

# Candida Glabrata Perinephric Abscess

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Ilker Inanc Balkan<sup>1</sup>, Arif Savas<sup>2</sup>, Ayfer Geduk<sup>2</sup>, Mucahit Yemisen<sup>1</sup>, Bilgul Mete<sup>1</sup>, Resat Ozaras<sup>1</sup>

<sup>1</sup>Department of Infectious Diseases and Clinical Microbiology, Cerrahpasa Medical School, Istanbul University, Istanbul, Turkey

<sup>2</sup>Department of 1st Internal Medicine, Bezmi Alem Valide Sultan Vakif Gureba Training and Research Hospital, Istanbul, Turkey

### Abstract

Perinephric abscess is a rare complication of urinary tract infections, and the etiology is usually a gram negative bacillus. We report a case of *Candida glabrata* perinephric abscess in a patient with diabetes mellitus who had a recent episode of pyelonephritis that was treated with antibiotics. Percutaneous drainage and fluconazole treatment led to resolution of the infection. Yeast perinephric abscess should be considered when symptoms of acute or chronic urinary tract infection occur in elderly and diabetic patients, especially patients who are unresponsive to antibacterial therapy. The clinical course is sometimes insidious. Imaging (contrast-enhanced CT or MRI) is required for diagnosis, and drainage is indicated for successful therapy. Adjuvant antifungal treatment is recommended based on the results of antifungal susceptibility tests.

**Key Words:** *Candida glabrata*, Perinephric abscess, Fluconazole, Percutaneous drainage

### Özet

Perinephrik abse, üriner sistem enfeksiyonlarının nadir komplikasyonlarından biridir ve etiyolojide genellikle Gram negatif çomaklar yer alır. Bu yazıda; yakın zamanda geçirilmiş pyelonefrit atağı ve dolayısıyla antibiyotik kullanımı tanımlayan diyabetes mellitus tanılı bir hastada gelişen *Candida glabrata* perinephrik absesi sunulmaktadır. Hasta perkütan abse drenajı ve flukonazol tedavisi ile iyileşmiştir. Yaşlı ve diyabetik hastalarda akut veya kronik üriner sistem enfeksiyonu semptomları geliştiğinde, özellikle de antibakteriyel tedaviye yanıt alınamayan durumlarda mayalara bağlı perinephrik abse akla getirilmelidir. Klinik seyir bazen sinsi olabilir. Tanıda görüntüleme yöntemlerine (kontrastlı BT veya MR), tedavide ise drenaj uygulamalarına baş vurulmalıdır. Drenajla birlikte antifungal tedavi başlanması ve tedavinin antifungal duyarlılık sonuçlarına göre yönlendirilmesi önerilmektedir.

**Anahtar Kelimeler:** *Candida glabrata*, Perinephrik abse, Flukonazol, perkütan drenaj

### Introduction

Perinephric abscess is an uncommon complication of urinary tract infection that usually occurs in the setting of ascending infection with obstructed pyelonephritis and is occasionally secondary to bacteremia [1]. Predisposing factors include diabetes mellitus and urinary tract abnormalities such as urinary tract calculi, vesicoureteral reflux, neurogenic bladder, obstructive tumor, benign cyst or polycystic kidney disease [2-6]. The infecting bacteria are usually gram negative enteric bacilli but are occasionally gram positive cocci when the infection is of hematogenous origin. Multiple bacterial species are present in about 25% of cases, and occasionally fungi, especially *Candida spp.*, can be cultured from the abscess [1]. While *Candida albicans* is commonly present in these abscesses, *C. glabrata* urinary infections have become more prevalent in recent years [5, 7-9]. Many *C. glabrata* isolates are resistant to azoles due to changes in drug efflux. This type of resistance can sometimes be overcome

by using higher doses of fluconazole [10]. Herein, we report a case of perinephric abscess due to *C. glabrata* treated with fluconazole (MIC=0.25 ng/ml) i.v. in addition to percutaneous drainage.

