



Spontaneous Fornix Rupture Due to Obstructive Ureteral Stone

CASE REPORT

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ABSTRACT

Spontaneous rupture of the renal fornix and urinary extravasation are very rarely encountered in urological practice. In the present paper, a 57-year-old male patient who suddenly developed spontaneous rupture of the fornix and urinary extravasation due to obstructive ureteral stone is presented. The patient developed a sudden onset of renal colic pain without any trauma. His complete blood count and kidney function tests were within the normal limits. Microscopic hematuria was detected on complete urinalysis. There was no urinary opacity on plain X-ray. On urinary ultrasonography, the left renal pelvis and ureter were dilated and there was a hyperechoic appearance consistent with a stone approximately 4 mm in diameter at the distal end of the left ureter. Grade 1 dilatations of the left renal pelvis and ureter and extravasation of contrast material at the peripelvic area were observed on intravenous pyelography. Spiral computed tomography also showed extravasation of contrast material in the left pararenal area. In the present case, double J stent catheterization was performed in order to control symptoms and eliminate extravasation. His postoperative pain decreased and alpha-blocker treatment was initiated at the follow-up. Extravasation regressed and hydronephrosis disappeared on follow-up ultrasounds. Two weeks later, the patient stated that he had passed the stone. The catheter was withdrawn and the patient was discharged on the same day.

Key words: Kidney, spontaneous rupture, ureteral calculi, urinoma

INTRODUCTION

Rupture of the renal collecting system occurs due to blunt or penetrating renal traumas or rarely due to pressure increase in collecting system as a result of accompanying pathologies such as obstruction, hydronephrosis, tumor and infection (1, 2). Spontaneous rupture of the calix/fornix renalis causing urinary extravasation to perirenal or retroperitoneal area is not frequent among the complications of obstructive nephropathy. However, most fornix ruptures are associated with ureteral obstructions due to ureteral or ureteropelvic junction stones (3, 4). Other causes of secondary ureteral obstruction include posterior urethral valve, prostate hyperplasia, pregnancy and advanced ovarian cancer.

Retroperitoneal urinoma cannot be distinguished from uncomplicated renal colic (1). However, there are some signs and symptoms suspicious for rupture of the fornix. These include change in typical characteristic of renal colic with transition to diffuse lumbar pain and peritoneal irritation findings, leukocytosis and increased body temperature in most cases, loss of psoas shadow and antalgic posture in the vertebrae to diseased kidney, stone or findings related to gastrointestinal paresis on plain abdominal X-ray, fluid in various qualities that can be together with pyelocalicial dilatation in the periureteral, perinephric or peripelvic area on consecutive ultrasonographic examinations, changes in perfusion of renal interlobular arteries by *Resistance Index* (RI) and *Pulsatility Index* (PI) on color Doppler ultrasonography (USG) (5), and contrast extravasation to peripelvic, perinephric or retroperitoneal area on intravenous pyelography (IVP) or computed tomography (CT) (3, 4, 6).

Principally, treatment of rupture of the fornix due to ureteral stone disease includes removal of obstruction and control of the extravasation. Ureteral catheterization alone can provide these criteria. Additional interventions are needed in this accepted treatment method. Ureterorenoscopic lithotripsy has been accepted as the first treatment of choice for ureter stones (7).

CASE REPORT

Anamnesis of a 57-year-old male patient who was admitted to the Emergency Department with pain in the left side revealed no history of trauma. He had a sudden onset of pain like renal colic during sleep at night. He described left side pain that awaken him from sleep. His physical examination revealed no finding except for left costovertebral angle tenderness. His abdominal examination revealed no rebound and defense. His other systemic examination findings were normal. He had blood pressure of 120/80 mmHg, pulse of 84/min, and body tem-

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Figure 1. On intravenous pyelography, grade 1 dilatation to the distal end in the left renal pelvis and ureter and extravasation of contrast material in the left peripelvic area

perature of 36.4°C. Findings of routine complete blood analysis and renal function tests were within the normal limits. Microscopic hematuria was detected on his complete urinalysis. On plain urinary system X-ray, no opacity consistent with urinary system trace was noted. Urinary system USG revealed normal right kidney and edematous left kidney. Left renal pelvis and ureter was dilated to the distal end. There was a hyperechoic appearance consistent with a stone approximately 4 mm in diameter at the distal end of the left ureter. On intravenous pyelography, while nephrographic and pyelographic phases were normal in the right kidney, grade 1 dilatation to the distal end in the left renal pelvis and ureter and extravasation of contrast material due to a potential forniceal rupture in the left peripelvic area were observed (Figure 1). On spiral computed tomography following IVP, pararenal extravasation of contrast material, which was considered secondary to rupture in the level of left renal pelvis, was detected (Figure 2).

