

Profile of tinea faciei patients in a tertiary care hospital

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ABSTRACT

Background: Tinea faciei is the dermatophytic infection of glabrous skin of face. Its prevalence is increasing day by day.

Aim: To determine the clinico-mycological correlation of tinea faciei.

Materials and methods: Patients, clinically diagnosed as cases of tinea faciei attending the skin OPD of Dayanand Medical College and Hospital, Ludhiana during the period of 1 year were taken.

Results: KOH (Potassium hydroxide) positivity was seen in 81.8% of the patients while fungal culture confirmation was obtained only in 43.4% of patients. *Trichophyton rubrum* was the isolate (43.4%) obtained on fungal culture. The duration of disease ranged from 4 days to 2 years. Patients with history of steroid/ indigenous treatment had mean disease duration of 5.93 months which was significantly longer as compared to patients who did not applied steroids. Typical morphology of tinea faciei was seen in 74.7% cases. Tinea faciei was associated with involvement of other body sites also, most commonly with tinea corporis et cruris (46.5%). Almost 60% cases had history of steroid/ indigenous treatment out of which 78.3% were KOH positive and 36.7% were fungal culture positive.

Conclusion: Present clinicomycological study revealed *Trichophyton rubrum* as the most common causative agent of tinea faciei. Tinea faciei is commonly associated with steroid abuse.

KEY WORDS: Tinea faciei, dermatophytes, KOH, clinicomycological profile

INTRODUCTION

Dermatophytic infections are a common clinical problem encountered in more than 50% of patients attending the dermatology outpatient departments.¹ Over the past few years there is an unprecedented change in the epidemiology, clinical features and treatment responsiveness of dermatophytic infections.²⁻⁴ The prevalence of cutaneous mycoses is increasing day by day.⁵ Most infections that are reported at higher frequency primarily infect glabrous skin i.e tinea corporis,

tinea cruris, and tinea faciei.⁶ Its prevalence varies in different countries because of the change in climatic conditions across the world.⁷⁻⁸ Low socioeconomic status, poor hygiene, overcrowding, improper sanitation, lack of health education and awareness, and poor healthcare facilities are the most important predisposing parameters.⁹ Dermatophytosis is the most important group of superficial mycoses, caused by a group of closely related keratinophilic fungi, known as dermatophytes. They colonize only cornified layer of

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epidermis and do not penetrate deeper layers of skin.¹⁰ Dermatophytes have affinity for keratin rich tissues like skin, hair and nails for obtaining nutrition and producing dermal inflammatory response leading to redness, intense itching and cosmetically poor appearance.¹¹⁻¹²

Ringworm infection and tinea are synonyms of dermatophytosis. Although dermatophytes does not cause mortality, it does cause morbidity and poses a major public health problem.¹³⁻¹⁴ The clinical features result from a combination of keratin destruction and an inflammatory host response. The variation in clinical presentation depends upon the species, probably the strains of fungus concerned, size of inoculum, site of body infected as well as immune status of the host.¹⁵ Facial skin may be infected either by direct inoculation of a dermatophyte fungus from an external source or there may be secondary spread from pre existing tinea from other body site (self- inoculation).¹⁵⁻¹⁷ The ringworm species causing tinea faciei are moulds belonging to two asexual genera: *Microsporum* and *Trichophyton* species.¹⁸ Zoophilic organisms such as *Microsporum canis* may be associated with severe inflammatory changes, whereas anthropophilic organisms such as *Trichophyton tonsurans* may be associated with fine scale and minimal inflammation.¹⁹⁻²¹ Tinea faciei sometimes display a wide variety of clinical features like erythema, patches, induration, vesicles, pustules, papular and circinate lesions, therefore mimics other facial dermatoses like discoid lupus erythematosus, lymphocytic infiltration, seborrheic dermatitis, granuloma annulare and contact dermatitis.²²⁻²⁴ Also tinea faciei is sometimes difficult to diagnose and manage as active margins of lesions cannot be appreciated due to over the counter use

of topical corticosteroids and antifungal combinations.^{3, 25-27} The lesions may sometimes become widespread and may have significant impact on social, psychological and occupational health compromising the quality of life.²⁸ Despite the increasing incidence of recurrent dermatophytosis, information on the extent of the burden in our country is scarce.^{4,29} It was previously considered to be the most trivial cutaneous infection to be managed but now it has become the most stubborn infection to manage.^{3,30} So a correct knowledge of the etiological agents is therefore important to initiate appropriate treatment and also essential for epidemiological purposes. Thus, the present study was undertaken to identify the species of fungi and to correlate clinical diagnosis with KOH positivity and fungal culture positivity.

