

# An Unusual Cause of Renal and Perirenal Abscesses: *Candida albicans*

## *Renal ve Perirenal Apsenin Nadir Bir Nedeni: Candida albicans*

### ABSTRACT

A 42-year-old female with history of surgery due to urolithiasis was admitted to hospital with complaints of fever, left flank pain and vomiting. She was found to have acute kidney injury due to urinary tract infection. Abdominal computed tomography revealed right atrophic kidney and left renal and perirenal abscesses together with urolithiasis. Urine, blood and abscess cultures yielded *C. albicans*. The patient was treated with fluconazole and percutaneous drainage of the perirenal abscess, which was 60 mm in diameter. Her serum creatinine returned to the normal ranges within two weeks of hospitalization. Nearly 18 months following this presentation, she has normal serum creatinine and no abscesses in the kidneys.

**KEY WORDS:** Acute kidney injury, *Candida albicans*, Perirenal abscess, Renal abscess, Treatment

### ÖZ

Ürolitiazis nedeniyle operasyon öyküsü olan 42 yaşında kadın hasta, ateş, sol yan ağrısı ve kusma şikayetiyle hastaneye başvurdu. İdrar yolu infeksiyonuna bağlı akut böbrek hasarı olduğu tespit edildi. Abdominal bilgisayarlı tomografide sağ atrofik böbrek, sol renal ve perirenal apseler ve sol üreterde taşlar tespit edildi. İdrar, kan ve apse kültürlerinde *C.albicans* üremesi tespit edildi. Hastaya flukonazol ve 60 mm çapındaki perirenal apseye perkütan drenaj uygulandı. Hastaneye yatışının ikinci haftasında serum kreatinin düzeyi normal sınırlara geriledi. Hastanın 18. aydaki kontrolünde serum kreatinin düzeyinin normal olduğu ve böbreklerde apse olmadığı saptandı.

**ANAHTAR SÖZCÜKLER:** Akut böbrek hasarı, *Candida albicans*, Perirenal apse, Renal apse, Tedavi

### INTRODUCTION

Renal and perirenal abscesses are rare but potentially lethal complications of urinary tract infection (1,2). A delay in diagnosis may lead to morbidity and mortality. The microorganisms responsible for renal and perirenal abscesses are usually gram negative and positive bacteria, mostly *E. coli*, *K. pneumoniae*, *S. aureus* and *B. fragilis* (3-5). Fungal organisms including *C. albicans* are uncommon causes of renal and perirenal abscesses. (1-5). *Candida* species enter the upper urinary tract from the bloodstream or ascend the urinary tract from a focus of candidal colonization near the urethra. *Candida* species adhere poorly to the bladder mucosa, but invasion of the

bladder wall, ureter, and/or kidney may occur under conditions of diabetes, profound immunosuppression, concomitant bacteriuria or obstructive uropathy. In the diagnosis of renal and perirenal abscesses, apart from urine, blood and abscess cultures, abdominal computed tomography is the preferred method to demonstration of the abscess (4-5). Treatment modalities include antibiotic treatment together with percutaneous or surgical drainage according to the size and treatment response (1-5). Mortality rates have decreased over the past 30 years with successful percutaneous drainage. In this report, we describe a non-diabetic female patient who presented with acute kidney injury and urinary tract infection, and renal

**Serhan PIŞKINPAŞA**  
**Hadim AKOĞLU**  
**Nihal ÖZKAYAR**  
**Fatma AKYEL**  
**Didem TURGUT**  
**Fatih DEDE**

Ankara Numune Education and Research Hospital, Department of Nephrology, Ankara, Turkey



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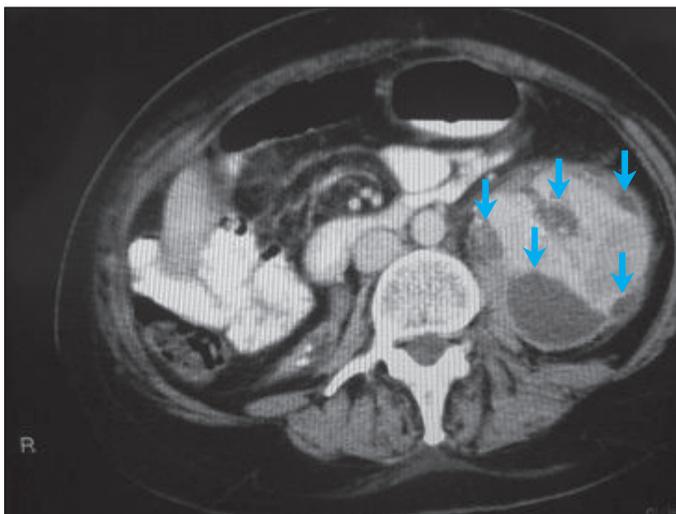
Correspondence Address:

**Serhan PIŞKINPAŞA**  
 Ankara Numune Eğitim ve Araştırma Hastanesi, Nefroloji Kliniği,  
 Ankara, Turkey  
 Phone : +90 505 221 52 14  
 E-mail : svppasa@yahoo.com

and perirenal abscesses caused by *C. albicans*, and was treated successfully with antibiotic and percutaneous drainage.

