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Original Article

A STUDY OF SUPERFICIAL MYCOSIS IN SOUTH GUJARAT REGION

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ABSTRACT

Aim: To know the seroprevalence of clinical pattern of dermatophytosis and non – dermatophytic fungi (superficial mycosis) with most common fungal pathogen in the South Gujarat region of the India. **Methods**: A clinical and mycological study of superficial mycosis was conducted on 198 cases (127 male and 71 female). Direct microscopy by KOH mount and culture was undertaken to isolate the fungal pathogen in each case. **Results**: 123 out of 198 cases (62.12%) were positive by direct microscopy in which 58 (29.29%) were positive by culture. The commonest age group involved was 21 – 30 years. *Tinea corporis* was the most common clinical presentation and *Trichopyton rubrum* was the most common fungal pathogen isolated. Non dermatophytic fungus like *pityriasis versicolor* and *yeast* like *candida* species were isolated in 17(22.67%) cased and 8 (10.67%) cases respectively. **Conclusion**: It was concluded that along with dermatophytes, nondermatophytic fungi are also emerging as important causes of superficial mycosis.

Key words: Superficial mycosis, Dermatophytes, *Trichophyton rubrum*, *Tinea corporis*.

INTRODUCTION

Superficial mycosis refers to the disease of skin and its appendages caused by fungi. This group includes *dermatophytosis, pityriasis versicolor* and *candidiasis.* [1] These fungi have the capability to produce keratinase, which allows them to metabolize and live on human keratin like skin, nail and hair. [2]

Dermatophyte infections are one of the earliest known fungal infections of mankind and are very common throughout the world. [3] Although dermatophytosis does not produce mortality, it does cause morbidity and poses a major public health problem, especially in tropical countries like India due to the hot and humid climate. [3] Infection of skin or nail can also be caused by non – deramtophytic fungi and yeast – like fungi. These can also be cutaneous manifestation of systematic mycosis. Over the last decades, an increasing number of non – dermatophyte filamentous fungi have been recognized as agents of skin and nail infections in humans, producing lesions clinically similar to those caused by dermatophytes. [4]

Though several reports on dermatophytosis are available from different parts of the country, there are no reports on non – dermatophytic fungi and yeast like fungi as causative agents of superficial mycoses along with dermatophytes at South Gujarat region.

The present study was undertaken with a view to find out the clinical pattern of dermatophytosis and non – dermatophytic fungi (superficial mycosis) and most common fungal pathogen, prevalent in the South Gujarat region of the India.

MATERIAL AND METHODS

This is a 1.5 years (May 2003 to November 2004) prospective study, was conducted at one of the teaching hospital which is also a tertiary care hospital in, Surat, South Gujarat. A total of 198 symptomatic patients attending the dermatology clinic were taken as study group. A detailed clinical history including age, sex, duration, site and extent of infection, type of lesion, antifungal therapy and occupation of patients was taken. Patients were examined and grouped in different clinical types depending upon the site of involvement.

Clinical specimens like skin scrapping, infected hair (by hair plucking) and clipped nails were collected in small paper envelopes after cleaning the area with 70% alcohol. All specimens were subjected to direct microscopy for fungal elements in 10% / 20% (for nail) KOH and culture in Sabouraud's Dextrose Agar (SDA) with chloramphenicol antibiotics and Dermatophyte Test Medium (DTM). Tease mount, cellophane tape mount and slide cultures were undertaken for microscopic morphology. As *Pityrosporum* is a normal skin commensal, scraping from clinically diagnosed cases of *P. versicolor* were subjected to KOH mount only and not cultured. The culture studies and identification were done by standard methods. [1, 5, 6, 7, 8]

RESULTS

A total of 198 clinically diagnosed cases of superficial mycosis were enrolled in the study, comprising 127 (64.14%) male and 71 (35.86%) female. None of them had any systemic disease. The commonest age group involved was 21 – 30 years in 58 (29.30%) followed by 11 – 20 yrs, 31 – 40 yrs, > 50 yrs, 0 – 10 yrs and 41 – 50 yrs in 40 (20.20%), 24 (12.12%), 19 (9.59%) and 16 (8.08%) respectively. (Table 1)

Table 1 Distribution of clinical types according to Age and Sex.

