

**Research Article**

## MYCOLOGY PROFILE OF DERMATOPHYTE INFECTION IN RURAL AREA

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### ABSTRACT

Dermatophyte infection is one of the most common skin infections in the rural population. This because of the proximity of domestic animals, rural people working in fields and gardens exposing themselves to soil, compost, decaying organic material. Further rural people also habituated to take bath and swimming in village ponds where animals also are washed in the same ponds. All this may put the rural people at the high risk of Dermatophyte infections. This study is undertaken on the patients attending to Dermatology OPD in the teaching Hospital in rural area. These patients were clinically diagnosed as suffering from Dermatophyte infections and subjected laboratory diagnosis.

**Keywords:** Dermatophyte, Infection

### INTRODUCTION

Dermatophytosis in human beings is produced by many species of Dermatophyte. These are grouped in three genera. Genus *Microsporum* contain 16 species, Genus *Trichophyton* contain 24 species and Genus *Epidermophyton* contain 2 species. All these pathogens are morphologically show septate thin hyphae. In Genus *Trichophyton* spirally coiled and other characteristic morphological shapes of hyphae are present. These fungal pathogens cause disease in the keratinized structures of the skin, nails and hair (Sageerabano *et al.*, 2011).

Naturally these pathogens live on animals, soil and some adapted to survive only on human beings. On many occasions initially infection arises from soil and animals and spread among humans. In view of rural people who are naturally interacting closely with domestic animals there is high risk of getting dermatophyte infections. Further rural people working in the fields, gardens with manure and decaying organic matter in the soil will add to the risk of getting these fungal infections. Rural people also habituated to take bath and swimming in village ponds where animals also are washed in the same ponds (Shenoy *et al.*, 2008). Some of these patients may develop allergic cutaneous lesions and get infected. Most of these rural people are having low health awareness and neglect these cutaneous fungal infections and do not seek proper treatment. These results in disease progression and more chances in spreading in the family contacts. By proper health awareness these infections can be prevented in the rural people (Vikrant *et al.*, 2009). This study is undertaken to know the prevalence of dermatophytic infection in rural area by analyzing the patients attending the Dermatology OPD in the teaching Hospital located in a rural area during the period of June 2013 to December 2013.

### MATERIALS AND METHODS

Total of 683 patients (males – 205, females – 187, male children -159 and female children- 132 ) attending the Dermatology OPD in the teaching Hospital located in a rural area with complaints of ring worm lesions on various parts of the body were included in this study. These patients were attending the

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Dermatology OPD for skin infections and provisionally diagnosed as Dermatophytosis and subjected to Laboratory diagnosis. Proper explanation about this study was given to all these patients and the consent was taken from them. Under aseptic conditions skin scrapings from the margins of the lesions and bits of hair from the lesions are collected into sterile petridish.

In case of nail infections small bits of nail is collected. All the specimens were subjected to 10% KOH mount and culture on Sabouraud's dextrose agar with incubation at 27°C for two to three weeks. From the culture plate bits of mycelia are subjected to Lactophenol cotton blue stain mount and microscopically observed for characteristic spores formation. Pathogen is identified to genus level based on macroconidia and morphology of hyphae.

## RESULTS AND DISCUSSION

### Results

In this study 683 patients were clinically diagnosed as suffering from Dermatophyte infections. Among these patients more cases are Tineacorporis (41.28%) followed by Tineacapitis (26.20%) and Tineacurris (22.69%). Tineabarbae and Tineaunguim are seen in (4.24%) and (5.56%) respectively. After performing 10% KOH mount and culture, the fungal pathogen was detected and identified only in 597 patients amounting to 87.40% patients.

These pathogens were identified to genus level by observing the macroconidia, microconidia and hyphal structures. Macroconidia are rare in genus Trichophyton and so these pathogens were identified by abundant microconidia and hyphal structures. In the case of genus Microsporum and genus Epidermophyton, macroconidia were seen in large numbers and thus identified based on macroconidia. Out of the 597 patients in whom fungal pathogen was identified in the laboratory genus Trichophyton was present in 469 patients amounting to 78.55%.

This was followed by detection of genus Microsporum in 96 (16.08%) and genus Epidermophyton in 32 (5.36%) patients. The details of age and gender of the study population with dermatophytosis included in the study is shown in Table 1. Children with the age group of 7 -12 yrs and particularly males as compared to females had an increased infection with dermatophytosis.

