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MYCOLOGICAL AND RISK FACTOR PROFILE OF CLINICALLY SUSPECTED SUPERFICIAL MYCOSIS IN AND AROUND A TERTIARY CARE HOSPITAL IN HYDERABAD

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ABSTRACT

BACKGROUND : Superficial mycosis is ubiquitous and are often associated with excessive morbidity and is a cause of physical and psychological concern.

AIM & OBJECTIVES : 1) To detect the fungi causing superficial mycosis.
2) To assess the risk factors associated with it.

MATERIAL & METHODS: A prospective study was conducted over a period of 6 months from June 2020 to November 2020. Skin scarpings, hair and nail clippings were collected from patients and subjected to KOH mount and fungal culture as per standard techniques.

RESULTS: 78 clinically suspected cases of superficial mycosis were studied. The most common isolates in the study were Dermatophytes(66.1%) followed by Candida(27.1%) and Aspergillus(6.8%).The most common fungal species isolated was T.mentagrophytes followed by T.rubrum. 74.6% isolates were KOH mount positive and 88.1%isolates were Culture positive . The major risk factors associated with superficial mycosis were diabetes followed by prolonged antibiotic therapy.

CONCLUSION: Dermatophytes are the most common pathogens in Superficial mycosis. Culture still remains the gold standard for detection of Superficial mycosis. Superficial mycosis is more common in immunocompromised patients. Undue prolonged use of antibiotics should be avoided to prevent Superficial mycosis.

KEYWORDS : Supeficial mycosis, Dermatophytes, KOH mount, Culture.

INTRODUCTION

Superficial mycosis constitute the most common fungal infections worldwide. [1] This group includes dermatophytosis ,pityriasis versicolor, candidiasis & non dermatophytic molds .These infections are ubiquitous and are often associated with excessive morbidity .The prevalence of these infections is increasing globally and also in India. [2]The distribution of fungi causing Superficial mycosis varies with the geographical area and changes from time to time. Studies reveal that these infections are more common in immunocompromised patients [3]. KOH mount is a cheaper, faster and rapid method for lab diagnosis of fungi causing Superficial mycosis and requires minimal technical aids .However it has its own limitations. KOHmount has varied reproducibility with interobserver variation and requires technical expertise. Fungal culture is a high cost and a time consuming process requiring about 4-6 weeks for the diagnosis [4,5] .Hence the present study was undertaken to detect the the fungal agents causing superficial mycosis and to assess the risk factors associated with superficial mycosis in our hospital area.

MATERIALS & METHODS

The present study is a prospective study conducted over a period of 6 months from April 2019 to September 2019 in a tertiary care hospital in Hyderabad,Telangana . Skin scrapings, hair plugs and nail clippings were collected from 78 clinical suspected cases of Superficial mycosis.Before collection of samples , history of the patient which includes age ,sex , socioeconomic status ,immune status was taken .Then informed consent was taken from the patient . The collected samples were divided into 2 parts . One part of the sample was subjected to KOH mount and the other part was used for culture for detection of fungal elements as per standard mycological techniques. KOH mount was performed by adding a part of the sample in a drop of KOH and then placing a coverslip over it .10% KOH was used for skin and hair samples and 40% KOH for nail clippings. The skin scraping and hair were examined after one hour and examined under low and high power of the microscope for presence of fungal elements .Nail scrapings were examined after overnight incubation. The other portion of the sample was subjected to culture on 2 plates each of Sabourauds dextrose agar (SDA with and without antibiotics and actidione).The SDA slants were incubated both at 25°C and at 37°C. The slants were observed for growth twice during the first week, and once a week thereafter for 6weeks before discarding them as negative.The culture positive slants were subjected to LCB mount and Gram stain to identify fungal moulds and yeasts respectively. Dermatophytic fungi were identified by duration of growth, surface morphology and pigment production. Candida species was identified as Candida albicans and Nonalbicans Candida species by the germ tube test and the production of chlamydospores on corn meal agar .

RESULTS

In our study , Superficial mycosis was more common in the age group of 21-30 years (37.2%) and was found to be more common in males (74.6%) than in females (25.4%). **[Table 1]**

Table 1: Age distribution of Superficial mycosis

AGE	No of culture positives	Percentage
<10 yrs	2	3.4%
11- 20 yrs	12	20.3%
21-30 yrs	22	37.2%
31 -40 yrs	14	23.7%%
41 -50 yrs	7	11.9%
>50 yrs	2	3.4%

Among the 78 clinical samples studied , 59 isolates (88.1%) were positive for fungi elements .Others were negative for fungi elements. Dermatophytes (66.1%)were the most common isolates followed by Candida (27.1%)and Aspergillus species (6.8%). Dermatophytic species identified were T.*mentagrophytes 37.3*% ,T.*rubrum 20.3*4% and T.*tonsurans 8.5*%.

