

Original Research Article

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Characterization of Isolated *Candida* Spp in Blood Stream Infection and its Antifungal Susceptibility Pattern

Meghagevariya and Ekta Gosaliya*

Department of Microbiology, P.D.U Medical College, Rajkot-360001, Gujarat, India

*Corresponding author

ABSTRACT

The aim of present study was to isolate, identify various species of *Candida* responsible for producing clinical Candidacies from blood culture and to determine antifungal susceptibility pattern of *Candida* species by disc diffusion method. study was conducted at Microbiology department P.D.U Medical college Rajkot from March 2014 to June 2015. Blood samples from suspected cases were inoculated in to Brain Heart Infusion broth were incubated at 37^{0C} and subcultured routinely. Whenever growth of white opaque colony on Blood agar was noticed, further processed to identify isolated yeast species by Gram's stain, germ-tube production, Hichrome and cornmeal agar morphology. Within the study period, among 38 candida strains isolated, *Candida parapsilosis* 17 (44.70%), *Candida guilliermondii* 9 (23.68%), *Candida glabrata* 6 (15.70%), *Candida tropicalis* 4 (10.50%), *Candida albicans* 2 (5.20%). Antifungal susceptibility rates of candida isolates based on disc diffusion method were as follows: amphotericin B (100%), voriconazole (100%) and fluconazole (97.2%). *Candida* species possess a number of virulence factors responsible for hematogenous disseminated infections in susceptible hosts with increased morbidity and mortality. Characterization of isolated *Candida* spp in bloodstream infection and any increase in resistance (if any) over time, must be determined with scientific methods. We think that similar studies will guide the clinician in planning treatment of candida infections especially in patients at risk.

Keywords

Candidemia,
Candida, Microbial
sensitivity tests,
Indoor patients

Article Info

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Introduction

Candida species are known to be the most common fungal pathogens isolated from blood cultures. *Candida* ranks fourth in the United States and seventh in Europe. In recent years, the incidence of nosocomial *Candida* infections increased due to increasing number of patients receiving chemotherapy and other immunosuppressive therapies, innovations in

transplantation surgery, use of broad-spectrum antibiotics, higher number of patients hospitalized in the intensive care units and invasive procedures performed on patients. Recent decades, there has been change in epidemiology of candida infection, characterized by progressive shift a predominance of *Candida albicans* to nonalbicans species (1,2). *Candida* species possess a number of virulence factors which

enable them to cause hematogenous disseminated infections in susceptible hosts with increased morbidity and mortality.

Due to differences in antifungal use and infection control strategies, distribution and antifungal susceptibility of *Candida* spp. Differ between countries and hospitals. In species other than *Candida albicans*, especially in *Candida krusei* and *Candida glabrata* resistance against azole group antifungal agents develops which further complicates choice of treatment in candidemias. Antifungal susceptibility tests guide the antifungal therapy during episodes of fungemia (3,4).

In this study, our aim was to isolate, identify various species of *Candida* responsible for producing clinical Candidiasis from blood culture. And to determine antifungal susceptibility pattern of *Candida* species by disc diffusion method.

Materials and Methods

Candida species are known to be the most common fungal pathogens isolated from blood cultures. *Candida* ranks fourth in the United States and seventh in Europe. In recent years, the incidence of nosocomial *Candida* infections increased due to increasing number of patients receiving chemotherapy and other immunosuppressive therapies, innovations in transplantation surgery, use of broad-spectrum antibiotics, higher number of patients hospitalized in the intensive care units and invasive procedures performed on patients. Recent decades, there has been change in epidemiology of *Candida* infection, characterized by progressive shift a predominance of *Candida albicans* to nonalbicans species. *Candida* species possess a number of virulence factors which enable them to cause hematogenous disseminated

infections in susceptible hosts with increased morbidity and mortality.

Due to differences in antifungal use and infection control strategies, distribution and antifungal susceptibility of *Candida* spp. Differ between countries and hospitals. In species other than *Candida albicans*, especially in *Candida krusei* and *Candida glabrata* resistance against azole group antifungal agents develops which further complicates choice of treatment in candidemias. Antifungal susceptibility tests guide the antifungal therapy during episodes of fungemia.

