

Topical Treatment of Onychomycosis With Efinaconazole Solution 10%

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Onychomycosis, a common nail infection that often is associated with substantial patient distress, disability, and pain, is a challenge to manage successfully. This report presents the case of a 44-year-old man with moderate distal lateral subungual onychomycosis (DLSO) of more than 5 years' duration and discusses effective treatment with efinaconazole solution 10%, a new topical antifungal, once daily for 48 weeks. At baseline, 50% of the great toenail was affected and laboratory test results were positive for Trichophyton rubrum. Mycologic cure was noted at week 36 with complete cure observed at the end of treatment (week 48). This case demonstrates for physicians that efinaconazole solution 10% is a promising new topical treatment of onychomycosis and emphasizes the importance of mycologic cure as an early indicator of treatment success.

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Onychomycosis is a common nail disease^{1,2} that often involves several nails.³ It is more common in males, patients with human immunodeficiency virus or diabetes mellitus, and older individuals.⁴ Successful management of onychomycosis can be challenging due to the limited availability of effective treatments, patient adherence, and recurrence or reinfection. The disease often is associated with substantial distress, disability, and pain, all of which can affect the patient's quality of life.⁵⁻⁹

Oral treatments generally are considered to be more effective than topical antifungals¹⁰; however, potential drug interactions limit use in many individuals, especially elderly patients who may be on multiple medications or have other comorbidities.^{11,12} Safety concerns associated with oral treatments include hepatotoxicity, cardiovascular disease, rash, and hypogeusia.

Many patients with onychomycosis generally prefer topical treatment,¹⁰ leading to extensive product development programs over the last 10 to 15 years; however, despite these efforts and many failed trials, no new topical onychomycosis treatments have been introduced for more than 10 years. To date, ciclopirox nail lacquer is the only topical therapy approved by the US Food and Drug Administration for the treatment of onychomycosis with reports of modest complete cure rates (5.5%–8.5%).¹³ Additionally, this therapy requires frequent nail debridement and alcohol to remove excess buildup of the lacquer from the ventral aspect of the nail plate to avoid additional infection.¹⁴

The main challenge in the development of effective topical antifungals for the treatment of onychomycosis has been to formulate a drug that can penetrate the nail plate and reach the site of infection in the nail bed with a high enough concentration to eradicate the pathogens.¹⁵⁻¹⁷ Two recent phase 3, multicenter, randomized, double-blind studies of efinaconazole solution 10% demonstrated that this topical triazole antifungal therapy is more effective than vehicle in treating distal lateral subungual onychomycosis (DLSO).¹⁰ Herein, a patient with DLSO who was enrolled in one of the trials is presented along with a description of the clinical and mycologic clearance using efinaconazole solution 10%.

Case Report

A 44-year-old man presented with moderate DLSO of the great toenail of more than 5 years' duration. Fifty percent of the great toenail was affected (Figure, A),

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and laboratory test results from the baseline fungal culture were positive for *Trichophyton rubrum*. In total, 5 toenails were infected.

The patient was treated according to study guidelines¹⁰ with efinaconazole solution 10% once daily for 48 weeks. The product was applied to the clean and dry nail plate surface, lateral and proximal nail folds, hyponychium, and undersurface of the free edge of the nail plate. The patient was assessed for efficacy and safety at 12-week intervals postbaseline (weeks 12, 24, 36, and 48) with a follow-up at 4 weeks posttreatment (week 52).

Progressive improvement was seen throughout the treatment period and at follow-up. At week 12, the total affected area of the toenail had decreased to 30%. By week 24, 10% of the toenail was affected (Figure, B), with a positive potassium hydroxide (KOH) test and negative fungal culture. By the end of treatment (week 48), the great toenail had 0% involvement; however, 2 other toenails still were affected. Both the KOH test and fungal cultures were negative from week 36. At 4-week follow-up (week 52)(Figure, C), there was no evidence of onychomycosis, no other toenails were affected, and the KOH and fungal cultures remained negative.

The patient reported no redness, swelling, burning, itching, or vesicle formation during treatment. There were no adverse events related to topical treatment with efinaconazole solution 10%. In addition to the clinical results, the patient also noted satisfaction with the improvement and appearance of his toenails. At baseline, he noted yellowing or discoloration of the toenails and reported that his condition was bothersome. He was embarrassed by the appearance of his nails, felt self-conscious, and had difficulty wearing shoes. At the end of the study, the patient reported that his condition was no longer bothersome, and his prior embarrassment, pain, and discomfort were no longer a problem. Overall, he was satisfied with the improvement in the condition of his toenails.

Comment

Onychomycosis is notoriously difficult to treat and requires a long-term management program. Key goals of onychomycosis treatment include eradication of pathogens, restoration of healthy nails, and prevention of recurrence. Patients often present with a long history of onychomycosis; substantial nail involvement, often with multiple nails affected (as in the case presented here); and usually require oral therapy. The addition of an effective topical antifungal to the physician's therapeutic armamentarium would address an important unmet medical need; however, modest efficacy has limited the use of topical therapies to only the mildest cases of onychomycosis.¹⁸



Onychomycosis in the right great toenail at baseline (50% affected)(A), week 24 of treatment with efinaconazole solution 10% (10% affected)(B), and 4-week follow-up posttreatment (week 52)(0% affected)(C).

Quickly assessing clinical effectiveness of a treatment and maintaining patient motivation can be problematic, as toenails can take as long as 78 weeks to grow out.^{19,20} As a result, mycologic cure is considered an important precursor in evaluating treatment success, as it precedes clinical cure by several months.²¹ In this case, mycologic cure was apparent from week 36, whereas complete cure (mycologic cure

with 0% involvement of the target nail) was seen by the end of treatment (week 48) and was maintained 4 weeks posttreatment (week 52).

Conclusion

The results of treatment with efinaconazole solution 10% in this case of moderate DLSO are encouraging, demonstrating both mycologic and complete cure as well as improved patient satisfaction. An effective topical antifungal for the treatment of onychomycosis is essential in the management of onychomycosis, and more extensive data are needed.

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