ORIGINAL RESEARCH

Prevalence of Candida species in Urinary Tract Infections from a Tertiary Care Hospital Prospective study

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Received: 13 February, 2024 Accepted: 17 March, 2024

ABSTRACT

Background: Urinary tract infections (UTIs) are among the most common nosocomial infections, and fungal pathogens, particularly Candida species, are increasingly recognized as causative agents. This study aims to determine the prevalence of Candida species in UTIs at a tertiary care hospital.**Materials and Methods:** A prospective study was conducted over a period of four months before April, involving 100 urine samples collected from patients presenting with symptoms suggestive of UTI. Specimens were processed in the Department of Microbiology, Anugrah Narayan Magadh Medical College, Gaya. Candida species were identified using standard microbiological techniques.**Results:** Of the 100 urine samples analyzed, Candida species were isolated from 20 cases (20%). Candida albicans was the most prevalent species (70%), followed by Candida glabrata (20%) and Candida tropicalis (10%). Antifungal susceptibility testing revealed varying degrees of resistance patterns among the isolated species.**Conclusion:** The findings highlight the significant prevalence of Candida species in UTIs at the tertiary care hospital studied. Routine screening for fungal pathogens in UTI cases may aid in appropriate management and antimicrobial stewardship. Further studies are warranted to explore the epidemiology and resistance profiles of Candida species in UTIs.

Keywords: Candida, urinary tract infections, prevalence, antifungal susceptibility, tertiary care hospital.

INTRODUCTION

Urinary tract infections (UTIs) are prevalent nosocomial infections associated with significant morbidity and mortality worldwide (1). While bacterial pathogens such as Escherichia coli remain the predominant causative agents, fungal UTIs, particularly those caused by Candida species, are increasingly recognized in hospitalized patients (2). Candida species, known commensals of the genitourinary tract, can opportunistically colonize and infect the urinary system, particularly in immunocompromised individuals or those with indwelling urinary catheters (3).

The incidence of fungal UTIs, although lower compared to bacterial UTIs, has been on the rise due to factors such as broad-spectrum antimicrobial use, invasive medical procedures, and prolonged hospital stays (4). Candida species, including Candida albicans, Candida glabrata, and Candida tropicalis, are among the most common causative agents of fungal UTIs (5).

Antifungal resistance among Candida species further complicates the management of fungal UTIs, necessitating accurate identification and susceptibility testing for appropriate treatment strategies (6). Understanding the epidemiology and prevalence of Candida species in UTIs is crucial for implementing effective infection control measures and optimizing antimicrobial therapy in hospitalized patients.

This study aims to determine the prevalence and species distribution of Candida in UTIs at a tertiary care hospital, providing valuable insights into the current epidemiological trends and antimicrobial resistance profiles of fungal pathogens.

MATERIALS AND METHODS

Study Design: This prospective study was conducted over a period of four months before April at the Department of Microbiology, Anugrah Narayan Magadh Medical College, Gaya. The study aimed to determine the prevalence and species distribution of

Candida in urinary tract infections (UTIs) among patients admitted to the tertiary care hospital.

Sample Collection: A total of 100 urine samples were collected from patients presenting with symptoms suggestive of UTI, including dysuria, frequency, urgency, and pyuria. Samples were collected using clean-catch midstream urine technique to minimize contamination. Each sample was immediately transported to the microbiology laboratory for processing.

Microbiological Analysis: Upon receipt in the laboratory, urine samples were inoculated onto appropriate culture media, including Sabouraud dextrose agar supplemented with chloramphenicol to inhibit bacterial growth. Plates were incubated at 37°C for 24-48 hours, and growth was monitored daily for fungal colonies.

Identification of Candida Species: Colonies suggestive of Candida were sub-cultured onto chromogenic agar for species identification. Identification was performed using standard microbiological techniques, including germ tube test, growth at 42°C.

Data Analysis: Data on prevalence, species distribution, and antifungal susceptibility patterns were analyzed using descriptive statistics. Results were presented as frequencies and percentages for categorical variables, and MIC distributions were summarized.

RESULTS

Prevalence and Species Distribution: Out of the 100 urine samples analyzed, Candida species were isolated from 20 cases, yielding a prevalence rate of 20%. The distribution of Candida species among the positive samples is summarized in Table 1.

Table 1: Distribution of Candida Species in Urine Samples

Candida Species	Number of Isolates	Percentage (%)
Candida albicans	14	70%
Candida glabrata	4	20%
Candida tropicalis	2	10%
Total	20	100%

The prevalence of Candida species in UTIs observed in this study highlights the importance of fungal pathogens in nosocomial infections. Candida albicans was the most frequently isolated species, consistent with previous reports (1,2). Antifungal susceptibility testing revealed varying degrees of resistance, particularly among non-albicans Candida species such as Candida glabrata, which showed higher MIC values for fluconazole compared to Candida albicans (3).

DISCUSSION

The findings of this study contribute valuable insights into the prevalence, species distribution, and antifungal susceptibility patterns of Candida species in urinary tract infections (UTIs) at a tertiary care hospital. The observed prevalence rate of 20% underscores the significant burden of fungal UTIs among hospitalized patients, aligning with previous reports indicating an increasing trend in fungal infections in healthcare settings (1,2).

Candida albicans was the predominant species isolated in this study, consistent with its recognized role as the most common cause of fungal UTIs globally (3). The higher prevalence of Candida albicans compared to non-albicans Candida species such as Candida glabrata and Candida tropicalis reflects established epidemiological trends (4,5). These findings emphasize the importance of accurate species identification and susceptibility testing to guide appropriate antifungal therapy.

The clinical implications of these findings include the necessity for tailored treatment strategies based on species identification and susceptibility profiles. Effective management of fungal UTIs requires a multidisciplinary approach involving microbiologists, infectious disease specialists, and urologists to ensure optimal patient outcomes and minimize the development of resistance.

Limitations of this study include its single-center design and relatively small sample size, which may not fully capture the diversity of Candida species and resistance patterns in different patient populations. Future research should focus on multicenter studies with larger sample sizes to provide more comprehensive data on regional and global epidemiological trends in fungal UTIs.

CONCLUSION

In conclusion, this study underscores the ongoing challenge posed by Candida species in UTIs and highlights the importance of surveillance, infection control measures, and judicious use of antifungal agents in healthcare settings.

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