

EPIDEMIOLOGICAL AND MYCOLOGICAL PROFILE OF TINEA CORPORIS AT A TERTIARY CARE CENTRE, SOUTH INDIA

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ABSTRACT

Tinea corporis is the most common type of dermatophytosis encountered in the clinical practice. Its prevalence is influenced by a number of demographic variables.

AIM

To evaluate the various epidemiological factors influencing tinea corporis and to isolate the fungal elements. Settings and design, cross-sectional study.

MATERIALS AND METHODS

A sum of 78 patients with clinical diagnosis of tinea corporis were subjected to direct microscopic examination and culture after a detailed history.

RESULTS

Majority of the patients were males (M:F ratio - 1.2:1) in the age group of 21-40 years (26.9%) with 66.7% of patients belonging to lower socioeconomic status; 72% of patients with recurrent tinea corporis were of lower socioeconomic class. *Trichophyton Rubrum* was the commonest isolate (62%) from tinea corporis. *Microsporum gypseum*, a geophilic dermatophyte was isolated in 14.2% of cases. Out of 78 cases, 53.8% were positive by culture alone.

CONCLUSION

Socioeconomic status is one of the major determinants for recurrent and chronic tinea corporis with patients of lower socioeconomic status more commonly affected and *Trichophyton rubrum* was the commonest isolate.

KEYWORDS

Tinea Corporis, Socioeconomic Status, *Trichophyton Rubrum*.

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INTRODUCTION

Dermatophytosis is an infection of skin, hair and nails caused by dermatophytes, a group of related filamentary fungi also known as ringworm fungi. These are moulds belonging to three genera of fungi, i.e. *Microsporum*, *Trichophyton*, *Epidermophyton*.¹ It poses a major public health problem and about 20% of the world's population suffers from dermatophytic infections.² Clinical presentation is varied and depends on the site of infection, species of fungus and on the immune status of the host.³

Tinea corporis is defined as dermatophytoses of the glabrous skin with exclusion of scalp, palms, soles and groin. The classical presentation is an annular lesion with scales across/along the entire erythematous border. *Tinea imbricata*, *tinea faciei*, *tinea incognita* and *Majocchi's granuloma* are some of the variations in tinea corporis. When the infection is due to zoophilic organism the lesions are seen on exposed skin, while due to an anthropophilic species it occurs in occluded areas.⁴

Though one of the earliest known fungal infections of the mankind, its prevalence is still increasing in our country as the hot and humid climate, aided by poor hygiene and overcrowding is conducive for the growth of the fungus. Hence, the present study was undertaken to know the demographic variables associated with tinea corporis and for isolation and identification of the species causing tinea corporis.

MATERIALS AND METHODS

A total of 78 patients with a clinical diagnosis of tinea corporis attending the outpatient department of a tertiary care centre between 2008 and 2009 were randomly included in the study. Ethical committee clearance was obtained from Institutional Review Board Committee. All case of tinea corporis including *tinea faciei* irrespective of age and sex with involvement of non-glabrous skin were included in the study. Other types of dermatophytosis like *tinea cruris*, *tinea pedis*, *tinea capitis*, *tinea barbae*, *tinea manuum*, *tinea unguium* and cutaneous candidiasis were excluded from the study. A detailed clinical history including age, sex, socioeconomic status (modified Kuppuswamy's socioeconomic scale⁵), occupation, education, duration, recurrence, family history, contact with animals or soil, associated systemic disorders and history of topical medications used were noted. Also, the morphology, number, scaling, margin, multiple site involvement were noted in a detailed proforma. After cleaning the area with 70% alcohol, skin specimens were collected by scraping across the inflamed margin of the lesion

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into the apparently healthy tissue with a glass slide. Scales were collected on the slide and 10% potassium hydroxide (10% KOH) was used for the direct microscopic examination after 30 minutes. The material was inoculated in Sabouraud's dextrose agar enriched with 0.05% chloramphenicol and 0.5% cycloheximide for primary isolation. The culture tubes were incubated at 28°C upto 2 weeks for the growth and the tubes were discarded only after 6 weeks in the absence of growth. The mycological identification was done by macroscopic (growth rate, colony morphology, pigmentation) and microscopic examination (lactophenol cotton blue mount) of the culture isolates.

