

MYCOLOGICAL STUDY ON VARIOUS CLINICAL SAMPLES FROM PATIENTS ATTENDING TERTIARY CARE HOSPITALS

Medical Science

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ABSTRACT

OBJECTIVE: In recent years, yeasts and molds have emerged as important pathogens in tertiary care unit. The incidence of fungal infections has increased with reports of increased morbidity and mortality associated with it, in the recent years. Hospitalized patients infections are often severe, rapidly progressive, and difficult to diagnose or treat. Early initiation of antifungal therapy helps in reducing the high mortality rate in patients attending tertiary care hospital.

MATERIAL AND METHODS: The specimens were collected from various patients attending the hospital. The specimens were collected and processed as per the standard mycological procedures.

RESULTS: A total of 128 specimens were received in the Microbiology department, GSVMC Kanpur. Of these, 18% cases were positive for fungal infection. Among 18% positive cases were 34.7% were non dermatophytic molds (NDMs) and 13.0% were dermatophytes and candida albicans (47.8%)

CONCLUSIONS: We found that the risk of fungal infection is increased in hospitalized patients as well as healthy individuals. Clinician in cessation of antibacterial drugs and in inhibiting empirical antifungal therapy earlier is helped by early detection of fungus by microscopic examination (KOH examination), which serves patient for better treatment.

KEYWORDS

Mycoses, Candida species, Dermatophytes, Aspergillus species

INTRODUCTION

Invasive Fungi have emerged as important agents causing human infections in last few years. Though fungi are widespread in distribution, but only a few are causing infections in human beings. The infections caused by fungus can be mild and only superficial or cutaneous or may cause life threatening systemic illness.¹

Dermatophytes are a group of superficial fungal infections of keratinized tissues, namely, the epidermis, hair, and nails. The causative fungi are molds belonging to three asexual genera microsporum, trichophyton, and epidermophyton Superficial fungal infection is the most common fungal infections. Dermatophytes are a group of superficial fungal infections of the epidermis, hair, and nails. The causative fungi are molds.

Systemic fungal infection in humans can range from asymptomatic infection to life-threatening disseminated infections that involve multiple organ systems. Aspergillus species are frequent causes of invasive fungal infections in immunocompromised patients.

Candida species is one of the most commonly encountered opportunistic fungi that cause superficial mucosal infections usually, but can invade tissue and produce life threatening pathology caused by alteration of immune defenses. Candida albicans accounts for 40-60% yeasts isolated from clinical specimens in developed countries. There are various conditions in which the normal equilibrium between Candida and the host is altered and it leads to pathologic state like extremes of age, pregnancy, diabetes, prolonged use of antibiotics secondary to bacterial infections, steroid therapy and AIDS².

The incidence of opportunistic fungal infections has increase in immunodeficient individuals as well as hospitalized patients.³ Many factors predispose to opportunistic invasive fungal infections like prolonged hospitalisation, anticancer therapy, organ transplantation and AIDS.^{6,7}

The isolation of these agents from clinical specimens may indicate colonization, infection or disease, hence posing a challenge while interpreting the reports. Also many studies have reported increased incidence of resistance among these fungi to various antifungal agents resulting in treatment failures and increased morbidity and mortality. There is no clear data on prevalence of fungal infections in India. However the climate of our country is suitable for growth of wide varieties of fungus and hence fungal infections.

The objective of this study was to look the spectrum of fungal infections obtained from various clinical samples in patients attending tertiary care hospital.

MATERIAL AND METHOD

This study was conducted in a Department of Microbiology at GSVM Medical College, Kanpur after obtaining ethical clearance from the institutional ethics committee. The specimens were received from the inpatients and outpatients of the hospital. The various specimens received were sputum, pus and other specimen like urine, skin scraping, nail clippings, hairs etc.

The specimens were collected using aseptic precautions and were subjected to microbiological examinations as follows: - Direct microscopy: KOH mount (10 % for other specimens and 40 % for nail specimens), Gram staining and India ink preparation. Culture was done on Sabouraud's dextrose agar with and without antibiotics and the cultures were incubated as per standard mycological procedures.

The fungal growth obtained was identified on basis of colony morphology and examination of Lactophenol cotton blue mounts (LCB). The yeast isolates were identified by gram staining.

RESULT

A total of 128 specimens were received in the Microbiology department, GSVM Medical College, Kanpur. Of these, 18% cases were positive for fungal infection. Among 18% positive cases were 34.7% were non dermatophytic molds (NDMs) and 17.4% were dermatophytes and 47.8% were candida albicans.

Table-1 Age distribution of patients included male and females

Age (Year)	Male	Female
10-20	1(7.6%)	3(30.0%)
21-40	9(69.2%)	4(40.0%)
41-60	1(7.6%)	2(20.0%)
61-80	2(15.3%)	1(10.0%)
Total	13	10

Table-2 Prevalence of fungi in various clinical specimens

Clinical samples	Positive sample	Negative sample	Total
Sputum	10(13.25%)	66(86.84%)	76
Pus	0(0.0%)	4(100.0%)	4
Other Specimen	13(27.1%)	35(72.9%)	48
		Total	128

Table-3 Fungus isolates in various isolates

Fungus	Sputum(N=76)	Pus(N=04)	Other specimen (N=48)
Aspergillus spp.	0(0.00%)	0(00%)	8(17.0%)
Candida spp	9(12.0%)	0(00%)	2(4.0%)
Dermatophytes	0(00%)	0(00%)	4(8.3%)

DISCUSSION

In our study, the rate of fungal infections was more in males as compared to females that corroborates the findings of other authors.^{6,7,8} The most common age group affected with fungal infections in our study was from age between 20-40 years that is in accordance with many other studies carried out in our part of the country.⁶ It may be due to the increased outdoor activities, and greater physical exertion in this group.

