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PREVALENCE OF CANDIDA ISOLATES FROM WOMENS AFFECTED WITH URINARY TRACT INFECTIONS AT A TERTIARY CARE HOSPITAL

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ABSTRACT
An increase in the incidence of Urinary tract infections due to *Candida species* has been observed. The higher rate of Candiduria due to Non albicans Candida is now being reported than due to *Candida albicans*. The emergence of drug resistance in Candida species has complicated the patient management. The aim of this study was to observe the prevalence of *Candida species* in UTIs and their antifungal susceptibility pattern in a tertiary care hospital. An observational study was conducted for a period of six months in Pacific Medical University, Udaipur. A total 75 clinical specimens collected from women with Urinary Tract Infection (UTI). Among the 75 samples analysed, 41 were positive for *Candida.* The *Candida* isolates was recorded higher in urine specimen (55.5%), followed by vaginal swab (53.3%). The isolation and identification of *Candida* isolates were done by the study of its morphological, cultural and biochemical characteristics. The phenotypic results showed that *Candida albicans* (68.2%) was the predominant species followed by *C. glabarata* (24.3%) and *C. krusei* (07.3%). The antibiotic susceptibility study revealed that all the species of *Candida* isolates were 100% susceptible to Amphotericin B and Nystatin whereas Ketoconazole was evaluated with low susceptibility.

KEYWORDS: *Candida*, Antifungal, Urinary Tract Infection.

INTRODUCTION
An increase in the frequency of Candida infections among hospitalized patients for past three decades has been observed. Several studies have reported that the incidence of Urinary tract infections (UTIs) due to Candida has rose.[1] Important risk factors for Candiduria includes prolonged hospitalization, Intensive care unit (ICU) patients, urinary tract abnormalities, diabetes mellitus, indwelling urinary catheters, immunocompromised patients, long term antibiotic therapy & immunosuppressive therapy.[2-3] Though the rate of morbidity due to Candida species is high, the mortality rate remains low. Candiduria can be caused by *Candida albicans* as well as other *Candida species*. [4] *Candida albicans*, once known as the leading causative yeast of UTI, is now being replaced by Non albicans Candida species, as the predominant pathogen. The vast majority of invasive *Candida* infections are caused by only four species which include *C.albicans C. glabrata*, *C. parapsilosis* and *C. tropicalis*. The clinical manifestations of disease are extremely varied, ranging from acute, sub-acute and chronic to episodic. Involvement may be localized to the mouth, throat, skin, scalp, vagina, fingers, nails, bronchi, lungs, gastrointestinal tract or become systemic as in septicaemia, endocarditis and meningitis.[5] The *Candida* species are the 4th most common organisms causing blood stream infection, and constitute 8% of all nosocomial infections. Candidiasis is mainly caused by *C. albicans*, while there has been striking increase in the frequency with non albicans *Candida* species in last few years. The most important species which are considered pathogenic to humans are *C.albicans, C. tropicalis, C. kruseii, C. glabrata, C. lusitaniae* and *C. Viswanathii*.[6]

MATERIAL & METHODS
The present investigation was carried out with75 female patients who were suspected with urinary tract infection during March 2019 to August 2019. All patients were married at an age group of 25-40 years. Among the 75 clinical samples, 30 were vaginal swabs and 45 were urine samples.

Collection of Specimens
Vaginal Swabs: A total of 30 vaginal swabs were obtained from the patients mainly includes with excessive vaginal discharge, pruritis vulva, dysuria, irritation, pregnant and non-pregnant women. Specimens

were taken by using sterile bivalve speculum and sterile swabs, and then transported to the laboratory for diagnosis.[7] All swabs were subjected to culture for the detection of *Candida* Species.

Urine samples collection: The patients were instructed to collect the midstream urine into sterile bottles. Forty five urine samples were collected and transported to the laboratory with ice packs in a sterile container. After that, the samples were centrifuged at 2500 rpm for 10 min. Four plates of Sabouraud's dextrose agar (SDA) with the addition of 0.05 g/L Chloramphenicol were inoculated: two plates were incubated at 25°C for 48 h and the other two at 35°C for 48 h.

Identification of Candida species: Two swabs/specimens were taken from each case. The specimens were subjected for direct examination and the other for the culture. All the above samples were subjected to various mycological tests like direct examination by KOH mount, Gram stain, culture on SDA.

