

# Assessment of Etiology Pattern and Treatment of Tinea Infections in a Tertiary Care Hospital

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## Abstract

**Background:** The study provides an overview of aetiology, drug utilization and pattern of widespread of tinea infections in a tertiary care hospital. **Aim:** Assessment of pattern of aetiology and management of widespread of Tinea infections. **Objectives:** To assess the aetiology of Tinea infection, to evaluate the clinical presentation and outcome of widespread of Tinea infection and to evaluate the drug utilization pattern of patients with newly diagnosed and history of tinea infection. **Methodology:** A prospective study conducted for two months included patients visited dermatology OPD with a history and recent diagnosis of tinea infections. Patient details like demographic, presenting complaints, past medical and medication history were noted in self-designed proforma. Assessment of widespread of tinea infections and drug utilization pattern were calculated and expressed as Mean  $\pm$  SD. **Results:** From a total of 100%, 51.35% were male aged between 21-30 years (32.43%). The most common area of exposure for lesions was localized (54.05%). The frequently used topical and systemic anti-fungals in patients with a history of tinea infections were Clobetasol (34%) and Itraconazole (38%) respectively. The manifestation of tinea cruris and corporis together was found to be 40.54% of the total cases. The current drug utilization pattern revealed the maximum usage of Azoles i.e. Luliconazole (45.65%) as topical and Itraconazole (39.13%) as systemic anti-fungal agents. **Conclusion:** The study highlights widespread of infections and drug utilization pattern of azoles and other anti-fungals for the management of tinea infections.

**Key words:** Dermatophytes, Superficial fungal infection, Tinea corporis, Tinea cruris.

## INTRODUCTION

Tinea corporis includes all superficial dermatophyte infections of the skin other than those involving the scalp, beard, and face, dorsum of hands and feet and groin. Although healthy individual have strong natural immunity against fungal infection, then also Tinea infections are increasing very fast.<sup>[1-2]</sup> Lesions usually lose their classic annular appearance. Instead of characteristics, the features of dermatophytosis including peripheral activation, central clearing, and prominent scaling, papules, pustules, nodules may develop. Thus, the disease is likely confused with different diseases like eczema types, seborrheic dermatitis, and psoriasis causing delay in itching an accurate diagnosis.<sup>[3-5]</sup> On the other hand, suppression of the itch of the anti-inflammatory effects of steroids or immunomodulator agents also helps the patient to neglect the disease. Some of the superficial Mycosis elicit a greater inflammatory response than others, and the non-inflammatory ones are generally more chronic. A variety of defects in the immunologic responses to the superficial Mycosis have been described. In some cases the defects may be found, whereas in others the infection, it may interfere with protective cell-mediated immunity against the microorganisms. A number of different mechanisms may underlie these immunologic disorders and lead to the development of chronic superficial Mycosis in individual patients.<sup>[6]</sup>

The prevalence of superficial fungal infection worldwide is 20–25% of which dermatophytes are the most common agents. Over the last few years, studies on epidemiology of dermatophytic infection in the developing countries,

especially in the tropical and subtropical countries like India, where the environmental temperature and relative humidity are high, have shown a rising trend in the prevalence of cutaneous dermatophytosis.<sup>[7]</sup>

Humidity and moisture provide a favorable environment for the fungi, making infections more common in skin folds, the groin or between the toes. Other factors such as increased urbanization including the use of occlusive footwear and tight fashioned clothes, has been linked to higher prevalence.

Tinea infection presents as itchy and scaly lesions. Patients with tinea capitis have a defined area of hair loss as the infected hair become very brittle and break easily. Skin infections often manifest as round scaly patches with reddish raised borders. Vesicles and pustules may also be seen along the borders of these well-demarcated circular lesions.

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The diagnosis of tinea infection involves undertaking investigations on the basis of patient's medical history and physical examinations. Other laboratory investigations such as Potassium Hydroxide (KOH) examination of skin scrapings and fungal culture, forms the basis of diagnosis.

