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Allergic contact dermatitis caused by prednicarbate presenting as chronic hand eczema

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The frequency of contact allergy to corticosteroids is estimated to be between 0.2% and 5% (1). This wide variation might be caused by the variety of formulations employed in each country and the misdiagnosis of this entity.

Case Report

The patient was a 37-year-old black woman who worked as a waitress and had no personal medical history of interest. The patient consulted because of desquamative lesions on the backs of both hands that had been resistant to treatment with topical and systemic corticosteroids for a year (Fig. 1a). The lesions were treated with methylprednisolone aceponate, clobetasol propionate, betamethasone dipropionate, and prednicarbate, but with little improvement. Subsequently, the patient was treated with systemic prednisone (30 mg/day) for 1 month and tapering dosing afterwards, with good control but reappearance of the lesions after withdrawal. Skin biopsy showed spongiotic dermatitis.

The patient was then referred to our Contact Allergy Unit, where patch tests were performed with the Spanish Contact Dermatitis Research Group baseline series (TRUE Test®; Stallergenes Ibérica, Madrid, Spain) and a cosmetic series (Chemotechnique, Vellinge, Sweden). The tests showed positive reactions to hydrocortisone 17-butyrate and budesonide (both +/++ on D2, D4, and D7). These positive reactions were interpreted

as possible cross-reactions, because the patient had never used these corticosteroids. To assess their relevance, we decided to further patch test the patient with the Chemotechnique corticosteroid series, her own cosmetics, the corticosteroids that she had used (methylprednisolone aceponate 0.1% cream, clobetasol propionate 0.05% cream, betamethasone dipropionate 0.05% cream, and prednicarbate 0.25% cream, all 'as is') and Lipikar Baume® 'as is' (La Roche-Posay Laboratories, La Roche-Posay, France) with Curatest® chambers (Lohmann & Rauscher International GmbH & Co., Rengsdorf, Germany), fixed with Micropore® (3M Health Care, Borken, Germany). Only the tests with prednicarbate 0.25% cream (Batmen® cream) gave positive results (+ on D2, D4, and D7). We contacted the laboratory that manufactures and distributes Batman® cream in Spain, Menarini, who sent us the data with the excipients and the active principle. We patch tested these, and found positive ring-shaped reactions to prednicarbate 0.1% ethanol (++) and prednicarbate 1% ethanol (++) and prednicarbate aq. (+) at D2, D4 (Fig. 1b), and D7. The mechanisms resulting in a ring-shaped reaction are not fully clear. Some authors think that it can probably be explained by the anti-inflammatory effect of the corticosteroid, which inhibits the allergic reaction under the chamber, where, owing to occlusion, the concentration of the molecule is higher (2). Another possible explanation is that the concentration of the corticosteroid molecule in ethanol may not be uniform throughout the entire chamber and the pressure under the flange of the ring allows better penetration of the substance (3). Most authors recommend ethanol as a vehicle for testing corticosteroids, except for budesonide and tixocortol pivalate, for which pet. is recommended (1). We used aq. by mistake, and, even in a suspension, a positive result was obtained.

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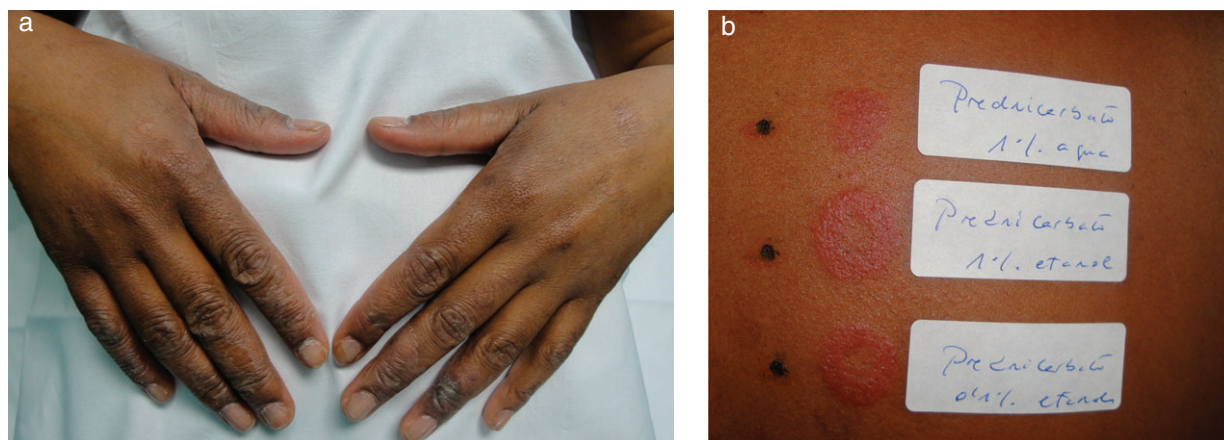


Fig. 1. (a) Eczematous lesions with fine desquamation on the backs of both hands. (b) Positive reactions to prednicarbate (D4).

All excipients (liquid paraffin, Tween-60, octyldodecanol, sorbitan monostearate, myristyl alcohol, benzyl alcohol, EDTA, stearyl alcohol, and cetyl alcohol) gave negative results. Four patients with chronic eczema were patch tested, as controls, and the tests gave negative results.

The patient was diagnosed as having allergic contact dermatitis caused by prednicarbate with possible cross-reaction to budesonide and hydrocortisone 17-butyrate. In our opinion, the other topical corticosteroids that the patient had used did not contribute to the lesions, as none of them, patch tested 'as is', gave a positive result. We tried to contact the laboratories responsible for these preparations, but they did not answer our request. The previous moderate to poor therapeutic response to these compounds could also be explained by additional irritant aetiology of hand dermatitis, as the patient worked as a waitress at the time, with poor skin protection and care. The lesions were treated with tacrolimus 0.1% ointment once daily for a month and corticosteroid withdrawal, with total resolution.

Discussion

Allergic contact dermatitis caused by topical corticosteroids usually manifests with eczema that does not

respond to, or even worsens with, topical treatment. Clinical manifestations can be localized or generalized, mimicking cutaneous subacute lupus (4), genital oedema (5), or erythema multiforme (6). Patients suffering from chronic dermatological conditions or those who employ over-the-counter compounds are at most risk.

Prednicarbate is a topical non-fluorated corticosteroid; it is hydrolysed by cutaneous esterases to prednisolone 17-ethyl carbonate, and then to prednisolone. Prednicarbate allergy is not uncommon; it was present in over one-third of the 315 corticosteroid-allergic patients in one clinical study (1). Recent studies have suggested that corticosteroid molecules halogenated in the B ring and methylated at C16 (D ring) would induce less contact allergy, because the molecule is more stable. Conversely, corticosteroid molecules without these characteristics would be degraded faster, forming cyclic compounds stabilized with arginine, making these more prone to be sensitizers (7).

Contact allergy to corticosteroids represents a diagnostic challenge. Performing patch tests with topical corticosteroid preparations 'as is' has proven very useful, because most molecules, like prednicarbate, are not available as standardized allergens, and this therefore seems to be the only method to achieve the correct diagnosis.

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