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CROME agar

Results and Discussion

Table.1 Species wise distribution

Isolated spp.	No. of Patients	Percentage
<i>C.albicans</i>	2	5.20%
<i>C.tropicalis</i>	4	10.5%
<i>C.guilliermondii</i>	9	23.68%
<i>C.parapsilosis</i>	17	44.70%
<i>C.glabrata</i>	6	15.70
Total	38	100%

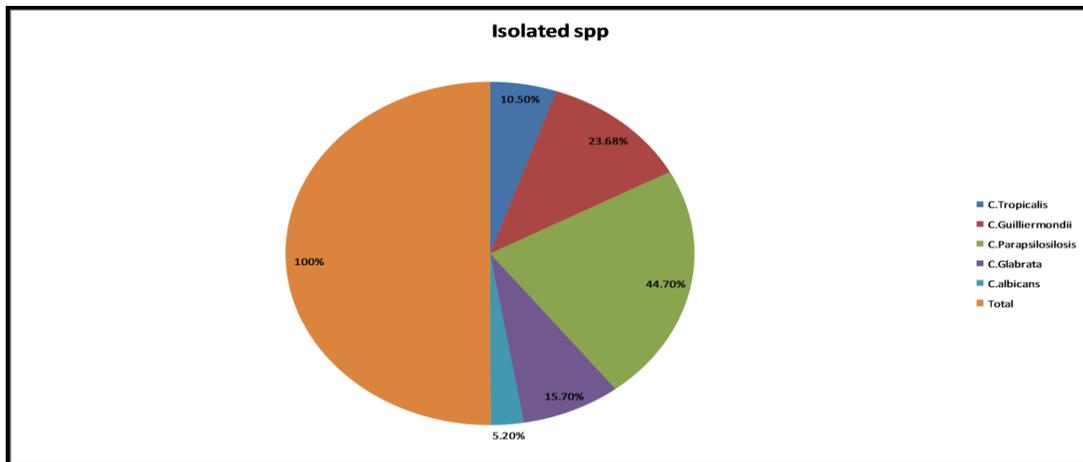


Table.2 Resistance patterns

Isolated spp.	No. of Patients	Ap	FLC	VLC
<i>C.albicans</i>	2	0	0	0
<i>Candida nonalbicans</i>	36	0	2.8%	0

Table.3 Age wise distribution

Age	No. of Patients	Percentage
Neonate	35	92.1%
Pediatric	1	2.6%
Adult	2	5.26%
Total	38	100%

Table.4 Antifungal susceptibility patterns

Isolated spp.	Total	AP			FLC		
		S(%)	I(%)	R(%)	S(%)	I(%)	R(%)
<i>C. albicans</i>	2(5.3%)	100	0	0	100	0	0
<i>Candida non albicans</i>	36(94.7%)	72.2	27.8	0	97.2	0	2.8

Isolated spp	Total	VLC		
		S(%)	I(%)	R(%)
<i>C. albicans</i>	2(5.3%)	100	0	0
<i>Candida nonalbicans</i>	36(94.7%)	100	0	0

In Present study most common isolated spp is *Candida nonalbicans* (94.7%) compare to *Candida albicans* (5.3%). *Candida parapsilosis* (44.7%) is most commonly isolated nonalbicans spp. Out of 38 isolated candida spp 35(92.1%) from Neonates, 1(2.6%) Pediatric and 2 (5.26%) adult patients. Out of 35 neonates 16 were suffering either from low birth weight, preterm labor and/or RDS. *C. albicans* were found sensitive to all 3 drugs. In nonalbicans spp were found 2.8% resistant to fluconazole, 27.8% were intermediate to Amphotericin-B & all are sensitive to Voriconazole.

In this study non albicans candida spp were common than *Candida albicans* and among them *C. parapsilosis* was most common.

Antifungal Resistance more common toward nonalbicans candida Neonates are at higher risk of developing candidemia.

Similar studies will guide the clinician in planning treatment of *Candida* infections especially in patients at risk (6-8).

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