Clinico-mycological study of dermatophytic infection in a tertiary care hospital during the covid pandemic

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Abstract

Introduction: Cutaneous infections have become a public health problem affecting all age groups especially of tropical wet regions, where moisture plays an important role in growth of the fungi. Superficial mycoses refers to the diseases of the skin and its appendages caused by a group of fungi which includes Dermatophytoses, Pityriasis versicolor and Candidiasis.

Materials and Methods: A total of 200 samples were collected for a period of one and half years from infected skin, hair, and nails. Samples were collected under aseptic conditions and were then subjected to direct microscopy by KOH mount and culture on SDA.

Results: Dermatophytes were seen more in males (104/200). KOH mount was positive for fungal elements in 156 samples and culture was positive in 122 samples. Dermatophytes were isolated from 88 skin scrapings, 5 nail clippings, 6 hair samples. Among the 99 dermatophytes isolated, 86 belonged to T.mentagrophytes, 11 belonged to T.rubrum, 2 belonged to T. violaceum. T. mentagrophytes was the most predominant isolate followed by T.rubrum and T.violaceum.

Conclusion: Present study was done during the covid pandemic. Our hospital being Quarantine centre during first lock down and Covid care centre during the subsequent lockdowns and due to unavailability of local dermatologists and family physicians, patients were forced to visit dermatologists in tertiary hospitals. There is a need for proper diagnosis and treatment of these dermatophytic infections as they are reported throughout the year in our country.

Key words: Superficial mycosis, Covid Pandemic, Fungal culture

Introduction

Cutaneous infections have become a public health problem affecting all age groups especially of tropical wet regions, where moisture plays an important role in growth of the fungi[1]. Superficial mycoses refers to the diseases of the skin and its appendages caused by a group of fungi which includes Dermatophytoses, Pityriasis versicolor and Candidiasis. They produce dermal inflammatory response and cause redness, intense itching and burning in addition to a cosmetically poor appearance as they possess the affinity for parasitising keratin rich tissues[2]. There has been an increase in the incidence of fungal infections in recent times due to frequent usage of antibiotics, immunosuppressive drugs, unhygienic conditions, excessive sweating, various other conditions. These dermatophytic infections have become a significant health problem affecting children, adolescents and adults[3]. Emergence of chronic diseases such as diabetes and suppression of host immune defence mechanisms by underlying diseases have made humans more susceptible not only to pathogenic fungi but also to all fungi that were once considered contaminants[4]. As our country is situated within the tropical and subtropical belts of the world with remarkably varied topography making its climate conducive to the acquisition and maintenance of these mycotic infections. Accurate assessment of the prevalence and etiological agent is needed to prevent the transmission and spread of these infections with adequate measures[5]. The clinicians should have a thorough understanding of the varied clinical presentations, the profile of organisms so that they will be able to provide effective empirical treatment.

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Periodic studies documenting the demographic and clinical profile of these infections may play a vital role in this regard[6]. In the background of all the above factors detection of these agents becomes mandatory for their effective management to prevent further infections. The main objective of this study is to document the demographic and clinical profile of these infections during covid pandemic period.

Materials and Methods:

The present study was done from April 2020 to November 2021. A total of 200 samples were collected from patients visiting dermatology OPD. Samples from skin, hair and nail were collected from suspected patients of all age groups and both sexes who had not been treated earlier for the fungal infection after taking informed consent. Detailed history and clinical examination of the patient was done and details of skin lesions were noted.

Inclusion criteria - all new cases of dermatophytoses of all age groups and both sexes who gave consent were included.

Exclusion criteria - patients treated with oral or topical antifungal agents or topical steroids in recent past were excluded.

The 200 samples were collected according to the presenting condition like skin scales, nail clippings or hair plucking. A part of specimen was subjected to KOH wet preparation (10% for skin and hair, 40% for nail) for the presence of fungal elements. The remaining specimen was inoculated on SDA with chloramphenicol and cycloheximide and incubated at 25°C for up to 4 weeks. Species identification was done on basis of colony morphology, pigment production finding of teased mount using LPCB.

Results

A total of 200 samples were received for fungal examination out of which 189 were skin scrapings, 6 were hair samples and 5 were nail clippings. Out of 200 patients, age and sex wise analysis showed in Table 1 & 2.

Table 1. Distribution of samples based on age group

Age group	1-20	21-30	31-40	41-50	51-70
Total N (%)	15 (13.3)	33 (16.5)	53 (4)	54	45

Table 2. Distribution of samples based on sex

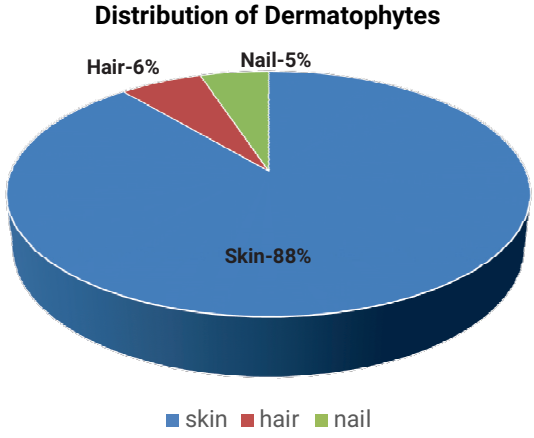
	Male	Female	Total
Number	104	96	200
Percentage	52	48	100

KOH mount was positive for fungal elements in 156 samples and culture was positive in 122 samples. Hyaline septate hyphae were seen in 143 KOH mounted samples and yeast cells in the remainder 13 KOH mounted samples. Among the 122 culture positive samples, dermatophytes were identified in 99 samples, candida in 13 samples and other fungi in 10 samples. Of the 99 Dermatophytes, 88 were isolated from skin scrapings, 5 from nail clippings, 6 from hair samples (Graph 1). Among the 99 dermatophytes isolated, 86 belonged to T.mentagrophytes, 11 belonged to T.rubrum and 2 belonged to T.violaceum (Table 3).

