

Microbiological Profile Among Patients With Fungal Infections: A Hospital Based Study

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ABSTRACT

Background: There are various fungal infections of humans. Among them candidiasis, mucormycosis, etc are common. The present study was conducted to assess various fungal infections in study population.

Materials & Methods: The present study was conducted in the department of Microbiology. It comprised of 114 patients with fungal infection which comprised of 56 males and 58 females. Microbiological culture assessment was done in all cases. Swab was taken from the lesion of the patients and was incubated in Sabouraud's dextrose agar medium for assessment of culture growth characteristics.

Results: Age group 11-20 years had 1 male, 4 females, 21-30 years had 15 males, 13 females, 31-40 years had 20 males, 17 females, 41-50 years had 12 males, 9 females and >50 years had 8 males, 15 females. The difference was non-significant ($P > 0.05$). Common fungal infections were candidiasis seen in 30 males and 32 females, mucormycosis seen in 23 males and 20 females, phycomycosis seen in 2 males and 5 females and aspergillosis seen in 1 male and 1 female. The difference was non-significant ($P > 0.05$).

Conclusion: Fungal infection is mostly seen in immunocompromised individuals. Maximum cases were seen in age group 31-40 years and 21-30 years. Most common infection was candidiasis.

Key words: Candidiasis, Fungal, Mucormycosis.

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INTRODUCTION

There are various fungal infections of humans. Among them candidiasis, mucormycosis, etc are common. The disease is often characterized by hyphae growing in and around blood vessels and can be potentially life-threatening in diabetic or severely immunocompromised individuals.¹ Superficial fungal infections of the skin can be caused by dermatophytes, yeasts and non dermatophytes. Dermatophytes can be divided in three groups; anthropophilic, zoophilic and geophilic, depending on their natural habits and host preferences.

Fungi in all three categories may cause human infections. Anthropophilic organisms are responsible for most fungal skin infections. Transmission can occur by direct contact or from exposure to desquamated cells. Direct inoculation through breaks in the skin may occur in persons with depressed cell immunity. Once fungi enter the skin; they geminate and invade the superficial skin layers. These organisms, which attack the keratinized tissue of living hosts are classified into three genera of Epidemophyton, Trichphyton and Microsporium.² Candida is the shortened name used to describe a class of fungi that includes more than 150 species of yeast. In healthy individuals, Candida

exists harmlessly in mucus membranes such as your ears, eyes, gastrointestinal tract, mouth, nose, reproductive organs, sinuses, skin, stool and vagina, etc. It is known as your "beneficial flora" and has a useful purpose in the body. When an imbalance in the normal flora occurs, it causes an overgrowth of *Candida albicans*. The term is Candidiasis or Thrush. This is a fungal infection (Mycosis) of any of the *Candida* species, of which *Candida albicans* is the most common.³ The present study was conducted to assess various fungal infections in study population.

MATERIALS & METHODS

The present study was conducted in the department of Microbiology of Mahatma Gandhi Medical College & Hospital, Jaipur, Rajasthan, India. It comprised of 114 patients with fungal infection which comprised of 56 males and 58 females. All were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

General information such as name, age and gender etc. was noted. Clinical examination was done in all patients. Microbiological culture assessment was done in all cases.

Swab was taken from the lesion of the patients and was incubated in Sabouraud's dextrose agar medium for assessment of culture growth characteristics. All the samples were incubated in the culture medium at 37°C for 1–2 days.

Counting of the yeast colonies was done 48 hours after incubation. Results thus obtained were subjected to statistical analysis using chi-square test. P value less than 0.05 was considered significant.

