

Clinico-Mycological profile of Dermatophytes in Vijayapur, Karnataka

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Abstract**Introduction:** Dermatophytosis is common superficial mycoses affecting human beings. Dermatophytes presents with inflammatory response, intense itching and lesion of cosmetic importance. This study aimed at isolation, identification and clinical presentation of dermatophytes.**Materials & Methods:** Our study was carried over for one year. Causative organisms were detected by microscopy and culture. Clinically suspected 80 cases of dermatophytosis were taken into consideration for study.**Results:** This work was carried on 80 clinically diagnosed cases of dermatophytosis. Tinea corporis was common clinical presentation with 46 cases (57.5%). Out of 80 cases clinically diagnosed dermatophytoses males were more in number 44(55%) compared to female 36(45%). Out of 80 cases of dermatophytosis 44(55%) showed fungal elements in direct microscopy (KOH) and 35(43.75%) showed growth in culture. Trichophyton rubrum was the commonest isolate 22(62.85%) identified.**Conclusion:** This study shows the tinea corporis as the common clinical type. Trichophyton rubrum and Trichophyton mentagrophyte as the most noted isolates with male preponderance. This study helps us to know the importance of mycological examination of dermatophytoses, for proper treatment and also for epidemiological studies.**Key words:** Dermatophytosis, Tinea, Trichophyton, Dermatophyte, KOH

Access this article online	
Quick Response Code:	Website: www.innovativepublication.com
	DOI: 10.5958/2455-6807.2016.00009.X

Introduction

Dermatophytosis is by far most common superficial infection affecting keratinized tissues of stratum corneum involving hair, nails and skin. Dermatophytes are filamentous fungi which are physiologically adapted for growth on keratin causing dermatophytoses, commonly known as "Tinea" and "Ringworm" infection.¹

Dermatophytes affects human beings in the world with no human habitation being exempt from them. Even in India this disease is encountered commonly, contribute a great bulk of cases attending the dermatology clinics. Due to tropical climatic conditions like high temperature and humidity it's more prevalent in India. Environmental and living styles of people play a role in disease. It is only the true contagious mycosis.²

As there is increase in number of immunosuppressed patients it becomes difficult to treat cases of dermatophytoses making it a challenge as it involves 1/5th of the world's population.^{3,4}

Dermatophytes are septate molds with three anamorphic genera- Trichophyton, Microsporum and Epidermophyton. Depending on its origin it is divided into geophilic, zoophilic and anthropiic species.⁵

Dermatophytosis causes inflammatory response, intense itching and lesion of cosmetic importance.⁶

This study was aimed at isolation, identification and clinical presentation of dermatophytes.

Materials and Methods

This study was conducted from January – December 2015 in the department of microbiology, Al-Ameen Medical College, Vijayapur, Karnataka. Clinically suspected 80 cases of dermatophytoses visiting to the dermatology OPD were studied.

After taking detailed case history, clinical examination was conducted. The patient was made to sit in the good source of light and proper clinical examination of lesion was done. It included type of lesions, presence of inflammatory margin etc. The specimens collected were skin scrapings, hair, hair roots and pus. Approval for the work was given by ethical committee. Consent was taken from all patients.

10% potassium hydroxide (KOH) wet mount for the specimens of skin, pus, biopsy tissue and grains. For hair and nail specimens 40% KOH was used for microscopy.²

Sabouraud dextrose agar (SDA) media, with chloramphenicol 50mg/l and another SDA with chloramphenicol with cycloheximide 500mg/l added to it were inoculated for culture at 30°C.²

Growth was recorded and tubes were noted as no growth only after six weeks.² Dermatophytes growth was noted with following features-duration, surface morphology and pigment on reverse. Exact morphology was observed in corn meal agar. Lactophenol cotton blue stain showed type of mycelium, presence of

macroconidia and microconidia on microscopy helping to identify genera and species. Urease test helped in differentiation of dermatophyte species since most of them have ability to produce enzyme urease which hydrolyses urea.

