CLINICO – MYCOLOGICAL PROFILE OF DERMATOPHYTIC SKIN INFECTIONS IN A TERTIARY CARE CENTER – A CROSS SECTIONAL STUDY.

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ABSTRACT

Introduction: *The prevalence of dermatophytosis differs from place to place and is governed by environmental conditions, personal hygiene and individual's susceptibility.*

Aim and objective: *This study is sought to determine the prevalence of dermatophytic skin infections and their causative agent in the population attending the Dermatology Out patient department.*

Material and methods: *A total of 117 patients with skin lesions resembling tinea infections attending out patient dept during a six month period (February 2004 to August 2004) were taken for study. Diagnosis was confirmed by microscopy and culture.*

Results: *Out of the 122 samples collected from 117 patients dermatophytes were isolated from 54.9 %,(67isolates) non-dermatophytes 6.6% (8 isolates) and candida from 4.1% (5 isolates). Tinea corporis accounted for 70.8 %(82 cases) followed by tinea cruris 18.8% (22 cases). Tinea faceii and tinea manuum 3.4% (4cases) each and mixed infection in 5 patients. The male to female ratio of the skin infection was 1.12:1 T. rubrum was the most common etiological agent in 45 cases (67.5%). T. mentagrophytes 18.0% (12 cases), other dermatophytes isolated were T. schoenleinii 4 , two each of E. flocossum and M.audouinii and one of M. nanum and M. canis.*

Conclusion: *Among the dermatophytic skin infections tinea corporis was the predominant clinical type and T.rubrum was the most common dermatophyte isolated.*

Key words*: Cutaneous fungus, dermatophytes, Tinea*

INTRODUCTION

Mycotic infections are world wide in distribution. However, superficial mycosis is more prevalent in tropical and subtropical countries including India, where heat and moisture play an important role in promoting the growth of these fungi [1, 2].

Fungal infections have attracted the attention of physicians and microbiologists in recent years due to various reasons like indiscriminate use of antibiotics, anticancer therapy and immunodeficient diseases like AIDS.

Sex, race and occupation have little recognized differential influence upon the frequency of dermatophytosis [3], however change in trends are noticed in the studies done by the later researchers.

In the current study, we have undertaken a clinico-mycological approach, correlating various demographic data such as age, and sex with identification of the fungus using standard techniques [3]. As the dermatophytic skin infections are more frequent when compared to those of hair and nails the study was confined to skin infections alone.

Materials and methods

A total of 117 consecutive patients with skin lesions resembling tinea attending the Dermatology Out Patient Department of Sri Ramachandra Medical College and Research Institute, Porur, Chennai, Tamilnadu were taken for the study over a period of six months (February 2004 to August 2004).

A detailed history of selected cases was taken in relation to name, age, sex, address, occupation, duration of illness and involvement of more than one site.

Samples were collected from the site of the lesion. Scrapings were taken with a blunt sterilized scalpel from the active site of the lesion using standard technique described earlier [3].

All the samples collected were subjected to microscopy and culture.

Following direct microscopic examination with 10% KOH, the scrapings were inoculated into slopes of duplicate sets of tubes containing

a) Sabouraud's dextrose agar with chloramphenicol
b) Sabouraud's dextrose agar with thiamine
c) Sabouraud's dextrose agar with chloramphenicol and cycloheximide (To prevent contamination with saprophytic fungi and bacteria.)
d) Dermatophyte test medium.

One set of the tube was incubated at 37°C and the other set at 25°C. The cultures were examined every two days for a period of one month for the presence of growth. The growth was observed starting from sixth day onwards. If no growth was found after 45 days it was considered negative for the growth of fungi.

Growths obtained were identified based on the colony morphology, microscopic appearance and other relevant tests as described by Emmons. The growth on the tubes was examined for gross morphology, pigmentation if any and slide cultures were put to identify up to species level.