Graph I: Age wise distribution of cases

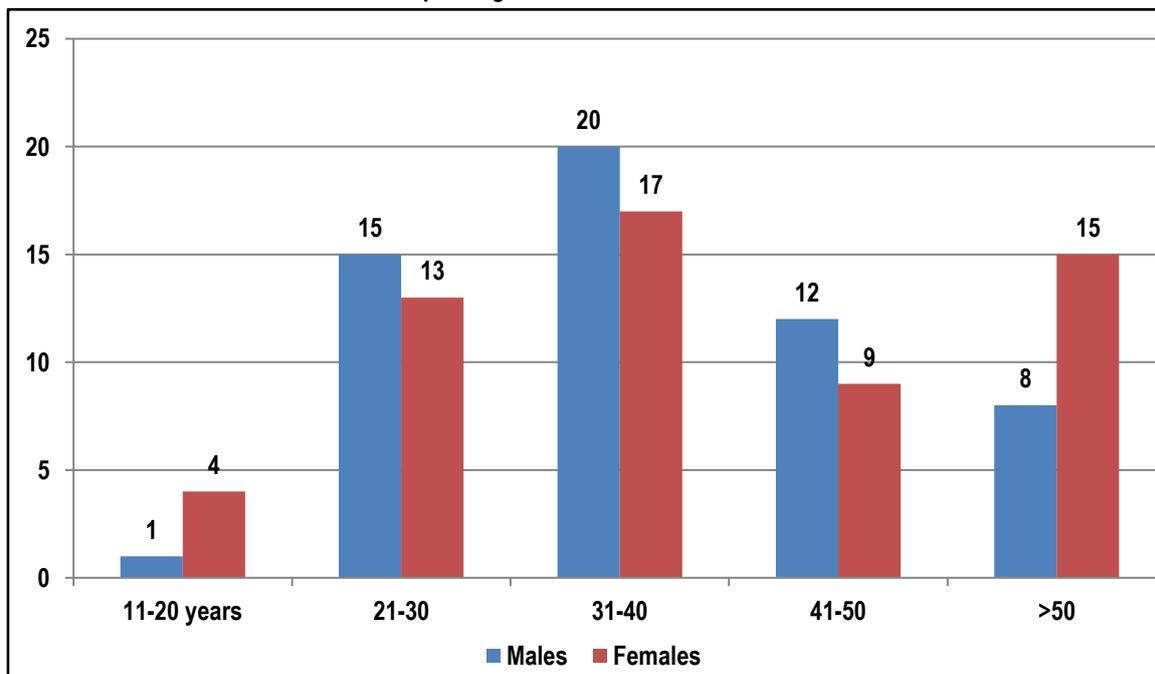


Table I: Types of fungal infection

Types	Males	Females	P value
Candidiasis	30	32	0.5
Mucormycosis	23	20	
Phycomycosis	2	5	
Aspergillosis	1	1	

RESULTS

Graph I shows that age group 11-20 years had 1 male, 4 females, 21-30 years had 15 males, 13 females, 31-40 years had 20 males, 17 females, 41-50 years had 12 males, 9 females and >50 years had 8 males, 15 females. The difference was non-significant (P> 0.05).

Table I shows that common fungal infections were candidiasis seen in 30 males and 32 females, mucormycosis seen in 23 males and 20 females, phycomycosis seen in 2 males and 5 females and aspergillosis seen in 1 male and 1 female. The difference was non-significant (P> 0.05).

DISCUSSION

The involvement of brain, lungs and sinuses are common in mucormycosis. While infection of the oral cavity or brain are the most common forms of mucormycosis, the fungus can also infect other areas of the body such as the gastrointestinal tract, skin, and other organ systems. In rare cases, the maxilla may be affected by mucormycosis. The rich blood vessel supply of maxillofacial areas usually prevents fungal infections, although more virulent fungi, such as those responsible for mucormycosis, can often overcome this difficulty.⁴

Oral candidiasis is an opportunistic infection of the oral cavity. It is common and undiagnosed among the elderly, particularly in those who wear dentures and in many cases is avoidable with a good mouth care regimen. It can also be a mark of systemic disease, such as diabetes mellitus and is a common problem among the immunocompromised. Oral candidiasis is caused by an overgrowth or infection of the oral cavity by a yeast-like fungus, candida albicans.⁵ The present study was conducted to assess various fungal infections in study population.

We found that age group 11-20 years had 1 male, 4 females, 21-30 years had 15 males, 13 females, 31-40 years had 20 males, 17 females, 41-50 years had 12 males, 9 females and >50 years had 8 males, 15 females. Rahber et al.⁶ in their study a total of 201 patients clinically suspected to have cutaneous fungal infections were examined for causative fungal agents. Laboratory examination confirmed the diagnosis in 87 cases. Among dermatophytes species isolated, Epidermophyton floccosum in 11cases (12.2%) Trichophyton mentagrophytes in 10 cases (11/1%), Trichophyton rubrum in 10 cases (11/1%) were the predominant dermatophytes. Malassezia furfur was seen in 16 cases (17/7%). Cutaneous candidiasis in 30 cases (33/3%) was

found to be an important agent of fungal infection particularly in females involved in study. According to the rate of anatomical site infections with tinea unguinum, tinea corporis, tinea cruris and tinea pedis were the next prevalent. Dermatophytosis was more prevalent in females in comparison with males. We found that common fungal infections were candidiasis seen in 30 males and 32 females, mucormycosis seen in 23 males and 20 females, phycomycosis seen in 2 males and 5 females and aspergillosis seen in 1 male and 1 female. This is similar to Akash et al.⁷ Dermatophytosis is fungal infection of skin. Up to 20% of the population may be infected by ringworm at any given time. Infections of the groin are more common in males, while infections of the scalp and body occur equally in both sexes.⁸ Infections of the scalp are most common in children while infections of the groin are most common in the elderly. It may give rise to typical enlarging raised red rings of ringworm. Infection on the skin of the feet may cause athlete's foot and in the groin. Involvement of the nails is termed onychomycosis, and they may thicken, discolour, and finally crumble and fall off. They are common in most adult people, with up to 20% of the population having one of these infections at any given moment.⁹

CONCLUSION

Fungal infection is mostly seen in immunocompromized individuals. Maximum cases were seen in age group 31-40 years and 21-30 years. Most common infection was candidiasis.

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