Allergic contact dermatitis caused by panthenol in a child

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doi:10.1111/cod.12116

Key words: allergic contact dermatitis; dexpanthenol; D-panthenol; facial wipes; panthenol.

Case Report

An 11-year-old girl presented with a history of two episodes of facial eczema, which developed 1 day after the application of make-up that was removed with ‘hypoallergenic’ facial wipes.

She was patch tested with the British Society for Cutaneous Allergy baseline series, a facial series (Chemotechnique Diagnostics, Vellinge, Sweden), and the facial wipes (the only ‘own’ product made available for investigation). The patches were applied to her back with Finn Chambers® on Scanpor® tape (Vitaflo Scandinavia AB, Goteburg, Sweden). There was a positive (+) reaction to the facial wipes tested ‘as is’ on D2 and D4. The only other reaction was to methyldibromo glutaronitrile 0.3% pet. (D2, −; D4, +), of unknown relevance.

The constituents of the facial wipes were supplied by the manufacturer, ready diluted for further patch testing. A positive reaction occurred to one of the constituents only, D-panthenol 75W (D2, +; D4, ++). This had been diluted to 30% in aqua by the manufacturer. Twelve control patients were patch test-negative to this compound.

Discussion

D-Panthenol 75W is an aqueous dilution containing a minimum of 75% panthenol. 75W relates to the grade of the panthenol, as confirmed with one of the manufacturers. This can be stabilized with pantolactone, which is a condensation product of panthenol, as in our case, or with citric acid.

Panthenol is the alcohol form of pantothenic acid (formally known as vitamin B₅). Pantothenic acid is essential for the synthesis of coenzyme A in cells. Coenzyme A, in turn, has a role in conveying acetyl groups to the Krebs cycle in order to generate energy. Panthenol exists as two stereoisomers, D-panthenol and L-panthenol. Only D-panthenol is biologically active. The synonyms of panthenol include D-panthenol and dexpanthenol.

Panthenol is commonly used in the pharmaceutical and cosmetic industries, because of its moisturizing and conditioning properties. It is mainly used in hair preparations, but is also added to other products, including wipes, cosmetic makeup, cleansers, and nail polish.

Allergic contact dermatitis caused by panthenol is considered to be rare, but has been reported following the use of medicaments, moisturizers, and sunscreens (1–4). In one series of 1474 patients, patch tested with dexpanthenol 5% pet., there were 5 positive reactions (0.34%), 4 of which were reported to be relevant (5). Another quoted series of 273 patients showed 2 positive reactions (0.73%) (6). Most recently, 2 patients in Portugal were reported to have developed allergic contact dermatitis caused by panthenol in Bepanthene® moisturizing cream (7).

This is the first reported case of allergic contact dermatitis caused by panthenol (D-Panthenol 75W) in a child, and the first report of it causing allergic contact dermatitis from the use of facial wipes.

What has been used to remove makeup can be as important as what may have been originally applied.
ALLERGIC CONTACT DERMATITIS CAUSED BY PANTHENOL

References