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Research Article

A clinical, epidemiological and therapeutic scenario of dermatophytosis in a tertiary care hospital in the state of Telangana, India

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ABSTRACT

Background: Dermatophytosis is a superficial fungal infection of the keratinized tissue. The infection generally designated as Tinea. Objectives of the study were to analyze the epidemiological, clinical and therapeutic scenario of the patients of the dermatophytosis attending a tertiary care hospital in the state of Telangana. As these infection falls into differential diagnosis of many skin disorders it is necessary to make early laboratory tests for better management. These infections spread through occlusive foot wear, hot humid climate, malnutrition, endocrinal disorders like Cushing syndrome.
Methods: The present study was a prospective study conducted on individual patients who visited DVL department of Malla Reddy Medical College for women, Suraram, Hyderabad in the Telangana state between 23/11/2015 to 22/3/2016.
Results: Males were more than females. Maximum patients were seen in the age group of 21-30 years. Very few cases were seen above the age of 60 years. Maximum cases presented with *T. corporis* followed by *T. cruris.* Five cases had more than one type of Tinea. Maximum cases were KOH positive. 26.3% of cases were culture positive. 17.5% of cases were both KOH and culture positive Maximum i.e. 70.2% of cases were treated with miconazole followed by clotrimazole in 10.5% of cases Maximum cases were treated with terbinafine in 56.14% of cases followed by itraconazole in 12.3% of cases.
Conclusions: This study provides an incidence of *T. corporis* with male predominance of cases and responding well to the standard therapeutic line of management along with proper personal counseling about the lifestyle modifications in a tertiary care hospital.

Keywords: Dermatophytosis, Fungal infection, Keratinized tissue

INTRODUCTION

Dermatophytosis is a superficial fungal infection of the keratinized tissue. The infection generally designated as Tinea. The literal meaning of the tinea is larva as Romans mistakenly thought due to insects. Dermatophytes have been defined as keratinophilic organisms that have the ability to invade the skin, hair and nails of the living host. They are divided into geophilic, zoophilic and anthrapophilic.[1-3] Anthropophilic infections are often epidemic in nature and the mode of transmission of the infection is from humans either by direct contact or by fomites. Trauma, maceration and increased hydration of the skin make the inroad for pathogenic fungi.[4] During the incubation period the dermatophytes grows in the stratum corneum with minimal clinical sites of infection. The fungal growth rate must equal or exceed the epidermal turnover rate. In annular dermatophytosis there is fourfold increase in the epidermal turnover rate at the inflammatory periphery of the lesion. The infections are

named according to the location on the body ex. *T. corporis, T. capitis* etc. The dermatophytes prefer to spread between horn cells of the stratum corneum through the production of the keratinases.[5] As these infection falls into differential diagnosis of many skin disorders it is necessary to make early laboratory tests for better management. These infections spread through occlusive foot wear, hot humid climate, malnutrition, endocrinal disorders like Cushing syndrome and Diabetes, apparently diminished resistance to infection due to decreased cell mediated immunity.[3,6] The chief immunological defense in dermatophyte infection is the type IV delayed hypersensitivity response mediated by the cellular immune system.

METHODS

The present study was a prospective study conducted on individual patients who visited DVL department of Malla Reddy Medical College for women, Suraram, Hyderabad in the Telangana state, India between 23rd November 2015 to 22nd March 2016.

Inclusion criteria: The cases attended the department during the study period with a clinical diagnosis of dermatophytosis were selected for the study.

Exclusion criteria: Use of antifungal and steroids of both systemic and topical were excluded from the study. Cases which were using other topical modalities were excluded from the study. From such selected cases scrapings were sent for KOH mount and fungal culture from typical sites. Disposable scalpel blades were used to obtain the scrapings. The selected sites were cleaned with 70% alcohol and scrapings were obtained from the active margins and also from the centre of the lesions. Scrapings were collected in a neat disposable folded paper labeled and sent to microbiology laboratory. Basing on the clinical judgment antifungal treatment started and the cases were followed till the point of recovery.

RESULTS

Table 1 shows age and sex distribution of clinical cases. Males were more than females. Maximum patients were seen in the age group of 21-30 years. Very few cases were seen above the age of 60 years.

Maximum cases presented with *T. Corporis* followed by *T. Cruris.* Five cases had more than one type of *Tinea.*

Maximum cases were KOH positive. 26.3% of cases were culture positive. 17.5% of cases were both KOH and culture positive. Maximum i.e. 70.2% of cases were treated with miconazole followed by clotrimazole in 10.5% of cases.

Table 1: Age and sex distribution of clinical cases.

Age group (years)	Male		Female		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
0-10	03	6.9	00	00	03	5.3
11-20	10	23.3	01	7.1	11	19.3
21-30	12	27.9	05	25.7	17	29.8
31-40	06	13.9	03	21.4	09	15.8
41-50	09	20.9	02	14.3	11	19.3
51-60	02	4.7	02	14.3	04	7.01
> 60	01	2.3	01	7.1	02	3.5
Total	43	75.4	14	24.6	57	100

Table 2: Sex-wise distribution of cases of Tinea.

Clinical type of Tinea	Male	Female	Total
T. corporis	28	10	38
T. cruris	04	01	05
T. facei	03	00	03
T. manuum	01	02	03
T. pedis	02	02	04
T. Unguium	03	02	05
T. capitis	03	00	03
T. barbae	01	00	01
Total	45	17	62*

*5 cases have more than one type of tinea; that is why the total number is 62.

