

Onychomadesis caused by efinaconazole

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doi:10.1111/cod.12658

Key words: antifungal agent; case report; contact dermatitis; efinaconazole; onychomadesis.

Onychomadesis is defined as exfoliation of the nail plate from the nail bed (1). Although various causes of onychomadesis have been reported (1), allergic contact dermatitis has hitherto not been reported as a cause. Moreover, only 1 case of allergic contact dermatitis caused by efinaconazole has been reported so far (2). Herein, we report a case of onychomadesis resulting from allergic contact dermatitis caused by efinaconazole.

Case Report

A 66-year-old Japanese man with a 1-month history of exfoliative erythema on both soles and interdigitally consulted our hospital. He reported thickening of all toenails over a period of 20 years, and that various topical treatments had been prescribed. Allergic contact dermatitis was suspected, and a steroid ointment was administered. After 2 months of treatment, the patient's condition was substantially improved; however, nail deformities remained. Fungal hyphae were detected in potassium



Fig. 1. Clinical appearance (a) after 1 week of treatment with efinaconazole solution, (b) after removal of the nail in (a), and (c) 1 week after efinaconazole discontinuation and the start of difluprednate administration.

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Conflicts of interest: The authors declare no conflicts of interest associated with this article.

Table 1. Patch test results

Allergens		D2	D3
Ingredients of 10% topical efinaconazole solution			
1	Efinaconazole	+	+
2	Decamethylcyclotrasiloxane	–	–
3	Diisopropyl adipate	–	–
4	Alkyl lactate (C12–C15)	–	–
5	Anhydrous citric acid	–	–
6	Dibutylated hydroxytoluene	–	–
7	Disodium edentate hydrate	–	–
8	Ethanol	–	–
Selected prescribed topical agents			
12	Mixed ointment consisting of luliconazole and clobetasone butyrate	–	–
19	Luliconazole cream	–	–
20	10% topical efinaconazole solution	+	+

hydroxide preparations from his toenails. Hence, tinea unguium was diagnosed, and a 10% topical solution of efinaconazole (Kaken Pharmaceutical Company, Tokyo, Japan) was prescribed.

After 1 week of this topical treatment, the patient presented with redness, swelling and onycholysis affecting all toes. All toenails were macerated and softened, and the nail plates had separated from the nail beds (Fig. 1a). We were able to easily remove all of the toenails by using tissue forceps and iris curved scissors (Fig. 1b). A detailed history showed that the previously prescribed topical agents had included efinaconazole solution. Therefore, we suspected allergic contact dermatitis caused by the efinaconazole, and we prescribed 0.05% difluprednate ointment, which led to reductions in erythema and swelling after 1 week (Fig. 1c).

Patch testing was performed with several previously used topical agents, including efinaconazole solution, tested 'as is', and all constituents of efinaconazole solution (at concentrations as in the product, provided by Kaken Pharmaceutical Company; the concentrations are proprietary except for the active ingredient). The patch test was applied to the back, and occluded until day (D) 2. Readings taken on D2 and D3 according to ICDRG criteria are summarized in Table 1. The efinaconazole product 'as is' and a 10% solution of efinaconazole in ethanol (eth.)

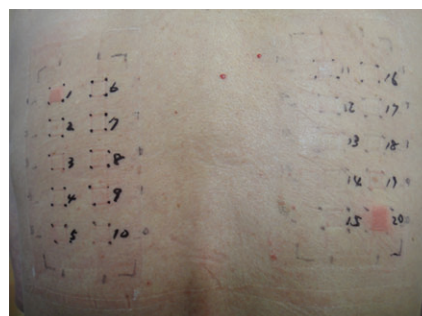


Fig. 2. Positive patch test reactions to a 10% solution of efinaconazole in eth. (No. 1) and a 10% topical solution of efinaconazole 'as is' (No. 20) on D2.

elicited positive reactions (Fig. 2). Therefore, the diagnosis of allergic contact dermatitis caused by efinaconazole was made.

Discussion

Hardin et al. reviewed previous reports of onychomadesis, and classified the causes as follows: autoimmune diseases, major medical illnesses, medication-induced, infections, and neonatal and idiopathic cases (1). Even this current and extensive review did not include onychomadesis caused by allergic contact dermatitis, and our case is the first report of onychomadesis caused by allergic contact dermatitis.

Efinaconazole is an antifungal agent that inhibits 14 α -demethylase and blocks ergosterol biosynthesis. Its strong penetration of the nails is associated with its effectiveness against tinea unguium (3, 4). In our case, the strong penetration may have led to contact dermatitis not only on the paronychium but also on the subungual areas, resulting in onychomadesis. It should therefore be considered that efinaconazole can cause allergic contact dermatitis that is severe enough to cause onychomadesis.

Acknowledgements

All constituents of efinaconazole solution were kindly provided by Kaken Pharmaceutical Company.

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