Case Report

A case report of renal mucormycosis masquerading as lower ureteric mass

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ABSTRACT

Isolated renal mucormycosis is rare. Its occurrence in immunocompetent patients is low. We present the case of a 45-year-old male presenting with flank pain and intermittent fever. On further evaluation, he was found to have a lower ureteric mass. Partial cystectomy and radical nephroureterectomy with pelvic node dissection were done. Histopathology was suggestive of mucormycosis. To the best of our knowledge, this is the only case presenting as a lower ureteric mass requiring partial cystectomy. Diagnosis of mucormycosis is challenging and requires a high index of suspicion.

Key words: Immunocompetent, Lower ureteric mass, Partial cystectomy, Renal mucormycosis

Mucormycosis is an angioinvasive disease that is characterized by tissue infarction and necrosis [1]. Renal mucormycosis typically occurs as part of disseminated mucormycosis. Renal involvement in disseminated zygomycosis is seen in up to one-fifth of patients; however, isolated renal mucormycosis (IRM) is rarely reported [2]. Cases of isolated renal involvement are unusual and are mostly documented in the form of case reports in the medical literature [2-4]. This type of infection is frequently observed in immunocompromised individuals, such as organ transplant recipients, Human immunodeficiency viruses patients, individuals with uncontrolled diabetes, those with cancer, and intravenous drug users [4]. The occurrence of renal mucormycosis in immunocompetent individuals is extremely rare [5].

To the best of our knowledge, this case is the only reported case in the literature presenting as a ureteric mass.

CASE REPORT

A 45-year-old male presented to us with left flank pain which was dull aching and associated with low-grade fever on and off. His fever subsided with antibiotics at a local hospital. His past medical and surgical history was unremarkable.

On physical examination, his temperature was 99.5 F, pulse was 76 beats/min, and blood pressure 114/76 mmHg. The abdomen was soft and his flanks were non-tender.

His total leucocyte count was 6700 and hemoglobin was 11.5 g/dL. Serum creatinine was 1.44 mg/dL and random blood sugar was 112 mg/dL. The urine culture was sterile. Viral markers were negative. A contrast-enhanced computed tomography scan of the abdomen showed a normal right kidney, and a bulky left kidney with multiple hypodense non-enhancing ill-defined lesions involving upper, middle, and lower pole cortex with cortical rim sign contrast excretion till 1 h. Left mild hydroureteronephrosis noted till lower ureter. A well-circumscribed non-enhancing lesion of 5.7 × 4.7 × 4.3 cm was noted around the left lower ureter suspicious of neoplastic etiology. Anteriorly, the lesion was abutting the urinary bladder wall and laterally pelvic floor muscles. The urinary bladder was normal (Fig. 1). An 18-fluorodeoxyglucose positron emission tomography-computed tomography scan was suggestive of a metabolically active soft tissue lesion in the left lower ureter suggestive of neoplastic etiology with infective changes in the left kidney and no metabolically avid lesions in the rest of the body.

Urine cytology was negative. Cystoscopy was done in which the left ureteric orifice could not be visualized. The mass was indenting the left posterolateral wall of the urinary bladder. No intraluminal growth was noted. Ureteric biopsy and wash cytology was not feasible in this case, due to distorted intraluminal anatomy.

The patient was planned for laparoscopic left radical nephroureterectomy with the suspicion of transitional cell carcinoma of the lower ureter. Intraoperative evidence of 6 × 5 cm lower ureteric mass with loss of planes with urinary bladder. Dense perihilar adhesions were noted. Laparoscopic partial cystectomy with left radical nephroureterectomy with pelvic node dissection was done (Fig. 2). Post-operative period was uneventful.

On gross examination, the bladder cuff was not identified due to distortion. The renal sinus was involved with foci of necrosis.

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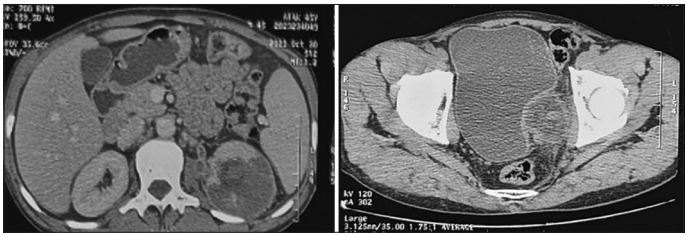

Figure 1: Contrast-enhanced computed tomography Kidneys, Ureters, and Bladders showing non-enhancing heterogenous areas in the left kidney and a lower ureteric mass

