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Allergic contact dermatitis caused by Dermabond®

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Topical skin adhesives such as Dermabond® (Ethicon, Norderstedt, Germany) may contain 2-octyl cyanoacrylate. These glues are used as alternatives to traditional sutures. We report a case of allergic contact dermatitis with negative patch test results but positive scratch test results with Dermabond®.

Case Report

A 30-year-old patient presented with a pruritic rash on the thighs 24 h after knee surgery, in which Dermabond® had been used for wound closure. The pruritic rash had extended within a few hours. The initial lesions showed localized eczema, followed within 24 h by a poorly defined erythematous, partly papular/urticarial and vesicular rash that extended to the thigh (Fig. 1). The patient was treated with antihistamines and topical corticosteroids.

Three months later, patch testing was performed with the European baseline series (including formaldehyde 1% aq.), an acrylate series, and Dermabond® 'as is'. The patch tests were applied to the patient's upper back with IQ Ultra® chambers (Destaing Laboratory, Grasse, France) for 2 days. As previously described (1), we also performed scratch tests with Dermabond®, with a mixture (1:1) of Dermabond® and povidone iodine (1% aq.), and with a mixture of Dermabond® and chlorhexidine (0.2% aq.), in order to reproduce the conditions of use. Povidone iodine and chlorhexidine were also both tested alone in the above-mentioned concentrations. Readings, performed according to ESCD guidelines (2), were performed on day (D) 2 and D3. Only scratch tests gave positive



Fig. 1. Urticarial and vesicular rash extending to the thigh 48 h after exposure.

results for Dermabond®, Dermabond® with chlorhexidine, and Dermabond® with povidone iodine, at D2 and D3 (Fig. 2). Patch tests with other allergens, including Dermabond®, the mixture of Dermabond® and chlorhexidine, and the mixture of Dermabond® and povidone iodine, gave negative results.

Discussion

Dermabond® is a skin adhesive containing 2-octyl cyanoacrylate, and was approved by the European Medicines Agency in 1999. Despite the widespread use

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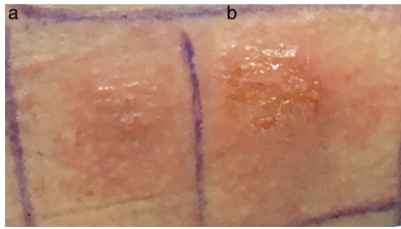


Fig. 2. Positive scratch test results on D3 – Dermabond® with povidone iodine 1% aq. (a) and Dermabond® (b).

of 2-octyl cyanoacrylate, few allergic reactions have been reported (1, 3–6). Once polymerized, cyanoacrylates degrade and release formaldehyde. However, contact allergy to formaldehyde was not diagnosed in our patient. In our case, the patch tests – on intact skin and under occlusion – with Dermabond®, chlorhexidine and povi-

done iodine gave negative results. In contrast, the scratch tests gave positive results. In other cases, a normal patch test, or even an open test, has been sufficient to show sensitization, except in the case report by Studer et al. (1), in which scratch tests were also required. We can speculate that bypassing of the epidermal barrier in a scratch test, which is quite similar to the clinical application for wound closure, allows the penetration of greater amounts of the hapten, causing the clinical response.

To the best of our knowledge, we report the second case in which there were negative patch test results with Dermabond®, but in which positive scratch test results confirmed contact allergy. In cases of suspected allergic contact dermatitis caused by 2-octyl cyanoacrylate, patch tests with Dermabond® and formaldehyde should be performed. However, in the case of a negative reaction, scratch tests should be used to confirm or rule out sensitization to Dermabond®.

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