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Original Research Article

A Study of Superficial Mycosis in Tertiary Care Center, PDU Medical College Rajkot

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Abstract

Aim: To know the seroprevalence of clinical pattern of dermatophytosis (superficial mycosis) with most common fungal pathogen and association with the occupation in P.D.U. Hospital, Rajkot Gujarat region of the India. ***Methods:*** A clinical and mycological study of superficial mycosis was conducted on 250 cases (135 male and 115 female). Direct microscopy by KOH mount and culture was undertaken to isolate the fungal pathogen in each case. ***Results:*** 225 out of 250 cases (xxx) were positive by direct microscopy in which 130 (xxx) were positive by culture. The commonest age group involved was 21-30 years.Ladourer were affected in115 case out of 250(47.6%) *Tinea corporis* was the most common clinical presentation and *Trichopyton rubrum* was the most commonfungal pathogen isolated followed by *Trichopyton mentagrophyte*. ***Conclusion:*** It was concluded that dermatophytes, are the most common fungal causes of superficial mycosis.

Keywords: Superficial mycosis, Dermatophytes, *Trichophyton rubrum*, *Tinea corporis*.

INTRODUCTION

Fungal infections of the skin & its appendages are very common & assuming greater significance in India & both developed & developing countries. The common cause of skin infections are dermatophytes and opportunistic fungi. Although fungi are worldwide, only few of them are considered pathogenic. The pathogenic fungi may give rise to infections in animals and human beings. Most of the agents cause infection of the superficial layers of the integument and only very few give rise to systemic involvement. Recently there has been an increase in the incidence of fungal infections. This increase may be a result of frequent usage of antibiotics, immunosuppressive drugs and various conditions like organ transplantations, lymphomas, leukemia and human immunodeficiency virus (HIV) infections [1].

Dermatophyte means "*Skin–Plant"*, they are group of keratinophilic fungi, causative agents of " Dermatophytosis" are also called Tinea or Ringworm, clinically characterized by involvement of keratinized tissue of the skin & its appendages i.e. hair & nails [1-5]. Ring worm produces circular lesion equal in all center & becomes active and scaly at the periphery. The Dermatophytes causing superficial infection differ from place to place [1]. Environmental conditions, economical factors like poverty, overcrowding, personal hygiene & individual's susceptibility governs their prevalence. There are evidences that the predominance of species not only differs from region to region but also may change from time to time. Skin infection due to dermatophytes has become a significant health problem affecting children, adolescents and adults.

Any clinical diagnosis need to be supported by laboratory diagnosis. Culture is a necessary adjunct to direct microscopic examination for definitive identification of etiological agent and in many instances the choice of therapy may be depend upon the specific identification of invasive mould [6, 7]. This is especially important in nail and skin infection, often caused by non-dermatophytic filamentous fungi, which are often resistant to usual dosage of the therapy, used for dermatophytic infection [7].

Identification of dermatophyte species and knowledge of their host preference and ecology play an important role in epidemiology, public health issue and infection control [7]. The varied clinical presentation of tinea, which results in delay in diagnosis, poor compliance in follow up of cases, and consequently

spread of infection in the community had rekindled interest in identification of dermatophyte species [7].

Hence, the present study was done to find out the prevalence of Dermatophytosis and to isolate various species causing Dermatophytosis in patients attending P.D.U. Hospital, Rajkot. The study was done in 200 patients attending SKIN & VENERAL diseases department (out patient department, OPD), in P.D.U. Hospital, Rajkot and samples were processed in Mycology section of the Department of Microbiology, P.D.U.Medical College, Rajkot.

MATERIAL AND METHODS

Two hundred patients, clinically diagnosed as dermatophytosis were selected for present study from Out Patient Department (OPD) of Skin &Veneral Department, P.D.U. Hospital, Rajkot from the period of July 2011 to September 2012.

This is a 1.2years (July 2011 to September 2012) prospective study, was conducted at one of theteaching hospital which is also a tertiary carehospital in, P.D.U. Hospital, Rajkot Gujarat. A total of 250 symptomatic patients attending the (OPD) of Skin &Venereal Department were taken as study group. A detailedclinical history including age, sex, duration, siteand extent of infection, type of lesion, antifungaltherapy and occupation of patients was taken.Patients were examined and grouped in differentclinical types depending upon the site ofinvolvement.Clinical specimens like skin scrapping, infectedhair (by hair plucking) and clipped nails were collected in small paper envelopes after cleaning the area with 70% alcohol. All specimens weresubjected to direct microscopy for fungal elements in 10% / 20% (for nail) KOH 40% Dimethyl Sulfoxide mount.Nail clippings were immersed in 10% KOH overnight and examined next morningand 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. Special urease test was also performed to identify T.mentagrophyte. The culture studies and identification were done by standard methods [2-4, 7, 13].

