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Sorbitan sesquioleate (SS; Arlacel 83[®], Sigma-Aldrich Co., St. Louis, MO, USA) is a fatty acid ester derived from a mixture of mono- and diesters of oleic acid and hexitol anhydrides of sorbitol (1). It is an oil-soluble, water-dispersible, and non-ionic surfactant, which functions as a water-in-oil emulsifier, increasing skin permeability and changing the physicochemical characteristics of other compounds (2). It is used widely in cosmetics, ointments, creams, lotions, pharmaceutical preparations, agrochemicals, inks, and paints (3). While allergic contact dermatitis (ACD) from emulsifiers has been reported (4), this case series presents the first report of clinically relevant SS contact allergy described in children.

Case Series

6 paediatric patients, 5 atopics, 4 men, and 2 women, aged 3–10 years (mean age 5.5 years), were referred for evaluation of recalcitrant dermatitis. Custom patches were formulated for each patient based on environmental history. Patch tests were performed according to the North American Contact Dermatitis Group Standard protocol, with the exception that in subjects younger than 8 years (patients 1–4), a delayed reading was performed 3 D after the patch application and at 4 D for confirmation. No differences were noted in the 3 and 4 D readings.

SS 20% in pet. was tested in all subjects because of known previous exposures to Desitin Diaper Rash Ointment[®] (Pfizer Inc., New York, NY, USA) in patients 1, 2, and 4–6, and Baby Magic Creamy Baby Oil[®] (Playtex Products, Streetsboro, OH, USA) in patient 3 and current use of products containing this emulsifier. Positive reactions to SS were noted in all 6 patients.

Provocation use tests confirmed the clinical relevance of the SS with

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positive reactions noted to Cutivate Cream (GlaxoSmithKline, Brentford, Middlesex, UK) in patients 2, 3, and 5 and to Cutemol Emollient Skin Cream (Summers Laboratories Inc, Collegeville, PA, USA) in patient 4. Furthermore, patients 1 and 6 had positive provocation tests to triamcinolone acetonide (FOUGERA and Co., Division of Altana Inc., Melville, NY, USA) and Aristocort (Astellas Pharma Inc., Deerfield, IL, USA) creams, respectively. Both these creams contain sorbitol solution, a component of sorbitan sesquioleate (1). Notably, all 6 patients cleared when SS and sorbitol were avoided.

Discussion

In 1985, the Cosmetic Ingredient Review Expert Panel completed a safety assessment on sorbitan fatty acid esters, including SS, and concluded that they were safe for use in cosmetic formulations (3). Subsequent clinical testing demonstrated that sorbitan fatty acid esters were non-sensitizing mild skin irritants (2). Notably, SS was found to produce allergic reactions in less than 1% of patients screened by a series of emulsifiers commonly found in topical preparations (5). This being said, cosmetics and topical medications have been reported to be the exposure sources for ACD in patients allergic to SS (3). And, although contact allergy to emulsifiers is considered uncommon, we report our findings to draw attention to the allergenic potential of SS in products formulated for the pediatric population and the topical steroids preparations used to treat their dermatitis.

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