Results

80 cases clinically diagnosed as dermatophytes were included in the study. Out of which 44(55%) were positive in microscopy. 35(43.75%) were found positive for dermatophyte species in culture.

Majority of cases in both sexes belonging to 21-30 years of age 30 cases (37.5%) next affected groups in order are 31-40 years 14 cases (17.5%). The sex incidence showed males 44(55%) and females 36(45%). [Table1]

Maximum cases presented with *Tinea corporis* 46 cases (57.5%). The other clinical type being *Tinea cruris* 12(15%), *Tinea faciei* 10(12.5%), *Tinea capitis* 6(7.5%), *Tinea barbae* 4(5%), *T.ungum* and *T.manum* 1(1.25%). [Table 2]

Out of 80 cases of dermatophytosis 44 cases (55%) showed positivity in KOH and 35(43.75%) showed growth in culture. 30(37.5%) showed positivity in KOH and culture. In 5 cases (6.25%) direct examination was negative but growth was seen in culture. 36 cases (45%) were negative in both microscopy and culture. [Table 3]

Among 80 clinical isolates 35 cases (43.75%) showed growth in culture. *Trichophyton rubrum* being maximum in number 22(62.85%) followed with *T.mentagrophyte* 6 (17.14%), *T.violaceum* 4 (11.43%), *Epidermophyton floccosum* 2(5.72%), *Microsporium gypseum* 1(2.86%). [Table 4]

Table 1: Dermatophytosis in relation to age and sex

Age	Male	Female	Total
1-10 years	2(2.5%)	4(5%)	6(7.5%)
11-20 years	8(10%)	4(5%)	12(15%)
21-30 years	20(25%)	10(12.5%)	30(37.5%)
31-40 years	8(10%)	6(7.5%)	14(17.5%)
41-50 years	2(2.5%)	6(7.5%)	8(10%)
51-60 years	4(5%)	6(7.5%)	10(12.5%)
	44(55%)	36(45%)	80(100%)

Table 2: Clinical types of dermatophytosis

Clinical types	Number of isolates	Percentage
<i>Tinea corporis</i>	46	57.5%
<i>Tinea cruris</i>	12	15%
<i>Tinea faciei</i>	10	12.5%
<i>Tinea capitis</i>	6	7.5%
<i>Tinea barbae</i>	4	5%
<i>Tinea unguis</i>	1	1.25%
<i>Tinea manuum</i>	1	1.25%
	80	100%

Table 3: Results obtained in direct microscopy and culture

	KOH positive	KOH negative	Total
Culture positive	30(37.5%)	5(6.25%)	35(43.75%)
Culture negative	14(17.5%)	31(38.75%)	45(56.25%)
	44(55%)	36(45%)	80(100%)

Table 4: Incidence of various species of dermatophytes in clinical isolates

Species	Number of isolates	Percentage
<i>Trichophyton rubrum</i>	22	62.85%
<i>Trichophyton mentagrophyte</i>	6	17.14%
<i>Trichophyton violaceum</i>	4	11.43%
<i>Epidermophyton floccosum</i>	2	5.72%
<i>Microsporium species</i>	1	2.86%
	35	100%

Discussion

Dermatophytes are molds affecting keratinized tissue causing superficial mycoses in humans and animals commonly known as ringworm infection.⁷

Age incidence: Incidence of dermatophytosis in our study was observed in 21-30 years (37.5%) of age.

These findings correlated with other studies with predominance in 21-30 years of age.

Sumit kumar in 2014—21-30 years (35.2%)⁸

Parameswari in 2015-- 21-30 years (40%).⁹

H. Krishna Santosh in 2015 in Nellore--21-30 years (41.62%).¹⁰

S.S. Sen in 2006 in Assam-- 21-30 years (44%)¹¹ reported incidence of dermatophytosis more in 21-30 years of age.