Among the Candida species isolated ,*Candida albicans (16.9%) was* the most common species isolated. *Aspergillus fumigates and Aspergillus niger were the* Aspergillus isolates *detected*.**[Table 2]**

Table 2 : Distribution of Fungal isolates in Superficial mycosis

FUNGAL ISOLATE	NAME OF SPECIES	NUMBER OF SPECIES	PERCENTAGE
DERMATOPHYTES	*Trichophyton mentagrophytes*	22	37.3%
	Trichophyton rubrum	12	20.3%
	Trichophyton tonsurans	05	8.5%
CANDIDA	*Candida.albicans*	10	16.9%
	Non albicans Candidaspecies	06	10.2%
ASPERGILLUS	*Aspergillus fumigatus*	03	5.1%
	Aspergillus.niger	01	1.7%

The most common risk factor associated with superficial mycoses was diabetes (54.2%) followed by prolonged antibiotic therapy (35.6%) ,the other risk factor implicated was the use of chemotherapeutic agents (11.9%).**[Table 3]**

Table 3: Risk factors associated with Superficial mycosis

Risk factors	No of samples	Percentage
Prolonged antibiotic usage	21	35.6%
Diabetes	32	54.2%
Chemotherapeutic agents	07	11.9%
No risk factor	15	25.4%

Among the total samples processed for fungal elements , 44(74.6%) of the isolates were KOH positive and 59 (88.1%) were culture positives.

DISCUSSION

In the present study , 37.2% of the isolates were from the age group 21–30 years. This finding is comparable with the findings of Rasul (44%) and Lyngdoh *et al*. (34.4%), [6,7]. Factors like increased physical activity and changes in hormonal pattern in young individuals can be attributed to this. [8]

Sex distribution of the fungal isolates revealed that 74.6% of them were from male patients and only 25.4% were from female patients. [5]. Our finding was consistent with the findings of Grover and Roy *et al* [9] , who also reported a male preponderance (81%) in Superficial mycosis cases.Some of the factors which contribute to higher incidence of Superficial mycosis in males are more outdoor activity ,sports and wearing closed footwear .[10]

In the present study, KOH positive rate was 74.6%, culture positive rate was 88.1%. Grover *et al* also reported better isolation by culture (79.1%) compared to KOH mount.[9] Hence culture still remains the gold standard for detection of superficial mycosis. However Patel *et al.,* and Nawal *et al*. [11,12] had reported higher KOH positive rate of 62.12%, and 72.40%, respectively compared to culture positive rate of 29.29%, and 62.80% respectively. This could be due to prior use of antifungal agents before specimen collection or lack of standard methods for identification of fungus [13.]

Among the 59 culture positive isolates , the predominant isolates were Dermatophytes (66.1%) followed by Candida (27.1%)and Aspergillus species (6.8%).Prasad *et al*. [14] also reported that the predominant isolates in superficial mycosis were Dermatophytes.

In our study, among the dermatophytes isolated, *T. mentagrophytes* was the most common species of dermatophyte isolated followed by *T. rubrum* . Pakshir *et al*.[15] also reported the same in his study. Aggarwal A *et al's*[16] and Patel P *et al's* studies[11] reveal *T. rubrum* as the commonest isolate. The geographical distribution of various species of dermatophytes vary from place to place.[9]. However, *T. rubrum* and *T. mentagrophytes* are the most commonly isolated dermatophytes from superficial mycoses in Asia[12].

Aspergillus fumigates and Aspergillus niger were also isolated in our study . Prasad et al. also isolated Aspergillus spp. in his study.Though these moulds are not considered pathogens , they can cause destruction in immunocompromised patients.Moreover, these isolates can cause primary invasion of the nail in onychomycosis [17.]

Our study revealed the major risk factors for superficial mycosis as diabetes and prolonged antibiotic therapy .Similar findings were also observed in the study of Fauzia *et al* and Vandana *et al*.[2] These findings reiterate the fact that superficial mycosis is common in immunocompromised patients and also suggests that proper antibiotic stewardship measures should be in place to prevent prolonged use of antibiotics in our hospital area.

CONCLUSION

Dermatophytes remain the most common cause of superficial mycosis. Aspergilus species are emerging as an important cause of superficial mycosis, especially in immunocompromised individuals. Culture still remains the gold standard for detection of superficial mycosis.

Superficial mycosis is common in immunocompromised patients. Proper antibiotic stewardship measures should be in place to prevent prolonged use of antibiotics in our hospital area .

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