RESULTS

A total of 250 clinically diagnosed cases of dermatophytes were enrolled in the study, comprising 135 (54%) male and 115 (46%) female. None of them had any systemic disease. The commonest age group involved was 21 – 30 years in 61 (24.4%) followed by 41-50 yrs, 31-40 yrs,11-21,51-60,>60 yrs, 0–10 yrs.According to anatomical site involvement of fungal infection, *T corporis* was the most frequently found 61.6% (154 / 250) and *T. mannum*, 1.2% (3 / 250) was rarely found clinical type as shown in Table-1.

Table-1: Distribution of clinical types according to Age

CLINICAL TYPES	AGE – GROUP							TOTAL CASES	
	0-10	11-20	21-30	31-40	41-50	51-60	>60	NO.	%
T. corporis	1	17	33	39	41	15	8	154	61.6
T. cruris	-	7	12	8	9	3	1	40	16
T. corporis+T.cruris	-	3	5	4	2	3	1	18	7.2
T. unguim	1	1	4	5	2	2	-	15	6
T. capitis	3	3	1	1	1	1	1	11	4.4
T. faciei	1	-	3	1	-	-	-	5	2
T. pedis	-	-	3	-	1	-	-	4	1.6
T. Mannum	-	-	-	-	3	-	-	3	1.2
TOTAL	**6**	**31**	**61**	**58**	**59**	**24**	**11**	**250**	**100**

Among the species of dermatophytes, *T. rubrum* and *T.mentagrophytes*were the maximally isolatedfungus and account for 50% (65 / 130) and 27.69% (36/ 130) respectively

Table-2: Incidence of Different Species of Dermatophyte

SPECIES	NO. OF CASES	%
T. rubrum	65	50
T.mentagrophytes	36	27.69
M.gypseum	14	10.76
T.tonsurans	6	4.62
T.violaceum	3	2.31
T.verrucosum	2	1.54
M.canis	2	1.54
M.cookie	1	0.77
E.floccosum	1	0.77
TOTAL	**130**	**100**

Out of 250 clinical cases, diagnosis was confirmed by microscopic examination (KOH) in 225 (90%) cases and casual agents were isolated in 130 (52%) cases. A total of 123 (49.2%) cases were positive on direct examination as well as on culture. 102 (40.8%) cases were positive on direct microscopy but negative on culture and 18 (7.2%) cases were negative by both techniques. 7(2.8%) cases were negative by direct microscopy but yield growth on culture. Skin infection was most common followed by nail and hair respectively as shown in Table-3.

Table-3: Incidence of Isolation of Dermatophyts from Sample Types

SITE	NO. OF CASES	KOH & CULTURE BOTH +VE	KOH+VE CULTURE -VE	CULTURE +VE KOH-VE	KOH & CULTURE BOTH –VE
SKIN	222	108	93	7	14
HAIR	13	9	4	-	-
NAIL	15	6	5	-	4
TOTAL	**250**	**123**	**102**	**7**	**18**

Out of 250 clinical cases, Labourer were affected in 119 (47.6%) cases followed by house wife and others in 66(26.4%) and 31(12.4) case respectively as shown in Table-4.

Table-4: Correlations between Occupation & Dermatophytes

OCCUPATION	NO. OF CASES	%
Labourer	119	47.6
House wives	66	26.4
Students	27	10.8
Agriculture	7	2.8
Others	31	12.4
Total	250	100

Table-5: Correlation Between Clinical & Mycological Study

CLINICAL TYPES	CULTURE +VE	T. rubrum	T.mentagrophytes	M.gyps	T.tonsurans	T.violac	T.verrucosum	M.canis	M.cookie	E.flocosum
T. corporis	88	41	25	9	6	2	1	2	1	1
T. cruris	18	12	4	1	-	1	-	-	-	-
T. corporis+T .cruris	8	4	2	2	-	-	-	-	-	-
T. unguim	6	4	2	-	-	-	-	-	-	-
T. capitis	7	2	2	2	-	-	1	-	-	-
T. faciei	2	1	1	-	-	-	-	-	-	-
T. pedis	-	-	-	-	-	-	-	-	-	-
T. Mannum	1	1	-	-	-	-	-	-	-	-
TOTAL	130	65	36	14	6	3	2	2	1	1

DISCUSSION

This study included 250 cases of clinically diagnosed superficial dermatophytes on random basis from patients attending P.D.U. Hospital, Rajkot. The study period was from july 2011 to September 2012. The results obtained are discussed as herewith.

