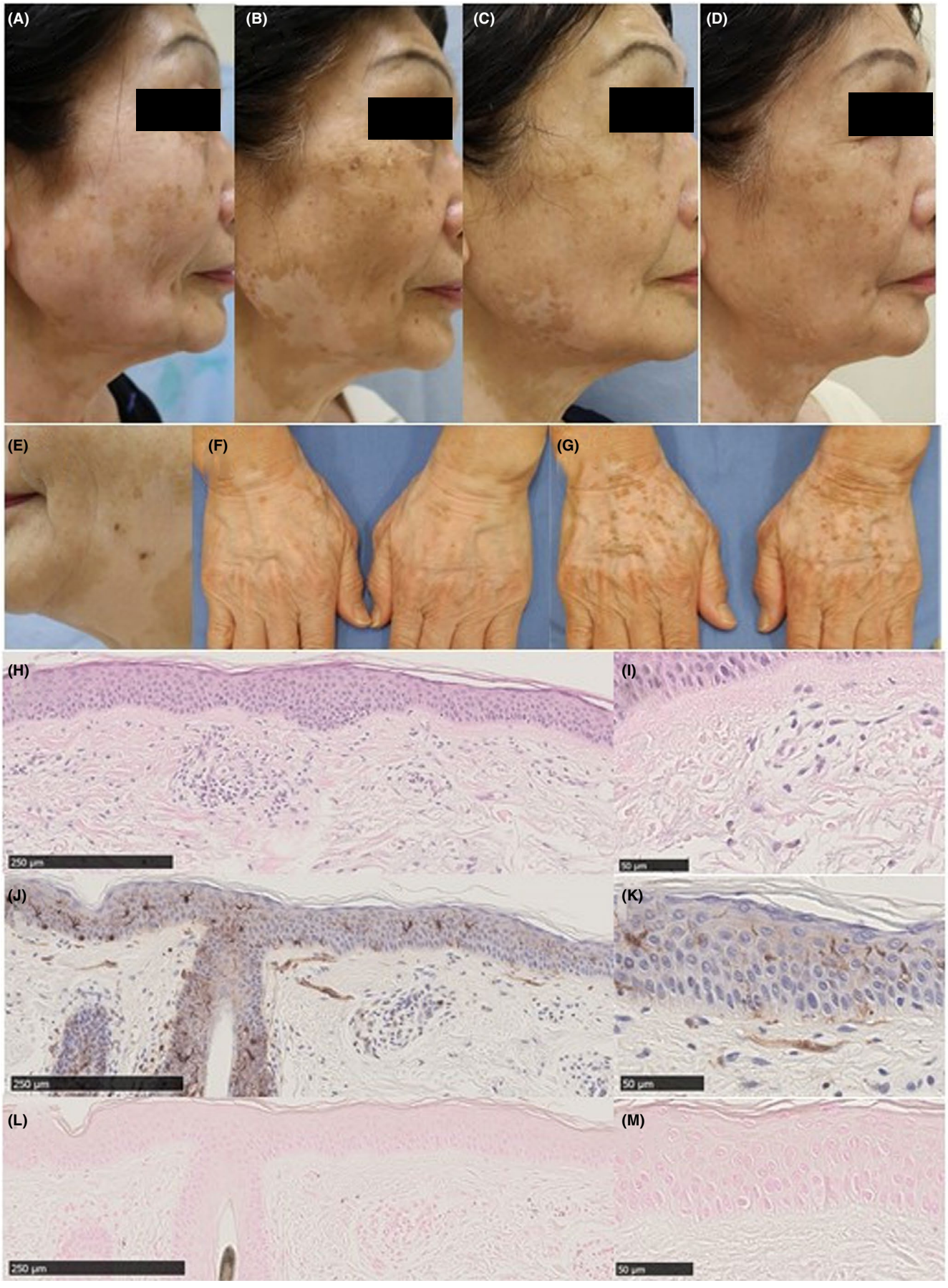
Neem (*Azadirachta indica*) is an evergreen tree used as a source of traditional medicines, as well as of cosmetics, in Asia and Africa.[1,2] Products containing neem have recently become accessible worldwide. We present a rare case of leukoderma probably caused by a soap containing neem oil.

