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Unilateral colonization of fungal infection presenting as renal mass in young patient: A case report

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Abstract

Fungal ball or fungal bezoar is the saprophytic colonization of a preformed cavity by a conglomerate of fungal mycelia without invasion of the adjacent tissue. Fungal bezoar is seen commonly in immunocompromised individuals. We present a case of urinary tract infection, complicated by unliateral fungus balls in a 25-year old female whose imaging findings (USG and CT scan), laboratory investigation and histopathological findings are consistent with renal fungal ball.

Keywords: fungal ball; urinary tract infection.

Introduction

Primary urinary tract infection due to Candida is usually seen in patients with immunocompromised risk factors such as diabetes mellitus, prior antibiotic therapy urinary tract drainage devices, urinary tract pathology and malignancy.

Candida albicans is a ubiquitous fungus and can be detected in approximately 32-55% of health individuals [1]. Infection of urinary tract by C. Candida can be from blood or retrograde infection [2]. Candidiasis can occasionally present as mass lesions. Localized renal Candida infection is rare. It can be a renal fungal ball, or rarely can Candida renal infection present as a granulomatous pyelonephritis [3,4]. In this report, we described a renal candidiasis in a 25-year-old patient presenting as a fungal bezor.

Case report

A 25- year old female presented with complaints of recurrent UTI for 10 yrs and painless hematuria for 3 yrs. She was unresponsive to prolonged antibiotic use since 10 years. Urinalysis showed hematuria, with 10-20 white blood cells per high power field, but a urine culture was negative.

Ultrasonography showed a mixed echogenic mass lesion involving mid & lower polar calyces and renal pelvis of right kidney measuring about 4.8.5 X 3.83 cm (Figure 1). On color Doppler ultrasonogram no blood flow is seen in the mass lesion (Figure 2). Plain CT imaging of the abdomen confirmed the presence of mass in the mid &lower polar calyx and renal pelvis associated with ipsilateral pelvic dilatation. And remaining part

of the ureter is not dilated (Figure 3). Left Kidney was normal. The mass contained no visible calcification, involved the renal capsule, and infiltrated the perinephric fat. Renal veins are normal in caliber. No lymphadenopathy was noted.

MR urogramT2W axial showed heterogeneously hypertintense lesion measuring about AP 2.2 X TD X 2.6 x CC 3.1 was noted at mid and lower polar calyx and renal pelvis of right kidney causing mild dilatation of involved part but remaining pelvi-calycael was not dilated (Figure 4). The right kidney appears normal in size, shape and position.

Ureteroscopy was done which reveals a polypoid lesion at the right renal pelvis.

Histopathology findings were compatible with a renal aspergilloma. No malignancy was seen.

As per clinical information and imaging findings are consistent with right renal fungal ball.

Figure 1 & 2: USG shows mixed echogenic mass in right medullary cavity. On color Doppler no uptake of flow is seen within the mass lesion.

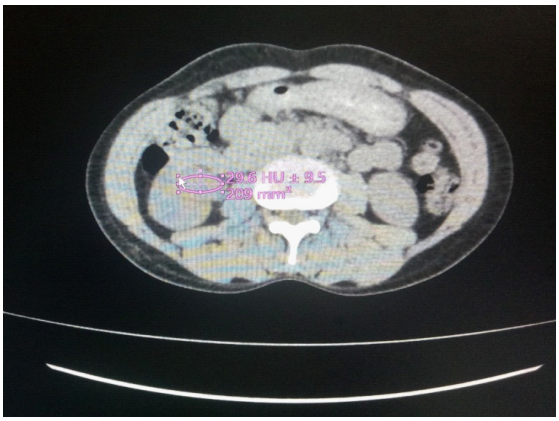

Figure 3: Non contrast CT show soft tissue mass in mid& lower polar calyx and renal pelvis with pelvic dilatation.

Figure 4: T2W heterogeneously hypertintense area noted at mid and lower polar calyx and renal pelvis of right kidney.

Discussion

Upper urinary tract fungal infections are relatively uncommon. Literature review reveals that renal involvement is commonly caused by disseminated candidiasis, but a primary infection can be caused by an ascending process or *via* urinary catheter drainage [5]. It can affect the renal parenchyma or the drainage system and cause a cortical abscess or an obstructive intrarenal mass, commonly in the pelviureteric junction [6]. It can present as renal colic, fever, dysuria, chills, vomiting or decreased urine output, and the age at presentation can vary from newborn to elderly [7].

Majority of the cases described in the literature suggests that diabetes, immunosuppressed state, bladder catheterization and prolonged antibiotic use are a few of the high risk factors for opportunistic infection by fungus. *Aspergillus, Mucormycetes, Cryptococcus* and *Histoplasma* are other organisms known to infect the urinary system [8]. A case of renal fungal ball with *Geotrichumcandidum* has been reported in a post-partum patient [9]. *G. candidum* infection has been reported commonly in renal transplant recipients.

Conclusion

The kidney is a common site of end-organ disease in disseminated candidiasis, with a variety of clinical manifestations including abscess (solitary or multiple), pyelonephritis, and fungal bezoar in the renal pelvis causing obstruction. Large doses of the *Candida* led to multisystem disease with a poor prognosis. Smaller doses, however, created low-grade disease in organs such as the kidney, where chronic renal atrophy and fungal ball formation were observed.

Ultrasonography is essential to rule out a fungal bezoar in the renal pelvis that could result in obstruction. If a fungus ball is present, percutaneous nephrostomy is recommended. Percutaneous nephrostomy definitively relieves obstruction and prevents ongoing parenchymal insult, provides a “clean” specimen and an accurate diagnosis of the fungal infection, and allows treatment of the infection with local instillation therapy complementing systemic therapy.

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