



**FREQUENCY OF CANDIDURIA AND ITS ANTIFUNGAL SUSCEPTIBILITY IN  
GERIATRIC POPULATION IN TMMC & RC MORADABAD (U.P)**

**Farha<sup>1</sup>, Shweta R. Sharma\*<sup>2</sup> and Umar Farooq<sup>3</sup>**

<sup>1</sup>M.Sc. Medical, Department of Microbiology, Teerthanker Mahaveer Medical College and Research Center Moradabad (U. P) 244001 India.

<sup>2</sup>Assistant Prof., Department of Microbiology, Teerthanker Mahaveer Medical College and Research Center Moradabad (U.P) 244001 India.

<sup>3</sup>Professor and H.O.D. Department of Microbiology, Teerthanker Mahaveer Medical College and Research Center Moradabad (U.P) 244001 India.

**\*Corresponding Author: Shweta R. Sharma**

Assistant Prof., Department of Microbiology, Teerthanker Mahaveer Medical College and Research Center Moradabad (U.P) 244001 India.

Article Received on 28/01/2019

Article Revised on 19/02/2019

Article Accepted on 13/03/2019

**ABSTRACT**

**Introduction:** Candida species are the most common cause of fungal infections leading to a range of life threatening invasive to non-invasive diseases. Urinary tract infections as a result of Candida species is becoming increasingly common in hospitalized setting particularly in intensive care units. Epidemiological surveillance indicates that Candida species are now one of the most common pathogens causing nosocomial blood stream and urinary tract infection. This study was aimed to determine the frequency of candiduria and its antifungal susceptibility in geriatric population in TMMC & RC, Moradabad (U.P). **Material and Methods:** the present study included 100 patients admitted to IPD wards in our hospital. The urine from catheter is collected from each patients and subjected to culture and antifungal susceptibility testing. **Result:** A total number of 442 clinically suspected urine samples were processed in which 100 isolates were positive for candida species. Out of 100 samples, 40 % were *Candida albicans* and 60% were *non albicans Candida* (NAC). **Conclusion:** *Candida albicans* has shown high level of resistance to fluconazole(60%), while Non albicans candida has shown high level of resistance to fluconazole.

**KEY WORDS:** Candida, Antifungal Susceptibility, urinary tract infection (UTI).

**INTRODUCTION**

Candida species are the most common cause of fungal infections leading to a range of life threatening invasive to non-life-threatening diseases.<sup>[1]</sup> Urinary tract infections as a result of Candida species is becoming increasingly common in hospitalized setting particularly in intensive care units.<sup>[2]</sup> Epidemiological surveillance indicates that Candida species are now one of the most common pathogens causing nosocomial blood stream and urinary tract infections.<sup>[3]</sup> Among the hospital acquired urinary tract infections 80% are by urinary catheters.<sup>[4]</sup> Surveillance data(1986 to 1996) from the United states National Nosocomial infection Surveillance System(NNISS), has shown that *Candida albicans* is the fourth most common cause of urinary tract infections.<sup>[5]</sup>

The predisposing factors causing Candiduria are urinary tract instrumentation, Diabetes **mellitus**, prior antibiotic use, prolonged hospital stay, extremes of ages, immunosuppressive therapy and female sex.<sup>[6]</sup> Candida species accounts for almost 9 to 40% of nosocomial urinary tract infections.<sup>[1,7]</sup> It is important to know the

Candida species causing urinary tract infection before initiating the treatment, as non albicans Candida species are on the rise and majority are inherently resistant to treatment with Fluconazole.<sup>[8,9]</sup> Few observers have emphasized the changing microbiological characteristics of Candida and its virulence factors expressed as a causative agent of nosocomial urinary tract infection. As the conventional identification of Candida take several days, employing Chromogenic media may help to reduce the time of isolation and identification by 48 -72 hrs. This will help the clinician in optimizing the selection of antifungal agents and provide a more rational and customized therapy.<sup>[10]</sup> This study was aimed to determine the frequency of candiduria in provisionally diagnosed cases of urinary tract infection(UTI), in geriatric population and to determine various candida spp. causing UTI and its antifungal susceptibility.

**MATERIALS AND METHODS**

This study Protocol was approved by college research Committee (CRC) Teerthanker Mahaveer Medical College & Research Center Moradabad.

Urine sample was collected from provisionally diagnosed cases of urinary tract infection in geriatric population (> 60 years) which were admitted in the hospital. Clean caught Midstream urine sample was collected in 50 ml sterile wide mouthed universal container. Wet mount preparation was examined for visualisation of pus cells, yeast cells and pseudohyphae. culture was performed on CLED agar (Cystine lactose electrolyte deficient). Culture plates were incubated at 37 °c and were examined after 18- 24 hours of incubation. Colony was identified on the basis of culture characteristics, gram staining, germ tube test and candid chromogenic media. All candida isolates were further processed for antifungal susceptibility testing by disc diffusion method as per CLSI guidelines and antifungals tested were Fluconazole 25 mcg/disc (25µg), Voriconazole 1 mcg/disc (10µg), Nystatin 50 mcg/disc (1µg) and Amphotericin B 50 mcg/disc (10µg).