Management with non-pharmacological therapy: Patients should be encouraged to wear loose-fitting garments made of cotton or synthetic materials designed to wick moisture away from the surface. Socks should have similar properties. Areas likely to become infected should be dried completely before being covered with clothes. Patients should also be advised to avoid walking barefoot and sharing garments.

### Pharmacological therapy

Tinea corporis, tinea cruris, and tinea pedis are generally responsive to topical creams such as terbinafine and butenafine, but oral antifungal agents may be indicated for extensive disease, failed topical treatment. Among various options, topical terbinafine for 4 weeks appears to be the treatment of choice for limited disease (tinea corporis/cruris/pedis). For more extensive disease, the choice is less clear. Both terbinafine (250–500 mg/day for 2–6 weeks) and itraconazole (100–200 mg/day for 2–4 weeks) appear to be effective. However, an appropriate dose and duration of administration which can produce mycologic cure and prevent recurrence remains elusive.<sup>[8]</sup> The present study aims to assess the pattern of etiology of tinea corporis, tinea cruris, tinea faciei, tinea capitis, tinea unguium and tinea pedis that highlights the series of fungal infections in the hospital setting and the drug utilization pattern.

### MATERIALS AND METHODS

An aggregate of 37 outpatients visited the Department of Dermatology in hospital between July 2018 to September 2018 with the complaints of skin rash with or without itching on the trunk as well as extremities. Patients were clinically diagnosed as tinea corporis, and some of them had another sort of tinea infection particularly tinea faciei and tinea cruris. Patients recently diagnosed and those to have a past history with anti-fungal treatment for tinea infections were incorporated into this study. Dermatological diseases other than tinea were excluded from the study. Deciding parasitic components with coordinate KOH examination or by the positive mycological culture were utilized to affirm the determination in few cases. The data related to study was collected through patient interviews and the customized patient profile form which was self designed. The collected data was analyzed descriptively.

### RESULTS

Out of 37 patients, 19 were male (51.35%) and 18 were female (48.64%) with a mean age of  $6.16 \pm 3.71$  (range; 21-30) years as shown in Table 1. Tinea cruris and corporis were more prevalent in early twenties and thirties. Twenty-two patients, either used topical steroids, antibiotics, or others, or delay treatment because of non-adherence. The mean duration of the disease was 15 (range 10-30) days.

Lesions were localized in 20 and generalized in 17 of the cases. The non-exposed area 54.05% was more frequently affected than exposed area 45.94% as shown in Table 1. Coexisting fungal infection was found in 59.45% of the cases, especially tinea faciei and tinea cruris.

The most frequently reported widespread infection was tinea cruris and corporis (40.54%) followed by tinea corporis (13.51%) as shown in Table 1. The management of tinea infections included use of topical and systemic antifungals. The most commonly used topical anti-fungals were luliconazole (45.65%) and ketoconazole (15.21%) as shown in the Figure 1 followed by Itraconazole (39.13%) as systemic antigungal agent as shown in Figure 2.

The frequently used topical anti-fungals in patients with a history of tinea infections were Clobetasol (34%) and Luliconazole (25%) as shown in Figure 3(a) while systemic anti-fungal prescribed was Itraconazole (38%) along with other systemic agents as shown in Figure 3(b).

### DISCUSSION

In the present study, amongst the various tinea infections, tinea cruris and corporis were found to occur frequently but the infection was found to be non-seasonal. Tinea corporis is traditionally described as an annular eruption (inflammatory or non-inflammatory), with fine scales represent approximately 40% of tinea infections, is a term ascribed to a dermatophyte infection with a typical.<sup>[9]</sup> Tinea incognito often presented a diagnostic challenge for clinicians because it mimics other dermatological conditions. In an Italian survey of 200 cases of tinea incognito, this disease was found to mimic, eczema, impetigo, lupus erythematosus, rosacea and psoriasis.<sup>[10]</sup> Topical and systemic anti-fungal therapy was initially prescribed for the patients as a clinical diagnosis of dermatitis, eczema and psoriasis. The easy availability of steroids, as well as prescription of steroids without considering superficial fungal infections in the differential diagnosis usually by physicians of primary health care, pharmacists, general people, or dermatologists may be the factor that facilitates the inappropriate steroid usage.<sup>[11]</sup> The most frequently reported agents in adult patients with tinea infection and a wide spread tinea cruris/corporis infection is Trichophyton rubrum followed by Trichophyton mentagrophytes. Predispositions to the superficial fungal infections include warmth and moisture, natural or iatrogenic immunosuppression, and perhaps some degree of susceptibility.

