

Frequency of Candiduria in Inpatients and Outpatients in Department of Urology, Golestan Hospital, Ahvaz, Iran

IJKD 2009;3:114-5
www.ijkd.org

SIR,

Catheter-associated urinary tract infection is the most common nosocomial disease in catheterized patients. The first sign of this infection is symptomatic or asymptomatic bacteriuria or funguria. Funguria, fungal infection of the urinary tract, is increasing in incidence, mostly because of the increasing use of antibacterial agents and indwelling urinary catheters.^{1,2} Candiduria presents as an increasingly common nosocomial infection, which may involve all anatomic levels of the urinary tract, resulting in a spectrum of diseases varying from asymptomatic candiduria to clinical sepsis. Several authors believe that funguria can be a symptom of systemic candidiasis in critically ill patients.⁴ The disease is most commonly caused by *Candida* species but may also develop by other fungi.² *Candida albicans* is the most common organism found in candiduria followed by *C glabrata* and *C tropicalis*.^{2,5} The aim of the present study was to determine the frequency of funguria and urinary tract infection in patients attending our department of urology at Golestan Hospital in Ahvaz, Iran. In addition, their etiological factors were addressed.

We studied on 244 patients with urological problems presenting to the department of urology at Golestan Hospital. Over a 9-month period, a total of 244 urine samples from the patients (100 inpatients and 144 outpatients) were randomly collected. Uncentrifuged urine samples were used for colony count. Fifty microliter of each urine sample was cultured on *Candida* plates (CHROMAgar, Paris, France) and incubated at 37°C for 1 week, aerobically. Direct smear from urine sediment was also prepared and stained by Gram or methylene blue technique. Yeast cells, budding cells, and pseudohyphae were identifying features of positive smears. *Candida* species were identified based on colony morphology on *Candida* plates, germ tube production, and micromorphology on 1% Corn

Meal Agar with Tween 80 (Hardy Diagnostics, Santa Maria, California, USA).

The patients' age range was between 5 and 78 years, and 51 (20.9%) of them were women. Urine cultures positive for *Candida* were yielded in 38 patients (15.6%), including 25 men (65.8%) and 13 women (34.2%). Whereas, in Pakshir and colleagues' report on Foley catheterized patients, these rates were 21.3% for men and 35.1% for women. Candiduria is a common nosocomial infection afflicting the urinary tract. We found it in 15.6% of our patients, and Pakshir and colleagues¹ reported a frequency of 28.7%, which are considerable rates. *Candida albicans* accounts for 50% to 70% of all Candiduria isolates, followed by *C glabrata* (20%) and *C tropicalis*.⁶ In our study, *C albicans* was identified in 25 patients (65.8%), followed by *C glabrata* in 8 (21.0%), *C tropicalis* in 3 (7.9%), *C parapsilosis* in 2 (5.3%), and *C kruzei* in 1 (2.6%). One isolate of *Penicillium* was also detected in urine cultures. Da Silva and colleagues⁷ also reported *C albicans* as the most frequent, followed by *C tropicalis*, *C glabrata*, and *C parapsilosis*.

Urine cultures yielded more than 15 000 yeast colonies per milliliter in 13 cases (32.5%), followed by 5000 to 15000 colonies in 7 (25.0%), 1000 to 5000 colonies in 10 (25.0%), and less than 1000 colonies in 10 (17.5%). Zaini and coworkers⁸ believe that even one colony of *Candida* in urine culture in men is considerable and should be important for clinicians. The most common risk factors of candiduria are urinary indwelling catheters, antibiotics therapy, elderly, urogenital tract abnormalities, and diabetes mellitus.^{1-3,9} In our study, the conditions accompanied by candiduria were extended hospitalization in 21 patients (55.3%), benign prostatic hyperplasia in 12 (31.6%), Foley catheter insertion in 10 (26.3%), antibiotic therapy in 9 (23.6%), double-J stenting in 8 (21.0%), hypertension in 5 (13.2%), kidney hematoma and urethral stenosis in 3 (7.9%),

and diabetes mellitus in 1 (2.6%). In summary, *C albicans* was the major cause of candiduria in our studied patients. Detection of *Candida* species in urine cultures of critically ill patients may be an additional important sign for establishing diagnosis of invasive candidiasis.

Acknowledgments. This study was supported by a grant from Jundishapur University of Medical Sciences (No, U86097), Ahvaz, Iran.

Ali Zarei Mahmoudabadi,¹
Ali Reza Keradmand,²
Nasim Enayatollahi¹

¹Department of Medical Mycology, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

²Department of Urology, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
E-mail: zarei40@hotmail.com

REFERENCES

1. Pakshir K, Moghadami M, Emami M, Kord Bacheh P. Prevalence and identification of etiological agents of funguria in Foley catheterized patients. *J Med Res Shiraz Univ Med Sci.* 2004;3:33-41.
2. Lundstrom T, Sobel J. Nosocomial candiduria: a review. *Clin Infect Dis.* 2001;32:1602-7.
3. Shimada S, Nakagawa H, Shintaku I, Saito S, Arai Y. Acute renal failure as a result of bilateral ureteral obstruction by *Candida albicans* fungus balls. *Int J Urol.* 2006;13:1121-2.
4. Knoke M, Bernhardt H, Schulz K, Schroder G, Zimmermann K. Funguria and *Candida*-specific immunoglobulins in patients with systemic candidosis. *Mycoses.* 2000;43:145-9.
5. Abelson JA, Moore T, Bruckner D, Deville J, Nielsen K. Frequency of fungemia in hospitalized pediatric inpatients over 11 years at a tertiary care institution. *Pediatrics.* 2005;116:61-7.
6. Lagrotteria D, Rotstein C, Lee CH. Treatment of candiduria with micafungin: A case series. *Can J Infect Dis Med Microbiol.* 2007;18:149-50.
7. da Silva EH, Ruiz Lda S, Matsumoto FE, et al. Candiduria in a public hospital of Sao Paulo (1999-2004): characteristics of the yeast isolates. *Rev Inst Med Trop Sao Paulo.* 2007;49:349-53.
8. Zaini F, Azordegan F, Chabavizadeh J. Study of fungal infection in urine. *Iran J Public Health.* 1993;22:13-31.
9. Bukhary ZA. Candiduria: a review of clinical significance and management. *Saudi J Kidney Dis Transpl.* 2008;19:350-60.