

Tacrolimus-Induced Tinea Incognito

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Tacrolimus and pimecrolimus represent a new class of topical nonsteroidal medications currently used in the treatment of a variety of inflammatory skin lesions. We report the case of a patient in whom topical tacrolimus therapy resulted in widespread lesions of tinea incognito. This case shows that partial treatment of dermatophytosis with griseofulvin may obscure the diagnosis. It also suggests that topical tacrolimus appears capable of inducing widespread dermatophytosis. The clinical appearance in this case was similar to tinea incognito induced by a topical corticosteroid.

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The term *tinea incognito* is generally used to describe a dermatophytic infection whose appearance is modified by the use of corticosteroids.¹ Steroids suppress local immunity, thus promoting fungal growth. Lesions often lack the degree of inflammation associated with tinea, and diagnosis is often delayed. Tacrolimus is 1 of 2 topical macrolide calcineurin inhibitors with potent immunomodulatory activity approved in the treatment of atopic dermatitis. We describe the case of a patient with widespread tinea incognito secondary to topical tacrolimus.

Case Report

A 9-year-old black male child presented to the dermatology clinic with large erythematous and scaly patches on his face, neck, and trunk (Figures 1 and 2). Discrete patches of scale with brittle hair were noted on his scalp. Results of a potassium hydroxide (KOH) examination of his skin revealed fungal hyphae, and results of another KOH examination of his broken scalp hair revealed large spore endothrix (Figure 3).



Figure 1. Annular erythematous and scaly patches on the face.

One year before presentation, the child and his 4-year-old brother were treated with a 6-week course of griseofulvin 12.5 mg/kg per day for tinea capitis, and his mother was treated with topical antifungal agents for tinea corporis. Both the mother's and the brother's lesions were cleared with treatment, but our patient relapsed quickly after treatment and was given an additional 2-week course of griseofulvin and topical antifungal agents. After many months of topical antifungal therapy, the patient was evaluated at a pediatric dermatology clinic. Results of a KOH examination of his skin scrapings at that time were negative for fungal elements. A diagnosis of seborrhea petaloides was made, and topical tacrolimus was initiated. After one month of topical tacrolimus, the child presented to us with the lesions described. He was treated with griseofulvin 25 mg/kg per day. After 2 weeks of treatment, the patient developed extensive scalp pustulation, which responded to a 5-day course of prednisone. Griseofulvin was continued, with full resolution of the dermatophytosis.

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Figure 2. Large annular erythematous and scaly patches on the scalp, neck, and trunk.

Comment

Dermatophytes invade keratin in the stratum corneum of skin, nails, and hair, eliciting a local host immune response characterized by local inflammation and scaling. Similar clinical presentations may be seen in eczema, seborrheic dermatitis, and lupus erythematosus.^{2,3} The diagnosis is even more challenging when dermatophyte lesions are modified by treatment. In this case, the patients were prescribed tacrolimus after the KOH examination and after the clinical appearance of dermatophytosis had been obscured by partial treatment with griseofulvin and topical antifungal medications. Application of tacrolimus then resulted in generalized dermatophytosis, similar to that seen after application of a potent corticosteroid.

Tacrolimus is a potent macrolide immunomodulator that, by blocking calcineurin activity, appears to inhibit both the release of inflammatory cytokines and the activation of T cells.⁴ Tacrolimus is highly efficacious in the treatment of atopic dermatitis and shows minimal adverse effects, both locally and systemically.⁴ Corticosteroids may work through similar mechanisms of immune suppression, and though effective and potent, are known to cause significant local and systemic adverse effects.

Tacrolimus and pimecrolimus offer several advantages over corticosteroids, such as lack of skin atrophy and low systemic bioavailability.⁴ With this demonstrated efficacy and safety profile, tacrolimus

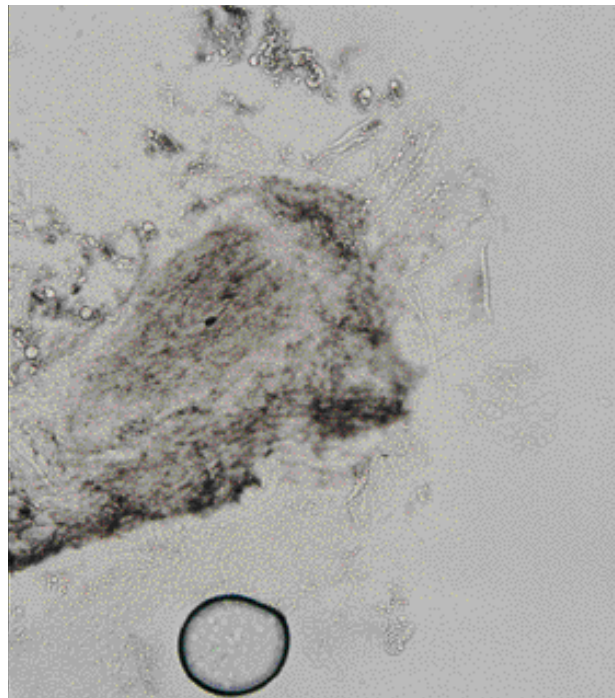


Figure 3. Potassium hydroxide examination of broken scalp hair reveals large spore endothrix (original magnification $\times 20$).

use has spread from the treatment of atopic dermatitis to the treatment of other skin disorders, such as psoriasis, seborrheic dermatitis, lichen planus, pyoderma gangrenosum, contact dermatitis, and graft versus host disease.^{5,6}

With increasing use of noncorticosteroidal topical immunomodulators such as tacrolimus, we may expect to encounter additional patients with atypical manifestations of dermatophytoses as a result of topical macrolide use. In our patient, tacrolimus showed that it has the potential to induce worsening of dermatophytosis in a manner similar to a topical corticosteroid.

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