



Renal mycetomas in a 10-month-old female infant without immunodeficiency

İmmün yetmezliği bulunmayan 10 aylık bir kız bebekte renal miçetomalar

✉ Anastasia Gkampeta¹, ✉ Maria Stamou¹, ✉ Charalampos Antachopoulos², ✉ Elpida Simeoforidou¹,
✉ Athena Pantoleon³, ✉ Nikoleta Lazaridou¹, ✉ Andreas Giannopoulos¹

¹2nd Pediatric Department, Aristotle University of Thessaloniki, AHEPA Hospital, Thessaloniki, Greece

²3rd Pediatric Department, Aristotle University of Thessaloniki, Hippokration General Hospital, Thessaloniki, Greece

³Department of Radiology, Aristotle University of Thessaloniki, "AHEPA" General Hospital, Thessaloniki, Greece

The known about this topic

Candida albicans is the most prevalent fungal infection of the urinary tract. Prematurity, parenteral nutrition, corticosteroids, immunosuppressive factors, surgical procedures, and prolonged antibiotic therapy are common predisposing factors.

Contribution of the study

The occurrence of mycetomas or fungus balls in patients who are immunocompetent is extremely rare. To the best of our knowledge, this is the second case report of mycetomas occurring in immunocompetent pediatric patients.

Abstract

Candida albicans is the most prevalent and pathogenic fungal infection of the urinary tract. Although fungal urinary tract infections occur less frequently than bacterial infections, their incidence has increased during the last decades. Prematurity, parenteral nutrition, corticosteroids, immunosuppressive factors, surgical procedures, and prolonged antibiotic therapy are common predisposing factors. We report a case of candidal renal mycetomas in a 10-month-old female infant without immunodeficiency who developed candidal infection after surgical treatment for bilateral vesico-ureteric reflux. The renal candidiasis was treated successfully with fluconazole and echinocandin. The occurrence of mycetomas or fungus balls in patients who are immunocompetent is extremely rare. To the best of our knowledge, this is the second case report of mycetomas occurring in immunocompetent pediatric patients.

Keywords: *Candida albicans*, candidemia, mycetomas, renal

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Introduction

Despite the existence of a large number of fungal species, only a few are pathogenic to humans. Of those, *Candida*

Öz

Candida albicans enfeksiyonu üriner sistemin en sık görülen ve en patojen mantar enfeksiyonudur. Üriner sistemde mantar enfeksiyonları, bakteriyel enfeksiyonlara göre daha az sık ortaya çıkmasına rağmen, son dekadlarda, bunların insidansları artmıştır. Prematürite, parenteral beslenme, kortikosteroidler, bağışıklık sistemini baskılayan faktörler, cerrahi işlemler ve uzun süre antibiyotik tedavisi, sık görülen predispozan faktörlerdir. Burada, bilateral vezikoureteral reflü için yapılan cerrahi tedavi sonrasında kandida enfeksiyonu geliştiren ve immün yetmezliği bulunmayan 10 aylık bir kız bebekte saptanan kandidal renal miçetoma vakasını bildiriyoruz. Renal kandidiazis, flukonazol ve ekinokandin ile başarılı bir şekilde tedavi edilmiştir. İmmün yetmezliği bulunmayan hastalarda miçetomalar veya mantar topları çok nadir görülür. Bildiğimiz kadarı ile, bu vaka bildirimini, immün yetmezliği bulunmayan pediatrik hastalarda ortaya çıkan miçetomalarla ilgili ikinci vaka bildirimidir.

Anahtar sözcükler: *Candida albicans*, kandidemi, miçetomalar, renal

albicans is the most frequently encountered, accounting for more than half of all cases of fungal urinary tract infections. *Candida* is a commensal organism found most frequently on the skin, gastrointestinal, respiratory, and

Corresponding Author/Sorumlu Yazar: Anastasia Gkampeta E-mail/E-posta: anastagab@yahoo.gr

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lower genitourinary tracts. In an immunocompromised or debilitated host, it may become a pathogen. Prematurity, parenteral nutrition, corticosteroids, immunosuppressive factors, surgical procedures, prolonged antibiotic therapy, diabetes mellitus, and various diseases constitute predisposing factors (1).

We report a case of candidal renal mycetomas in a 10-month-old female infant without immunodeficiency who developed candidal infection after surgical treatment for bilateral vesico-ureteric reflux.

