Allergic contact dermatitis caused by dexpanthenol: report of two cases

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doi:10.1111/j.1600-0536.2011.02005.x

Key words: allergic contact dermatitis; cosmetics; dexpanthenol; over-the-counter products; patch test; photoprotective products; topical medication.

Dexpanthenol (INCI name panthenol; CAS 81-13-0) is the stable alcoholic analogue of pantothenic acid, a water-soluble vitamin (B5) that is essential for the biosynthesis of coenzyme A (1). Currently, this substance is widely used in a variety of cosmetics, and topical medical, over-the-counter and photoprotective products.

Case Report

The authors present two cases of allergic contact dermatitis caused by Bepanthene® cream (Bayer, Carnaxide, Portugal) used for the treatment of stasis dermatitis on the lower extremities in patient 1 and for local application after radiotherapy for basal cell carcinoma of the face in patient 2. Patient 1 developed subsequent widespread skin involvement leading to generalized eczema, which was treated with systemic corticosteroids and withdrawal of the cream. In patient 2, the symptoms resolved after withdrawal of the suspected offending agent and administration of steroid topical treatment and oral antihistamines.

Patch testing was performed with Finn Chambers® on Scanpor® tape (Epitest Ltd Oy, Tuusula, Finland) and according to the International Contact Dermatitis Research Group criteria, with the Portuguese baseline series and with Bepanthene® cream and its ingredients: lanolin 30% pet. (CAS 8006-54-0), cetearyl (cetostearyl) alcohol 20% pet. (CAS 67762-27-0), propylene glycol

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Conflicts of interest: No conflicts of interests or competing financial interests exist.

5% pet. (CAS 57-55-6), potassium cetyl phosphate 1% pet. (CAS 19035-79-1), isopropyl myristate 2% pet. (CAS 110-27-0), and panthenol 5% pet. (all of the allergens used were obtained from Bial-Aristegui®, Oporto, Portugal). Both patients reacted positively to Bepanthene® cream (++) at D2 and D4, and, among its ingredients, exclusively to panthenol 5% pet. with positive reactions (++) at D2 and D4.

Discussion

Allergic contact dermatitis caused by dexpanthenol has rarely been described (1–5). There is also one case report in the literature of contact urticaria caused by a dexpanthenol-containing hair lotion (6) and another of a severe systemic reaction induced by dexpanthenol in multivitamin tablets after previous use of a sunscreen cream containing dexpanthenol (7). We present two cases of allergic contact dermatitis regarding the use of the same topical cream containing dexpanthenol, in different clinical settings.

The allergic moiety of dexpanthenol remains uncertain. Inside the cell, dexpanthenol is rapidly converted to pantothenic acid, and a possible role of β-alanine, one of its components, in the involved pathomechanism has been discussed (7). Lymphocyte transformation tests with dexpanthenol-modified microsomes performed by Hahn et al. (8) suggested a specific T cell-dependent reaction enhanced by microsomal-dependent antigen metabolism.

Clinicians should be aware of the increasing use of topical products containing dexpanthenol and its associated risk of allergic contact dermatitis, which is often observed in patients with stasis dermatitis (2, 5, 9). We recommend testing Bepanthene® cream 'as is', and we highlight the importance of also testing its ingredients. We believe that the generalized use of topical formulations with dexpanthenol will, in the near future, increase the incidence of allergic contact dermatitis and potentially severe systemic reactions to this agent.

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