



# Urothelial carcinoma of the proximal ureter revealed by spontaneous forniceal rupture: A case report

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## ABSTRACT

Spontaneous rupture of the upper urinary tract is a rare and potentially serious pathology. Lithiasis is the most frequent cause. However, other causes are incriminated such as trauma, retroperitoneal fibrosis and especially stenosing tumors. Few cases of excretory tract rupture secondary to tumor obstruction have been reported in the literature. We report a case of spontaneous rupture of renal pelvis secondary to ureteral obstruction caused by urothelial tumor and discusses difficulties of diagnostic and treatment.

## 1. Introduction

Spontaneous rupture of the upper urinary tract with extravasation of urine into the peri-renal space is a rare and potentially serious condition.<sup>1</sup> It is usually associated with ureteral obstruction by stones.<sup>1</sup> Other rare causes are tumors, trauma, and iatrogenic procedures.<sup>2</sup> We report a case of spontaneous forniceal rupture secondary to ureteral obstruction caused by urothelial tumor and discuss difficulties of diagnostic and treatment.

## 2. Case report

A 62-year-old patient, diabetic, suffering from coronary insufficiency, a heavy smoker, who consulted our department for hematuria associated with left back pain evolving for three months. The physical examination revealed an altered general condition, pallor, tachycardia, and hypotension. The urological examination showed a left lumbar fossa and the absence of a bladder globe. The digital rectal examination showed a small, painless, and flexible prostate with an infiltrated bladder base with little mobility. Biological analysis showed microcytic hypochromic anemia, (Hemoglobin:2.9g/dl), correct renal function with high CRP level. The patient was admitted to the intensive care unit. After transfusion and stabilization of the hemodynamic state, a radiological exploration by an ultrasound and a computed tomography was made. The ultrasound showed a left pyelocalyceal dilation with a suspect thickening of the left ureter (Fig. 1). The CT-scan revealed a ureteropyelo-calyceal dilatation with the presence of a tissular process of the proximal left ureter and extravasation of the contrast medium and

a peri-ureteral effusion (Fig. 2). The entire ureteral wall is thickened associated with a locally advanced left lateral bladder tumor (Fig. 3). The patient was put on antibiotic therapy and had drainage by a percutaneous nephrostomy. Cystoscopic exploration revealed a solid lesion in the left wall and the trigone with a large base, infiltrating the left ureteral orifice. The patient underwent a complete transurethral resection of the bladder tumor. Histological examination showed a high-grade muscular infiltrating urothelial carcinoma. After a decision of multidisciplinary consultation meeting and discussion with the patient, a cystoprostatectomy with a left nephroureterectomy and a cutaneous ureterostomy was performed. The patient had an uneventful recovery and was discharged on the fifth postoperative day. The histological examination showed a high-grade urothelial carcinoma with double ureteral and bladder location. The patient was referred to the medical oncology department, where he received cisplatin-based chemotherapy. After six months of clinical and radiological check-ups, there was no functional complaint or any sign of reoccurrence.

## 3. Discussion

Spontaneous forniceal rupture is a rare and potentially serious condition. The causes are mainly obstructive and are dominated by obstructive stones, which are reported in about 80% of cases.<sup>2</sup> However, other causes are incriminated such as trauma, retroperitoneal fibrosis, and exceptionally malignant tumors.<sup>1,2</sup> Few cases of excretory tract rupture secondary to tumor obstruction have been reported in the literature. In our case, the spontaneous rupture of the upper urinary tract was caused by a urothelial tumor. The diagnosis of rupture may be

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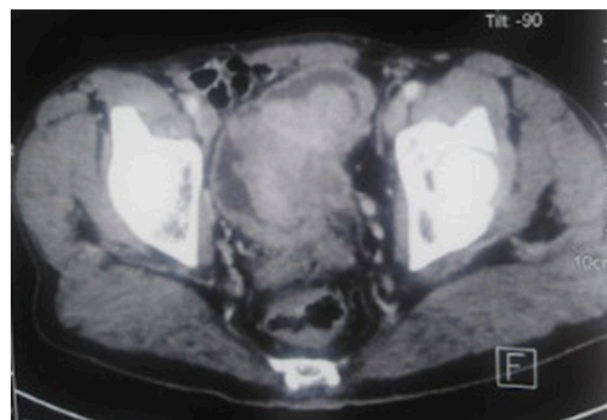
**Fig. 1.** Ultrasonographic appearance of left pyelocalyceal dilation with suspicious thickening of the proximal ureter.



**Fig. 2.** CT scan showing contrast medium extravasation secondary to a left ureteral tumor.

suspected clinically and confirmed by imaging. The clinical presentation includes macro or microscopic hematuria, back pain, micturition disorders and, less frequently, a palpable mass, altered general condition, weight loss and can sometimes be asymptomatic.<sup>2</sup>

Urothelial tumors can affect any part of the urinary tract. They are relatively rare in the upper urinary tract (about 1% of all urothelial tumors) and most often affect patients in the sixth and seventh decades of life.<sup>3</sup> The most common histological type was urothelial carcinoma which was found in 90% of cases.<sup>3</sup> The most common risk factors are smoking and prolonged exposure to colorants such as aniline, petrochemicals, and tar.<sup>3</sup> The bladder location should be routinely investigated because of the possibility of synchronous bladder cancer in 2–4% of patients.<sup>3</sup> However, our patient has an associated locally advanced bladder tumor.



**Fig. 3.** Computed tomography revealing a locally advanced bladder tumor.

Given the rarity of this pathology, the diagnosis and management of ureteral tumors complicated by a spontaneous rupture of the upper urinary tract remain uncodified. In the majority of cases, the CT scan allows the diagnosis to be suspected.<sup>2,4</sup> It allows to confirm the tumor lesion with confirmation of the extravasation of the contrast medium showing the rupture of the urothelium.<sup>2,4</sup>

There is no consensus on how to manage spontaneous upper excretory tract rupture secondary to a urothelial tumor. Most authors recommended non-invasive treatment as first-line therapy.<sup>2,4</sup> This non-invasive approach consists of antibiotic therapy and drainage through a ureteral stent or nephrostomy.<sup>5</sup> The management of the ureteral tumor will be done later according to the clinical, radiological, and evolutionary data.<sup>2,4,5</sup> In the case described, our patient presented a ureteral tumor associated with a locally advanced vesical tumor complicated by a spontaneous rupture of the upper urinary tract and gross hematuria. After antibiotic treatment, drainage through a nephrostomy, and complete resection of the bladder tumor, the patient underwent radical surgery combined with adjuvant chemotherapy. The patient did not present a tumor recurrence after six months of follow-up.

#### 4. Conclusions

Although rare, spontaneous rupture of the upper urinary tract secondary to ureteral obstruction caused by a urothelial tumor can be suspected clinically, and radiological analysis by CT scan can confirm the diagnosis. First-line treatment should be based on antibiotic therapy and drainage. Surgery can be offered in a second time in well-selected patients.

#### Declaration of competing interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

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