Disc diffusion method: The isolated Candida species were tested for the antifungal susceptibility. The test was done by disc diffusion method as recommended by CLSI guidelines on Muller Hinton agar (CLSI, 2019). The antifungal agents used for disc diffusion method were Amphotericin-B (10µg), Nystatin (10µg) and Ketoconazole (10µg).

RESULTS

The present investigation was carried out with 75 female patients who were suspected with urinary tract infection. Among the 75 clinical samples, 30 were vaginal swabs and 45 were urine samples.

Table 1: Occurrence of Candida species in the clinical samples collected from women with Urinary Tract Infections.

Sample Type	Total Specimen	Total positive	Percentage
Vaginal Fluid	30	16	53.3%
Urine	45	25	55.5%

Table 2: Candida species identified in the clinical samples collected from women with Urinary Tract Infections (n=41)

Candida Species	No. Of Isolates	Percentage
Candida albicans	28	68.2%
Candida glabrata	10	24.3%
Candida krusei	03	07.3%
Total	**41**	**100%**

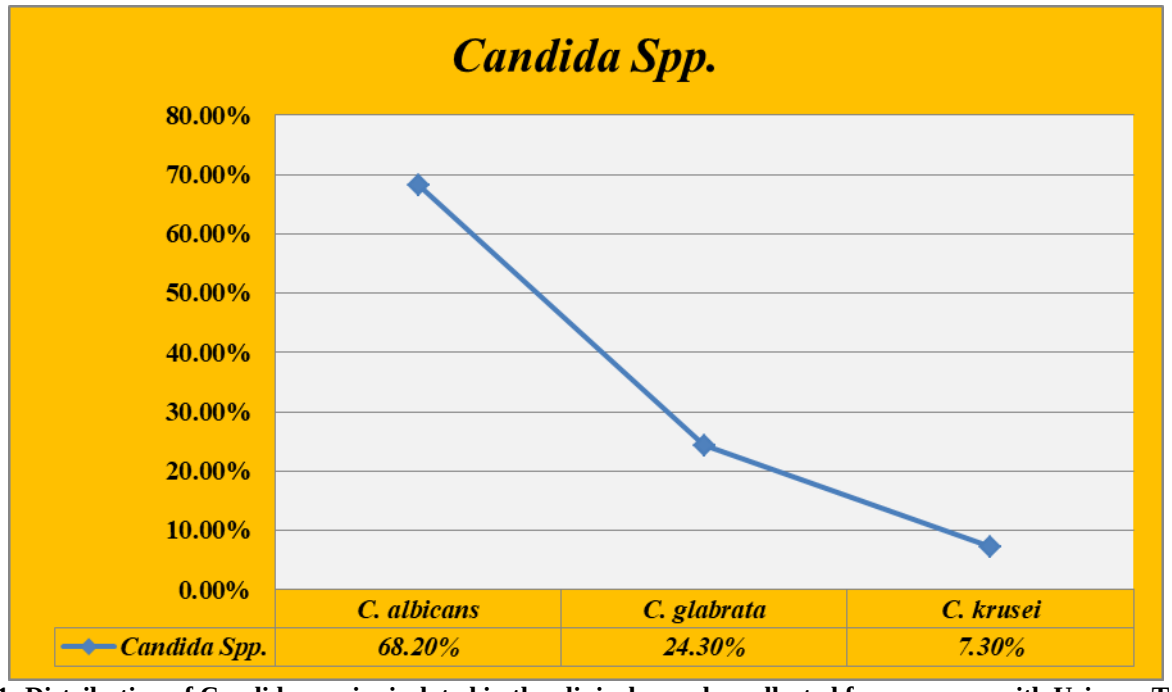

Fig. 1: Distribution of Candida species isolated in the clinical samples collected from women with Urinary Tract Infections.

Table 3: Antifungal sensitivity pattern of the Candida isolates on different antibiotics by disc diffusion assay.

Antifungal agent	*Candida albicans (n=28)*	*Candida glabrata (n=10)*	*Candida krusei (n=03)*
Amphotericin B	100%	100%	100%
Nystatin	100%	100%	100%
Ketoconazole	68%	65%	76%

