Contact dermatitis caused by ascorbyl tetraisopalmitate in a cream used for the management of atopic dermatitis

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Ascorbic acid and its derivatives are usually used as antioxidants. They are present in ‘anti-aging’ cosmetics to stimulate production of skin fibroblast procollagen and for the antioxidant properties. There are few case reports of contact dermatitis caused by vitamin C derivatives in cosmetic creams. We report here a case of severe contact dermatitis caused by ascorbyl tetraisopalmitate, an ester-modified ascorbic acid agent.
in a cream (Atopiclair®) used for the management of atopic dermatitis.

Case Report

An 83-year-old man had been hospitalized in 1998 for severe leg and foot dermatitis. Patch tests were positive for Disperse Orange 3, Disperse Yellow 3, and tetramethylthiuram. Avoidance of allergens enabled resolution of the contact dermatitis, but a moderate nummular eczema persisted, and was controlled by daily application of diflucortolone valerate cream. In 2011, during the corticosteroid maintenance phase, Atopiclair® cream (Sinclair Pharmaceuticals, Godalming, UK), a non-steroidal over-the-counter moisturizer used in the management of mild to moderate atopic dermatitis, was used (1). At D14 of application, the treated skin areas developed an acute contact dermatitis that rapidly spread to the limbs and trunk. Discontinuation of Atopiclair® and treatment with diflucortolone valerate cream resulted in complete healing of the acute contact dermatitis. Six months later, patch tests were performed with the ingredients of the cream provided by Sinclair Pharmaceuticals: ethylhexylpalmitate, butyrospermum parkii, pentylene glycol, butylene glycol, glycrrhetinic acid, capryloyl glycine, bisabolol, tocopheryl acetate, carbomer, ethylhexylglycerin, piroctone olamine, sodium hydroxide, allantoin, DMDM hydantoin, sodium hyaluronate, Vitis vinifera, disodium-EDTA, ascorbyl tetraisopalmitate, propyl galate, telmesteine, a mixture of arachidyl alcohol, behenyl alcohol, and arachidyl glucoside, and a mixture of glyceryl stearate and PEG-100 stearate. They were tested as provided by Sinclair Pharmaceuticals, that is, diluted at the final concentration in liquid paraffin or in water, using IQ Chambers® (Chemotechnique, Vellinge, Sweden). Test results were read after D2 and D4 in accordance with ICDRG guidelines. There was a ++ positive reaction at D4 to ascorbyl tetraisopalmitate. Vitamin C from food was well tolerated. The patient refused more investigation. According to Sinclair Pharmaceuticals, ascorbyl tetraisopalmitate was present at a concentration of 0.05% in the cream and in the test preparation.

Discussion

There are very few reports in the literature of cases of delayed allergic reactions to ascorbic acid derivatives. A generalized eczema in relation to vitamin C contained in food was reported, where oral uptake elicited symmetrical eczematous dermatitis, and a vitamin C-free diet led to complete resolution (2). A contact dermatitis caused by an anti-ageing product was attributed to ascorbic acid (patch test-positive), but oral vitamin C was well tolerated (3). Swinnen and Goossens reported an allergic contact dermatitis caused by ascorbyl tetraisopalmitate present in an anti-ageing skin care product; no cross-reactions with ascorbic acid or with two vitamin C derivatives, ascorbyl palmitate and isopropylpalmitate, were observed (4).

In our case, ascorbyl tetraisopalmitate was used as an excipient in an over-the-counter cream, Atopiclair®, a corticosteroid-free option for managing atopic dermatitis. In a multicentre study evaluating the efficacy and safety of Atopiclair®, 1 patient withdrew from the study because of a moderate contact dermatitis, but no patch testing was performed (1).

Our case is the first reported case of allergic contact dermatitis caused by Atopiclair® in the literature. Nonetheless, 10 cases of contact dermatitis have been reported to Sinclair Pharmaceuticals. Only ours was related to ascorbyl tetraisopalmitate; the other involved other ingredients. In conclusion, we recommend performing patch testing when Atopiclair® induces a flare-up of atopic dermatitis, to identify an eventual acute contact dermatitis and its causal agent. Vitamin C and its derivatives are likely to be increasingly seen as contact allergens with the increasing use of them.

References