

Allergic contact dermatitis caused by panthenyl ethyl ether in a patient with psoriasis

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Panthenyl ethyl ether [(2R)-N-(3-ethoxypropyl)-2,4-dihydroxy-3,3-dimethylbutanamide, CAS no. 667-83-4] is a yellowish to colourless, slightly viscous liquid that is used for its emollient and conditioning properties in several skin and hair products; it is also a source of vitamin B5.

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Case Report

A 65-year-old woman with palmoplantar psoriasis was referred with intense itching eczematous dermatitis on her feet. Her history showed that she had her psoriasis treated for 3 months with oral acitretin 0.5 mg/kg daily and daily topical application of an emollient stick used to improve the re-epithelization of fissured heels. During the treatment, her hands healed quickly, but she experienced worsening of the skin lesions on the feet during the last month of therapy. Patch testing was performed with the baseline series of the Italian Society of Allergological, Occupational and Environmental Dermatology (SIDAPA) (Euromedical, Calolziocorte, LC, Italy), and with the

emollient stick 'as is'. Patch tests were applied on the back and left under occlusion for 2 days with the Al Test® (Euromedical) on Scanpor® tape (Norgesplaster, Venesla, Norway). Test readings were performed on day (D) 2 and D4 according to ESCD guidelines, and showed positive reactions (++) on both D2 and D4) only to the emollient stick. The ingredients of the emollient stick kindly provided by the manufacturer were tested at appropriate concentrations, and positive reactions (++) on both D2 and D4) were obtained only to panthenyl ethyl ether 30% pet. Patch testing performed with panthenol 5% and 10% pet. gave negative results. A repeated open application test with panthenyl ethyl ether 30% pet. was performed on the volar aspect of the forearm (twice-daily 5 × 5-cm applications for a duration of up to 21 days), and showed a reaction with erythematous infiltration and vesicles covering > 25% of the treated area after four applications (2 days). Twenty healthy volunteers were patch tested with panthenyl ethyl ether 30% pet., with negative results. The eczematous lesions healed after discontinuation of use of the emollient stick and the twice-daily application of a topical corticosteroid for 1 week.

Discussion

We report a case of allergic contact dermatitis caused by panthenyl ethyl ether contained in an emollient stick used by a patient with palmoplantar psoriasis. To our knowledge, panthenyl ethyl ether has been reported as sensitising only once, in 1984 by van Ketel (1). Panthenyl ethyl ether is made from the alcoholic compound panthenol, which has been rarely reported as sensitizing (2–5). Nevertheless, our patient showed a negative result when tested with this latter compound. We may speculate that the risk of contact sensitisation of our patient was enhanced by the repeated use of topical products on damaged skin (fissured heels) and by the acitretin treatment. It is of interest that acitretin inhibits interleukin-6-driven induction of T helper 17 cells, promoting the differentiation of T regulatory cells (6), so it may also play a role as a risk factor for contact sensitisation to weak allergens, such as panthenyl ethyl ether.

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