Cystitis due to Blastoschizomyces Capitatus Successfully Treated with Fluconazole: A Case Report

Saddam Al Demour [1], Adel Alrabadi [1], Ra'ed Haddad [1],

Emad Tarawneh [2], Faris G Bakri [3]

Abstract

The incidence of fungal urinary tract infections has been increasing and is usually linked with the use of systemic chemotherapy, use of immunosuppressive medications, and overuse of antibiotics. Non-candida urinary tract infections are uncommon. *Blastoschizomyces capitatus* is an emerging invasive infection in immunosuppressed patients. Urinary infections with this pathogen are rarely reported. Here, we present a case of a diabetic female patient with a urinary tract infection caused by this pathogen. The infection was successfully treated with fluconazole therapy.

Keywords: *Blastoschizomyces capitatus*, Cystitis, Diabetes, Fluconazole, Ureteric stent.

(J Med J 2018; Vol. 52 (1): 77-82)

Received	***Accepted***
Jan. 28, 2017	*Oct. 24, 2017*

Introduction

Blastoschizomyces capitatus (*B. capitatus*) is a yeast-like fungus, previously known as *Trichosporon capitatum* and *Geotrichum capitatum* before being classified under the new genus (*Blastoschizomyces*).[1] Infections caused by *B. capitatus* are uncommon, and patients affected by this fungus are usually immunosuppressed.

Fungal infections of the urinary tract also typically occur in immunosuppressed patients. Most of these infections are caused by *Candida albicans* and non-*albicans Candida* species. Non-candida urinary tract infections are uncommon, and cases of cystitis due to *B. capitatus* infection are rarely reported.[2,3] Here, we report a case of cystitis due to *B. capitatus* in a diabetic female patient. The infection was managed effectively with fluconazole.

Case Report

A 65-year old female patient with diabetes and on oral hypoglycemic medications for the last nine years presented to clinic our hospital.

1. **Department of Special Surgery, Division of Urology, Jordan University Hospital and School of Medicine, The University of Jordan, Amman, Jordan.**
2. **Department of Radiology, Jordan University Hospital and School of Medicine, The University of Jordan. Amman, Jordan.**
3. **Department of Medicine, Jordan University Hospital, Infectious Disease and Vaccine Center, and School of Medicine, The University of Jordan, Amman, Jordan.**

**** Correspondence should be addressed to:***
Saddam Al Demour, MD, MRCS, FEBU, FACS
School of Medicine, The University of Jordan, Queen Rania Street, Amman 11942 – Jordan
P.O Box 13046
E-mail: saddamaldemour@yahoo.com
saldemour@ju.edu.jo

The patient had a ureteric stent insertion for a right lower ureteric stone at another institution two years prior to her presentation to us. The ureteric stent was missed for one year before the stone, and the stent was removed. Following stent removal, the patient began to complain of frequency, urgency, urge incontinence, nocturia, and hematuria. The patient took several courses of antibiotics without benefit before presenting to us one year after the onset of those symptoms. She had never been on corticosteroids or chemotherapeutic medications.

Her physical examination was unremarkable. The urinalysis showed turbid urine with numerous white blood cells (WBCs) per high power field (HPF) and 6 to 8 red blood cells per HPF. Two midstream urine cultures were negative. Her serum WBC was 10,700/mL, and HbA1c was 8%. Tests for human immunodeficiency virus (HIV) and hepatitis B and C viruses were negative. All blood cultures were negative. Computed tomography (CT) of the urinary tract showed a thick bladder wall, with significant fat stranding around the bladder (Figure 1).