Case

A 10-month-old female infant was referred to our hospital due to fever of 15 days' duration with intermittent pattern, with three to four daily spikes up to 39°C, followed by a rapid return to baseline. The infant had an unremarkable perinatal and family history. From her past medical history, the infant had her first episode of urinary tract infection at the age of 3 months when she was diagnosed with bilateral vesico-ureteric reflux (grade II-III on the left, grade V on the right). She underwent surgical correction of bilateral vesico-ureteric reflux with the Politano-Leadbetter technique (double-J 3 Chrr ureteral catheters were surgically inserted) 20 days previously with no postoperative complications.

On physical examination, she was in good general condition with vital signs within normal ranges. Primary laboratory screening revealed leukocytosis [white blood cells (WBC): 29.030 K/ μ L], thrombocytosis [platelets (PLT): 1386.000 K/ μ L], and elevated erythrocyte sedimentation rate (140 mm at end of 1 h). The other biochemical investigations were within normal ranges. The infant's immunologic profile was unremarkable and she had no obvious immunocompromising conditions. A surgical procedure for the correction of bilateral vesico-ureteric reflux and prolonged postoperative chemoprophylaxis were the only predisposing factors. Urine and also blood cultures were positive for *Candida albicans*. Sonography demonstrated enlarged, hyperechoic kidneys with discrete echogenic masses (bilateral renal mycetomas).

The patient was administered antifungal treatment intravenously with fluconazole (60 mg twice daily) and caspofungin (25 mg once daily). Blood and urine cultures became negative after 24 and 72 hours of antifungal therapy, respectively. The infant became afebrile 8 days after the start of antifungal treatment and the double-J 3 Chrr ureteral catheters were surgically removed one month after the surgical correction of bilateral vesico-ureteric reflux. The renal parenchymal echo pattern gradually reverted to normal, and mycetomas resolved after 2 weeks

of antifungal therapy. During hospitalization and, subsequently, at home, the infant was administered antifungal therapy with fluconazole and caspofungin for a total of four weeks and underwent close follow-up with laboratory testing, urine-blood cultures, and sonographic assessments. Two months later, the patient remains asymptomatic, in good general condition, without recurrent fungal infection on urine culture.

Informed consent from both parents of the infant was taken.

Discussion

Candida albicans infection can cause a range of complications from mild focal disease to fatal septicemia and multi organ dysfunction. Urinary tract colonization can be due either to hematogenous dissemination or a retrograde infection. The fungi extend into the collecting system and rarely coalesce to form bezoars or fungus balls, which can cause hydronephrosis and obstructive uropathy. Invasive candidiasis may result in renal failure due to both parenchymal destruction and obstruction of the collecting systems by mycetomas. Primary renal candidiasis shows a strong predilection for females (2).

When a candidal urinary tract infection (UTI) is diagnosed, it is important to assess the patient for candidemia. Phillips and Karlowicz (3) found candidemia in 13 of 25 candidal UTIs in neonates and Bryant et al. (4) reported this condition in 12 of 36 cases. Renal involvement in neonatal candidemia varies from 5% to 33%. Our patient had positive blood and urine culture for *Candida albicans*. When a fungal urinary tract infection is diagnosed, parenteral antifungal treatment is the first option. Fluconazole is preferred because of its safety, achievement of high concentrations in the urine, and availability in both an oral and intravenous formulation. The role of echinocandins and azoles that do not achieve measurable concentrations in the urine is not clear (5). Our patient responded well to treatment with fluconazole and caspofungin with complete sonographic resolution of bilateral renal mycetomas.

The occurrence of mycetomas or fungus balls in patients who are immunocompetent is extremely rare. The presence of candidiasis is described postoperatively in urologic procedures, even though other predisposing factors are not present. This could be attributed to the fact that human renal epithelial and uroendothelial cells are capable of internalizing pathogens, including candidal species, by producing cytokines and chemokines, and actively participating in acute inflammatory processes. A urologic procedure disrupts the protective role of renal epithelial

and uroendothelial cells, altering host resistance, and consequently predisposing to overgrowth of candida (6). Di Paola et al. (7) recently were the first to report on two otherwise healthy women presenting with urinary tract obstruction caused by candidal mycetomas. Interestingly, in the case reported, the infant was immunocompetent and the only predisposing conditions were a surgical procedure for correction of bilateral vesico-ureteric reflux and prolonged postoperative chemoprophylaxis. To the best of our knowledge, this is the second case report on mycetomas occurring in immunocompetent pediatric patients. The first case of renal pelvic fungus balls in a 6-month-old female who developed candidal infection after surgical treatment for bilateral vesico-ureteric reflux was reported by Sica et al. (8) in 1993.

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