### Case Report

A 71-year-old diabetic woman was admitted to the emergency unit with dysuria, oliguria, nausea and vomiting. She had undergone previous antibiotherapy to treat a urinary tract infection two months prior to admission. She had fever (38.5°C), tachycardia (110 pm), and tenderness at the costovertebral angles bilaterally with percussion. She had pyuria, her CRP level was 15-fold high, and a neutrophilic leukocytosis was observed. The serum creatinine level was 7.4 mg/dl, revealing acute renal failure. Urinary sonography revealed a 95x75 mm, heterogeneous, abscess-like mass lesion at the upper pole of the right kidney. After obtaining blood and urine cultures, ceftriaxone and metronidazole were started. A perinephric

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**Correspondence to:** Ilker Inanc Balkan, Department of Infectious Diseases and Clinical Microbiology, Cerrahpasa Medical School, Istanbul University, Istanbul, Turkey  
Phone: +90 212 414 30 00 e-mail: ilkerinancbalkan@hotmail.com

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abscess surrounding the right kidney from the posterior side was confirmed by MRI. A prompt percutaneous drainage was performed by the invasive radiology department. The gram staining of the abscess revealed leukocytes and yeast, and fluconazole was started at 400 mg/day. *Candida spp.* were isolated from urine and abscess cultures, and both were identified as *C. glabrata* in the third day of treatment with an MIC level of 0.25 ng/ml for fluconazole, an MIC that did not require treatment modification. All of the clinical, radiological and laboratory signs improved in the first five days of this treatment, and fluconazole was stopped in the tenth day, following the withdrawal of the drainage tube. A new abscess did not develop during the follow-up period (Figure 1).

## Discussion

For a patient with a complicated urinary tract infection, the work up should include urinary system imaging. The most helpful modality for radiological diagnosis is contrast-enhanced MRI or computerized tomographic scanning. Ultrasound and intravenous pyelography may be falsely negative in about one-third of cases [5]. As for the etiology, *Candida* species should be taken into consideration in predisposed patients with complicated urinary tract infections and perinephric abscesses. The evolving epidemiological data reveals that there has been an increase in the isolation of non-*albicans* species of *Candida* in recent years [11-13]. In a multicenter surveillance study conducted in the United States between 2004 and 2008, 54% of 2019 bloodstream isolates represented non-*albicans Candida spp.*, and 46% represented *C. albicans* [12]. *C. glabrata* was responsible for 26% of all cases of candidemia, followed by *C. parapsilosis* (16%), *C. tropicalis* (8%), and *C. krusei* (3%). The clinical importance of *C. glabrata* is related to the increased proportion in non-*albicans Candida*



**Figure 1.** Contrast-enhanced MRI. Right perinephric abscess containing gas (arrow).

infection and the increased MIC levels to fluconazole [14]. Therefore, echinocandins or high-dose polyenes are preferred for the treatment of infections with *C. glabrata*. Unlike the resistance of *C. krusei*, the resistance of *C. glabrata* is not intrinsic but is due to changes in drug efflux. This type of resistance can sometimes be overcome by using higher doses of fluconazole [10]. As another striking feature compatible with our case, *C. glabrata* is more commonly isolated from older patients, and over 25% of candidemias among persons 65 years of age or older are due to *C. glabrata* [15].

On the basis of efficacy, safety, and cost considerations, fluconazole is the agent of choice for the empirical treatment of disseminated candidiasis and complicated urinary tract infections in nonneutropenic, hemodynamically stable patients, unless a patient is suspected to be infected with an azole-resistant species. For hemodynamically unstable or neutropenic patients, agents with a broader spectrum, such as polyenes, echinocandins, or possibly, voriconazole, are preferred for empirical treatment.

The initial, empirical regimen can be modified depending on the response to therapy and the subsequent identification of the species of the offending pathogen.

In conclusion Complicated urinary tract infections, including perinephric abscesses due to yeasts, should certainly be taken into consideration in elderly, diabetic (especially female) patients who have a recent history of antibacterial treatment due to urinary tract infection. Imaging studies (contrast-enhanced CT or MRI) are essential for diagnosis, and prompt drainage is indicated for a successful therapy. Adjuvant antifungal treatment is recommended based on the results of antifungal susceptibility tests.

**Conflict of interest statement:** The authors declare that they have no conflict of interest to the publication of this article.

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