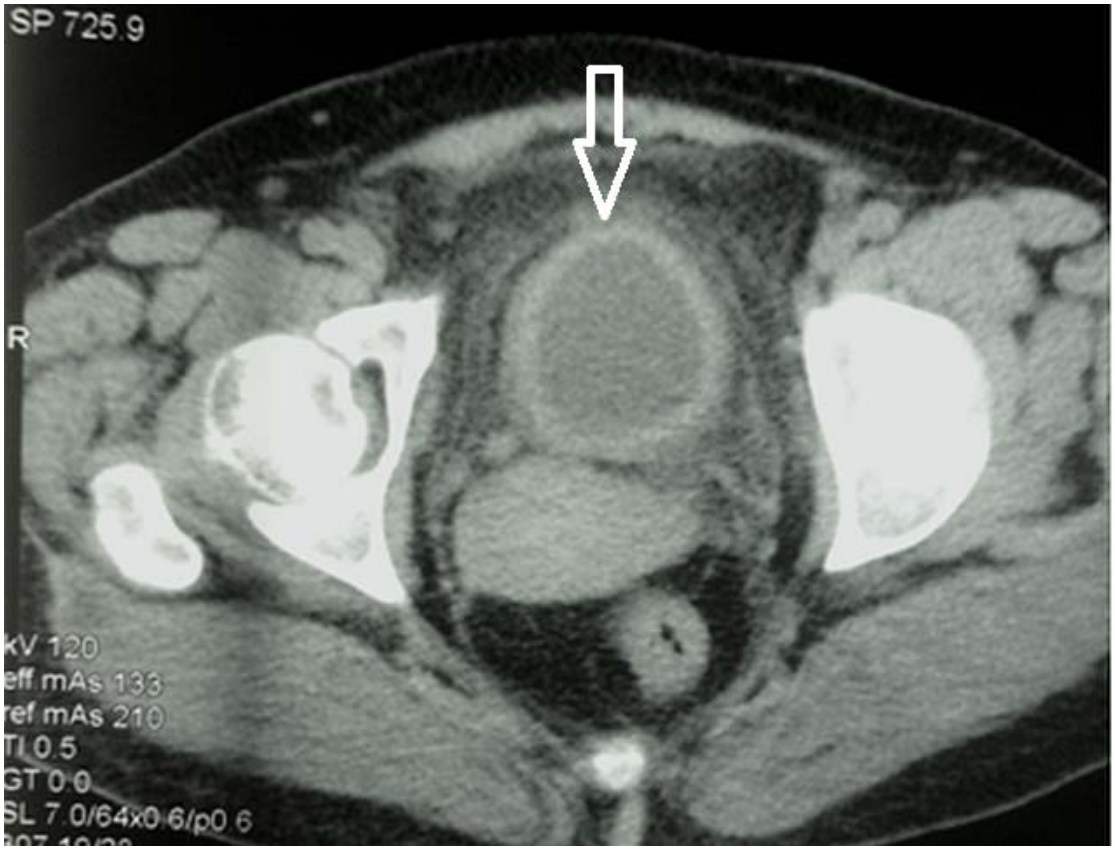

Figure 1. Computed tomography (CT) scan showing a thick bladder wall with significant fat stranding around the bladder (arrow)

Given the fact that the patient had hematuria and lower urinary tract symptoms that were not responding to antibiotics, a diagnostic cystoscopy was performed to rule out a sinister pathology. On cystoscopy, the bladder was severely inflamed with diffuse mucosal erythema, multiple punctate bleeding points, scattered white patches adherent to the mucosa, a significant amount of sloughed tissue in the bladder lumen, and patent ureteric orifices. Because these findings were suspicious for either bladder carcinoma *in situ* or fungal infection, transurethral resection biopsies were performed, a urine culture was collected directly from the bladder by cystoscope, and the patient was started on fluconazole intravenously.

Subsequently, the urine culture from the cystoscopy grew yeast. However, the yeast failed to change color with chrome agar. Thus, another identification test, the Remel Yeast test, was performed, identifying the yeast as *B. capitatus*. A histopathologic examination revealed severely inflamed bladder mucosa with no evidence of malignancy (Figure 2).

The patient was kept on intravenous fluconazole 400 mg/day for 21 days. During this time, the hematuria resolved, followed by gradual improvement of urgency and frequency. A repeat urine culture during treatment was negative. A follow-up urinary tract CT scan two weeks later showed improved perivesical inflammation (Figure 3).

One month after stopping fluconazole, the patient reported significant improvement and complete resolution of her symptoms. Her urine culture remained negative. One year after stopping fluconazole, the patient was still free of urinary symptoms.