DISCUSSION

In the present study, total of 75 clinical specimens were collected. Among the75 samples, 41 were positive for *Candida* (54.6%). The highest percentage of *Candida* isolates were obtained from Urine specimen (55.5%) followed by vaginal swab (53.3%). The distribution of *Candida* isolates in various specimens was displayed in Table 1. *Candida albicans* (28) was the predominant species followed by *C. glabarata* (10) and *C. krusei* (03). The distribution of different Candida species is displayed in Table 2. All species of *Candida* isolates were susceptible to Amphotericin B and Nystatin. The next effective antifungal drug was Ketoconazole with 68%. 65%, 76% for *Candida* isolates. The result of the antifungal susceptibility test of all isolates was displayed in Table 3. Candidiasis is one of the most diverse fungal infections that can lead to superficial, such as vaginitis, to systemic and potentially life- threatening diseases. Genital involvement in women is one of the most common presentations due to *Candida*. Vaginal candidiasis results from abnormal growth of Candida in the genital tract mucosa and has increased dramatically in the recent years. This infection is a worldwide health problem and affects millions of women, annually by Ilkity and Guzel, 2011. The frequency of fungal infections caused by Candida species has amplified over the past few years, especially in immunocompromised patients. There is also an increase in the frequency of non albicans species causing infection commonly *Candida tropicalis, Candida krusei, and Candida guillermondii.* In our study, incidence of Candida isolation was 54.6%. which correlates with study done by Mohandas and Ballal in 2011. The antifungal susceptibility of the Candida isolates to Amphotericin B and Nystatin revealed that all the isolates were sensitive to it. Our study also agreed with the findings of similar studies done on *Candida* by Maria Fatima Sugizaki et al., 1998. The next effective antifungal drug was found Ketoconazole. These findings correlate with study done by Ragini Ananth Kashid et al. in 2011.

CONCLUSION

Identification of *Candida* isolated from various clinical specimens and speciation has become increasingly important as the changing epidemiology of *Candida* infections calls for monitoring of species distribution and susceptibility of *Candida* in order to successfully manage such cases. Clinicians are facing challenge to treat the *Candida* infection due to emergence of antifungal resistance. The identification and antifungal susceptibility testing of Candida species isolated from clinical sample must be tested as the antifungal susceptibility varies from species to species. Many new antifungal which are under development may have more advantage in terms of overcoming antifungal resistance and safety than current drugs are the need of hour.

REFERENCES

1. Laverdiere M, Labba AC, Restieri C, Rotstein C, Heyland D, Madger S. et al. Susceptibility patterns of Candida species recovered from Canadian intensive care units. J Crit Care, 2007; 22(3): 245-50.
2. da Silva EH, da Silva Ruiz L, Matsumoto FE, Aular ME, Giudice MC, Moreira D. et al. Candiduria in a public hospital of Sao Paulo (1999-2004): characteristics of the yeast isolates. Rev Inst Med trop S Paulo, 2007; 49(6): 349-53.
3. Saha R, Das Das S, Kumar A, Kaur IR. Pattern of Candida isolates in hospitalized children. Indian J Pediatr, 2008; 75: 858-60.
4. Ford CB, Funt JM, Abbey D,Issi L, Guiducci C, Martinez DA, Regev A. The evaluation of drug resistance in clinical isolates of Candida albicans. eLife, 2015; 4: e00662.
5. Amar C.S et al. Study of prevalence and antifungal susceptibility of Candida. Int.J. Pharm. Bio Science, 2013; 4(2): 361–8.
6. Shivaprakash, S et al, P.M.S. Candida sp. other than Candida albicans: a major cause of fungaemia in a tertiary care centre. Indian J Med. Microbiol, 2007; 25: 405-407.
7. Koneman E.M and Roberts G.D. Practical Laboratory Mycology. 3rd ed. London Williams and Wilkins., 1985; 27-30.
8. Clinical Laboratory Standards Institute (CLSI). Methods for antifungal disc diffusion susceptibility testing of yeasts. Approved guidelines USA, 2019.
9. Ilkity M and Guzel AB. The epidemiology, pathogenesis, and diagnosis of vulvo vaginal candidosis: a mycological perspective. Crit. Rev. Microbiol, 2011; 37(3): 250–61.
10. Ilkity M and Guzel AB. The epidemiology, pathogenesis, and diagnosis of vulvo vaginal candidosis: a mycological perspective. Crit. Rev. Microbiol, 2011; 37(3): 250–61.
11. Maria Fatima Sugizaki et al, Prevalence and in vitro antifungal susceptibility of Candida spp. isolated from clinical specimens in São Paulo, Brazil. Rev Iberoam Micol., 1998; 15: 16–18.
12. Ragini Ananth Kashid, Sandhya Belawadi, Gaytri Devi and Indumal. Characterisation and antifungal susceptibility testing for candida in a Tertiary Care Hospital. J. Health Sci. Res, 2011; 2(2): 1–1.