In addition to topical immunosuppressive therapy other risk factors for a wide spread tinea corporis infection and tinea incognito with atypical

**Table 1: Basic characteristics of study subjects.**

Characteristics	Value
Gender	
Male	19 (51.35%)
Female	18 (48.64%)
Age in years	
10-20	6 (16.21%)
21-30	12 (32.43%)
31-40	9 (24.32%)
41-50	4 (10.81%)
51-60	4 (10.81%)
61-70	2 (5.40%)
Area of exposure	
Localized lesions (Non-exposed)	20 (54.05%)
Generalized lesions (Exposed)	17 (45.94%)
Diagnosis	
Tinea cruris+ corporis	15 (40.54%)
Tinea corporis	5 (13.51%)
Tinea cruris	4 (10.81%)
Tinea incognito	4 (10.81%)
Tinea versicolor	4 (10.81%)
Tinea faciei	3 (8.10%)
Tinea unguium	1 (2.70%)
Tinea capitis	1 (2.70%)

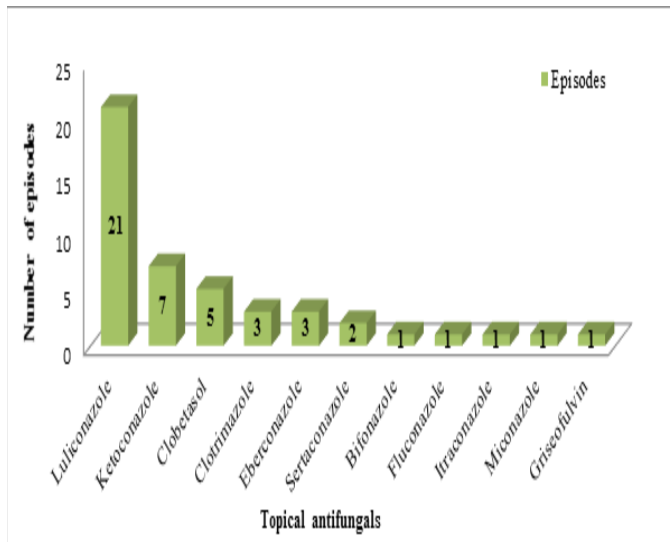


Figure 1: Use of topical anti-fungals.

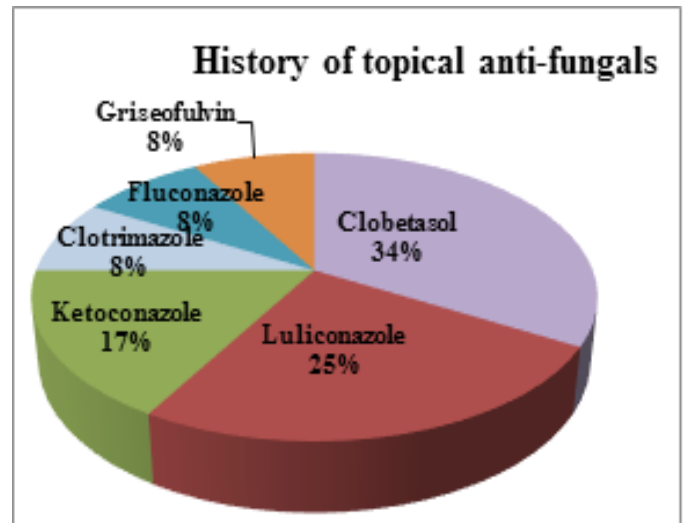


Figure 3(a): Patients with history of topical anti-fungals.