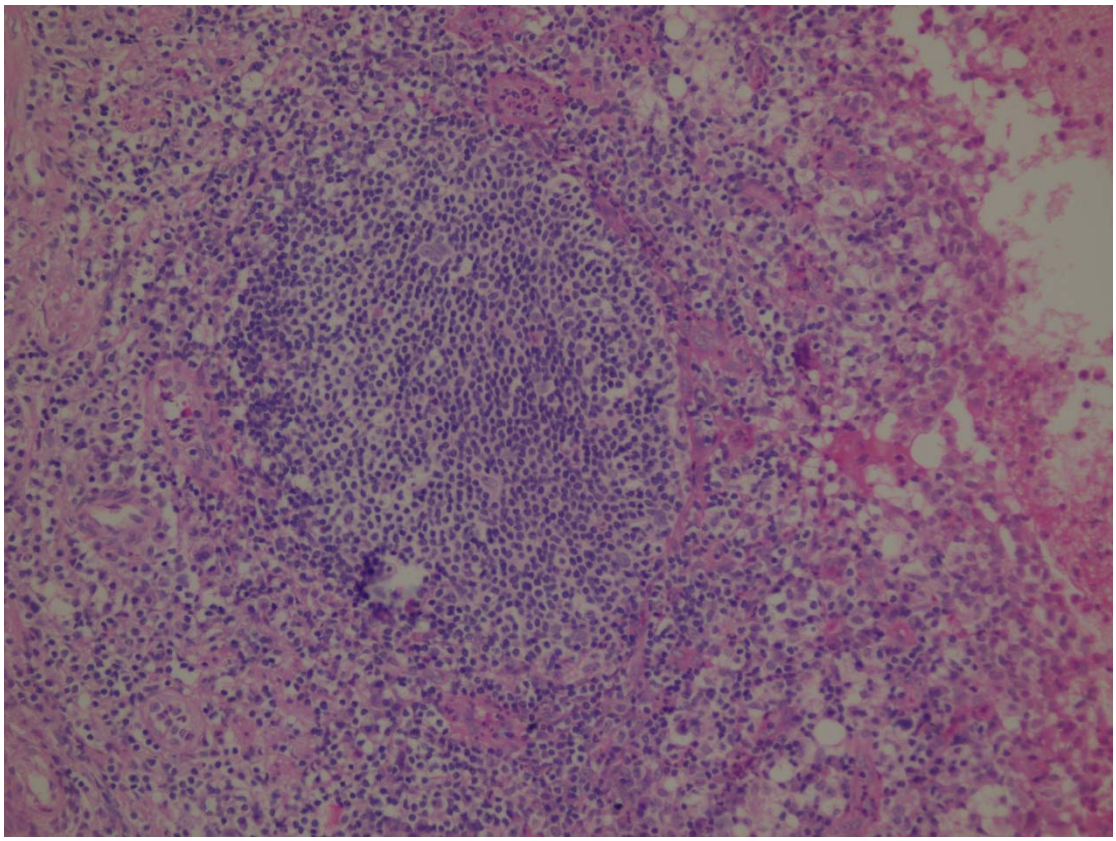

Figure 2. Histopathologic examination of the bladder mucosa showing severe, chronic follicular cystitis with no evidence of malignancy

