

Candiduria — Our Experience

VP Baradkar*, M Mathur**, M Rathi***, S Kumar***

Abstract

A total number of 68 clinically suspected cases of fungal urinary tract infection were studied which included 60 adults and 8 children. Significant growth of *Candida species* was observed in 17(25%) patients. *Candida albicans* was the commonest pathogen isolated (58.82%) followed by *Candida parapsilosis*, *Candida krusei*, *Candida tropicalis*. *Candida glabrata* was the species isolated from blood as well as urine in 3 premature infants with low birth weight and respiratory distress syndrome. The predisposing factors in adults were catheterization, obstruction and pregnancy in females. All cases were managed by oral fluconazole treatment except the premature infants who were managed by Amphotericin B.

Introduction

The incidence of yeast infections has increased during last two decades.¹⁻³ The finding of candiduria may be a benign process associated with use of catheters or antimicrobial therapy.⁴ Nevertheless candiduria may be one of the most challenging of candidial infections. Present study was carried out to find out different species of candida in suspected cases of urinary tract infections and to find out predisposing factors for candiduria.

Material And Methods

The study was carried out in the Department of Microbiology, L.T.M.M.C and L.T.M.G.H, Sion, Mumbai from January 2006 to December 2006. A total number of 68 patients suspected to have fungal urinary tract infection were considered for the study among which 60 were adults and 8 were children. Among adults 46 were males and 14 were females while in children 6 were males and 2

females. Out of these children 4 were premature, low birth weight infants.

The clinical data analysed included age, sex and predisposing factors as obstruction, pregnancy, in cases of females history suggestive of vaginitis (vaginal discharge). Also finding of blood culture (if positive for candidaemia) and isolation of *Candida species* from other sites was noted. The symptoms of urinary tract infection were taken into account.

To define urinary tract infection, criteria described earlier^{2,5-7} was used. Mid stream clean catch samples were collected in sterile test tubes and processed for microscopy and culture on blood agar, MacConkey agar and Sabouraud's Dextrose agar. The speciation was done by standard methods. Out of the 68 suspected cases of UTI, no growth of *Candida species* was observed in 33 cases.. In these 33 patients other gram negative organisms were isolated in insignificant numbers and without symptoms of UTI. Insignificant growth of *Candida species* (colony count < 10⁵ CFU/ ml) was present in 14 cases. Only in 17 cases (25%) significant growth of *Candida species* was observed.

*Lecturer; **Professor and Head; ***Resident, Department of Microbiology, Lokmanya Tilak Municipal Medical College and General Hospital, Sion Mumbai - 400 022.

These 17 cases included 5 adult males with catheterization, 3 with obstruction, 2 having urinary tract stones and one old patient with prostatic enlargement. Out of the 4 females with significant growth, 2 were pregnant and one with obstruction and in one case no predisposing factors were identified. In all these cases history of painful micturition was present. The remaining patients were premature infants with low birth weight, history of central venous catheterization, long term administration of antibiotics, respiratory distress syndrome was present in all the infants and their blood cultures were also positive for fungaemia.

14 patients with insignificant growth included 10 with catheterization, 2 females with a history of vaginitis and 2 were diabetic. All were asymptomatic. Microscopic examination did not reveal presence of pus cells except in 5 patients with catheterization, which showed occasional pus cells/ ml of urine when observed under X 400 magnification.

Out of the 17 *Candida species* isolated from significant growth, *Candida albicans* was the commonest species in 10 cases (58.82%), *Candida parapsilosis* in 2 cases, *Candida tropicalis* and *Candida krusei* in one each while 3 cases of *Candida glabrata* was isolated (premature infants).

In premature infants *Candida glabrata* was isolated from urine as well as blood culture.

Discussion

Candiduria refers to the presence of *Candida species* in urine. It is an increasingly common finding in hospitalized patients.⁸ According to some authorities candiduria is a marker for haematogenous seeding in the kidney. In the vast majority of patients however, candiduria most likely reflects colonization or infection of the lower urinary tract or the collecting systems of the kidneys.

Unfortunately, colonization versus infection, lower tract versus upper tract involvement and haematogenous versus ascending infections are very difficult to differentiate clinically. Pyuria is not predictive of infection and could not be correlated with outcome. The finding of candiduria is mostly a part of the benign process associated with use of urinary catheters and antimicrobial therapy. Nevertheless candiduria may be one of the most challenging of candida infections. The challenge comes from the fact that *Candida species* in urine can be either insignificant (e.g. due to contamination or asymptomatic colonization)⁹ or it may be a marker of very serious disseminated disease.⁹ In between the two are other clinical possibilities, which may require specific treatment.

As some members of *Candida species* may be members of the host's normal microbiota, the detection of these organisms especially in clean catch or catheterized ("in and out") urine samples may sometimes be ignored by the physicians.¹⁰

Current definitions of UTI involve symptomatology (painful micturition), polymorphonuclear lymphocytes in urine or leucocyte esterase test positive, and presence of a single uropathogen or uropathogen in predominance within a culture.^{2,5,6} In the absence of these defining signs and symptoms, the diagnosis of urinary tract infection is not established and consequently the patient may not be administered any antifungal therapy. Microbiologic criteria for UTI conventionally based on bacteriuria as originally described by Kass,¹¹ such criteria may be inappropriate for fungaemia; particularly as the yeast cell concentration may not have predictive value.^{5,12} In the elderly, the significance of a high fungal concentration is less clear as obstructions or urinary tract damage could allow insufficient

flushing or provide a nidus for organisms. Thus the apparent asymptomatic presentation associated with obstruction may be a misnomer, as these patients do not have symptoms including dysuria, pyuria and nocturia.² Nicolle¹³ noted that no long term adverse effects have been attributed to asymptomatic fungiuria, but Neumann and Rakowa¹⁴ demonstrated that there is a higher associated mortality in critically ill patients with fungiuria, mostly due to *Candida albicans*. Whether the same is true for patients with less severe disease is not clear, but in our study in all the asymptomatic patients, no antifungal treatment was given and no adverse effects was noted.