Clinical Types	Age (in yrs)						Sex				Total	%
	0 –10	11 – 20	21 – 30	31 – 40	41 – 50	> 50	M	%	F	%		
T. corporis	8	28	24	25	9	18	77	68.75	35	31.25	112	56.57
T. capitis	10	6	4	1	1	0	7	31.82	15	68.18	22	11.11
T. mannum	1	2	5	5	3	2	9	50	9	50	18	9.09
Oncho–mycosis	0	0	14	1	2	1	12	66.67	6	33.33	18	9.09
T. pedis	0	4	2	3	0	3	11	91.67	1	8.33	12	6.06
T. crusis	0	0	5	5	1	0	6	54.55	5	45.45	11	5.56
T. barbae	0	1	2	0	0	0	3	100	0	0	3	1.51
T. faciei	0	0	2	0	0	0	2	100	0	0	2	1.01
Total	19	41	58	40	16	24	127	64.14	71	35.86	198	100
Percentage	9.59	20.71	29.30	20.20	8.08	12.12	64.14		35.86		100	

According to anatomical site involvement of fungal infection, *T corporis* was the most frequently found 64% (48 / 75) and *T. facie*, 1.33 % (1 / 75) was rarely found clinical type dermatophytosis was the commonest 66.66% (50 / 75) superficial fungus infection with five species being isolated followed by *P. versicolar* 22.67% (17 / 75) and *candida* 10.67% (8 / 75). Among the five species of dermatophytes, *T. rubrum* and *T. mentagrophytes* were the maximally isolated fungus and account for 54% (27 / 50) and 32% (16 / 50) respectively. Clinical and mycological correlation is shown in Table 2.

Out of 198 clinical cases, diagnosis was confirmed by microscopic examination (KOH) in 123 (62.12%) cases and casual agents were isolated in 58 (29.29%) cases. A total of 53 (26.77%) cases were positive on direct examination as well as on culture. 70 (35.35%) cases were positive on direct microscopy but negative on culture, also 70 (35.35%) cases were negative by both techniques. 5 (2.53%) cases were negative by direct microscopy but yield growth on culture.

DISCUSSION

Fungal infections are extremely common in the tropical region and some of them are serious and even fatal. They produce diverse human infections ranging from superficial skin infections to internal organ invasion (systematic disease). Although rarely life threatening , they can cause debilitating effects on a person's quality of life and may in some circumstances spread to other individuals or become invasive. Most superficial and subcutaneous fungal infections are easily diagnosed and readily amenable to treatment. [2] On account of that, a year and half long study was carried out on the patient attending the dermatology clinic at our institute from May 2003 to November 2004 with a view to find out the clinical pattern of dermatophytosis and species prevalent in the South Gujarat region.

Total 198 cases were studied for superficial mycosis. Persons of all ages were susceptible but most of the cases of fungal infection (69.7%, 138 / 198) occurred above 20 years of age, with maximum number of patients were seen in the second decade (29.30%, 58 / 198) followed by 11 – 20 yrs (20.71%, 41 / 198) our study is well correlated with study carried out by Sarma et al [maximum cases in age group 21 – 30 yrs (39%)], followed by 11. 20 yrs (19%). [9] Higher frequency in adults confirm to the predominant age group which is physically active outdoors. 10 cases out of 22 of *T. capitis* below the age of ten yrs and 6 cases were in age group of 11 – 20 yrs which confirms that the *T. capitis* is a disease of prepubertal age. Post – pubertal changes in hormones, resulting in acidic sebaceous gland secretions are responsible for decrease in incidence with age. [10]