MATERIALS & METHODS

Ninety nine clinically diagnosed cases of tinea faciei attending the OPD of dermatology department of Dayanand Medical College & Hospital, Ludhiana constituted the study material.

An informed consent was taken from the patients regarding KOH & Fungal culture and participation in the study.

Procedure of sample collection and transportation

After thorough cleaning with 70% alcohol, the peripheral, erythematous, growing margin of typical annular lesions was taken with the edge of disposable sterile Bard Parker surgical blade No. 15. If vesicles were present, the top was removed with fine scissors.³¹ Samples were collected and transported in a clean, sterile envelope or petri dish for processing in the Microbiology department.³¹

PROCESSING OF SPECIMENS

1. Direct Microscopy

Samples were examined by preparing KOH mount. Ten percent KOH was used for direct microscopic examination of skin samples.

The wet mount of KOH was prepared by the following method:

Slide KOH method

The sample was placed on clean glass slide. A drop of 10% KOH was poured on specimen and coverslip was placed over it. The slide was heated gently over the flame and examined under microscope (40x magnification) after few minutes.

2. For fungal culture, the sample was inoculated on two sets of Sabouraud's Dextrose Agar (SDA) tubes, one tube containing SDA with antibiotics and cycloheximide, other tube containing SDA with antibiotics and without cycloheximide. SDA slants were incubated at 25°C and 37°C and were examined for growth daily for first week and twice a week for subsequent period of 3 weeks.

3. The growth obtained was identified on the basis of colony morphology, pigment production and microscopic examination in Lactophenol Cotton Blue preparation (LCB).

The clinico-mycological profile of clinically diagnosed cases of tinea faciei was determined and the data obtained was put to relevant descriptive analysis.

RESULTS

A total of ninety-nine clinically diagnosed cases of superficial fungal infections were included in the study. It was observed that males were

more commonly affected than females (1.36:1). The most common affected age group was 21 to 30 years with 35.4% cases. (Table 1) In this study, maximum number of patients were housewives (32.3%) and students (28.3%) followed by service class people. Maximum number of cases were seen in the months of June to August (45.45%). Most of the patients (72.7%) were from urban background.

The duration of disease ranged from 4 days to 2 years. 61.6% cases had duration of disease of less than 3 months and only 5.1% cases had disease duration of more than 12 months. (Table 2) Patients with history of steroid/ indigenous treatment had mean disease duration of 5.93 months which was significantly longer as compared to patients who did not applied steroids. (Table 3) Typical morphology of tinea faciei was seen in 74.7% cases. (Fig 1) In all atypical cases margins were present in lesions, suggestive of tinea faciei and KOH examination was positive in all these cases. (Fig 2)

Table 1 Distribution of patients according to the age groups and gender

	Male	Female	
Age group (in years)	No. of cases (%age)	No. of cases (%age)	Total (%age)
0-10	0	0	0
11-20	6(14.3)	17(40.5)	23(23.2)
21-30	9(21.4)	26(45.6)	35(35.3)
31-40	19(45.2)	6(10.5)	25(25.3)
41-50	7(16.7)	6(10.5)	13(13.1)
51-60	0	2(3.5)	2(2)
61-70	1(2.4)	0	1(1)
Total	42(42.4)	57(57.6)	99(100)

Table 2 Disease duration

Disease Duration (months)	No. of cases (% age)
0-3 Months	61(61.6)
3-6 months	15(15.2)
6-9 months	7(7.1)
9-12 months	11(11.1)
12<months	5(5)

Table 3 Correlation of steroid application/indigenous treatment with duration of disease

History of steroid application	Absent	Present	P value
Disease Duration (months) SD±Mean	3.33 ± 3.92	5.93 ± 6.32	0.024



Fig. 1 (a) A well-defined erythematous annular plaque with scaling present over left side of face.
(b) A well-defined erythematous plaque with raised borders present over forehead and bilateral cheeks.

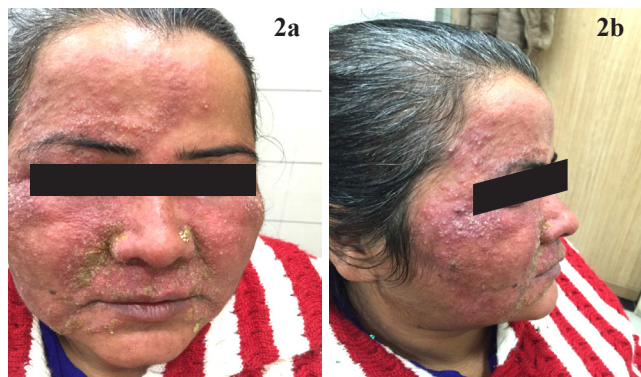


Fig. 2a & 2b Ill- defined erythematous plaque without central clearing with pustules covering entire face and dirty yellow crusting seen at places.

