

Intractable *Tinea corporis*: Simmering in the COVID-19 Era

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Abstract

In the lockdown phase of COVID-19 pandemic, some other infections are being overlooked because of the overwhelming presence of this disease. We present a case of 42-year-old female with intractable *Tinea corporis* infection. She was immunocompetent, non-diabetic and practiced hygienic habits but not showing any improvement to common topical and oral medications. This case was reported just before lock down phase, in an outdoor of dermatology in a tertiary care hospital of Eastern India.

Keywords: *Tinea corporis*; COVID-19 pandemic; Dermatophytes

1. Introduction

Dermatophytes are pathogenic fungi that have the capacity to invade keratinized structures such as skin, hair, and nails. These infections are known as dermatophytoses and are caused by species of three genera - *Trichophyton*, *Epidermophyton*, and *Microsporum*. Based on their natural habitat, they are classified into three groups - geophilic, zoophilic, and anthropilic species. The typical lesion is a pruritic-ringed plaque, which is usually erythematous, scaling, and with clearly outlined margins. Dermatophytosis is one of the most common skin diseases worldwide, especially in tropical countries like India. Various antifungal agents (both topical, systemic or combination of both) have been used for the treatment of these infections. We present a case of recalcitrant *Tinea corporis* who had taken antifungal treatment and did not respond completely to therapy and had recurrent lesion within 1 month of stopping the therapy during lockdown phase of COVID 19.

2. Case Report

A 42-year-old female presented with pruritic, erythematous patches in the abdominal region around the navel and similar ones in the back along the sacral area (FIG. 1-3). These lesions had partial central clearing and well demarcated margins with tiny vesicles with associated paronychia (involvement of nail). Microscopical examination with Potassium hydroxide (KOH)

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preparation of skin and nail scraping revealed florid hyphae. She gave a history of ring like lesions in the same location a month back for which she had received an empirical treatment of topical clotrimazole along with oral antifungal agent for two weeks. But there was repeated resurgence of the lesions even after completing her therapy. The patient was then placed on Fluconazole 150 mg (once a week) for a month but didn't show any improvement. Then treatment was followed up with oral Itraconazole 100 mg twice daily for 30 days (Liver function test was performed before and after therapy and found within normal limit). The patient showed improvement and with complete resolution at the end of Itraconazole therapy. Pulse therapy (200 mg twice daily) with Itraconazole will be continued for nail infection.



FIG 1. Chronic Paronychia.



FIG 2. Patches involving Right Side of Breast even after 4 weeks of Oral Fluconazole Therapy.



FIG 3. Erythematous Patches in the Abdominal Region around the Navel (Patient was on Topical Medications).

3. Discussion

We presented a case of a 42-year-old female with resistant *Tinea corporis* infection. She was immunocompetent, non-diabetic and practiced hygienic habits but was mildly obese. There was no recent report of any skin disease in the family. She had onychomycosis in her finger nails which might have acted as the reservoir for the fungal infection to reappear.

Tinea infection or Dermatophytosis is a common problem in tropical and subtropical country where humidity, perpetual moist and warm environment and unhygienic habits predispose to such infections more readily. Various antifungal agents have been used for the treatment of these infections. Most common systemic agents used are Terbinafine, Fluconazole, and Itraconazole [1]. Although there is a rising trend of patients who tend to relapse following cessation of antifungal therapy, the relapses have not been conclusively proven to be consequent to merely resistance.

Dermatophytes exclusively secrete multiple serine-subtilisins and metallo-endoproteases (*fungalysins*) aimed at digestion of the keratin network and penetration of the skin [2]. Several factors are responsible for the resurgence or chronicity of *tinea* infection in the host.

Firstly, the host's immune status is significant in his or her capability of responding to the fungal infection. The efficient and protective response against dermatophytosis is a cell-mediated response of the delayed-type hypersensitivity response, characterized by the action of macrophages and neutrophils, interferon- α secretion from type 1 T-helper lymphocytes and by some key cytokines like interferon- γ (IFN- γ). Any comorbid conditions that leaves the person immunocompromised like diabetes, HIV positive state, on steroid therapy all suppresses the TH1/17 response which is needed for inflammatory cells infiltration. Thus these conditions results chronicity of the infection.

Next important factor is the virulent potential of the infecting species of dermatophyte. The anthropophilic species usually cause more chronic infections, with a lower cellular infiltration in the skin [3]. A study has shown that anthropophilic *T. rubrum* has certain fungal mannans in their cell wall (*T. rubrum* cell wall mannan) which inhibits the lymphoproliferation of mononuclear leukocytes in response to dermatophytic antigens thus causing immunosuppression [4].

Several host factors skin trauma, excessive sweating predisposes to persistent *tinea* infection. Reinfection can also occur from other sites that acts reservoirs of the fungus.

The antifungal drugs that do not achieve high concentrations in the skin can be inefficient in curing the diseases. On the other hand, drugs with keratophilic and lipophilic property, when given in higher doses will have reservoir effect and will lead to better mycological clearance [5]. Compliance to the treatment regime is of utmost importance for proper resolution of the lesions and prevention of relapses.

4. Conclusion

Several points need to be assessed while handling a case of dermatophytosis. The complex host- fungal interaction, climate factors, compliance to the therapy all play a crucial role in the successful treatment of recurrent and resistant *Tinea* infection.

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