**Table 1: Details of age and gender of the study population with dermatophytosis**

Subjects Age	Gender				Total
	Males	Females	Male children	Female children	
2 -6 yrs	-	-	48	39	87
7-12 yrs	-	-	111	93	204
15 – 25 yrs	32	29	-	-	61
26 – 40 yrs	57	46	-	-	103
41 – 55 yrs	61	58	-	-	119
56 – 65 yrs	43	39	-	-	82
Above 66 yrs	12	15	-	-	27
Grand Total	205(30.01%)	187(27.37%)	159(23.27%)	132(19.32%)	683

The clinical presentation of dermatophytosis infection in male and female patients included in the study is given in Table 2. As far as the clinical presentation of dermatophytosis is concerned, Tineacorporis was high (41.28%) followed by Tineacapitis, Tineacurris, Tineabarbae and Tineaunguim.

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**Table 2: Clinical presentation of Dermatophytosis infection**

Subjects	Tinea Corporis	Tinea Capitis	Tinea Cruris	Tinea barbae	Tineaungu ium	Total
Males n = 205	64(31.21%)	27(13.17%)	68(33.17%)	29(14.14%)	17(8.29%)	205
Females n = 187	83 (44.38%)	37(19.78%)	46(24.59%)	-	21(11.2%)	187
Male children n = 159	62(38.99%)	73(45.91%)	24(15.09%)	-	-	159
Female children n = 132	79(59.84%)	42(31.81%)	11(8.33)	-	-	132
Grand Total n = 683	282 (41.28%)	179 (26.20%)	155 (22.69%)	29 (14.14%)	38(5.56%)	683

The results of different isolation rates of Dermatophyte included in the study is provided in Table 3.

**Table 3: Different genus of Dermatophytes isolated**

Total patients	Number of patients showing laboratory identification of pathogen	Identified pathogen belongs to n = 597		
		Genus Trichophyton	Genus Microsporum	Genus Epidermophyton
683	597 (87.40%)	469 (78.55%)	96 (16.08%)	32(5.36%)

**Discussion**

Outbreak investigations are an important and challenging component of public health (Foster *et al.*, 1999-2002). Careful investigation of outbreaks has increased our understanding of fungal diseases, their sources and modes of transmission and the risk factors for infections and, in so doing, has resulted in design of improved control measures for those infections (Ellabib *et al.*, 2004; Desai *et al.*, 1961). Distribution of the Dermatophyte varies with the geographical area and during the course of time leading to a change in the spectrum of dermatophytic isolates (Shahindokht *et al.*, 2009; Sahai *et al.*, 2011; Sahai *et al.*, 2011). In the present study, Trichophyton species was the predominant isolate followed by Microsporum and reported *E. floccosum* and *T. rubrum* as the most common causative agents in Tehran. Our study results also correlated with Jahromi *et al.*,’s results with an increased infection of Trichophyton species. Tinea capitis in adults has been reported to occur in patients who are immunosuppressed or HIV-infected (Shahindokht *et al.*, 2009; Cremer *et al.*, 2009). Devliotou-Panagiotidou *et al.*, reported 35 adults with tinea capitis, 27 of them with a typical pattern of menopause but none with any immunological deficiency. A female predominance in the adult cases has been reported but has not been explained (Aste *et al.*, 2009). Numerous factors have been incriminated, such as contact with affected family members, hormonal differences, the composition of sebum, and immunological deficiency. Griseofulvin has been the gold standard for the treatment of tinea capitis. Little data is available about the efficacy of fluconazole in tinea capitis (Devliotou-Panagiotidou *et al.*, 1995). In the present study tinea capitis infection rate was 26.2% following tinea corporis. In the present study,

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Microsporium species was isolated in 16.08% patients. Sahai *et al.*, (2009) have reported Microsporium species as the predominant isolate in a study conducted in North India. This is suggestive of the changing spectrum of dermatophytes using dermatomycoses. Epidermophyton had a low detection rate in the present study as compared with Trichophyton and Microsporium species. Measures for prevention of these fungal infections should be based on appropriate treatment, health education and improving community and individual hygiene. Further investigation over the course of several years will be needed to determine whether these changes reflect a continuing trend. The fluctuations recorded in the etiology of dermatophytosis are believed to be due to changes in the environment, human migration pattern, newer therapies, the pathogen and the host relationship (Aste *et al.*, 2009). Monitoring the incidence of these fungal species enables the detection of emerging organisms and is an indicator for the assessment of the adequacy of current pharmacologic regimens.

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