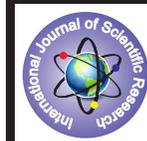


Clinico-Mycological Study of Superficial Fungal Infections in a Tertiary Care Centre



Medical Science

KEYWORDS : Tinea corporis, cruris, dermatophytes, fungal culture

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ABSTRACT

Background: Superficial mycoses are infections of skin, hairs and nails caused by dermatophytes, yeasts and non-dermatophytes molds.¹

Aims and Objectives: The present study was conducted to evaluate the frequency of various cutaneous superficial fungal infections in patients and to study the positivity on KOH mount and associated fungal culture.

Materials and Methods: Patients 59 in number were selected randomly who presented with various superficial fungal infections attending Dermatology opd.

Results: Maximum patients were in the age group of 21-50 years accounted for 67.7%. Male patients were 39 and females were 20 in number. Tinea corporis, tinea cruris and tinea faciei was the most common presentation which accounted for a total of 52 cases. Most frequent system associated with superficial mycoses was hypertension and Diabetes Mellitus. KOH mount examination was positive in 29 cases (49.1%) of the fungal scraping specimens. KOH was positive even in few pretreated patients also. Growth was seen in total of 22 patients (37.2%). In 14 cases we had both KOH and fungal culture positive. Trichophyton was the most common organism isolated on the culture among these patients of the superficial fungal infections. **Conclusion:** Superficial fungal infections being common in young adults. Tinea corporis, cruris and faciei being the commonest. KOH mount test as a best bedside tool for confirmation of the diagnosis. Fungal culture helps in knowing the trend of present organisms which are more common. Diabetes and hypertension was common among the systemic illnesses associated with the patients of superficial fungal infections.

Introduction:

Dermatophytes are responsible for the largest number of cases of superficial mycoses.

Dermatophytes are anthropophilic, zoophilic and geophilic fungi, classified into three genera – Trichophyton spp. (T.), Microsporum spp. (M.) and Epidermophyton spp. (E.). Distribution of the dermatophytes varies with the geographical area and course of time.² Dermatophytosis is a common disease in tropical countries due to factors like heat and humidity. The high humidity and temperature provides a fertile ground for the abundant growth of dermatophytes. Few species of dermatophytes (M. ferrugineum, T. soudanense etc.) are endemic in certain parts of the world and they are rarely encountered in other parts of the world.³ A KOH mount is a useful screening test, but culture is considered the mainstay of diagnosis because it not only has high sensitivity, but also allows identification of the etiologic agent, so that treatment may be appropriately tailored. However, negative results are frequent, and the diagnosis may be delayed up to 6 weeks. Histological examination of nail clippings with PAS staining is the most sensitive diagnostic test for onychomycosis.^{4,5}

Aims and Objectives:

- To evaluate the frequency and aetiology of superficial fungal infections.
- Correlation of superficial dermatophytosis with systemic diseases.

Materials and Methods:

Study was carried out to know the various epidemiological aspects and latest trend of dermatophytoses in our tertiary care hospital. Total of random 59 clinically diagnosed cases of superficial fungal infections attending the out-patient department during last 3 months were enrolled. Both male and female patients of all age groups were included. Those patients who did not provide informed consent were ex-

cluded. After obtaining consent detailed history including drug intake, present and past medical history (hypertension, diabetes mellitus) was taken. Baseline investigations were performed to rule out any predisposing conditions. Specimens of skin, nail or hair scrapings and/or clippings were taken in the OPD and were processed for 10% potassium hydroxide (KOH) mount and inoculated for fungal culture on Sabouraud's dextrose agar at department of Microbiology for up to 4 weeks. Fungal isolates were identified according to standard procedures.³

Results:

In our study, maximum number of the patients 29 (49.1%), were seen in the age group of 20- 40 years of age followed by the age group of 41-50 years with number of patients being 11 (18.6%). Table-1. Youngest patient was 4 years old female child with tinea capitis and oldest patient was of 86 years of age. Mean age in our study was 36.7 years while mean age of female patients was 32.2 years. Out of 59 patients 39 (66.1%) were males while 20 (33.8%) patients were females with male to female ratio being 1.9:1. Among the female patients most were housewives. While in male patients 15 were farmers and 7 were laborers.

Table1: Age wise distribution of patients suffering from superficial fungal infections.

Sr. No.	Age group (years)	No of patients	Percentage
1	<10	2	3.3
2	11-20	7	11.8
3	21-30	14	23.7
4	31-40	15	25.4
5	41-50	11	18.6
6	51-60	6	10.1
7	61-70	3	5
8	71-80	--	--
9	81-90	1	1.6
Total		59	

Amongst 59 patients, 3 patients had hypertension and 2 patients were suffering from diabetes mellitus.

