Ureteral Obstruction Caused by Aspergilloma in a Non-Immunosuppressive Patient

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Although rarely, aspergillosis can cause obstructive uropathy. This generally occurs in patients with immunosuppressive conditions. Herein, we report a case of aspergilloma that caused ureteral obstruction in a 79-year-old man with no immunosuppressive conditions. A computed tomography revealed that his left pelvocalyceal system and ureter showed mild dilatation, without a definite obstructive lesion. The fungal bezoar was removed using an ureteroscopy. The patient was successfully treated with antifungal medication.

Keywords: Aspergillosis; Ureteral obstruction; Ureteroscopy

CASE REPORT

Aspergillosis that arises in the urinary tract is a rare occurrence. It predominantly occurs in patients who are immunocompromised, such as after a kidney transplantation, uncontrolled diabetes mellitus, acquired immunodeficiency syndrome, intravenous drug use, or chronic steroid therapy [1]. Aspergillosis confined to the urinary tract is unusual, and ureteral aspergillomas may cause obstructive uropathy [2]. Urinary tract fungal infections tend to be symptomatic, and in some cases, have a risk of dissemination [3]. We present a case of ureteral aspergilloma causing ureteral obstruction in a nonimmunocompromised patient presented with flank pain.

A 79-year-old man, with no underlying disease, presented with left flank pain for 1 day. He had experienced pneumonia 6 months ago and was confirmed cured at the preoperative examination. Physical examination demonstrated that he had left flank tenderness without fever or chills. Laboratory findings via urinalysis revealed microscopic hematuria and pyuria, and from complete blood count, leukocytosis (white blood cell count=11,500/mm³) was discovered. Serum creatinine and electrolyte levels were within normal range. Additionally, a preoperative urine culture yielded negative findings. A computed tomography (CT) scan of the abdomen showed mild dilatation of the left pelvocalyceal system and ureter, without a definite obstructive lesion or mass (Fig. 1). A whitish tissue-like mass—measuring approximately 1 cm—was discovered in the left lower ureter using a ureteroscopy (Fig. 2). The entire mass was extracted by using stone basket and forceps. Washing cytology of the left ureter was performed, and the results indicated the presence of dominant inflammatory cells without any malignant cells. The whitish tissue-like mass obtained from the left ureter was confirmed to be Aspergillus by a tissue culture. The patient was treated with the antifungal agent, voriconazole, for 2 months postoperatively. Intravenous pyelography indicated that the calyceopelvic system and ureteral contrast passages appeared well for both urinary systems with no evidence of obstruction or recurrence three months after the operation.
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Fig. 1. (A, B) Computed tomography of the abdomen showed mild dilation of the left pelvocalyceal system and ureter (arrows). (C, D) Distal ureter showed mild dilatation and revealed no mass or obstructive lesion in both non-contrast and contrast enhanced view (arrows).

Fig. 2. Whitish ureteral fungal ball on ureteroscopic examination.

Fig. 3. Intravenous pylography 2 months after antifungal agent (voriconazole) showed normal excretion of the pyelocalyceal system from the left kidney and complete relief of hydronephroureterosis.

DISCUSSION

Fungal infections in the urinary tract caused by *Aspergillus* were initially reported in the 1960s. It is common for aspergillosis infections to spread hematogenously, and it can cause obstructive uropathy due to *Aspergillus* casts. An ascending aspergillus infection can affect other organs and not only the lungs. Localized ureteral obstruction caused by aspergillosis is a rare event [2]. Furthermore, most cases of aspergillosis arising in the urinary tract occur in immunocompromised patients, such as those undergoing immunosuppressive therapy or those with diabetes mellitus or
intravenous drug abuse [4]. Invasive aspergillosis has a risk of dissemination, and in some cases, it can be fatal [5]. Uniquely, in this case, the patient was not immunocompromised.

Early diagnosis of ureteral aspergillosis remains challenging. This is mostly because CT findings of fungal balls in the urinary tract are not clear or specific, and are rarely described [6]. In most reported cases, filling defects can be found on retrograde or excretory urography [4]. In this patient, the initial CT findings did not indicate any presence of a fungus ball, only showing hydronephroureterosis without a definite obstructive lesion or mass. Furthermore, the urine culture result yielded negative findings. For this reason, some have suggested using endourological methods for diagnosing and managing fungal bezoars in the urinary tract, which are safer and more effective [7]. In our case, the aspergilloma in the lower ureter was easily and completely removed by a ureteroscopy, using a stone basket and forceps with local anesthesia.

A combination of antifungal therapy and surgery are necessary to fully manage ureteral obstruction resulting from a fungal mass. Systemic and topical antifungal agents are used for endourological interventions for lavage and debulking of aspergillomas. However, some successful outcomes have been reported using surgical or medical treatment alone [2]. The optimal period for antifungal treatments has not been fully established; it depends upon a wide array of factors, such as the extent and severity of aspergillosis, underlying disease of patients, response to therapy, and immune status of patients. Treatment should last until the resolution of radiological and clinical abnormalities (the patient displays negative culture findings) [1]. In this case, the antifungal therapy lasted for 2 months. Intravenous urography revealed a recovery from previous abnormalities, and the urine culture yielded no abnormal findings.

Ureteral obstruction caused by an *Aspergillus* mass may be suspected even in nonimmunocompromised patients. Since, in some cases, aspergillosis has a risk of dissemination, early diagnosis and management through an endourological approach and adjunctive antifungal agents seems to be the appropriate strategy.

**CONFLICT OF INTEREST**

No potential conflict of interest relevant to this article was reported.

**REFERENCES**