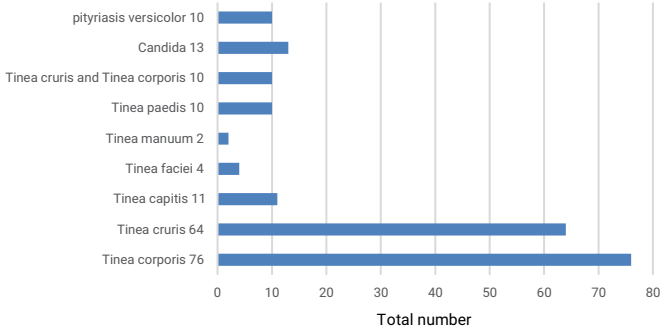
Table 3. Species isolated in culture

Organism isolated	Number	Percentage
T.mentagrophytes	86	43%
T.rubrum	11	5.5%
T.violaceum	02	1%

Of the 200 samples, 10 were identified to be pityriasis versicolor, 13 were found to be candida, 10 were found to have tinea cruris and tinea corporis simultaneously, 10 were tinea pedis, 2 were tinea mannum, 4 were tinea faciei, 11 were tinea capitis, 64 were tinea cruris and 76 were tinea corporis (Graph 2).



Graph 1. Distribution of dermatophytes based on site of involvement



Graph 2. Clinical types isolated

Few clinical images of the patients encountered in the study are shown in Fig 1, 2 and 3 below.

Figure 1. Tinea Corporis

Figure 2. Tinea Pedis

Figure 3. Tinea cruris

Discussion

The epidemiology of superficial fungal infections has changed significantly in recent years and reflects changes in socioeconomic conditions, lifestyle, and migration[7]. Dermatophytes are the most common fungal agents which have been linked around the globe with superficial infections of the skin besides being one of the common public health problems worldwide, dermatophytosis is commonly seen in tropical countries such as India. High humidity levels, overcrowding and poor sanitary conditions can lead to increase in these infections[8]. In this study which was done during the Covid pandemic, 200 patients with suspected dermatophytic infections were included. Among these patients, there were 104 (52%) male patients and 96 (48%) were females which is similar to the study by Ujjain and group. Male predominance in the study could be due to more outdoor physical activities and tight fitting clothing leading to pronounced sweating and an increased opportunity for infections. Other factor being males visiting hospital more frequently than females who might not be very open for hospital visits for dermatological infections.

In the present study, skin (189) was the most common affected site followed by hair(6) and nail (5) which was similar to a study by Aaarti et al[10]. Most common clinical type observed in our study was T.corporis 76 (44.5%) followed by T. cruris 64 (37.5%), T. capitis 11 (5.5%), T. faciei 4 (1.5%), T. manuum 2 (1%), T. paedis 10 (5%) and combined T. cruris and T. corporis in 10 (5%), Candida in 13 (16.5%), Pityriasis versicolor in 10 (5%).Similar finding was observed in a study done by Beena Jha et al[11]. In the present study T. mentagrophytes 86 (43%) was the commonest etiological agent in majority of clinical types followed by T. rubrum 11 (5.5%) and T.violaceum 2 (1%). Similarly, in a study by Lakshmann et al, among the isolated dermatophytes, Trichophyton rubrum was the commonest (79%), followed by T. mentagrophytes (14.5%), Microsporum canis (3.2%)[12]. In our study too, Trichophyton species were more commonly isolated than Epidermophyton and Microsporum like in other studies Among the culture positive, 99 were dermatophytes and 23 were non dermatophytic fungi which included 13 isolates of Candida albicans and 10 isolates of pityriasis versicolor. The pattern and isolation rate of non dermatophytic fungi obtained in my study was comparable with Kumaran Ganesan et al. which showed that out of the culture positive samples, 98 were dermatophytes and 12 were non dermatophytic fungus which included 5 isolates of Candida albicans and 7 isolates of Candida non albicans[13].

Conclusion

The most common dermatophyte infection was T.corporis. T.mentagrophytes followed by T. rubrum were the commonest isolated organisms. Dermatophytic infections are more prevalent in tropical and subtropical countries including India and identification of these agents is important for epidemiology and also for treatment when advised for longer period of time. Over the last few years an increase in incidence and prevalence of these infections is being noted. This study was done during the covid pandemic. Our hospital was Quarantine centre during first lock down and covid care centre during the subsequent lockdowns. Due to unavailability of local dermatologists and general family physicians patients were forced to come and consult dermatologists in tertiary care medical college hospital though it is covid care centre, as dermatologists were available throughout the covid period. This indicates the need for proper diagnosis and treatment of these infections as they are reported throughout the year in this locality.

Recommendations

We recommend further studies to be done as multi centric study with large number of samples.

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Conflicts of interest

There are no conflicts of interest

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