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Results

A total of 11847 patients attended the OPD section of Dermatology, Venereology and Leprology during the period of our study. Hundred and seventeen of them fulfilled the criteria (not taken any treatment and also had infection for the first time) and hence taken up for the study. There were 62 men (53%) and 55(47%) women. The age of the patients ranged from 4-83 years, the mean age being 35.8 years. There was preponderance of males in the 11-30 years and females in the age group of 31-50 years. Very few cases were encountered in the extremes of age. Males were marginally more affected than females, male to female ratio being 1.12:1. The sex distribution of various clinical types is depicted in Table1.Tinea corporis was the predominant lesion in the present study occurring in 82 (70.08%) patients followed by tinea cruris in 22 (18.8%), tinea faceii and tinea manuum each in 4 (3.41%) and mixed infection in 5 (4.27%) patients.

Table-1

SEX DISTRIBUTION OF DIFFERENT CLINICAL TYPES OF DERMATOPHYTES			
Clinical types	**Male**	**Female**	**Total**
T.corporis	32	50	82
T.cruris	20	2	22
T.manum	3	1	4
T.facieii	2	2	4
Mixed	5	0	5
Total	62	55	117

Tinea corporis was found to be the most common clinical presentation.

The mixed infection included a combination of tinea corporis and tinea cruris in three patients, tinea corporis and tinea capitis in one and tinea faceii and tinea manuum in the other. The dermatophytic infections were more common in the third decade.

Dermatophytes formed the majority accounting for 67 out of the total 122 samples (54.9%). The principal dermatophyte was *T.rubrum* 45(67.5%) followed by *T.mentagrophytes* 12(18.0%), 4 of *T.schoenleinii* 2 each of E.*floccosum* and *M.audouinii* and 1 of *M.nanum* and M.canis.

A single species of dermatophyte could cause different clinical manifestation as seen with *T. rubrum* being the major isolate, from all the clinical types of tinea; and a single clinical type like tinea corporis had several etiological agents, from all the three genera of dermatophytes namely *Trichophyton, Epidermophyton and Microsporum*. (Table 2)

Non-dermatophytic molds were grown from 8 (6.6%) and candida from 5 samples (4.1%). The various non-dermatophytic molds isolated were as follows: *Exophiala spp* two in number and one each of *Exserohilum spp., Fusarium spp.,*

TABLE 2

CO-RELATION BETWEEN CLINICAL AND MYCOLOGICAL TYPES OF DERMATOPHYTOSIS						
Dermatophytes isolated	**Tinea corporis**	**Tinea cruris**	**Tinea manum**	**Tinea faceii**	**Mixed**	**Total**
T.rubrum	21	13	3	2	6	45
T.mentagrophytes	6	4	0	2	0	12
T.schoenleinii	4	0	0	0	0	4
E.floccosum	2	0	0	0	0	2
M.audounnii	1	1	0	0	0	2
M.nanum	1	0	0	0	0	1
M.canis	1	0	0	0	0	1

Nigrospora spp., Scopulariopsis spp., Cladosporium spp. and *Acremonium spp.* All these non-dermatophytes were isolated in pure culture and from KOH positive samples and no dermatophytes were isolated along with them.

In our study culture was negative in 42 samples (34.42%).

DISCUSSION:

As stated earlier the present study focused only on skin lesions caused by dermatophytes. Earlier studies confirm that dermatophytic skin infection were more common in males than females as reported by Bhaskaran et al. from Tirupati and Maheshwari Amma et al [4,5], the ratio being 2:1. While most studies in and around Chennai showed a male dominance. In contrast, one study reported a female preponderance (67.26%) (Kamalam.A Thambiah et al) [6] In our study among the 117 patients who were clinically diagnosed as dermatophytosis the percentage of males (53%) was only marginally higher than the females (47%) with the male female ratio 1.12:1, which can be attributed to the increased health awareness among the women and their positive attitude towards treatment without inhibition and their increased cosmetic consciousness.

The present study has revealed that the majority (46.2%) of the infection by dermatophytes has occurred during the 3rd and 4th decades of their life, an observation which is in par with those of the earlier studies [7,8]. The probable reason for this age predilection is excessive sweating due to excessive physical activity, as a consequence, in addition the tropical climatic conditions.

Tinea corporis was diagnosed in 82 (70.08%) of the 117 patients with dermatophytosis of the skin (fig-1).

