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ROLE OF CANDIDA IN CATHETER ASSOCIATED URINARY TRACT INFECTION IN ICU PATIENTS

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Conflicts of Interest: Nil
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Abstract:
Background: UTI in hospitalised patients due to Candida spp. is becoming increasingly common in ICU setting. There is always a dilemma as to differentiate colonisation from true infection and whether to treat candiduria or not. The choice of antifungal is also controversial due to low urinary concentration of many antifungal drugs.
Objective: This study was conducted to assess the significance of Candida spp. as the causative agent of symptomatic CAUTI in ICU patients and perform microbiological characterization of Candida and their antifungal susceptibility pattern.
Methods: A total of 472patients admitted in medical ICU, HPBICU, Neuro ICUand put on Foley's catheter were included in the study and followed up for the development of symptomatic CAUTI.. The samples positive for Candida spp. were identified and processed as per standard guidelines, by VITEK2 COMPACT and Germ Tube Test
Results: In this study, it was found that 23.80% (5/21) of the symptomatic CAUTI was caused by Candida spp.. Among non-albicans Candida, 4 patients had Candida tropicalis and one patient had Candida albicans
All Candida isolates were sensitive to fluconazole, voriconazole, amphotericin B and itraconazole.
Conclusion: Symptomatic catheter associated urinary tract infection with Candida spp. is becoming increasingly common. Among Candida spp., non-albicans Candida is emerging as the predominant pathogen causing CAUTI.
Keywords: Candida, Candiduria, Catheter associated urinary tract infection, Nosocomial, Intensive Care Unit

Introduction

Hospital acquired infections (HAI) are the leading cause of morbidity and mortality throughout the world [1-5] reflecting upon the quality control of the hospital. Urinary tract infection is most common nosocomial infection accounting to 40-50% of all infections[6]. Most of these infections are associated with catheter, a commonly used device in hospitals. Catheter associated urinary tract infection (CAUTIs) occur with high incidence if preventive protocols are not maintained [7-8]. The indwelling urinary catheter is an essential part of modern medical care and a variety of different indwelling urinary catheters are used for various purposes[9] In Indian population CAUTI is important cause of morbidity and mortality affecting all ages

The risk factors associated with CAUTI in adults mainly include intensive care unit (ICU) admission, broad-spectrum antibiotics, diabetes mellitus, increased age, and female sex.[10,11] The microorganisms causing CAUTI range from Gram negative bacteria to Gram positive cocci to Candida. UTI in hospitalised patients due to Candida spp. is becoming increasingly common in ICU setting[11]. There is always a dilemma as to differentiate colonisation from true infection and whether to treat candiduria or not[12]. Symptomatic CAUTI is considered when symptoms / signs consistent with UTI exist along with candiduria in a catheterized patient [10]. The signs and symptoms either are localized to the urinary tract or can include otherwise unexplained systemic manifestations, such as fever[10]. The accepted threshold for bacteriuria/candiduria varies from 103colony forming units per millilitre (cfu/mL) to 105 cfu/mL[10]. The choice of antifungals is also controversial due to low urinary concentration of many antifungal drugs[12.]. This study was conducted to assess the significance of Candida spp. as the causative agent of symptomatic CAUTI in medical ICU patients and perform microbiological characterisation of Candida and their antifungal susceptibility pattern

Observations and Results:

In this study, among 472 patients enrolled, 21 developed symptomatic CAUTI. It was found that 23.80% (5/21) of the symptomatic CAUTI was caused by Candida spp.

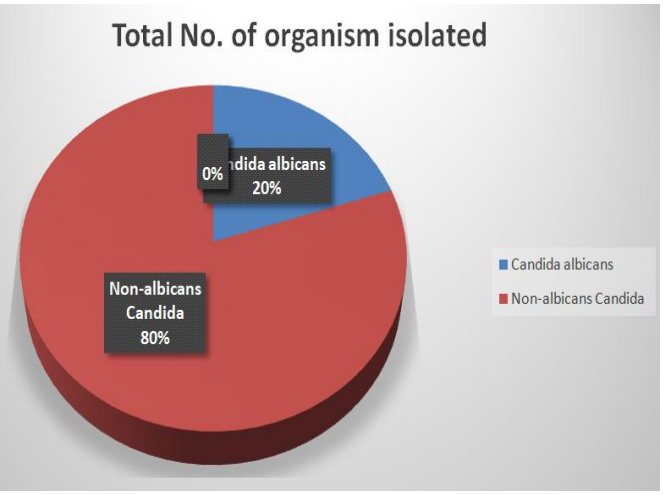
Among non-albicans Candida, 4 patients had Candida tropicalis and one patient had Candida albicans

All Candida isolates were sensitive to fluconazole, voriconazole, amphotericin B and itraconazole.

Non albicans were from male pateints(80%)and albicans(20%) in female paients

Table 1: Descriptive analysis of Candida spp. isolated in study group (N=5)

Organism Isolated	Frequency	Percent
Candida albicans	1	20%
Non-albicans Candida	4	80%
Total	5	100%



Graph 1:

Discussion:

It is thought that candiduria is very common in hospitalised patients [13,14,15,16] and is mainly due to antibiotic usage [17].

Nosocomial UTI is the most common healthcare associated infections. Candida spp. are increasingly becoming an important causative agent of nosocomial UTI.

The results were similar to study done by swasthi sahai et al 2018 In most studies, C. albicans dominates and accounts for 50% to 70% of all Candida-related urinary isolates, followed by C. glabrata, and C. tropicalis, which is the third most common species [18,19]. In a large multicentre study from Spain, C. albicans was recovered in 68%, followed by C. glabrata (8%) and C. tropicalis (4%). However, various studies show a steady increase in the incidence of non-C. albicans strains producing nosocomial infections such as those conducted by De Francesco MA et al (2007) [20], Horn DL et al (2009), [21] and Xess I et al (2007) [22]. In a study conducted by Manisha Jain et al (2011) [11], non-albicans Candida spp. (71.4%) was the predominant pathogen causing CAUTI. In a study by Swati Sahai et al (2018)Non albicans Candida sps. were 83.3%, Candida albicans(16.7)in females and and 83.3% non albicans in males Similar findings were seen in present study(2019). Among Candida isolates, non-albicans Candida spp. emerged as the predominant isolate accounting for 80%.

Conclusion:

Symptomatic catheter associated urinary tract infection with Candida spp. is becoming increasingly common. It is usually difficult to ascertain the difference between Candida colonization and infection. Diagnosis mainly depends on the symptoms of UTI along with pyuria and high colony Candida counts in the urine. Among Candida spp., non albicans Candida is emerging as the predominant pathogen causing CAUTI. Based on clinical setting, the relevance of candiduria must be determined and appropriate decision should be taken for the need of antifungal therapy.

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