Aspergillus Fungal Balls Causing Ureteral Obstruction

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INTRODUCTION

Fungal bezoar of the kidney is a rare clinical entity, usually seen in a diabetic, immunocompromised, or chronic alcoholic patient who has prolonged catheterization.[1] Angio-invasive fungal infections such as aspergillosis are associated with severe renal lesions and kidney failure with high morbidity and mortality rates.[2] We describe a patient who developed complete obstruction of the left ureter as a result of *Aspergillus* fungal balls which were successfully removed ureteroscopically.

CASE REPORT

A 48-year-old diabetic woman presented with a dull pain in the left flank, recurrent urinary tract infections, and passage of small particles during urination for the past 2 years. Urine microscopic examination showed a field full of pus cells. Diagnosis of aspergillosis was confirmed by urine culture (Figure 1). Intravenous urography showed left hydroureteronephrosis. No invasion to the renal parenchyma was detected on abdominal computed tomography (Figure 2). Preoperative retrograde pyelography and ureteroscopy showed complete obstruction in the pelvic ureter (Figure 3).

The fungal balls were removed ureteroscopically from the left ureter and the renal pelvis and sent for microbiological examination. Microscopic examination of the wet mount preparation revealed hyaline septate hyphae with branching at acute angles. The lactophenol cotton blue mount from the

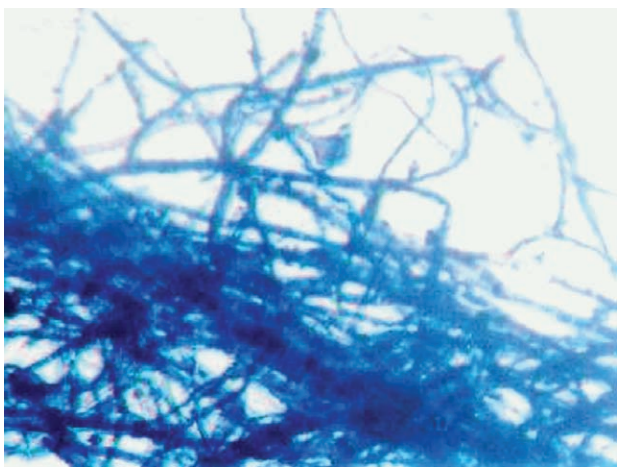

Figure 1. Lactophenol cotton blue mount of *Aspergillus* culture shows septate hyphae and conidiophores ending in a vesicle (× 400).

Figure 2. Contrast-enhanced abdominal computed tomography shows a bulky left kidney with normal enhancement of the renal parenchyma.

Figure 3. Retrograde urography shows complete obstruction of pelvic ureter.

Figure 4. Postoperative retrograde urography shows normal drainage of the left ureter.

fungal culture demonstrated septate hyphae with conidiophores terminating in a vesicle. The features were consistent with the diagnosis of *Aspergillus* infection. The patient received oral itraconazole, 400 mg, for 1 month, and irrigation through ureteral catheter with amphotericin B was done for 7 days. Retrograde urography on the 10th postoperative day showed good drainage of contrast medium from the left kidney (Figure 4). The patient's recovery period was uneventful.

DISCUSSION

Opportunistic pathogens such as *Candida*, *Aspergillus*, *Mucor*, *Cryptococcus*, and *Histoplasma* are known to infect the kidneys in patients with serious complications.[2] Typically, fungal diseases involve the urinary drainage system.[3] The usual locations of involvement by *Aspergillus* include the lungs, central nervous system, sinuses, and skin.[3-5] In immunocompromised patients, disseminated infections with involvement of kidney may occur. Aspergillosis of the kidney may present as any of the following patterns: disseminated aspergillosis with renal involvement resulting from hematogenous spread of the fungi to the kidneys, leading to formation of multiple focal abscesses; aspergillus cast of the renal pelvis; and ascending panurothelial aspergillosis of the urethra, bladder, pelvis, and kidney.[2]

A fungal bezoar causing ureteral obstruction is extremely rare. Only about 50 cases of such fungal balls have been reported.[5] Most fungal bezoars causing ureteral obstruction are due to *Candida* species. Only about 12 cases of ureteral obstruction by aspergillosis have been reported to date.[6] Most of ureteral obstructions are unilateral. Bilateral ureteral obstruction due to fungal bezoars is extremely rare.[6,7] Fungal infections of the urinary tract must be diagnosed quickly and treated aggressively. If they remain untreated, they can cause urinary obstruction through formation of accretions called fungal balls resulting in hydronephrosis, oliguria or anuria, destruction of the renal parenchyma, wide-spread

dissemination of the organism, and death of the patient.[2,8] Unfortunately, excretory urography, computed tomography, and even retrograde urography have been reported to be unreliable in diagnosis of this condition.[6-8] Otherwise, endourological procedures including percutaneous nephrostomy, ureteroscopy, nephroscopy, and ureteral stents are valuable in the diagnosis and management of fungal infections in the urogenital system and offer better ways of handling these patients to the urologist.[7] At the same time, percutaneous irrigation permits administration of highly toxic antifungal drugs to the patients with localized infection and as a result, minimizes systemic side effects.[8] Endourological procedures along with oral and topical antifungals can be successfully used to manage patients with disseminated fungal infection.

CONFLICT OF INTEREST

None declared.

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