## RESULT

**Table No.1. Showing ward wise distribution of *Candida* spp.**

S. N	Ward	C. albicans	C.tropicalis	C.glabrata	C.dublinensis	C.parapsilosis	C. Krusei
1	MICU	10	08	04	04	04	00
2	SICU	09	05	03	03	06	00
3	Medicine	07	05	03	04	04	01
4	OBS/ Gyane	05	05	02	02	03	00
5	PICU	00	00	01	00	01	
6	RICU	01	00	01	00	01	00
	Total	32	23	14	13	19	1

**Table No. 2. Species wise distribution of candida**

Species wise distribution	Number	Percentage
Candida albicans	40	40%
Candida tropicalis	22	22%
Candida parapsilosis	13	13%
Candida glabrata	12	12%
Candida dubliniensis	12	12%
Candida krusei	01	1%
Total	100	100%

**Table No.3. Risk factor associated with candiduria**

Risk Factor	Number	Percentage
Antibiotics	29	29%
Diabetes mellitus	18	18%
Indwelling urinary catheters	45	45%
Other risk factors	8	8%
Total	100	100%

**Table No. 4. Antifungal Susceptibility result of candida spp.**

Antifungals	Sensitivity	Resistant
Fluconazole	40	60
Voriconazole	82	18
Amphotericin –B	100	00
Nystatin	98	02

A total number of 442 clinically suspected samples were processed in which 100 isolates were positive for candida. Fifty six percent of the candida isolates were from ICU (intensive care unit) while 44% isolates were from patients admitted in wards as shown in **Table No. 1**. Candiduria was more commonly seen in females 65% compared to males 35% in the present study. Non albicans candida emerged as the predominant pathogen and was found 60%, while *candida albicans* was found in 40% cases of candiduria. Among *non- albicans candida*, most common species were *candida tropicalis* 22%, *candida parapsilosis* 13%, *candida glabrata* 12%, *candida dubliniensis* 12%, and *candida krusei* 1% as shown in **Table No. 2**. Among candiduria cases, 45% were having indwelling urinary catheters, 29% were broad spectrum antibiotics, 18% were having Diabetes mellitus and 8% were having other risk factors as shown in **Table No.3**. Antifungal susceptibility testing revealed that all the isolates were sensitive to amphotericin B (100%) while 60% of the isolates were resistant to fluconazole as shown in **Table No.4**.

## DISCUSSION

A total of 100 yeasts isolates from urine samples were studied with respect to their epidemiology, clinical significance and outcome. In our study most of the 100 candida isolates, is 42% in the same study done by Shaheen Bhat, et al.2018. is 52%.<sup>[11]</sup> In our study, candida was isolated more commonly in females(65%) compared to males (35%). This result is comparable with other study conducted by *Glaucia Moreira Espindola Lima, et al, where* 54.7% of candida was isolated in females and 45.3% in males.<sup>[12]</sup> The assessment of risk factors suggested that among candiduria cases 93.3% received prolonged antibiotic, 71.1% (32) were catheterized and 26.7% were low birth weight in ICUs (Neonatal ICU and Paediatric ICU) compared to 70.3% received prolonged antibiotic, 14.8% were catheterized and none were low birth weight in ward. Underlying risk factors were similar in other study by Kauffman et al<sup>[13]</sup> In addition, in a study conducted by Robinson et al. (14), mortality rate due to candiduria in infants in the neonatal intensive care unit was significant (30%). In our study, *candida albicans* was found in 51.39% while among non albicans *candida* species most common isolate was *C.tropicalis*, followed by *C.krusei* and *C.parapsilosis*. Non-*albicans* species accounted for 71% and 64.4% of isolates in Paul *et al.* and Kobayashi *et al.* reports,

respectively. In our study was isolated *Candida* species were highly sensitive to amphotericin B (100%), nystatin (98%), voriconazole (82%) and resistant to fluconazole (60%) in the same study done by Mondal *et al.* 2018.<sup>[14]</sup>

#### CONCLUSION

Out of 100 *Candida* isolates, 40% were identified as *Candida albicans* and 60% were *Non albicans candida* (NAC). Among *Non albicans candida* predominant species isolated was *Candida tropicalis* 22% followed by *Candida parapsilosis* 13%, *Candida glabrata* 12%, *Candida dubliniensis* 12% and *krusei* 1%. Among different conditions of inclusion criteria highest incidence of candiduria was found indwelling urinary catheters 45% indicating highest risk group followed by antibiotics 29%, diabetes mellitus 18% and other risk factor 8%. Sensitivity pattern of *Candida* species tested against amphotericin B., fluconazole, voriconazole and nystatin. All isolates of *Candida albicans* (100%) were sensitive to amphotericin B. *Candida albicans* and non-*albicans candida* has shown high level of resistance to fluconazole (60%).

#### ACKNOWLEDGEMENT

Authors were thankful to the Department of Microbiology of Teerthanker Mahaveer Medical College & Research Center, Moradabad.

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