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ORIGINAL ARTICLE

PHENOTYPIC CHARACTERIZATION AND ANTIFUNGAL SUSCEPTIBILITY PATTERN OF CANDIDA SP ISOLATED FROM A TERTIARY CARE CENTER

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ABSTRACT: Candida, a yeast like ubiquitous fungus, is an endogenous species which produces commonest fungal infection; Candidiasis. Resistance to antifungal agents is an alarming sign for the emerging common nosocomial candidiasis. **MATERIALS AND METHODS:** Various types of specimens were collected from the clinically suspected cases of candidiasis. Isolation and characterization of candida sp. was done by standard procedures. Antifungal susceptibility was done by disc diffusion method. **RESULT:** The candida was isolated from various clinical specimens, vaginal swab (24.66%), skin scraping (13.33%) oral swabs (12.66%), ear swabs (11.33%), nail scraping (10%), and pus from diabetes foot ulcer and post-operative wound infection (8%), sputum (6%), urine (4.66%), stool (4%), blood (2.66%), and eye swabs (2.66%). Among different species of candida isolated C.albicans was the predominant species (79.33%) followed by C tropicalis (19.33%) and C.Guilliermondii (1.33%). Antifungal resistance of different species of candida was higher to fluconazole. The least resistance was seen with amphotericin- B (1.33%). **CONCLUSION:** The increased isolation of candida species and development of resistance to commonly used antifungal drugs requires careful interpretation and the in vitro susceptibility testing. This facilitates better patient care.
KEYWORDS: Phenotypic characterization, antifungal susceptibility, Candida sp.

INTRODUCTION: Candida is a normal inhabitant in the skin, mucous membrane of the mouth, respiratory track or vagina, but may invade the other parts of the body, especially in immune-compromised individuals[1]. The most important pathogenic species are C. albicans, C tropicalis, C kruseii, C glabrata, C lusitaniae, C viswanathii[2]. They may cause simple lesions to even life threatening systemic infections. The most common species is C. albicans, even though there has been a striking increase in the frequency with non-albicans Candida in the last few years. At present there is increase in reports of treatment failure, may be because of drug resistance, mainly in non-albicans Candida. In-vitro susceptibility testing of anti-fungal agents is becoming increasingly important because of introduction of new anti-fungal agents and the recovery of clinical isolates that exhibit inherent or developed resistance to available anti-fungal[3, 4].

OBJECTIVES: To study the prevalence of candida species in clinical specimens and to determine their anti-fungal susceptibility pattern**.**

MATERIAL & METHODS: Sterile swabs and bottles were used to collect the appropriate clinical materials. The various clinical specimens collected were oral swabs, ear swabs, vaginal swabs, stool, CSF, sputum, blood, pus, nail scraping etc. The specimen was labeled completely.

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Identification Flow Chart

Sample

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Gram stain/Wet mount

↓

Inoculation on SDA

↓

Incubation at 25^{0}C &37^{0}C

↓

Appearance of colony

↓

Confirmation by Gram stain

Species identification
- Colony morphology
- Germ tube test
- Corn meal agar morphology
- Carbohydrate assimilation
- Carbohydrate formation

Anitfungal susceptibility
- Disc diffusion method

Using following drugs
Fluconazole
Clotrimazole
Nystatin
Amphotericin-B

RESULT: Total 150 Candida species were isolated from various clinical specimens. The highest numbers of samples were from vulvo-vaginitis, accounting for 24.66% of the cases, followed by samples from skin lesion, (13.33%), oral thrush (12.66%), CSOM (11.33%), nail scraping (10%), pus from diabetic foot and post-operative wound infection (8%), sputum (6%), Urine (4.66%), stool (4%), and blood (4%) and eye swabs (4%) (Fig: 1).

