

LETTER TO THE EDITOR

Probable allergic contact dermatitis from hydroquinone presenting as leukomelanoderma: Report of two cases

Dear Editor,

Hydroquinone creams are widely used as manually compounded cosmetics in Japan. Here, we report two cases of leukomelanoderma associated with probable allergic contact dermatitis caused by hydroquinone.

A 61-year-old woman was referred for evaluation of pigmentary changes on her face. She had used 10% hydroquinone cream on her face and neck for 2 months. Despite the development of a stinging sensation and slight erythema, she continued to use the cream. On examination, well-demarcated

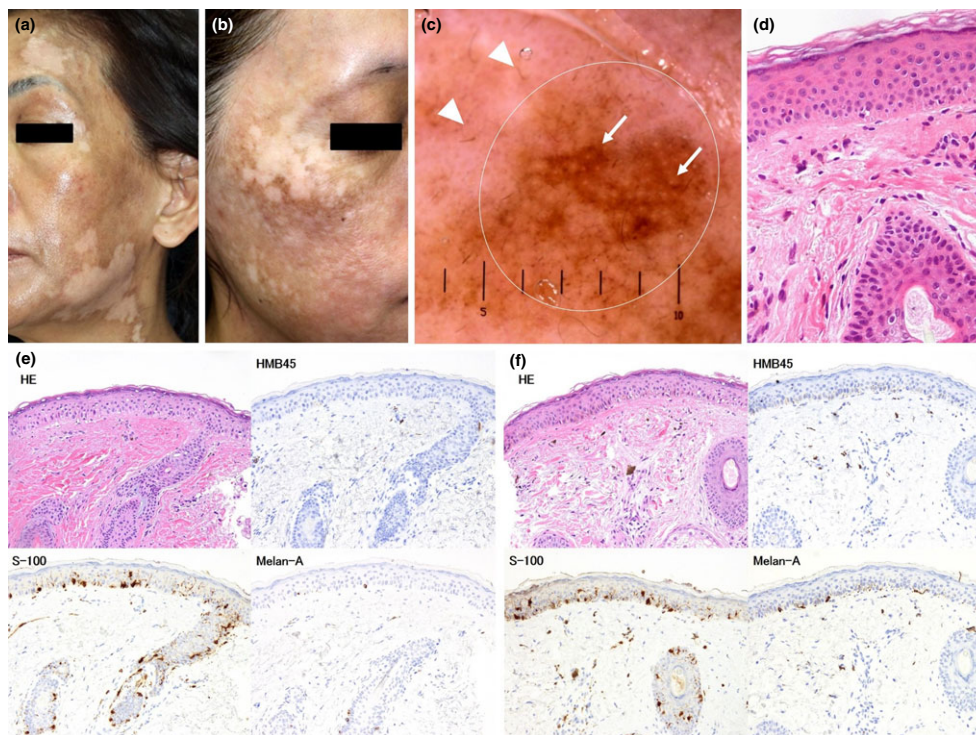


Figure 1. (a) Hyper- and hypopigmented macules with mild erythema on the face of a 61-year-old woman (case 1), after 2 months of application of a manually compounded 10% hydroquinone cream. (b) Well-demarcated hypopigmented spots and diffuse hyperpigmentation with mild erythema on the face of a 49-year-old woman (case 2). She had applied manually compounded 10% hydroquinone cream for 7 years, followed by 7% cream for 3 years. (c) Dermoscopy revealed a pseudo-pigment network within the pigmented area. Within these areas, depigmented spots coincided with the follicular funnel parts (arrow). The inner part of these spots was light brown in color while the outer part was dark brown (circle). Black hairs remained in the depigmented spot (arrow-head). (d) Histopathological imaging of a punch biopsy from the hypopigmented skin region of the first patient. In the basal layer of the epidermis, neither clear cells nor melanophages were present. However, melanophages were evident in the upper dermis (original magnification $\times 400$). (e) Histopathological imaging of a punch biopsy from the hypopigmented skin of the second patient. Melanophages were present in the upper dermis. No melanocytes were detected in the epidermis, as evidenced by HMB-45 and Melan-A analysis. Positive S100 analysis indicated the existence of Langerhans cells within the epidermis; most of these were located in the basal layer ($\times 100$). (f) Histopathological imaging of a punch biopsy from the hyperpigmented skin of the second patient. Using HMB-45 analysis, melanosomal proteins were successfully identified in the upper dermis. S100 analysis showed that Langerhans cells were located in the epidermis, mostly in the basal layer, as seen in the hypopigmented skin (see [e]). Melan-A analysis indicated that melanocytes were distributed in a uniform pattern ($\times 100$). HE, hematoxylin–eosin.

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hypopigmented macules and diffuse hyperpigmentation were noted on the face and neck (Fig. 1a). Seventeen months after discontinuing the 10% hydroquinone cream, the pigmentary changes had mostly resolved. Closed patch test results with hydroquinone (1% pet.) and the manually compounded 10% hydroquinone cream (as is) were graded D2 (–), D3 (+?) and D2 (+?), and D3 (+), respectively, using the International Contact Dermatitis Research Group (ICDRG) criteria.

A 49-year-old woman was referred for pigmentary changes on the face. She had used 10% hydroquinone cream for 7 years for melasma, followed by 7% hydroquinone cream for the next 3 years. On examination, she had circumscribed depigmented macules and reticulated hyperpigmented macules on both cheeks (Fig. 1b). Dermoscopy showed depigmented spots, which coincided with the follicular funnel parts within the pigmented area. Around the depigmented spots, the inner part was light brown and the outer part was dark brown; this created the appearance of reticulated hyperpigmented areas, which were reminiscent of a pseudo-pigment network. Black hairs remained in the depigmented spots (Fig. 1c). Ten months after discontinuing hydroquinone, the pigmentary changes showed improvement. Closed patch test results with hydroquinone (1% pet.) and the manually compounded 7% hydroquinone cream (as is) were graded D2 (–), D3 (+) and D2 (+?), and D3 (+), respectively, using the ICDRG criteria.

In both cases, Melan-A-positive melanocytes were absent in the hypopigmented skin, and many melanophages were present in the upper dermis of the hyperpigmented skin; ochronosis was not observed in either case (Fig. 1d–f).

Leukomelanoderma arising from the use of hydroquinone-containing cream is uncommon, at least in Japan, although reticulated hyperpigmentation due to hydroquinone has been reported recently.¹ Tatebayashi *et al.* reported the presence of reticulated and dotted hyperpigmentation and sting-like structures using dermoscopy. Here, we have shown that a pseudo-pigment network was present in the hyperpigmented areas.

It has been reported that hydroquinone at a concentration greater than 5% tended to sensitize.^{2,3} In addition, Suzuki and Kawana studied 28 patients with 5% hydroquinone-induced erythema, and positive allergic reactions to 5% hydroquinone were obtained in six patients (21.4%).⁴ The concentration of 7–10% hydroquinone creams in our cases seems to have been too strong. Recently, Jow and Hantash reported two cases of leukomelanoderma, which occurred after the application of 2% and 4% hydroquinone creams.⁵ Both cases were diagnosed with “irritant contact dermatitis” resulting from hydroquinone cream use. Therefore, contact dermatitis resulting from hydroquinone use, whether allergic or irritant in nature, can result in leukomelanoderma, possibly due to the combined phenomena of post-inflammatory pigmentation and hydroquinone-induced leukoderma.

CONFLICT OF INTEREST: None declared.

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