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Determination of Fungal Opportunistic Pathogens in Immunocompromised Patients

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***Abstract*: Invasive fungal infections are a significant health problem in immunocompromised patients. The clinical manifestations vary and can range from colonization in allergic bronchopulmonary disease to acute infection in local etiologic agents. Mycotic diseases of man are an emerging public health authority. An opportunistic infection is caused by variety of pathogens such as bacteria, virus, fungi or protozoans that usually do not cause disease in a healthy host. In order to accomplish the objectives of the patient research work clinical samples were collected from debilitated patient. Out of 22 samples 14 samples were found to be positive for fungal infection. The clinical samples in the patients yielded *Aspergillus*, *Rhizopus*, *Penicillium*, *Sporothrix* and *Candida* species.**

***Keywords*: Opportunistic infection, pathogens, debilitated patients, immunocompromised patients.**

1. Introduction

Mycosis (plural; mycoses) is a condition in which fungi pass the resistant barriers of the human or animal body and establish infection. Opportunistic infection is the infection of the systemic mycoses can occur all over the body. Invasive fungal infection has significantly increased due to advances in medical care in at the risk immunocompromised patients. Infection can be transmitted by the inhalation of spores (Aspergillosis, *Cryptococcosis, histoplasmosis)*. A large majority of the mare due to *Candida albicans* a high proportions of ICU patients become colonized, but only 20 to 30 % of them develop an invasive infection, otherwise 70 % of them develop an opportunistic infection because they do not maintain proper hygiene in the hospital. Infection may be mild and only superficial or cutaneous or may cause life threatening, systemic illness (eg., *Candidiasis, Aspergillosis* and *Mucormycosis)*. The clinical manifestations of the disease caused by a given fungal agent can be highly variable and related to host immunity and physiological condition (for eg., *Candida spp*). The isolation of these organism from clinical samples may indicate colonization, infection or diseases. In immunocompromised patients any fungus present in the environment may be potentially pathogenic. *Aspergillus* and *candida spp*. are the main organism isolated most frequently from immunocompromised patients.

2. Material and Method

The clinical samples (Blood, urine, CSF, sputum) were collected by the pathology lab, government hospitals and ICMR were taken in EDTA tubes, plastic screw bottles are taken in lab by aseptic conditions. After then, media prepared are Sabouraud dextrose agar (SDA) and Potato dextrose agar (PDA) and then sterilized then, mix the antibacterial (0.005mg/ml). Pour the media in slants and after that sample inoculated in slant. Then, incubate the sample was tested at 28 ^{0}C colony characteristics were recorded after 7 days of incubation on SDA and PDA medium.

3. Results

Figure shows the results of clinical details of positive cases and culture examination and details of patients and duration of disease and type of disease of 22 patients including immunocompromised patients having underlying disease T.B., cancer and diabetes.

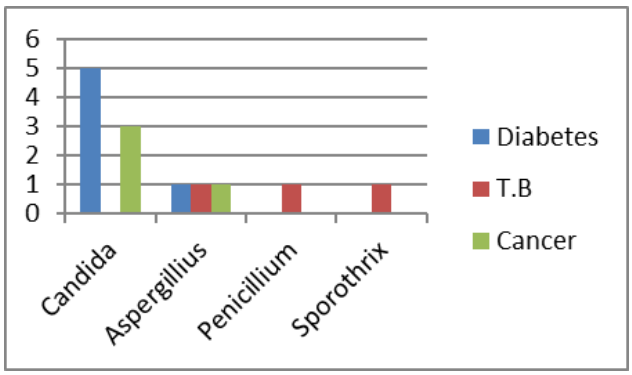

Fig. 1. Candida (25%), Aspergillus (13%), Penicillium (5%)