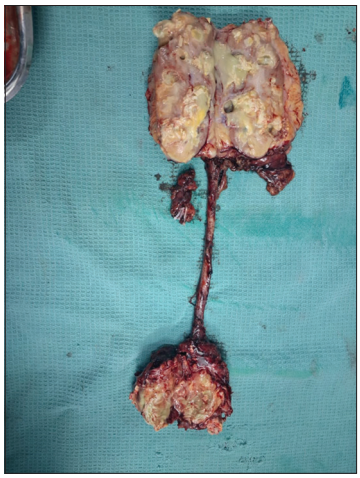

Figure 2: Post-operative specimen of left radical nephrourterectomy with node dissection

On microscopy with Grocott methenamine silver stain of renal parenchyma and ureteric mass showed aseptate broad fungal hyphae with right angle branching, suggestive of mucormycosis with a background of coagulative necrosis and saponification (Fig. 3). Nine lymph nodes were retrieved showing reactive lymphoid hyperplasia. Fungal culture could not be done due to a lack of initial suspicion.

DISCUSSION

Mucormycosis renal infections are often challenging to diagnose clinically and are frequently only identified through surgical pathology or post-mortem examinations. Imaging techniques such as ultrasound, computed tomography (CT) scan, or indium-111 leukocyte scanning may show kidney enlargement. While these imaging studies help localize and describe the lesion, they cannot definitively diagnose mucormycosis. The definitive diagnosis requires histologic examination of the affected tissue, which reveals broad, irregularly shaped, septate fungal hyphae with characteristic right-angle branching [6].

Mucormycosis poses a challenge for treatment because its hallmark features such as angioinvasion, thrombosis, and tissue necrosis make it difficult for anti-infective agents to reach the site of infection effectively. This can lead to treatment failure even if the fungus is susceptible to the antifungal medication *in vitro*. In severe cases, surgery may be required to address the extensive tissue necrosis caused by mucormycosis, which cannot be solely resolved by eliminating the organism [7,8].

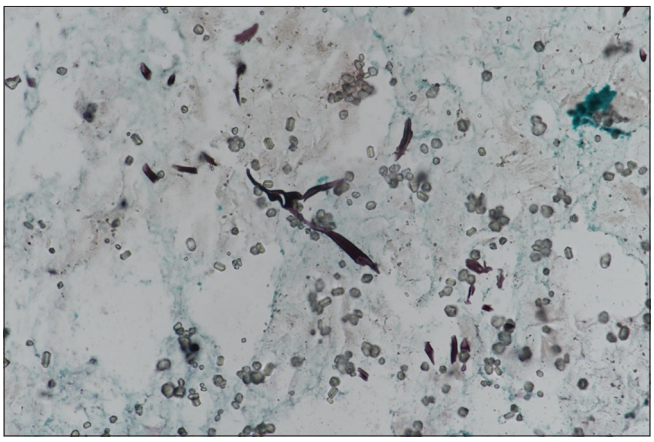

Figure 3: Microscopy with *Grocott methenamine silver* stain showing aseptate broad fungal hyphae with right angle branching

Bhaduria *et al*., [4] identified 10 cases of bilateral IRM with no underlying risk factors. All of them were males with a mean age of 24.7 years (range 10–42). Most patients were initially managed as acute bacterial pyelonephritis with acute kidney injury. A total of eight patients were diagnosed with antemortem. Diagnostic clues include sepsis not controlled with broad-spectrum antibiotics and enlarged kidneys with or without hypodensities on ultrasound/CT imaging. Three patients also gave a specific history of passing white flakes in their urine. Eight patients received specific antifungal therapy with amphotericin B with or without posaconazole. Three patients in whom the disease was apparently confined to the pelvicalyceal system underwent local irrigation with Amp-B. One patient underwent bilateral nephrectomy. Four patients succumbed to the disease while five patients were successfully treated.

While most patients with renal mucormycosis present as acute pyelonephritis and are life-threatening, our patient had a lower ureteric mass, hence we suspected a ureteric malignancy with secondary infective changes in the kidney. Intraoperatively, the mass could not be separated from the bladder and required a partial cystectomy. As the patient was clinically stable with no fever, antifungals were not started in our case due to the lack of initial suspicion of mucormycosis. The patient was closely followed to date and is asymptomatic. His flank pain had subsided and has no fever.

CONCLUSION

Mucormycosis is a lethal disease. Early diagnosis is the key to effective management. Increasing awareness among healthcare providers regarding the clinical presentation and the risk factors of mucormycosis can improve early recognition. Diagnosis requires a high index of suspicion. Collaboration among urologists, pathologists, radiologists, and infectious disease specialists can facilitate comprehensive evaluation and timely intervention. Protocols for starting antifungals in cases diagnosed only on histopathology in asymptomatic individuals are unclear. More such cases should be reported to establish consistent treatment protocols.

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