A healthy 71-year-old Japanese female presented with a 2-month history of depigmented lesions. She had been using a soap containing neem oil to wash her face and hands for 1 year. She had not change any of the other cosmetics. She experienced no itching or erythema. Depigmented patches were observed on most of the face, anterior neck, and dorsum of the hand (Figure 1A). Histological evaluation of a cheek biopsy revealed perivascular and perifollicular inflammatory cell infiltration with some melanophages in the superficial dermis (Figure 1H,I). S100 staining revealed a decrease in melanocytes (Figure 1J,K), and Fontana-Masson staining showed a lack of melanin granules (Figure 1L,M). Patch tests conducted using the soap (1% aq) and soap components [neem oil (as is, 10% pet, 1% pet), coconut oil, glycerin] were negative. Thyroid function was normal, and no antinuclear antibodies were detected. After discontinuing use of the soap, no further depigmentation occurred and repigmentation was observed soon afterward without any treatment. The patient received topical tacrolimus treatment after her follow-up visit 3 months later to further accelerate recovery. Two years later, her facial leukoderma had nearly resolved (Figure 1B-E). Better results were observed for the face than the hands (Figure 1F,G).

Our patient's leukoderma was considered to have been caused by contact with a soap containing neem oil because leukodermas matched areas where the soap was used, and spontaneous repigmentation started immediately after discontinuation of soap use. There have been seven reports of contact dermatitis caused by neem oil.[3,4] The absence of eczema and the patch test results indicated that her leukoderma was not postinflammatory depigmentation following contact dermatitis. In Japan, rhododendrol (RD)-induced leukoderma was confirmed in many individuals who had used RD-containing cosmetics in 2013.[5,6] Our case had some clinicopathological similarities to them despite not using RD.

Neem oil is mainly produced in the plant's seeds, which contain more than 30 substances with an inhibitory effect on melanogenesis.[7,8] Some inhibitors have only minor cytotoxicity. Jadhav[9] reported 14 cases of chemical leukoderma on oral and labial mucosal surfaces because of neem. These cases involved patients who used neem twigs for brushing teeth or chewed neem leaves daily. The leukoderma in these cases was speculated to be because of the direct melanocytotoxicity of limonoids in neem. In our patient, melanocytes were not completely absent, and some areas experienced rapid pigment regeneration. Therefore, we suspect that a melanogenesis inhibitor with less cytotoxicity in neem oil might have induced leukoderma on the skin with a degraded barrier caused by the soap in our case.

FIGURE 1 Clinical course of leukoderma in this patient. (A) At the first visit to our department, depigmented patches were observed on the entire cheek and neck. (B, C) Repigmentation increased around the hair follicles and at the lesional borders with surrounding hyperpigmentation, (B) 9 months after the patient's first visit and (C) 15 months after the patient's first visit. (D) Leukoderma on the right cheek had recovered in most areas 24 months after the patient's first visit. (E) On the lower left cheek, repigmentation occurred also around nevuses. (F) While using topical tacrolimus, repigmentation of the hands was slower than that of the face, 1 year after the patient's first visit. The treatment for the hands was changed to narrow-band ultraviolet B phototherapy and topical maxacalcitol ointment. (G) After 8 months of phototherapy, repigmentation has increased. (H, I) Microscopic findings of skin biopsy in the cheek showed inflammatory cell infiltration with some melanophages in the superficial dermis (hematoxylin and eosin). (J, K) S100 staining revealed that positive cells (melanocytes) in the basal layer were reduced in number. (L, M) Fontana-Masson staining showed that melanin granules were almost absent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Although further studies are required to elucidate the mechanism of the disorder, this case demonstrates that careful attention must be paid to neem-containing products, as they can cause leukoderma.

DECLARATION SECTION

Approval of the research protocol: N/A.

Informed Consent: The informed consent was obtained from the patient.

Registry and the Registration No. of the study/trial: N/A.

Animal Studies: N/A.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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