Table 3: Distribution of cases as per the laboratory results.

Laboratory test	Number	Percentage
KOH positive	18	31.57
Culture positive	15	26.3
KOH + culture positive	10	17.5
KOH positive but culture negative	08	14.03
KOH negative but culture positive	05	8.7

Table 4: Distribution of cases as per the use of topical anti-fungal.

Treatment variables	Number	Percentage
Miconazole	40	70.2
Amorolfine	03	5.2
Clotrimazole	06	10.5
Terbinafine	04	7.01

Table 5: Distribution of cases as per the use of systemic anti-fungal.

Treatment variables	Number	Percentage
Fluconazole	04	7.01
Griseofulvin	03	5.2
Terbinafine	32	56.14
Itraconazole	07	12.3

Figure 1: *Tinea capitis* 8 year male patient.

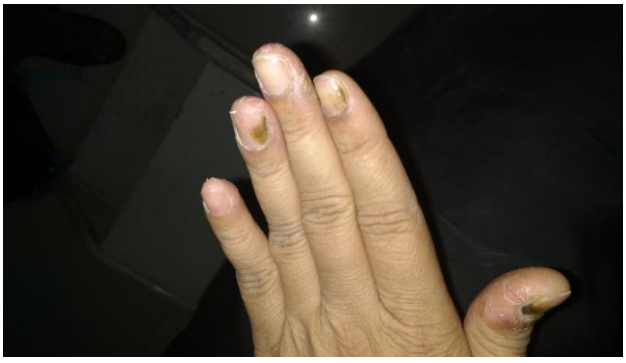

Figure 2: *Tinea unguium* in 33 year female patient.

Maximum cases were treated with terbinafine in 56.14% of cases followed by itraconazole in 12.3% of cases.

Figure 3: *Tinea corporis* in 35 year female patient.

DISCUSSION

In present study, total of 57 clinically diagnosed cases of dermatophytosis showed male preponderance, with a male: female ratio of 3:1. The other studies in India have also reported a higher male incidence with a ratio ranging from 1.5:1 to 3:1.[7-10] The higher male incidence is due to higher physical and outdoor activities in males leading to excess of perspiration in a hot and humid climate and also due to usage of occlusive foot wear.

In present study the incidence of dermatophytosis was seen to be highest in the age group of 21-30, followed by 41-50 and 11-20 years. These findings are consistent with other studies in the age group 21-30; this is probably active stage of human life predisposing to perspiration.[8-12] Of the several forms of the dermatophytosis in present

study *T. corporis* was the commonest form followed by *T. cruris* and *T. unguium.* These findings are endorsed by other parts of the country.[7-11,13]

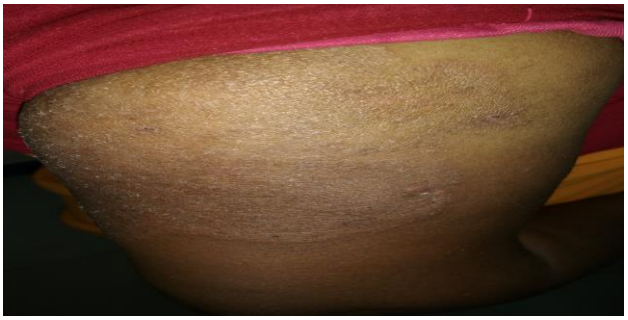

Figure 4: *Tinea corporis* in 35 year female patient.

In present study all the three cases of tinea capitis were below 10 years, which is in accordance with other studies.[7,9,11] All were male children. The least incidence was *tinea barbae*. Extensive *T. corporis* was present in six cases out of which four cases were males and two were females. It was observed that in five cases out of 57 cases multiple types of tinea seen in each individual. In present study KOH mount positive in 31.5% cases (18 cases) in contrast to other studies varies from 44% to 90%. [-12]

Figure 5: *Tinea pedis* in 45 year male patient.

Culture positivity was seen in 26.3% cases (15 cases). These findings were in contrast to the other studies from Assam (51%) and Baroda (44.6%). In present study 5 cases (8.7%) were positive by culture alone, 8 cases (14.3%) were positive by KOH alone. Treatment of dermatophytosis is a prolonged course involving the usage of antifungal agents of various groups like terbinafine, azoles etc. Mild infections were managed with topical therapy (19.3%). To increase the cure rate, topical and systemic medications are often combined. In our study 70.1% cases treated with combination therapy.

In present study 70.17% cases were treated with 2% miconazole, 10.52% by 1% clotrimazole, 5.26% by amorolfine (all *T. unguium* cases), and 7.01 % by 1% terbinafine. We prefer to give cheaper topical fungi static azoles and response was good in contrast to other studies.[14-16]

In present study 56.14% cases (32 cases) were given oral terbinafine so as to increase the compliance of the patient with affective cure rate. 7.01% cases (4 cases) were given once weekly fluconazole therapy. All 3 cases of *T. capitis* were treated with griseofulvin. All the onychomycosis and extensive tinea cases (15.2%) were treated with itraconazole pulse therapy with good results.

Figure 6: *Tinea corporis* in 24 year female patient.

Figure 7: *Tinea facei* in 45 year male patient.

CONCLUSION

This study provides an incidence of *T. corporis* with male predominance of cases and responding well to the standard therapeutic line of management along with proper personal counseling about the lifestyle modifications in a tertiary care hospital.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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