RESULTS

Demographic Variables

In this cross-sectional study, seventy eight cases of tinea corporis consenting for the investigation were included. As shown in Table 1, 42.3% of cases were in the age group of 21-40 years; 16.6% (13) of cases were less than 10 years. Males outnumbered the females with a male-to-female ratio of 1.2:1. The youngest patient was 4 months old infant with tinea faciei; 32.6% (25) of patients were manual labourers (unskilled labourer) on daily wages with 66.7% (52) of cases belonging to upper lower (class IV - 32.7%) and lower (class V - 34%) socioeconomic class as per Kuppaswamy's socioeconomic class. The short duration recorded in the present study was 3 days in the infant of 4 months old. Chronic dermatophytosis with tinea corporis for more than 1 year was noted in only 4 patients. Of the four patients, one had HIV and the other diabetes mellitus and the two female patients had tinea corporis over the flanks. Recurrent tinea corporis was seen in 36% (28) of patients and 72% (20) of these patients belonged to lower and upper lower scale of socioeconomic status (Table 2). History of contact with infected family members was present in 22.6% (17) of cases and contact with animals was present in 6.5% of patients. Among the associated diseases, diabetes mellitus was present in 34% of cases followed by HIV infection in 17% of cases. These patients had extensive tinea corporis (Figure 1).

Topical application of steroids were seen in 16.6% (13) of patients. Of the 78 cases of tinea corporis included in the study, tinea incognito (Figure 2) (6.4%), tinea faciei (11.5%) and tinea imbricata (3.2%) were some of the variants noted. Mixed infections with both tinea cruris and tinea corporis were noted in 16.6% (13) of cases.

The overall positivity rate by KOH was 78.2%, while due to culture was 53.8%. (Table 3) Twenty seven (34.6%) were positive by KOH alone, while seven (8.9%) were positive by culture alone. Trichophyton rubrum (Figure 3a and b) was the predominant species isolated (62%) followed by Trichophyton mentagrophytes (Figure 4a and b) (21.4%), Microsporum gypseum (Figure 5a and b) (14.2%) and Epidermophyton floccosum (2.3%) as depicted in Table 4. Isolate obtained from chronic dermatophytosis was Trichophyton rubrum in two cases.

Sl. No.	Socioeconomic Class	Number (n%)
1	Upper (I)	6 (7.6%)
2	Upper middle (II)	9 (11.5%)
3	Lower middle (III)	13 (16.6%)
4	Upper lower (IV)	25 (32.7%)
5	Lower (V)	27 (34%)

Table 2: Socioeconomic Status of the Patients as per Kuppaswamy's Socioeconomic Status Scale

	KOH Positive (n%)	KOH Negative (n%)	Total (n%)
Culture positive (n%)	35 (44.8%)	7 (8.9%)	42 (53.8%)
Culture negative (n%)	27 (34.6%)	9 (11.5%)	36 (46.1%)
Total	61 (78.2%)	17 (21.7%)	78 (100%)

Table 3: Analysis of Direct Microscopy and Culture

Sl. No.	Isolate	Number (%)
1	T rubrum	26 (62%)
2	T mentagrophytes	9 (21.4%)
3	M gypseum	6 (14.2%)
4	E floccosum	1 (2.3%)

Table 4: Results of the Isolates

Sl. No.	Age Group (In years)	Number (n%)
1	0-10	13 (16.6%)
2	11-20	8 (10.4%)
3	21-30	21 (26.9%)
4	31-40	12 (15.4%)
5	41-50	11 (14.1%)
6	More than 50	13 (16.6%)
Total		78 (100%)

Table 1: Age Distribution of the Tinea Corporis



Fig. 1: Extensive Tinea Corporis over the Upper Back



Fig. 2: Tinea Incognito Over the 'V' Area of the Neck, Mimicking Chronic Actinic Dermatitis



Fig. 5a and b: Colonies of Microsporum Gypseum on Sabouraud's Dextrose Agar with Powdery Whitish Brown Colonies with Reddish-Brown Reverse