Tinea faciei was associated with involvement of other body sites also, most commonly with tinea corporis et cruris (46.5%). Family history was positive in 42% cases and all had history of sharing of fomites. Only 11 patients had other diseases of which hypertension was seen in 5 patients followed by diabetes mellitus in 3 patients. Almost 60% cases had history of steroid/ indigenous treatment out of which 78.3% were KOH positive and 36.7% were fungal culture positive. Confirmation of the diagnosis by direct microscopic examination was obtained in 81.8% of the patients while fungal culture confirmation was obtained only in 43.4% of patients. (Table 4) (Fig 3,4,5) *Trichophyton rubrum* was the isolate (43.4%) obtained on fungal culture.

Table 4 Correlation of KOH examination with growth on SDA media

	Fungal Culture	Negative	Positive	P value
		No. of cases (% age)	No. of cases (% age)	0.000
KOH Results	Negative	18(32.1)	0	
	Positive	38(67.9)	43(100)	

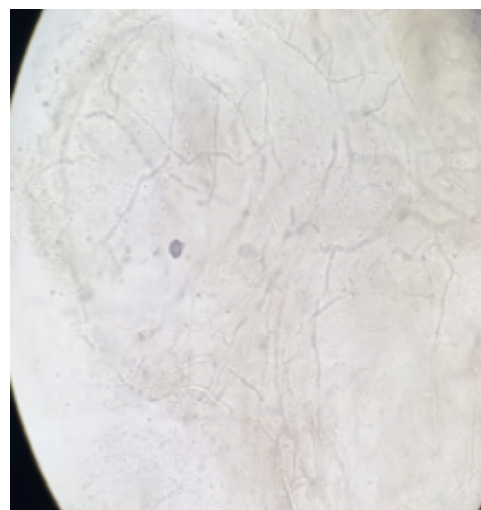


Fig. 3 KOH mount showing thin septate hyaline hyphae of dermatophytes.



Fig. 4 Growth of *Trichophyton rubrum* on SDA showing white cottony colonies and red pigment (reverse).

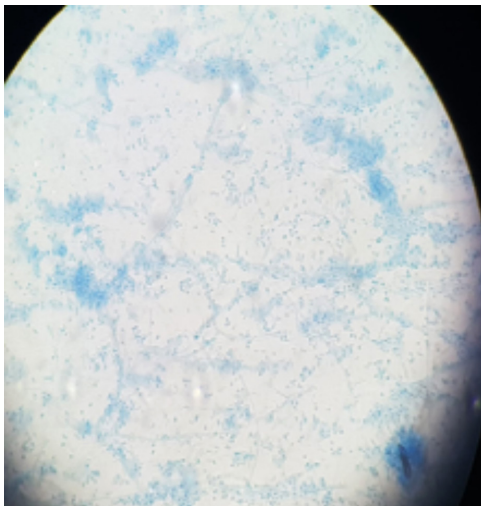


Fig. 5 Lactophenol cotton blue preparation of *Trichophyton rubrum* showing microconidia along the sides of hyphae giving "bird on fence" appearance (40X).

DISCUSSION

The present study was undertaken to shed light on the clinical manifestations of cutaneous mycosis of glabrous skin of face, identifying the species of fungi and to correlate clinical diagnosis with KOH positivity and culture positivity among the patients.

In the present study the age of patients ranged from 13 to 65 years. (mean SD = 30.02 : 10.824). Majority of the patients seen were in age group of 21-30 years (35.4%) followed by 31-40 years

(25.3%). This may be due to greater mobility of this age group and the potential for contact with other patients, making them prone to infection. This is in concordance with various other studies from India and abroad.^{1,32-34} No patients were seen below 10 years of age in our study.

