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DISCLOSURES: We have no conflicts of interest to disclose.

KEY WORDS:

Toes eczema. Allergic contact dermatitis. Tioconazole. Undecylenic acid. Nail solution.
Onychomycosis. Patch test. Repeated open application test. Case report.

Undecylenic acid (CAS no. 112-38-9) has antifungal and antibacterial effects. For this reason, it is used along with imidazole antifungals.

CASE REPORT

A 64-year-old non-atopic woman was referred due to chronic eczema on the dorsum of the toes, which had not improved in spite of applying topical corticosteroids (Figure 1). Before, she had applied multiple antifungal creams and solutions onto the nail plate and

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/cod.13195

periungual skin of all toes prescribed by her general physician for suspected onychomycosis.

A repeated open application test with commercial topical corticosteroids (Lexxema cream and Peitel cream) as well as multiple antifungal products brought in by the patient (Daktarin, Ciclochem, Trosid nail solution, Trosid cream) was only positive for Trosid nail solution on day (D) 4. This product contained tioconazole, ethyl acetate and undecylenic acid. Therefore, the patient was patch tested with the Spanish baseline series, econazole 1% alc., miconazole 1% alc. and tioconazole 1% pet. (Chemotechnique Diagnostics, Vellinge, Sweden) and undecylenic acid 1, 2 and 4% pet., respectively (Corbí Pharmacy, Valencia, Spain) on Finn Chambers on Scanpor tape (SmartPractice, Phoenix, Arizona). Readings on D2 and D4 resulted positive (++/+++) for all concentrations of undecylenic acid (Figure 2). Patch tests with undecylenic acid 1, 2 and 4% pet. were negative in 20 controls.

After stopping the application of Trosid nail solution the lesions improved rapidly. Multiple cultures of nail plate were negative. Finally, the patient was diagnosed with onychodystrophy and allergic contact dermatitis (ACD) to undecylenic acid.

DISCUSSION

Undecylenic acid is used as part of antifungal nail solutions, powders or deodorants, and also in commercial nail lacquers and dental products in order to prevent *Candida* biofilm formation.¹ Despite being a widely used compound, ACD to undecylenic acid is apparently not frequent, and only two cases have been previously reported in the literature.^{2, 3} This is the second reported case due to a nail solution. Probably the nail lacquer formulation facilitates sensitization due to the increase of concentration of its components when dried and because of the application of the product directly to the nail folds and hyponychium, as well as to the nail plate, ie, locations where drugs penetrate more easily.⁴ Allergic reactions of oral mucosa have hitherto not been reported. Nevertheless, it would be advisable that sensitized patients warned dentists in order to avoid the use of undecylenic acid.

The optimum patch test concentration of this compound has not been demonstrated; 1, 2, 2.5 and 4% pet. have been used, according to the published data.^{3,5,6} In our opinion, a concentration of 1% pet. would be sufficient to elicit a response.

Undecylenic acid is increasingly used in cosmetic products such as commercial nail lacquers which manufacturers promote for the prevention of fungal nail infections. This could entail a future increase of the incidence of sensitization to this compound.

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FIGURES



Figure 1: Eczema on the dorsum of the toes, as well as, hyperkeratosis of the first toenail.

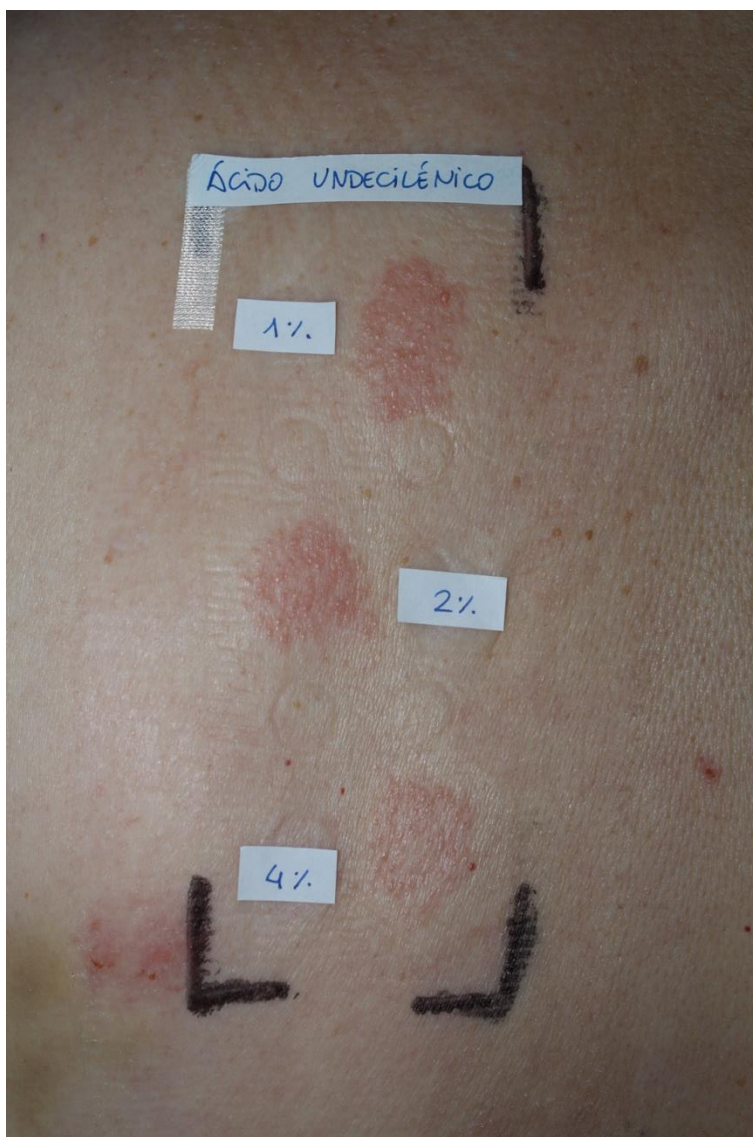


Figure 2: Positive result (++) to undecylenic acid 1, 2, 4% pet. patch test at 48 hours.