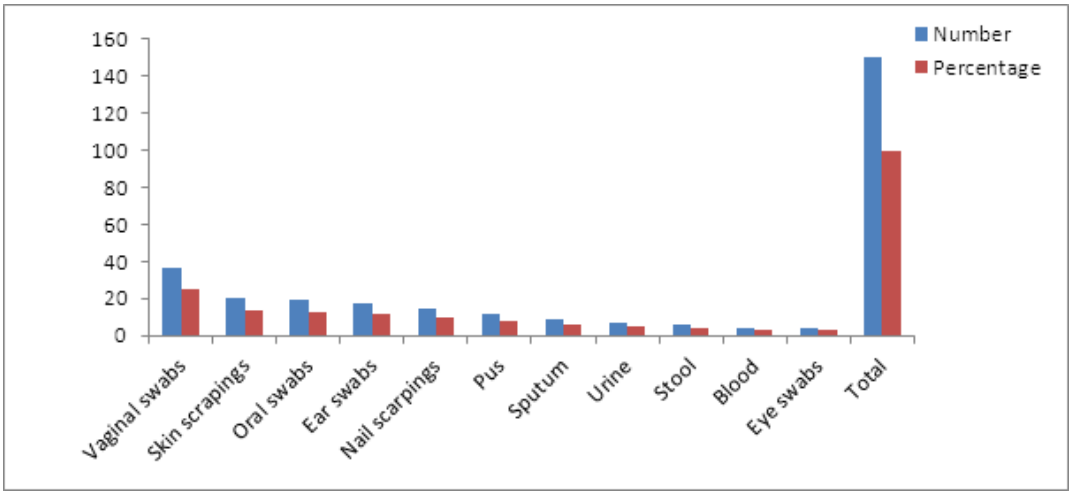

Fig. 1: Distribution of isolates among various Clinical specimens

In this study 83 were females, 67 were males (Table 1).

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Sex	No. of Patients
Male	67
Female	83
Total	**150**

Table 1: Distribution of Patients according to Sex

Among the 150 isolates 3 species are identified with predominance of C. albicans (119) followed by C. tropicalis (29) and C. guilliermondii (2) (Table: 2). It was noted that resistance of different species of candida was higher to fluconazole. The least resistance was seen with amphotericin- B (1.33%) (Fig. 2).

Sample	No.	Species		
		C. albicans	C. tropicalis	C. guilliermondii
Vaginal swabs	37	27	9	1
Skin scrapings	20	15	5	-
Oral swabs	19	14	5	-
Ear swabs	17	12	5	-
Nail scrapings	15	13	2	-
Pus	12	10	2	-
Sputum	9	8	-	1
Urine	7	7	-	-
Stool	6	6	-	-
Blood	4	4	-	-
Eye swabs	4	3	1	-
Total	**150**	**119**	**29**	**2**

Table 2: Distribution of Different Candida among various Clinical Specimens

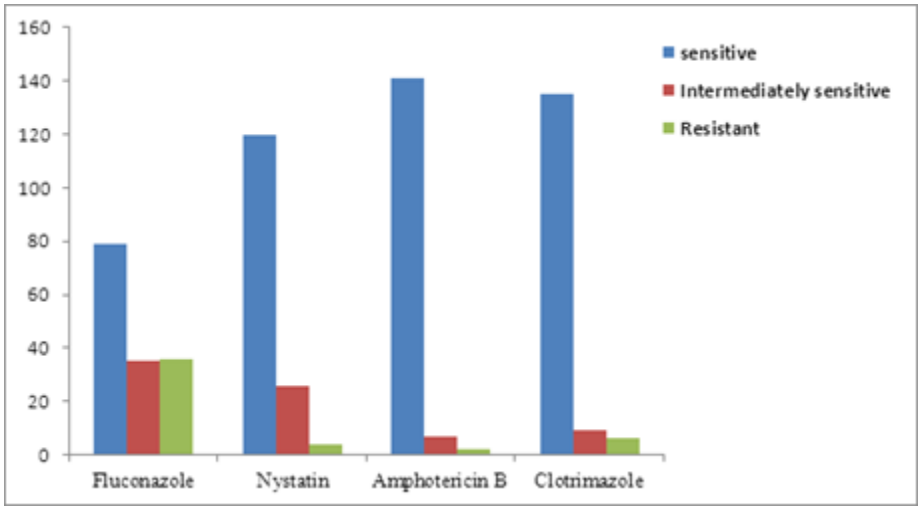

Fig. 2: Antifungal susceptibility patterns

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DISCUSSION: Candida is yeast like fungus which may cause acute or chronic, superficial or deep infection under certain predisposing factors. Recently the incidence of Candida infection has increased mainly because of HIV/AIDS. The present study showed that, highest number of samples were from vulvo-vaginitis (24.66%). The other studies also showed similar results[5]. The most common isolate from all samples was C.albicans (79.33%) followed by C.tropicalis (19.33%) and C.guilliermondii (1.33%). This correlates well with most of the other studies, with C.albicans as the predominant species[6, 7]. According to a study conducted in 1978, it was found that higher incidence was in the females. In our study 83 were females, 67 were males. In this study most of the isolates of Candida sp. was sensitive to Amphotericin B (94%) and resistance to Fluconazole (24%) was higher compared to other drugs used. This is similar to the study by Pfaller et al.[3] The presence of resistance to various antifungal agents emphasizes the need for routine susceptibility testing of candida.

CONCLUSION: This study highlights the need for rapid and specific identification of Candida isolates to species level for effective treatment and management. The periodic surveillance of antifungal susceptibility pattern of the prevalent Candida sp. is essential for the judicious use of antifungal drugs in patients.

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