Fig-1 : Tinea corporis showing lesion with well defined margins

Our results are comparable to those from other places like Kashmir, Jabalpur and Manipal[9,10,11]. Tinea corporis had been reported to be the most common clinical type even in few other countries like Spain and Brazil [12,13].

Tinea cruris (18.8%) followed tinea corporis as the next most common clinical variety in our study (fig-2). This report substantiates that published by other authors [7].

Fig-2 : Tinea cruris showing hyperpigmentated lesion in the genital area

Mixed infection of tinea cruris and tinea corporis were observed only in negligible numbers and so also was tinea manuum, tinea capitis and tinea faceii.

The high incidence of tinea corporis and tinea cruris as concluded from our study is probably due to its symptomatic nature (pruritis) which leads the patient to seek medical advice [7].

Tinea corporis was prevalent more in females (42.7%) than males (30.8%) and tinea cruris affected males (19.6%) more than females (1.7%). The reason for the higher incidence of tinea corporis is probably due to the type of attire, favours dermatophytic infections to thrive [14].

Tinea cruris is much more common in men than in women. The reason for this preference may be because men wear more occlusive clothing and are more physically active. Moreover they are at a greater risk of acquiring infection at other sites (e.g. tinea pedis) due to their nature of work. This may act as a reservoir for new cases of tinea cruris [15].

Trichophyton species have been isolated with increasing frequency as compared to Microsporum and Epidermophyton species. This has been noticed by many

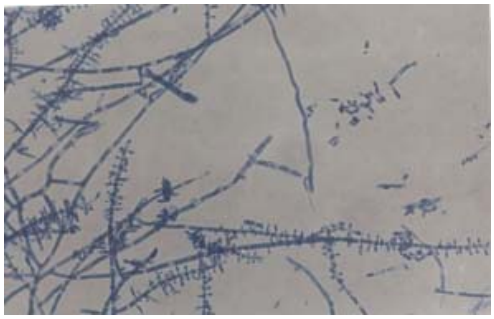

Fig-3 : Microphotograph of *Trichophyton rubrum* Showing abundant tear drop microconidia and occasional Macroconidia (LPCB mount magnificationX200)

of the Indian studies on dermatophytosis in India as well as the Western countries. *T.rubrum* was the most common isolate (56.25%) which is comparable with the reports of other authors [7] and was associated more with tinea corporis (46.6%) than with tinea cruris (16.25%). (Fig-3)

It was found from our study that *T.mentagrophytes* had an occurrence of 17.8% amongst the dermatophytes (n = 67). Therefore it occupied the second place with regard to the frequency with which it was isolated, which is comparable to other studies from India and abroad during the last 50- 60 years, only the percentage of isolates differed (ranging from 11-17%). We also found that 50% of *T.mentagrophytes* was from tinea corporis and 33.3% from tinea cruris. Only two cases (16.7%) were from tinea faceii.

Out of the total dermatophytes isolated it was found that 5.9% of them were *T.schoenleinii*. This particular species of trichophyton is rarely reported in literature. *T.schoenleinii* has more often been an isolate from cases of favus. Hence this is a new observation pertaining to the current study and has to be ascertained by further extensive studies covering a larger population in the same area over an extended period of time.

E.floccosum formed only 2.98% of the total dermatophytes (n = 67) in our study. Only few studies from India and abroad have shown *E.floccosum* as one of the dermatophyte isolated [5,16].

Pure growth of non-dermatophytic molds were isolated on repeated cultures from 8(6.6%) of the total samples.. There were five isolates of Candida spp., (4.1%).

As with the reports of Wg Cdr Sanjiv Grover, Lt Col P Roy [17] this is a striking finding in our study. Though commonly considered as contaminants, they have been reported to colonize damaged tissues and cause secondary tissue destruction. Their role in causing cutaneous infections is not yet proven and a primary pathogenic role of non-dermatophytes is controversial at best [17]. But the fact that these non dermatophytic molds were isolated on repeated cultures, without association of dermatophytes and only from KOH positive samples, bears some significance on etiology. The overall findings suggest that our studies are well comparable to the studies conducted by other researchers and the pattern of dermatophytes prevalent in our subjects under study is similar to that in other parts of the country.

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