In our study, Dermatophytes were isolated in majority from skin scraping followed by nail clipping and hair. It was more common in patients belonging to rural background as compared to urban patients. This may be attributed to less awareness of personal hygiene among the patients of rural area who belong to lower socio economic status.

In our study, *Candida albicans* was more frequently isolated from urine specimens as compared to non-*albicans* strains. Majority of these patients were inpatients. The pattern of fungal infections varies from one geographic region to other. So studies should be carried out to find out the common prevalent fungal agents in a geographic location which would help clinicians to know the epidemiology in their areas and serve as guide in management of the cases. Early laboratory diagnosis would help in reducing the morbidity and mortality associated with these infections.

CONCLUSION

Early diagnosis of fungal infections using conventional and rapid tests should be carried out for prompt management of the cases. Also the local etiology should be determined to know the common prevalent fungus in a given geographical area. Diagnosis of fungal infections is important considering an increase in the incidence of these infections in recent years.

Conflict of interest: none

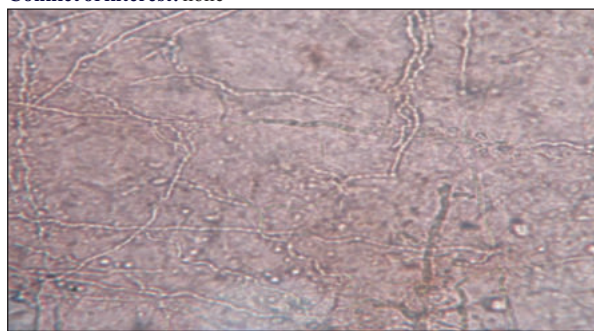


Fig.1: Macroscopic Appearance: Refractile Fungal Hyphae in 10% KOH

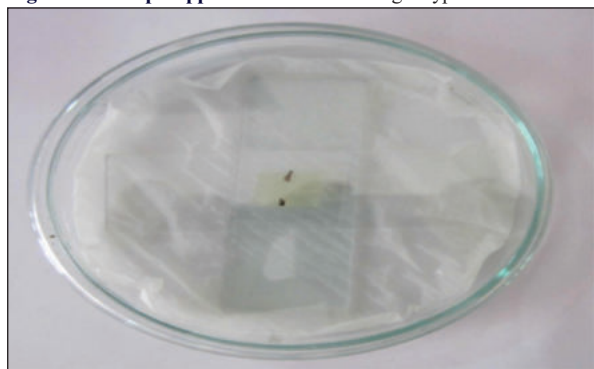


Fig.2: Slide Culture

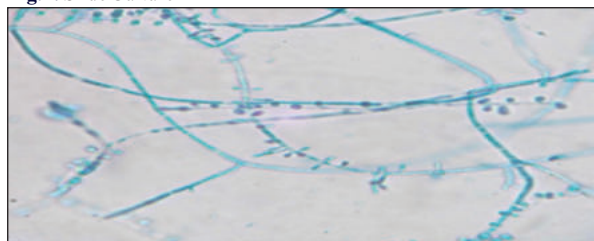


Fig. 3: Microscopic Appearance: Microconidia in Lactophenol Cotton Blue Mount

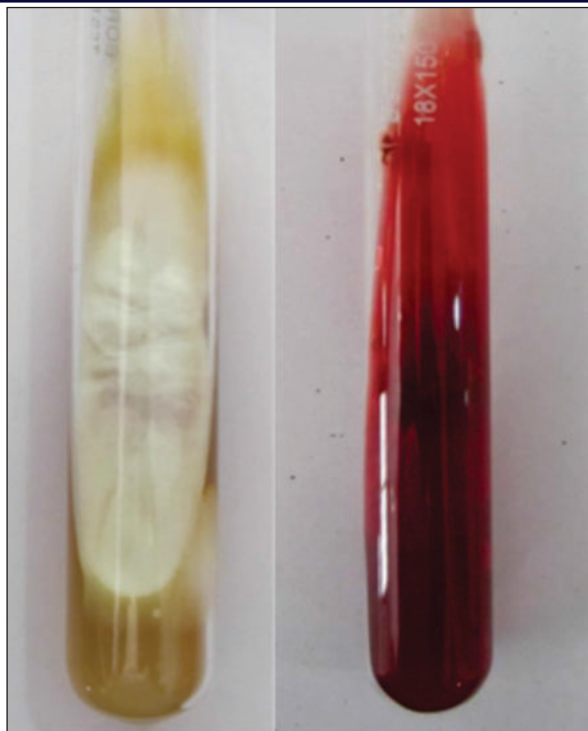


Fig. 4: Macroscopic Appearance: Trichophyton Rubrum

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