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PREVALENCE OF NEONATAL CANDIDEMIA IN TERTIARY CARE INSTITUTE, INDORE

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ABSTRACT

Background: *Candida* spp.is one of the most frequent pathogens isolated in bloodstream infections (BSI), and is associated with significant morbidity and mortality in hospitalized patients[1] .*Candida* species are known to be the most common fungal pathogens isolated from blood cultures of neonates. Recent reports from our country indicates trend towards an increasing prevalence of non-*albicans Candidemia*. *Candida* species possess a number of virulence factors which enable them to cause hematogenously disseminated infections in susceptible hosts with increased morbidity and mortality. **Objectives:** To know the prevalence of candidemia in neonates and their antifungal susceptibility pattern. **Materials and Methods:** Blood samples from suspected cases of neonatal septicemia were subjected to culture, incubated in BacT-Alert a automated machine and subcultures performed. Culture yielding pure growth of Candida were included for the study and identified by standard methodology. Antifungal susceptibility was performed by disc diffusion method on Muller-Hinton agar with 2% glucose and methylene blue. **Statiscal Analysis:** no **Result:** A total of 180 cases were blood cultures positive. Pure growth of Candida species was isolated from 34 (18.8%) cases. A total of 34 Candida isolates were obtained over a period of one year accounting for 18.8% of all neonatal septicemia cases. Among 34 isolates, *C.glabrata* 14(41.1%), *C. krusei* 8 (23.5%), *C.albicans* 11 (32.3%) and *C. tropicalis* 1(2.9%). Fluconazole susceptibility was observed in 22(64.7%) sensitive, and 12(35.2%) resistant and all were sensitive to Amphotericin B. **Conclusion:** In this study non- *albicans candida* was the common isolate & they showed decreased resistance to Fluconazole**.** In neonatal septicemia speciation & antifungal susceptibility testing may help in management.

KEYWORDS: Candidemia, fluconazole, non-a*lbicans candida.*

INTRODUCTION

Candida is a genus of yeast –like fungi and most common cause of fungal infection worldwide.[1]

Many species are harmless commensal, however when mucosal barrier are disrupted or immune system is compromised, they can cause disease.[1]

The importance of Candida spp. as a pathogen in neonatal intensive care units (NICU) is increasing as a result of advances in life support systems, low –birth weight babies, prematurity, wider use of broad spectrum antibiotics, parenteral nutrition, artificial ventilation.[2,7,8,9]

Respiratory insufficiency, apnea, bradycardia, temperature instability, feeding intolerance and abdominal distension are the various clinical manifestation associated with candidiasis. The mortality associates with candidemia varies from 20% to 50% underscoring the seriousness of these infections.[3]

Recent reports also suggest that with the introduction of Fluconazole and Itraconazole, there has been a change in the distribution of Candida species causing candidemia from *C. albicans* to non *albicans Candida* spp.[4]

MATERIALS AND MATHODS

A total of 180 blood samples of clinically suspected septicemic neonates were collected over a period of one year from neonates admitted in NICU of Sri Aurobindo Institute Of Medical Sciences, Indore. Blood sample inoculated in the BacT/alert 3D pediatric culture bottles was incubated in an automated microbial detection system (bioMerieux) for up to 7 days. The blood culture bottles which were indicated positive were subcultured on Blood agar and MacConkey agar. Whenever growth of creamy white colony on Blood agar was noticed, Gram's stain was performed to study the morphology,

yeast like budding cells were further speciated by using germ-tube production, cornmeal agar morphology and sugar assimilation tests and also by using *Candida* HiChrom agar . Antifungal susceptibility of the isolates were determined by the disc diffusion method on Muller Hinton agar with 2% glucose and methylene blue (0.5µg/ml) to Amphotericin B (10mg/disc) and Fluconazole (5mg/disc). Zone diameters were interpreted as per the approved CSLI (M44-A) guidelines.

Candidemia was defined as the growth of *Candida* spp. from at least one positive blood culture containing pure growth of Candida species with supportive clinical features.