Comparison of prevalence of different clinical types of Tinea infection with the reports of other workers (in %)

NAME OF WORKER	TINEA CORPORIS	TINEA CRURIS	TINEA CAPITIS	TINEA UNGUIUM	TINEA MANNUM	TINEA PEDIS	TINEA BARBAE
Suman S. 2000, Baroda	**58.84**	**12.30**	**6.92**	**1.92**	**6.15**	**11.53**	**0.76**
Bindu V., 2001, Calicut.	54.6	38.6	-	-	-	-	-

Kaviarasan PK, 2001, Pondichery	53.7	49.9	-	26.82	2.43	17.1	-
V. Sumana, 2001, AP.	60	40	-	-	-	-	-
Peerapur BV. 2003, Bijapur	34.31	35.29	8.82	1.96	0.98	2.94	-
KeyvanPakshir 2006, karaj	22.77	24.23	11.38	9.80	7.32	20.74	3.38
Jaya garg et al 2009 Varanasi	12.25	12.90	32.25	-	9.67	32.90	-
Makwana G. 2009, Jamnagar	55	17	10	4.50	2	3.50	0.5
Batra S.2011, Ajmer	36.8	26.6	17.6	4.8	0.8	3.2	-
Present study 2012, Rajkot.	**61.6**	**16**	**4.4**	**6**	**1.2**	**1.6**	**-**

In present study male to female ratio is 1.17:1, 54% male &46% female have been reported. Chowdhary et Kennedy, Chenna [8] have reported the male to female ratio 1.12:1.The high incidence in male is presumably due to higher physical activity in male leading to excess of perspiration in a hot and a humid climate.

Persons of all ages are susceptible to Dermatophyte infection but it appears to be more common in adults, age-group of 21-30 years with an incidence of 24.4% .followed by 41-50 years (23.6%), 31-40 years (23.2%), 11-20 years (12.4%), 51 – 60 years (9.6%) ,>60 years (4.4%)& 0 – 10 years (2.4%). So our study revealed maximum incidence in 3rd decade of life. Similar age incidence was reported by Jain Neetu, Jaipur, 2008 [9].

In our study most of the patients are labourers so their heavy physical work predispose them to excess perspiration in a humid environment. Maximum occupational risk is present in age group 21-30 years of age.

KOH positivity in our study was 90% similar to another study 88.5 % Makwana G., Jamnagar, 2009**,** 74.5% by Peerapur B V [10] & 64% by Bindu V [11] Culture positivity (52%) in our study was also similar to another studies like 63.5% Makwana G.Jamnagar, 46.3% by Damle *et al*., [12], 46.68% by Chowdhary *et al.*, [14] 44.61% by Suman S., [15] & 50.7% by Uma Banerjee *et al*., [16]. Shah A K *et al*., [17] Khare *et al*., [18] & Mehta J P *et al*., [19] have reported even higher 73.3%, 70.75% & 72.88% culture positivity respectively.

Genus Trichophyton was most prevalent than Epiderphyton&Microsporum in our study. Commonest species was T. Rubrum. Similar findings also present in other studies like Kumar Kennedy-2007, Mishra M.-1998, Damle-1981, Jain Neetu-2008, Sen SS-2009, makwana G.-2009 & Batra S.-2011.Other workers have found it ranging from 92.78% by Amin AG [20]. The selective utilization of certain amino acids by E.floccosum could be one of the reasons for its low prevalence in human infection [21].

CONCLUSION

250 cases of clinically diagnosed Dermatophytosis were selected from period of July 2011 to September 2012 to find out the prevalence of Dermatophytosis in Saurashtra and Kutch region. The various samples like skin scraping/ hair plucking/ nail clipping were taken for direct microscopy and culture.

The important findings of studies are:

- Tinea corporis (61.6%) was the most common clinical type followed by Tinea cruris (16%). High incidence of these two types could be due to severe itching associated with these two condition making them seek medical advice.
- The most common genus isolated is Trichophyton rubrum. It is antrhophilic fungi and leads to chronic infection which require longer duration of treatment.
- Dermatophytes are more prevalence in male then female this is due to higher physical activity in male leading to excess of perspiration in a hot and humid climate.
- Culture is gold standard though the isolation rate is lower than the KOH microscopy
- Most common affected occupation in our study is labourer. this reason is probably there poor hygiene and heavy physical activity making them more vulnerable to dermatophytosis

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