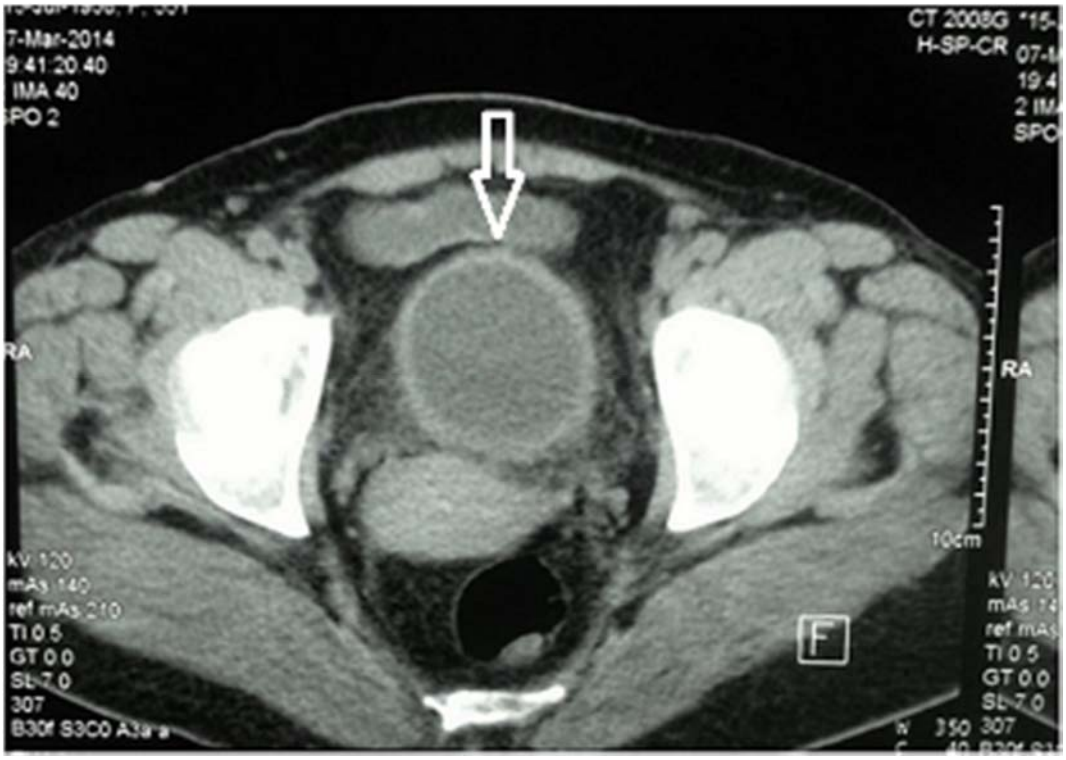

Figure 3. Follow-up computed tomography (CT) scan showing marked reduction in bladder wall thickness and residual fat stranding (arrow)

Discussion

The normal habitat of *B. capitatus* is the soil,[4] but it can be isolated from the skin, respiratory tract, and gastrointestinal tract of healthy individuals.[5] These organisms have previously been considered contaminants; however, infections caused by them have been increasing in recent decades. These infections have been attributed mostly to the increased use of systemic chemotherapy, increased prevalence of HIV infections, and empirical use of antifungals.[6] *B. capitatus* was reported to have caused severe invasive infections in immunocompromised patients, mainly those who had received chemotherapy for acute leukemia, patients on corticosteroids, patients with uncontrolled diabetes mellitus, and recipients of bone marrow transplants.[7,8]

The patient in this case had severe cystitis due to *B. capitatus*. Her risk factors for *B. capitatus* infection included diabetes mellitus, overuse of antibiotics, and previous ureteric stent insertion. On cystoscopy, cystitis appeared as severe, erythematous, diffuse bladder inflammation with adherent white patches and a significant amount of sloughed tissue. This appearance resembled bladder carcinoma, especially carcinoma *in situ*. The patient had significant bothersome lower urinary tract symptoms that resolved after antifungal therapy, indicating that *B. capitatus* cystitis was the sole cause for her symptoms.

Treatment of *B. capitatus* is not well-established due to its rarity. Systemic or intravesical amphotericin B has been used to treat fungal urinary tract infections.[2] Voriconazole has been reported to be effective in some cases of *B. capitatus* infection; however, the fungus was not fully eradicated in

subsequent cultures despite symptom improvement.[3] Others have reported successful treatment of invasive *B. capitatus* infections with amphotericin B and fluconazole.[9,10] In our case, the patient began to improve after a few days of empirical fluconazole therapy, so it was continued even after identifying *B. capitatus*. Voriconazole was not used as it was unavailable at that time. Amphotericin B was not used due to its potential nephrotoxic adverse effects. Eventually, the patient completely recovered with the use of fluconazole, and negative urine cultures after one year of follow-up indicated cure.

In conclusion, we are reporting a severe urinary tract infection caused by an unusual organism, *B. capitatus*. We believe this report adds to the body of literature concerning this fungal infection and highlights potential therapeutic options.