Table 2 Clinical Types in relation to etiologic agents

Clinical Types	Dermatophytes						Non dermatophytes P. versicolar	Yeast Like Candida	Total
	T. rub rum	T. menta grophyte	*T. schoe- Nlenii*	*T. viola Ceum*	*T. verru cosum*	*Epi.flo Cosum*			
T. corporis	20	7	0	1	0	0	17	3	48
%	(74.1)	(43.7)	(0.0)	(33.3)	(0.0)	(0.0)	(100)	(37.5)	(64.0)
T. capitis	0	3	1	2	0	0	0	2	8
%	(0.0)	(18.7)	(100)	(66.7)	(0.0)	(0.0)	(0.0)	(25.0)	(10.7)
T. mannum	2	0	0	0	0	0	0	0	2
%	(7.4)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(2.7)
Onychomycosis	1	2	0	0	0	1	0	2	6
%	(3.7)	(12.5)	(0.0)	(0.0)	(0.0)	(100)	(0.0)	(25.0)	(8.0)
T. pedis	3	0	0	0	0	0	0	0	3
%	(11.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(4.0)
T. crusis	1	3	0	0	0	0	0	1	5
%	(3.7)	(18.7)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(12.5)	(6.7)
T. barbae	0	1	0	0	1	0	0	0	2
%	(0.0)	(6.3)	(0.0)	(0.0)	(50.0)	(0.0)	(0.0)	(0.0)	(2.7)
T. faciei	0	0	0	0	1	0	0	0	1
%	(0.0)	(0.0)	(0.0)	(0.0)	(5.0)	(0.0)	(0.0)	(0.0)	(1.3)
Total	27	16	1	3	2	1	17	8	75
%	(36.0)	(21.3)	(1.3)	(4.0)	(2.7)	(1.3)	(22.7)	(10.7)	(100)
Total (%)			50 (66.7)				17 (22.7)	8 (10.7)	75(100)

Higher incidence of dermatophytes in male than in females has been reported both in India and abroad. [10] Male to female ratio in our study was 1.75: 1; higher incidence in young males could be due to greater physical activity and increased seating. The lower incidence in females may be also due to the hospitals due to the prevailing social stigma in rural population in India.

T. corporis was the most common fungus and manifestations were reported more in male than females. The findings are endorsed by earlier reports. [10]

As shown in Table 2, from the different species isolated, *T. rubrum* was found to be the commonest etiological agent, which is in conformation with other studies.[4] This followed by *P. versicolor* (17 / 75, 22.67%), *T. mentagophyte* (16 / 75, 21.33%), *yeas*t like *candida* (8 / 75, 10.67%). The study by E Ilabib MS et al co – relate with this (*T. versicolar* 27.8%, *Candida* 13.4%). [11] *T. violaceum*, *T. schoeleni, T. verrucosum* and *Epidermophytom floccosum* contributed remaining 9.33% (7 / 75). The report should be published so far in India unequivocally, report *T. rubrum* to be the most common dermatophyte isolated from various lesions followed by *T. mentagophytes*, which is consistent with our study results. [12, 13] *Candida* spp. was isolated in 10.67% and isolation rate of *candida* in this study is comparable to that of other study. [9]

T. rubrum was the main isolate from cases of *T. corporis* and least isolated from the *T. capitis* cases (0%). This is well correlated with study carried out by Aruna Aggarwal from Amritsar. [4]

As shown in Table 3 Commonest clinical presentation in our study were patient having skin infection (79.80%, 100 / 198) followed by hair infection (11.11%, 11 / 198) and nail infection (9.09, 12 / 198). Isolation rate was more by direct microscopy using KOH preparation (62.12%, 123 / 198) than culture (29.29%, 58 / 198), compared to rates 7% to 49% by culture in other studies. [10] (2.53%) specimens were positive by culture alone and 70 (35.35%) by direct microscopy alone, highlighting the importance of both direct microscopy and culture in definitive diagnosis of fungal infection.

We conclude that along with dermatophytes, nondermatophytic fungi are also emerging as important causes of superficial mycosis. Direct microscopy and culture both are important tool of diagnosis for the fungal infections.

Table 3 Result of direct microscopy (KOH) and Culture

		KOH +ve	Culture +ve	KOH + ve Culture + ve	KOH +ve Culture - ve	KOH - ve Culture + ve	KOH - ve Culture -ve	Total Cases	%
CLINICAL TYPES	*T.corporis*	79	31	30	49	1	32	112	56.57
	T.capitis	11	8	8	3	0	11	22	11.11
	T.mannum	6	2	2	4	0	12	18	9.09
	Onycho-mycosis	12	6	4	8	2	4	18	9.09
	T.pedis	02	3	1	1	2	8	12	6.06
	T.crusis	09	5	5	4	0	2	11	5.56
	T.barbae	03	2	2	1	0	0	3	1.51
	T.faciei	01	1	1	0	0	1	2	1.01
Total		123	58	53	70	5	70	198	100
SITE	Skin	100	44	41	59	3	55	158	79.80
	Hair	11	08	8	3	0	11	22	11.11
	Nail	12	06	4	8	2	4	18	9.09
Total		123	58	53	70	5	70	198	100
Percentage		62.12	29.29	26.77	35.35	2.53	35.35	100	

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