In our study male preponderance was seen which is in concordance with various other studies.^{1,27,35-38} This may be due to greater physical activity and increased sweating, favoring the growth of dermatophytes.¹

In the present study, maximum number of patients were housewives (32.3%) and students (28.2%). On the other hand, in a study by Rangnathan et al, labourers and daily earners formed the major group.³⁹ The hot and humid climate of Indian subcontinent is highly favorable for the acquisition of fungal infections. Maximum number of cases (45.45%) in our study were seen in monsoon (i.e. June to August) followed by winter (i.e. December to February in 30.30%). Similarly more cases in hot and humid climate were reported by Rangnathan et al.³⁹

In our study, duration of disease ranged from 4 days to 2 years. Most of the cases (61.6%) had disease duration of less than 3 months followed by 15.2% patients who had disease duration between 3 to 6 months. Madhavi et al found duration from 5 days to 5 years with most patients presenting within 2 months of onset of symptoms.²⁴ Recurrence and chronicity could be due to early discontinuation of treatment by patient after initial control of symptoms in 2-3 days.³⁹ Our study comprised more of urban patients (72.7%) as compared to patients from rural background (27.3%). This can be attributed to the fact that our institute is a tertiary care hospital, situated in a city. Similar findings have been reported

by other studies in India.^{1,14} An infected family member is also an important source of infection in superficial mycoses. In our study, family history of superficial fungal infections was seen in 42.4 % cases. Unsanitary conditions and sharing of fomites among the family members may contribute to the spread of infection.³⁴

Out of 99 patients diagnosed with tinea faciei, hypertension was found in 5 cases and diabetes was present in 3 cases. Bindu et al have reported diabetes mellitus as the associated disease with superficial fungal infections.⁴⁰

In present study only 24.2% patients had tinea faciei alone while in rest of the cases tinea faciei was associated with involvement of other body sites. Association with tinea corporis et cruris (46.5%) was most common followed by tinea corporis (16.2%) and tinea cruris (11.1%) respectively. In a study by Sanjay et al cases of tinea faciei was associated with tinea cruris et corporis in 31.3% and tinea cruris in 2% patients.⁴¹

Typical features of tinea faciei were present in 82.8% patients in our study. These findings are consistent with a study by Prohic et al in which most common feature i.e. typical ringworms were seen in 88.9% cases.³⁷ Rest of the cases had features resembling seborrhoeic dermatitis, SLE and allergic contact dermatitis. In all these cases margins were present in lesions, suggestive of tinea faciei. KOH examination was positive in all these cases.

In our study almost 60% patients had applied steroids out of which 78.3% were KOH positive and 36.7% were fungal culture positive. Similar findings were seen in study by Dutta et al, done on tinea incognito in Assam in India.⁴² Steroids can lead to quick relief in the symptom but eventually leading to atypical presentation, persis-

tence, and widespread infection.⁴³ In our study, there was a statistically significant association between steroid application and duration of disease.

In our study, overall KOH positivity and culture positivity was 81.8% and 43.4% respectively. 43/99 cases were both KOH and culture positive while 18 were negative on both microscopy and culture.

In our study almost 60% patients had history of steroid/ indigenous treatment, out of which 78.3% were KOH positive and 36.7% were culture positive. Various other studies revealed KOH positivity rates ranging from 35.6% to 100% and culture positivity ranging from 29.29% to 79.1%.^{1,36,44-53} Results of the present study compare well with the other studies.

Most common isolate obtained in our study was *Trichophyton rubrum* obtained in 43.4% cases. This is in accordance with various other studies.^{1,27,34,36,50,54,55} In a study by Dutta B et al done on tinea incognito, *Trichophyton rubrum* was the most common species isolated.⁴²

In contrast to our study, a 10 year study by Prohic et al found *Microsporum canis* (78%) as the most frequently isolated species followed by *Trichophyton mentagrophytes* (13.3%) while *Trichophyton rubrum* was present sporadically in tinea faciei patients.³⁷ There is only one recent study done on tinea faciei which showed *Microsporum canis* as the most common species isolated.³⁸ Dermatophytosis has a wide geographical distribution; the dermatophyte species can vary from region to region and are geographically restricted except some species like *Trichophyton rubrum* which have a cosmopolitan distribution.³⁵

CONCLUSION

Superficial mycoses that was amenable to minimal intervention has grown into a bothersome health problem accountable to epidemic in India. Present clinicomycological study revealed *Trichophyton rubrum* as the most common causative agent of tinea faciei. Tinea faciei is commonly associated with steroid abuse. Almost 60% patients had history of steroid application. Steroid abuse was associated with longer duration of disease. KOH positivity (81.8%) has a higher positivity rate than fungal culture (43.4%). Culture of the fungus identifies the species but it is not essential for the diagnosis as it is not a sensitive test, but is useful for studying epidemiology of the disease. It is recommended that along with culture, sensitivity should also be done, so as to overcome the problem of resistance.

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