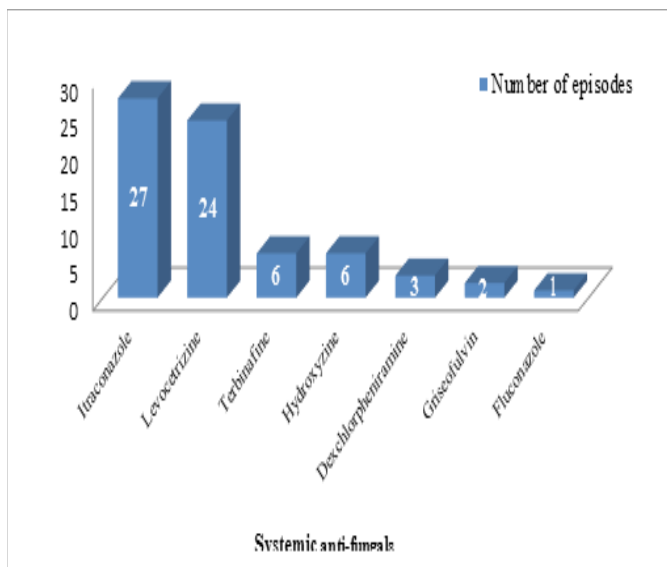


Figure 2: Use of systemic anti-fungals.

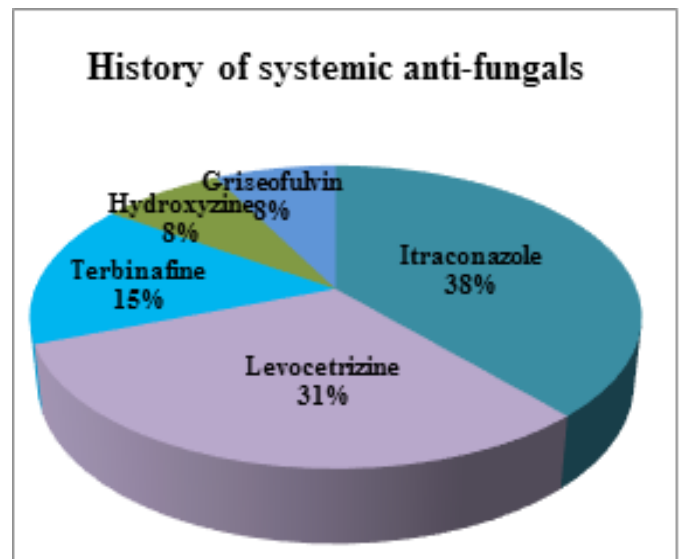


Figure 3(b): Patients with history of systemic anti-fungals

presentations also been proposed. The virulence of the organism and its invasive capacity, the site of infection, the host resistance, physiology and acquired host factors may all have a role to play.<sup>[12]</sup> Poor hygiene and unsanitary conditions associated with superficial dermatophyte infection.<sup>[13]</sup> Such risk factors with inability to visit dermatologists, easily getting topical steroids by hands, together with overcrowding of housing, and living with animals in the same houses may have contributed to the wide spreads infection and a typical appearance of our patients eruptions.

Luiconazole (45.65%) was the most commonly used topical anti-fungal agent in tinea cruris/corporis as twice daily application for 1-2 weeks whereas frequent use of itraconazole (39.13%) as systemic anti-fungal was reported in our study. This was in concordance with a study conducted in New Delhi where luiconazole, an azole antifungal had fungicidal action against *Trichophyton* species.<sup>[14]</sup>

## CONCLUSION

The study highlights the unusual appearance of a widespread tinea cruris/corporis infection with topical anti-fungals and systemic antifungals.

It underscores the importance of entertaining tinea infection in the various dermatological conditions in the hospital setting. Initiation with management of azoles and allyamines are the standard guidelines for tinea infections.

## RECOMMENDATIONS

Dermatophyte infections should be kept in mind in the differential diagnosis of a variety of dermatitis, mainly erythematous squamous diseases, particularly before prescribing topical or systemic steroids. The value of scrapings, culture and other examination can help confirm diagnosis.

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## CONFLICT OF INTEREST

The author declare that there is no conflict of interest.

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