OBSERVATION

Out of 180 blood samples ,total 34 (18.8%) samples were found to be culture positive for *Candida* spp. Out of 34 Candida spp. 11 (32.3%) was identified as *Candida albicans*, 23 (67.6%)were identified as non *albicans Candida*. *Candida glabrata* (41%) was the predominant NAC species isolated in our study, followed by *C.albicans* (32.3%), *C.krusei (23.5%),* and *C. tropicalis (2.9%).*

Candida spp.	**No. of isolates**
Candida. glabrata	14 (41%)
Candida albicans	11 (32%)
Candida krusei	8 (23.3%)
Candida tropicalis	1 (2.9%)

NAC species like *C. glabrata*, *C. tropicalis* are less susceptible to azoles, particularly fluconazole, than *C. albicans*. Study also revealed that all isolated *Candida spp*. are susceptible to Amphoterecin B. In our study *C. glabrata* and *C. krusie* are the only spp. to show resistance to fluconazole.

Table 2: Antifungal sensitivity pattern of *Candida spp*. (%).

Candida spp.	**Amphoterecin B.**	**Fluconazole**
Candida glabrata (14)	100	64.7
Candida albicans (11)	100	100
Candida krusei (8)	100	25
Candida tropicalis (1)	100	100

DISCUSSION

In the present study, 18.8% neonates were diagnosed with bloodstream infection due to *Candida* species indicating a common cause of nosocomial bloodstream infection this may be, the finding is comparable to other study,[9] we also observed that non-*albicans Candida* species had predominance over *C. albicans* which is consistent with the published report from different part of the words.[7] This study showed that *C.glabrata* was the most prevalent *Candida* species causing candidemia in our NICU which is consistant with other study.[8]

According to National Nosocomial Infection Surveillance (NNIS), USA in 1990s Candida spp remained the 4th most common blood stream pathogen accounting for 8% of all hospital acquired blood stream infections and more than 1/3rd of these infections were due to spp. of *Candida* other than *C. albicans*.[5,6]

Candidemia in neonates is most commonly due to *C. albicans* but our study demonstrated that only 32.3% of isolates were *C. albicans*.[7]

CONCLUSION

- Non –albicans Candida spp are assuming an incresing role in nosocomial infections in neonates and the findings of this study highlight the incresed isolation of C. glabrata.
- The continously use of invasive monitoring and aggrasive use of braod spectum antibiotics has not only improved the survival of critically ill patients but has also increased the risk for fungal infections.
- Fungal infections can become severe and rapidly progressive and are often difficult to diagnosis and treat.

REFERENCES

1. Kavitha H, Anuradha K, Venkatesha D. Comparison of susceptibility of various candida species isolated from neonatal septicemia to voriconazole and fluconzole. IOSR-JPBS, 2014; 9: 78-81.
2. Jagdish Chander, 'Textbook of Medical Microbiology' 3rd Edition.
3. Kossoff EH, Buescher S, Karlowicz MG. Candidemia in a neonatal intensive care unit: trends during fifteen years and clinical features of 111 cases. Paediatr Infect Dis., 1998; 504-8.
4. Stamos JK, Rowley AH. Candidemia in a pediatric population. Clin Infect Dis, 1995; 20: 571-5.
5. Voss A, Le Noble JLML, Verduyn, Limel FM, Foudraine NA, Meis JFGM. Candidemia in intensive care units: risk factors for mortality. Infection, 1997; 25: 8-11.
6. Mean M, Marchetti O, Calandra T. Bench-to-badside review: Candida infections in theintensive care unit. Crit Care, 2008; 12: 204.
7. Agrawal J, Bansal S, Malik GK, Jain A, Trends in neonatal septicemia: Emergence of non albicans candida .Indian Pediatr, 2004; 41: 712-5.
8. Gupta N, Mittal N, Sood P, Kumar S, Kaur R, Mathur MD. Candidemia in neonatal intensive care unit. Indian J Pathol Microbiol, 2001; 44: 45-8.
9. Rani R, Mohapatra NP, Mehta G, Randhawa VS. Changing trends of *Candida* species in neonatal septicemia in a tertiary North Indian hospital. Ind J Med Microbiol, 2002; 20: 42-4.