The higher incidence of dermatophytosis in young age due to increased physical activity, opportunity for exposure and hormonal pattern.

Incidence according to sex: Dermatophytic infection was noted common in male (55%) and less in female (45%).

Other studies also supported that incidence of dermatophyte is more prevalent in men than in female.

S.Sumathi in 2013 –dermatophytic infection in men (55%) and less in female (45%).¹²

A. Lakshmanan in 2015-- male (56%) and female (44%).¹³

Neetu Jain in 2008 showed Tinea infection were more dominant in males (67.5%) than in female (32.5%).¹⁴

Singh S in 2003 reported incidence in male (61.15%) and in female (38.84%).¹⁵

Male predominance of dermatophytosis was observed due to increased outdoor activities and increased opportunity for exposure to the fungi of men than women.

Culture and Microscopy: 44 cases (55%) showed fungal elements in microscopy (KOH). 35 cases (43.75%) growth in culture. 36 cases (45%) showed neither culture positive nor KOH positive. Other author's observations were same as our study.

Kumar in 2014-- microscopy positivity was 55.2% cases and culture positivity was 42.4%.⁸

Bindu V in 2002, 64% cases positive by microscopy and 45.35% cases were culture positive.¹⁶

S. Singh in 2003 also reported 60.38% cases positive by microscopy and 44.6% cases were culture positive. 55.38% cases were negative by microscopy and culture.¹⁵

Deramtophyte isolates: Trichophyton rubrum was the predominant isolate in 22 cases (62.85%) other workers who reported, T.rubrum as predominant isolate in their studies were Sumana V et al in 2004- 60%¹⁷, Peerapur B V et al in 2004 – 43.7%¹⁸, Madhavi S et al in 2011- 51.72%¹⁹, Kumar et al in 2014- 65.09%⁸.

Trichophyton mentagrophyte next common isolate 6 (17.14%). This correlated with results of Kumar et al in 2015- (17.92%)⁸, Bindu V et al in 2002- (25%)¹⁶ and Peerapur B V et al in 2004 – (28.1%)¹⁸.

Other dermatophytes isolated were Trichophyton violaceum in 4(11.43%) of cases. Epidermophyton floccosum was isolated in 2 (5.7%) of cases. Microsporum gypseum was isolated in 1(2.86%) of cases. These findings correlated with other studies.

Clinical types of dermatophytosis: Tinea corporis was the clinical presentation encountered in 46 cases (57.5%), Tinea cruris 12(15%), Tinea faciei 10(12.5%), Tinea capitis 6(7.5%), Tinea barbae 4 (5%), Tinea unguum and Tinea manum 1(1.25%).

Other studies also reported Tinea corporis to be the most prevalent clinical type.

G. Venkatesan in 2007-- Tinea corporis was most prevalent (64.8%)³

Seema Bhaduri in 2001-- Tinea corporis most common clinical types in 28/70 cases (60%).⁴

MN Sumana and V Rajagopal in 2002 found Tinea corporis commonest in 73/150 cases (60%).²⁰

Sowmya Nasimuddin in 2014 reported Tinea corporis as clinical infection in (43.33%).²¹

Conclusion

This study shows the Tinea corporis as the common clinical type. Trichophyton rubrum and Trichophyton mentagrophyte are the most noted isolates with males more frequently affected. The study signifies the importance of clinicomycological examination of dermatophytoses for their effective treatment as it has psychological effect and a costly disease to treat.

Acknowledgement

The authors are thankful to the Dean Al-Ameen Medical College for his help, department of Dermatology for providing samples and technician who helped in isolation of dermatophytes.

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How to cite this article: Khadri SY, Koregol S, Khadri YS, Patil BS. Clinico-Mycological profile of Dermatophytes in Vijayapur, Karnataka. *International Journal of Medical Microbiology and Tropical Diseases* 2016;2(2):75-78.