In our study out of 59 patients 6 patients gave the history of some form of pretreatment for their skin lesions. Out of these 3 patients were on antifungal treatment in the form of topical and systemic.

In our study, patients having tinea corporis with cruris pattern simultaneously were on higher side 50.8% (n=30). Isolated tinea cruris was observed in 8 (13.5%) patients and corporis in 12(20.3%) patients. Tinea faciei was observed in 6 cases while onychomycosis seen in 3 cases. Two cases of tinea pedis/ manuum and single case of tinea capitis was present.

Out of a total of 59 cases, 29 (49.1%) showed dermatophytes on KOH preparation (Table 2) and in 22 (37.2%) cases the fungus was grown on culture. Out of total 29 cases KOH mount was positive in 18 males (30.5%) and 11 females (18.6%). Maximum cases where dermatophytes were identified on KOH preparation was seen in patients suffering from tinea corporis with cruris 28.8% followed by isolated corporis patients 10%. KOH test was also performed on patients who were previously treated with some or other form of medications. It came positive in 4 patients who were given some form of treatment, while it turned negative in 2 cases in which patients were pretreated with antifungals in the form of Fluconazole.

Table 2: Dermatophytes on KOH preparation positivity

Sr No	Clinical condition	No. of patient	Percentage
1	Tinea corporis with cruris	17	28.8
2	Tinea corporis	6	10
3	Tinea cruris	3	5
4	Tinea faciei	3	5
5	Tinea pedis / manuum	1	1.6
6	Onychomycosis	1	1.6
7	Tinea capitis	1	1.6

Growth on Sabouraud's dextrose agar for fungal culture was present in 22 cases (37.2%). In 22 culture positive isolates most common dermatophyte isolated was *T. mentagrophytes* 7 (11.8%) followed by *T. rubrum* 5 (8.4%) cases, *T. tonsurans* 4 (6.7%), *T. verrucosum* 2 (3.3%) and *T. violaceum* 2 (3.3%) cases. Single case of onychomycosis showed *T. mentagrophytes* on growth while yeast cells and hyphae demonstrated on the culture of case of tinea capitis. The common organism isolated in patients of tinea corporis was *T. mentagrophytes*.

In a total of 14 cases (23.7%) fungal elements could be identified on both KOH mount and fungal culture. There were around 19 (39.2%) cases where the KOH mount was positive but could not demonstrate the growth on culture or sample was contaminated. While in 8 (13.5%) cases growth was seen on fungal culture but the KOH mount was negative on microscopy.

Discussion:

Maximum patients were in the age group of 21-50 years and accounted for 67.7% (n=40) of patients. Similar results were seen by other authors.^{6,7} Males were more frequently affected with male to female ratio being 1.9:1 in our study which is similar to other study Bindu V et al with 2.16:1.⁸ Mean age in our study was 36.7 years. Amongst all male patients 15 were farmers and 7 were laborers by occupation

in our study which was similar to Sarma and Borthakur⁶ found the disease most commonly in occupations related to agriculture (39%), followed by students and unskilled laborers (15%).

In our study, patients having mixed clinical pattern tinea corporis with cruris were on higher side 50.8% (n=30) followed by tinea corporis 12 (20.3%) which was in accordance with the study done by Agarwal US¹. Patients with tinea cruris were 13.5% in our study which was similar to study done by Agarwal US¹.

In our study out of a total 59 cases, 29 (49%) showed dermatophytes on KOH preparation which is comparatively lesser to Sahai and Mishra⁷ who reported 89.6% dermatophytes demonstration. Maximum cases where dermatophytes were identified on KOH preparation was seen in patients suffering from tinea corporis with cruris 28.8% followed by isolated corporis patients 10%. The difference in these rates may be due to factors involved in the collection and transport of specimens.

In our study amongst 22 culture positive isolates most common dermatophyte isolated was *T. mentagrophytes* 7 (11.8%) followed by *T. rubrum* 5 (8.4%) *T. tonsurans* 4 (6.7%) and *T. verrucosum* 2 (3.3%) and *T. violaceum* 2 (3.3%). Sahai and Mishra⁷ and study done by Agarwal US¹ noted *Trichophyton mentagrophytes* grown in 37.9% cases which was the most common isolate. The common organism isolated in patients of tinea corporis was *T. mentagrophytes* which was similar to study done by Agarwal US¹. In 23.7% of our cases fungal elements could be identified on both KOH mount and fungal culture.

Hence we can conclude that during last couple of decades change in spectrum of dermatophytes and uncommon fungal isolates can be encountered in clinical practice. Both direct microscopy KOH mount and culture are important tools of confirmation and identification for the superficial fungal infections. Although microscopic evaluation can provide evidence of fungal infections within minutes, it may also yield false negative results. Hence fungal culture should be performed when a dermatophyte infection is suspected clinically.⁹

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