

Original Research Article

A clinical and mycological study of superficial mycosis

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Received: 22 October 2020

Revised: 01 December 2020

Accepted: 02 December 2020

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ABSTRACT

Background: Superficial mycosis is among the most frequent forms of human infection affecting more than 20-25% of world's population. Current study aims at assessing the clinical profile of dermatophytic infection and to identify the fungal species responsible.

Methods: A prospective study conducted on 100 patients with clinically suspected dermatophytosis presenting to Skin OPD in a tertiary hospital in north Karnataka. A detailed clinical history, general physical examination and systemic examination routine lab investigations were done. Sample collection for mycological examinations was done for direct microscopy in 10% KOH (40% KOH for nail) and fungal culture on SDA with 0.5% chloramphenicol and 0.5% cyclohexidine was done in every case.

Results: A total of 100 patients were included in the study. Male:female ratio was approximately 3:2. Maximum numbers of cases were in the age groups of 16-30 years (46 cases). 46% patients had multiple site involvement followed by tinea corporis in 20 (20%), tinea cruris in 18 (18%), tinea unguium (8%), tinea manuum (3%), tinea pedis (3%), tinea barbae (1%), and tinea faciei (1%). Potassium hydroxide examination was positive for fungal elements in 88(88%) patients and 35(35%). The most common species identified were. *Trichophyton rubrum* in 60% samples, followed by *Trichophyton mentagrophytes* in 20%.

Conclusions: Present clinical and mycological study showed tinea corporis as the most common clinical pattern followed by tinea cruris and *T. rubrum* as the most common causative agent.

Keywords: Dermatophytosis, Epidermophyton, Microsporum

INTRODUCTION

Superficial mycosis is among the most frequent forms of human infection affecting more than 20-25 % of world's population.¹ The dermatophytosis constitute a group of Superficial fungal infection of keratinized tissue i.e. epidermis, hair follicles and nails.² It is caused by fungi like microsporon, trichophyton and epidermophyton.³ The distribution and frequency of dermatophytosis and the etiological agents very according to geographic region studied, the socio economic level of the population, the climatic variation & presence of domestic

animals and age.⁴ The present study was undertaken to assess the clinical profile of dermatophytic infection and to identify the fungal species responsible.

METHODS

Current study is a prospective study conducted in the department of dermatology, venereology and leprosy, in a tertiary hospital in North Karnataka for 1 year from October 2018 to November 2019.

Method of data collection and sampling procedure

A minimum of 100 patients with dermatophytosis presenting to Skin OPD will be evaluated. Skin Samples were collected carefully by scraping, after disinfecting with 70% alcohol solution using a sterile scalpel. Clipping from the distal portion of nail, underside of the nail and nail bed were taken from the abnormal nails. Scrapings were collected on sterile brown paper, folded and then labelled. Confirmation of the clinical diagnosis was based on microscopic examination and culture.

Direct microscopy in 10% KOH (40% KOH for nail) and fungal culture on SDA with 0.5% chloramphenicol and 0.5% cyclohexidine was done in every case. Ethical clearance has been obtained from ethical committee. Patient consent has been obtained for clinical examination as well as the skin scraping to be taken for KOH study and fungal culture. Statistical analysis was done using basic statistical functions in Microsoft Excel 2007.

Inclusion criteria

All the patients of dermatophytosis of any age groups and both sexes, who gave their consent, were included in the study.

Exclusion criteria

Patients treated with antifungals or topical steroids in recent past were excluded from the study.

RESULTS

A total of 100 patients were included in the study. Among them 60 were males and 40 females. Male:female ratio was approximately 3:2. Maximum numbers of patients were in the age groups of 16-30 years (46 patients). The youngest patient was a 7-year-old boy and the eldest was a 65-year-old man. In current study dermatophytosis was found more common in males (60%) than in females (40%).

Table 1: Age and sex distribution.

Age (years)/sex	Male	Female	Total
1-15	4	6	10
16-30	24	22	46
31-45	22	10	32
46-60	8	2	10
>60	2	0	2
Total	60	40	100

Most of the patients presented with a history of intermittent or continuous infection which varied from 1 to 6 months, even longer duration of up to 1 year in 34 (34%) patients. Family history was positive in 31 (31%) patients. Multiple site involvement (mixed type of

infection) was the common presentation in 46 (46%), followed by tinea corporis in 20 (20%), tinea cruris in 18 (18%), tinea unguium (8%), tinea manuum (3%), tinea pedis (3%), tinea barbae (1%), and tinea faciei (1%).

Table 2: Associated systemic disorders.

Associated systemic condition	N	%
Diabetes mellitus	12	12
HIV infection	6	6
Hypertension	5	5
Alcoholic liver disease	5	5
Ischemic heart disease	2	2
Atopic dermatitis	2	2



Figure 1: Tinea cruris.



Figure 2: Tinea corporis.

Diabetes mellitus was the most common systemic disorder associated with dermatophytosis with 12 patients (12%) followed by HIV infection with 6 patients (6%). Potassium hydroxide examination was positive for fungal elements in 88 (88%) patients and 35 (35%) were culture positive. In 33 cases, both KOH and culture were positive. The most common species identified were *Trichophyton rubrum* in 21 (60%) samples, followed by *Trichophyton mentagrophytes* in 7 (20%), *Epidermophyton floccosum* 4 (11.4%), *Trichophyton*

schoenleinii 2 (5.7%) and *Microsporum canis* 1 (2.8%) samples.

DISCUSSION

The present study was conducted in a tertiary hospital in North Karnataka having hot and humid climate which is more favorable for the development of superficial fungal infection. In the present study a total of 100 patients were included in the study. The following clinical types were observed: tinea corporis, tinea cruris, tinea pedis, tinea manuum, tinea unguium, tinea barbae, and tinea faciei. Male:female ratio was approximately 3:2. A male preponderance has been seen in some earlier studies.⁵⁻⁷ The higher incidence in males could be due to greater physical activity increased sweating and occlusive clothing. Few of the earlier studies have showed female predominance, with females mainly having tinea pedis and manuum and onychomycosis due to kitchen and household work.^{8,9}

Most of the patients presented with prolonged duration of illness of 6 months and above in 34%. Chronicity of the disease can be attributed to inadequate doses of anti-fungal medication, irregular treatment and application of topical steroids. Family history was positive in 31 (31%) patients. Transmission could be by direct contact and fomites or de novo infection.^{5,7,10}

Potassium hydroxide examination was positive for fungal elements in 88% patients and 35% were culture positive. Previous studies reported similar findings for potassium hydroxide positivity.^{11,12} Previous studies show a culture positivity ranging from 24 to 87%.^{13,14}

In the present study the most common species identified were *Trichophyton rubrum* in 60% samples, followed by *Trichophyton mentagrophytes* in 20%. Similar results were reported in other studies as well.^{10,15}

CONCLUSION

Present clinical and mycological study showed tinea corporis as the most common clinical pattern followed by tinea cruris. *T. rubrum* as the most common causative agent of superficial mycosis in this region of Karnataka. Potassium hydroxide examination is highly sensitive and less specific whereas fungal culture may identify the species, but it is not essential for the diagnosis as it is not a sensitive test.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Patil S, Raikar D. A clinical and mycological study of superficial mycosis. *Int J Res Dermatol* 2021;7:192-4.