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Table 1

S.No.	Case No.	Date of collection	Age/sex of patients	Duration	Types of diseases	Clinical sample	Fungi isolate
01	ROP 01	03/02/2023	48/F	2 Months	Diabetes	Blood	*Candida* spp.
02	ROP 02	03/02/2023	36/M	3 Months	Diabetes	Blood	*Candida spp*
03	ROP 03	03/02/2023	28/F	15 Days	Jaundice	Blood	-ve
04	ROP 04	08/02/2023	27/F	-	Hepatitis	Blood	-ve
05	ROP 05	08/02/2023	36/M	2 Years	Diabetes	Blood	*Candida spp.*
06	ROP06	12/02/2023	42/F	6 Years	Diabetes	Blood	*Candida* spp
07	ROP 07	12/02/2023	08/M	10 Days	Jaundice	Blood	*Aspergillus* spp
08	ROP 08	23/02/2023	38/F	-	-	Blood	-ve
09	ROP 09	23/02/2023	26/F	-	-	Blood	*Candida* spp.
10	ROP 10	14/03/2023	42/F	Cancer	5Year	Blood	*Candida spp.*
11	ROP 11	14/03/2023	55/M	Cancer	10Year	Blood	-ve
12	ROP 12	14/03/2023	40/M	Cancer	8Year	Blood	*Candida* spp.
13	ROP 13	14/03/2023	42/F	Cancer	6Year	Blood	-ve
14	ROP 14	14/03/2023	40/F	Cancer	10Year	Blood	*Candida* spp
15	ROP 15	20/03/2023	55/M	Diabetes	10 Year	Urine	*Aspergillus* spp.
16	ROP 16	20/03/2023	50/M	Diabetes	5 Year	Sputum	-ve
17	ROP 17	29/03/2023	50/F	T.B.	3 Year	Blood	-VE
18	ROP 18	29/03/2023	40/F	T.B.	10 Year	Urine	*Penicillium* spp.
19	ROP 19	29/03/2023	45/F	T.B.	5 Year	Sputum	-ve
20	ROP 20	29/03/2023	45/M	T.B.	8Year	CSF	*Sporothrix scheneckii*
21	ROP 21	05/04/2023	58/F	Diabetes	1Year	Blood	*Candida* spp
22	ROP 22	29/04/2023	65/F	Cancer	1 Year	Blood	*Aspergillus* spp

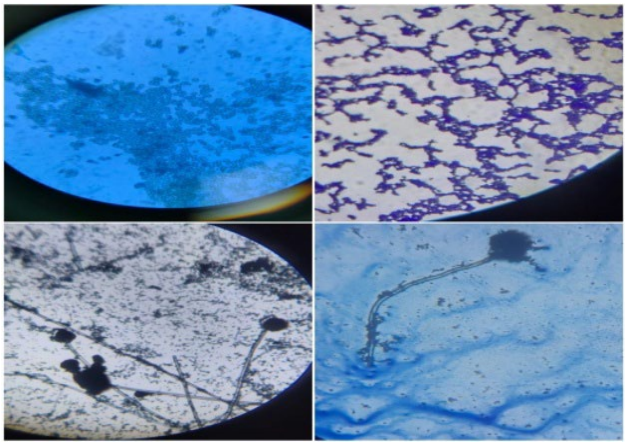

Fig. 2. Microscopic view of yeasts and moulds

4. Conclusion

Mycotic infections have increased significantly on the global basis and is the clinical entity of great public health importance in modern era. Its significance has increased may fold in immunocompromised patients like HIV, diabetes, AIDS, cancer in compromised individuals having some risk of serious illness from certain fungal infection in immunocompromised infection than doctors are take it lightly in this fungal infection and then not cure properly. Because, after fungal infection symptoms are occurs in late. It's concluded that Candidiasis, Aspergillosis are the commonest opportunistic infection in the present study group. Improved hygienic practices regular examinations and appropriate antimicrobial prophylaxis can reduce the substantial morbidity and mortality caused by opportunistic infections with better knowledge and diagnosis of the infection.

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