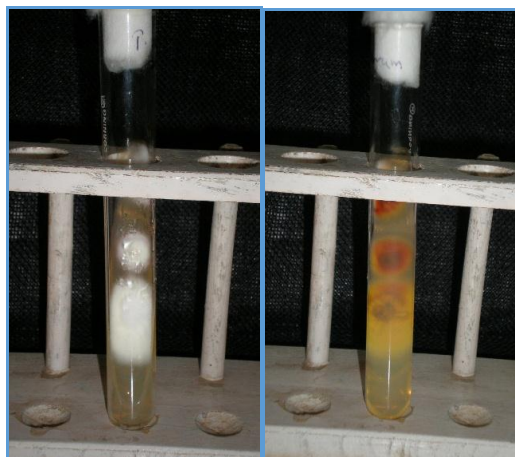


Fig. 3a and b: Colonies of Trichophyton Rubrum on Sabouraud's Dextrose Agar showing Fluffy White Colonies on Observed Deep Wine Red Reverse



Fig. 6: Tinea Imbricata Over the Neck



Fig. 4a and b: Colonies of Trichophyton Mentagrophytes on Sabouraud's Dextrose Agar showing Granular Creamy Colonies with No Pigment in the Reverse

DISCUSSION

Though a common condition encountered in the dermatology outpatient department, its prevalence is still on rise in a country like India owing to the favourable climatic conditions, which promotes the maintenance and transmission of the fungus. Epidemiological data changes with time. Hence, the present study was undertaken to study the changing trends and isolate the species associated with tinea corporis.

In the present study, 42.3% of the patients were in the age group of 21-40 years with males more affected than females. A similar trend was observed Sen and Rasul.⁶ This maybe as the young males are active working population of the society and hence they are more likely to be exposed to the infections in the immediate environment. Further, majority of our patients were manual labourers.

Further, it was noted that majority of our patients were manual and daily labourers and belonged to lower and upper lower socioeconomic class. We also noted that recurrent tinea corporis was more among the above-mentioned socioeconomic class which was also reported by Ranganathan S et al.⁷ In contrast to the observation made by Bindu V, we noted a positive family history in 22.6% of patients.⁸ An interesting finding in our study was that 40% of the cases with recurrent tinea corporis had positive family history and the common site for recurrent tinea corporis was flanks, which was also noted by Ranganathan S et al.⁷ This

may be due to the occlusive environment and sweating created by the tight garments worn by the patients.

In our study involving only tinea corporis, we found certain uncommon variants like kerion-like tinea corporis, anergic form of tinea corporis in airborne contact dermatitis,⁹ Majocchi's granuloma¹⁰ and tinea imbricata caused by *Trichophyton rubrum*¹¹ (Figure 6).

A slightly higher percentage of positivity was noted by direct microscopy alone and by culture alone compared to other workers,^{12,8} which may be as in the present study. The specimen for the test were collected from the non-glabrous skin. Only 8.9% were positive by culture alone. Hence, highlighting the importance of both KOH and culture in diagnosing the infection. In agreement with the study conducted by Venkatesan G et al,¹³ the ubiquitous fungus isolated in the present study was *T rubrum* followed by *T mentagrophytes*. Also in the present study a geophilic dermatophyte, *M gypsum* was isolated, which may be attributed to the contact of the patients with the soil. *T rubrum* was also the species isolated in chronic and recurrent dermatophytosis. *T rubrum* is an anthropophilic dermatophytes. It produces non-inflammatory mild lesions, which is often ignored by the patients.

In the present study, an attempt is made to know the epidemiological, clinical and mycological aspects of the tinea corporis, as it varies from time and place. From the present study, we noted that *T rubrum* is the commonest isolate. It is also the species isolated in tinea imbricata and chronic tinea corporis. We also noted that positivity rate of microscopy is higher in tinea corporis.

CONCLUSION

Tinea corporis though common is still a public health problem. It is related to socioeconomic status of the patients and is common in lower socioeconomic status in whom recurrent and chronic tinea corporis is common. Proper education regarding the good personal hygiene is a prerequisite in the management of tinea corporis.

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