### CASE REPORT

A 42-year-old female who had a history of surgery due to urolithiasis 3 months ago was admitted to our hospital with complaints of fever, left flank pain and vomiting. There was no history of diabetes, immunosuppression or taking drugs. At the time of the surgery 3 months ago, her serum creatinine level had been 0.9 mg/dl. Her vital signs were as follows; blood pressure 100/60 mmHg, heart rate 110 beats/minute, respiratory rate 22/minute, body temperature 38.9 °C. She looked ill and left costovertebral tenderness was noted on her physical examination. Complete blood count revealed a leukocyte count of 22800/mm<sup>3</sup> and platelet count of 264000/mm<sup>3</sup>. Biochemical investigations disclosed the following: blood glucose level 94 mg/dL, urea 169 mg/dL, creatinine 13.7 mg/dL, HCO<sub>3</sub>:12 mmol/L. Pyuria (50 white blood cells per high-power field) was detected on urinalysis. She was hospitalized due to suspicion of the upper urinary tract infection together with acute kidney injury and empirical antibiotic treatment with cefoperazone-sulbactam was started after blood and urine cultures were obtained. Abdominal computed tomography (CT) revealed a renal abscess in the medulla, and multiple perirenal abscesses in the left kidney (Figure 1), stones in proximal part of the left ureter without any obstructive pathology, and an atrophic right kidney. Hemodialysis therapy was started due to uremia. Urine and blood cultures yielded *Candida albicans* without any concomitant microorganism. The patient was treated with IV fluconazole (400 mg/day) and percutaneous drainage of the perirenal abscess, which was 60 mm in diameter. Abscess culture yielded *Candida albicans* and the cefoperazone-sulbactam therapy was changed with fluconazole. Hemodialysis therapy



**Figure 1:** Abdominal computed tomography showed a renal abscess and multiple perirenal abscesses (the biggest one is 60 mm in diameter) in the left kidney.

was stopped after 5 sessions and her serum creatinine returned to normal ranges within two weeks of hospitalization. At the 30<sup>th</sup> day of fluconazole treatment, urinary tract ultrasonography detected decreased diameters of renal abscesses and the patient was discharged with fluconazole PO 200 mg/day for a month. Repeated abdominal CT at 60<sup>th</sup> day after completion of therapy revealed resolution of the abscesses. Nearly 18 months following this presentation, she has normal serum creatinine and no abscesses in the kidneys.

### DISCUSSION

Renal and perirenal abscesses are dangerous complications of urinary tract infection. There are several reports on etiology, clinical characteristics and treatment modalities for patients with renal and perirenal abscesses in the literature. Diabetes, urolithiasis, obstructive uropathy, previous urological instrumentation/surgery, immunosuppression and kidney biopsy are accepted as risk factors for the development of renal and perirenal abscesses (1-4,6). Most of the organisms responsible for renal and perirenal abscesses are gram negative, positive and anaerobic bacteria (*E. coli*, *K. pneumonia*, *P. mirabilis*, *S. aureus*, *B. fragilis*). Renal and perirenal abscesses caused by *C. albicans* have been reported as case reports or very rarely in small series (2-4,7-9). Coelho et al., Lee et al., and Siegel et al. reported 65, 63, and 52 patients with renal abscesses respectively, with no *Candida* species as the causative agent (2,4,5). Edelman et al. reported 7 cases with perirenal abscess in renal transplant patients and they noted that *C. albicans* constituted 4% of the culture isolates (9). *Candida* spp. can cause urinary tract infections, especially in hospitalized patients with indwelling bladder catheters, diabetes, and immunosuppression (6). In case of renal or perirenal abscesses, prompt treatment according to causative agent after diagnostic radiological evaluation is essential. Although antibiotic therapy is the mainstay of the treatment, percutaneous or surgical drainage of abscesses >5 cm in diameter is suggested (2-5,10). According to some authors, drainage treatment of the abscesses 3-5 cm in diameter should be planned, especially if there is no response to the antibiotic treatment (2,3,5). The patient in this case had no diabetes, immunosuppression, indwelling urinary catheter, obstruction of urinary tract or hospital stay history. Although she had undergone urological instrumentation and surgery, it was more than 3 months ago. She only had urinary stones as a major risk factor for development of renal and perirenal abscesses. Urine, blood and abscess cultures yielded only *C. albicans*. Percutaneous drainage of the biggest perirenal abscess and antifungal therapy led to normal renal function and resolution of the abscesses.

In conclusion, we presented a patient with renal and perirenal abscesses and acute kidney injury treated successfully with fluconazole and percutaneous drainage. *C. albicans*-related renal and perirenal abscesses are very rare, but potentially lethal, and are mainly encountered in patients with diabetes, urolithiasis, ureteral obstruction or severely immunocompromised hosts.

Appropriate antifungal therapy and percutaneous drainage of abscesses larger than 5 cm in diameter, together with early diagnosis, is promising.

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