References

1. Salkin I, Gordon M, Samsonoff W, Rieder C. Blastoschizomyces capitatus, a new combination. Mycotaxon. 1985; 22 (2): 375-80.
2. Krcmery S, Dubrava M, Krcmery V. Fungal urinary tract infections in patients at risk. Int J Antimicrob Agents. 1999; 11 (3): 289-91.
3. Birrenbach T, Bertschy S, Aebersold F, et al. Emergence of Blastoschizomyces capitatus yeast infections, Central Europe. Emerg Infec Dis. 2012; 18 (1): 98-101.
4. Randhawa HS, Mussa AY, Khan ZU. Decaying wood in tree trunk hollows as a natural substrate for Cryptococcus neoformans and other yeast-like fungi of clinical interest. Mycopathologia. 2001; 151 (2): 63-9.
5. Pfaller MA, Diekema DJ. Epidemiology of invasive mycoses in North America. Criti Rev Microb. 2010; 36 (1): 1-53.
6. Vartivarian SE, Anaissie EJ, Bodey GP. Emerging fungal pathogens in immunocompromised patients: classification, diagnosis, and management. CID: an official publication of the Infectious Diseases Society of America. 1993; 17 Suppl 2:S487-91.
7. Martino R, Salavert M, Parody R, et al. Blastoschizomyces capitatus infection in patients with leukemia: report of 26 cases. CID: an official publication of the Infectious Diseases Society of America. 2004; 38 (3): 335-41.
8. Kremery V, Krupova I, Denning D. Invasive yeast infections other than Candida spp. in acute leukaemia. J Hosp Infec. 1999; 41 (3): 181-94.
9. Girmenia C, Micozzi A, Venditti M, et al. Fluconazole treatment of Blastoschizomyces capitatus meningitis in an allogeneic bone marrow recipient. Eur J Clin Microb & Infec Dis: official publication of the European Society of Clinical Microbiology. 1991; 10 (9): 7526.
10. Bouza E, Munoz P. Invasive infections caused by Blastoschizomyces capitatus and Scedosporium spp. Clin Microb and Infec: the official publication of the European Society of Clinical Microbiology and Infectious Diseases. 2004; 10 Suppl 1:76-85.

التهاب المثانة البولية بسبب (بلاستوشيزومايسس كابيتاتوس Blastoschizomyces capitatus) والمعالجة بنجاح بواسطة الفلوكانزول

صدام الضمور[1]، عادل الربضي[1]، رعد حداد[1]، عماد الطراونه[2]، فارس البكري[3]

1- استشاري جراحة الكلى والمسالك البولية، قسم الجراحة الخاصة، مستشفى الجامعة الأردنية، كلية الطب، الجامعة الأردنية.

2- استشاري الأشعة التشخيصية والتداخلية، قسم الاشعة، مستشفى الجامعة الأردنية، كلية الطب، الجامعة الأردنية.

3- استشاري الامراض الباطنية والأمراض المعدية، قسم الامراض الباطنية، مستشفى الجامعة الأردنية، كلية الطب، الجامعة الأردنية.

الملخص

زادت في الآونة الأخيرة نسبة حدوث الانتانات البولية بسبب الجراثيم الفطرية، وقد يكون ذلك مرتبطا بعده عوامل منها، استخدام العقاقير الكيماوية لمعالجه الاورام السرطانية، والعقاقير المثبطة للجهاز المناعي وكذلك الاستخدام المفرط للمضادات الحيوية.

تعدّ الالتهابات الفطرية التي تصيب الجهاز البولي من غير جرثومة (candida) أمراً غير شائع وقليل الحدوث وهناك نوع نادر من هذه الجراثيم الفطرية يطلق عليه (Blastoschizomyces capitatus) يصيب المرضى المثبطين مناعيا. تعتبر اصابة المجاري البولية بهذا النوع من الفطريات نادر الحدوث والحالات المسجلة بهذا النوع قليله. لقد قمنا بتقديم هذه الحالة المصابة بالتهاب المثانة البولية بهذه الجرثومة النادرة لدى امرأة تعاني من مرض السكري، وقد تم علاجها بنجاح بواسطة استخدام علاج مضاد للفطريات (fluconazole).

الكلمات الدالة: بلاستوشيزومايسس كابيتاتوس، التهاب المثانة البولية، السكري، فلوكانزول، قسطرة حالبية.