In our significant patients, catheterization, obstruction and pregnancy were the risk factors for UTI. These factors are already reported to act as risk factors for Candidal UTI.

In premature infants, low birth weight and other conditions like long term central venous catheterization, respiratory distress syndrome predispose them for candidaemia and disseminated disease.¹⁵ In our study also in premature infants, same pathogens were isolated from blood. All these infants were treated with IV Amphotericin B.

In the catheterized patients, the removal of catheter along with fluconazole therapy was successful and no recurrence or adverse effects noted.

With increasing evidence of yeast infections, there is an expansion of species recognized to cause disease. The most common yeasts causing UTI are *Candida albicans*, *Candida tropicalis*, *Candida glabrata*, *Candida kefyr*, *Candida guilliermondii*, *Candida parapsilosis*, *Candida krusei*, *Rhodotorula*, but other rare species such as *Candida utilis*, *Candida lipolytica* are also reported.¹¹

In our study, *Candida glabrata* was the pathogen isolated from premature infants. It is a known fact that *Candida glabrata* is emerging as predominant pathogen in premature infants. This species is resistant to fluconazole, hence Amphotericin B is recommended for treatment. In our study also all premature infants were treated with Amphotericin B.¹⁵

To conclude, all cases of fungiuria should be studied properly in relation to clinical presentation, presence of pyuria and risk factors involved. Speciation is also important specially if species like *Candida glabrata* or *Candida krusei* are isolated which are resistant to fluconazole.

References

1. Fischer JF, Newman CL, Sobel JD. Yeast in urine: Solution for a budding problem. *Clin Infect Dis* 1995; 20 : 183-89.
2. Lipsky BA. Urinary tract infection in men: Epidemiology pathophysiology, diagnosis and treatment. *Ann Intern Med* 1989; 110 : 138-50.
3. Leibovitz EA, Iuster Reicher, Amitai M, Magilner B. Systemic candida infections associated with use of peripheral venous catheters in neonates: a 9 years experience. *Clin Infect Dis* 1992; 14: 485-91.
4. Schonebeck J. Asymptomatic Candiduria. Prognosis, complications and some other clinical considerations. *Scand J Urol Nephrol* 1972; 6: 136-46.
5. Jacobs LG. Fungal urinary tract infections in elderly; treatment guidelines. *Drugs* 1996; 8: 89-96.
6. Lye M. Defining and treating urinary tract infections. *Geriatrics* 1989; 138-50.
7. Stamm WE, Hooton TM. Management of urinary tract infections in adults. *N Eng J Med* 1993; 329: 1328-34.
8. Warren NG, Shadomy HJ. Yeast of Medical importance, In: A Balows, WJ Hausler, KL Herrman, HD Isenberg and HJ Shadomy, Manual of Clinical Microbiology, 5th ed. American Society for Microbiology, Washington D.C. 1991: P. 617-29.

9. Wise GJ. Fungal infection of urinary tract. In: Walsh PC, Retik AB, Stamey TA, Vaughan ED eds. *Cambell's Urology*. 6th ed. Philadelphia Saunders, 1992; 1 : 928-50.
10. Chronic urinary tract infection due to *Candida utilis*. *J of Clin Microbiol* 199; 37 (3) : 824-27.
11. Kass EH. Bacteriuria and diagnosis of infections of the urinary tract. *Arch Intern Med* 1957; 100: 709-14.
12. Schonebeek J. Asymptomatic candiduria. Prognosis, complications and some other considerations. *Scandc*
13. Nicolle LE. Asymptomatic bacteriuria in the elderly. *Infect Dis Clin N Am* 1997; 647-62.
14. Neumann PR, Rakowa SR. The risk of positive cultures from candida in critically ill patients. *Crit Care Med* 1978; 6 : 73-76.
15. Paul L Fidel, Jose AV, Jack DS. *Candida glabrata*: Review of epidemiology, pathogenesis, and clinical disease with comparison to *C.albicans*. *Clin Micro Review* 1999; 12 (1) : 80-96.
16. Tiraboschi IN, Benett JE, Kaufmann CA, Rex JH, Girmenia C, Sobel JD. Deep *Candida* infections in the neutropenic and non-neutropenic host: an ISHAM symposium. *Medical Mycol* 2000; 38 (1) : 199-204.

ANTI-OBESITY DRUG INCREASES RISK OF ADVERSE EVENTS

'Taken together with the recent US Food and Drug Administration finding of increased risk of suicide during treatment with rimonabant, we recommend increased alertness by physicians to these potentially severe psychiatric adverse reactions.'

Rimonabant is a newly-approved member of a class of anti-obesity agents that targets the endocannabinoid system, involved in the regulation of food intake. Robin Christensen and colleagues did a meta-analysis of four randomized controlled trials comparing 20 mg per day rimonabant with placebo. Although rimonabant produced greater weight reduction than placebo after 1 year, it also caused significantly more psychiatric adverse events, and patients were more likely to discontinue treatment because of depressive mood disorders or anxiety, or both. In a Comment, Philip Mitchell and Margaret Morris emphasise the importance of this finding, especially since the study excluded patients with a history of psychiatric illnesses.

Lancet Infect Dis, 2007; 1671, 1706.