Ureter was thick and edematous in the level of ureterovesical junction. As tomography was performed after IVP, stone could not be distinguished from the contrast material at the distal end of the ureter.

As renal pelvis rupture due to obstructive distal ureter stone was considered in the present case, a *double J stent* was placed only to the left ureter by taking into account of passing the stone by medi-

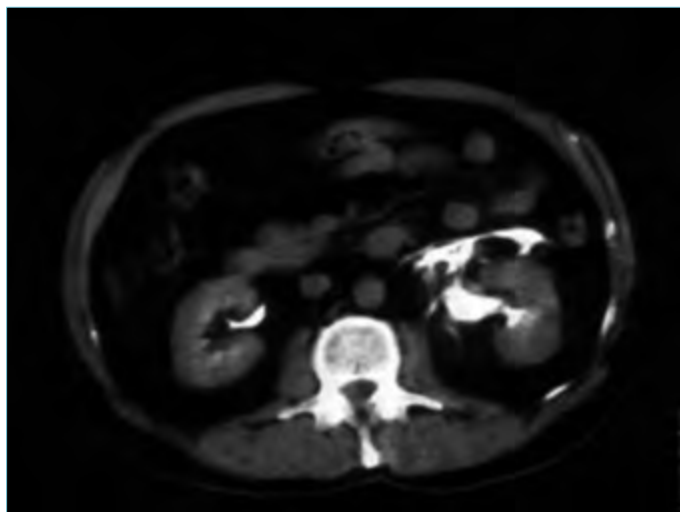


Figure 2. On spiral computed tomography, pararenal extravasation of contrast material in the left

cal treatment. His postoperative pain decreased and alpha-blocker treatment was initiated at the follow-up.

During this period, extravasation regressed and hydronephrosis gradually disappeared on control USGs. Two weeks later, the patient stated that he had passed the stone and no stone was observed on control USG and plain X-ray. The catheter was withdrawn in the same day. on the control follow-up after one month, he had no complaint and normal control usg.

DISCUSSION

Plain X-ray and USG are the first choice of radiologic methods in addition to detailed anamnesis and physical examination in the diagnosis of renal fornix ruptures due to obstruction (8). These two methods have the advantages of accessibility due to their common use in emergency services. In the present case, urinary system stone was primarily considered since he had colic pain severe that awaken him from sleep and costovertebral angle tenderness on his physical examination. The presence of only microscopic hematuria without bacteria and leukocyte on complete urinalysis made us to think that there was no accompanying infection at first. As no opacity was observed on plain urinary system X-ray, examination was found to be noninformative. The following USG revealed left ureterohydronephrosis and ureter stone (4 mm in size) and no finding regarding to urinoma was reported. If the diagnostic process had been finalized at this stage, fornix rupture would have been overlooked in our case. USG is an easy, cheap, rapid and advantageous radiologic method in patients who cannot be exposed to radiation like pregnant; however, its being dependent on practitioner decreases its reliability (8, 9). In the present case, overlooked urinoma on USG was attributed to the above-mentioned disadvantage of the method. Moreover, color Doppler USG for dynamic evaluation of hydronephrosis could not be performed due to technical problems (10). Contrast IVP was performed due to its high sensitivity and specificity in the diagnosis of fornix rupture (11) and as serum urea and creatinine levels of the case were normal. On IVP, in addition to ureterohydronephrosis, which was also detected on USG, peripelvic extravasation of contrast material

was remarkable. On spiral CT examination performed for more detailed evaluation of extravasation and possible accompanying pathologies such as hematoma and perirenal abscess formation that should be considered in differential diagnosis, extravasation of contrast material, which was not so extensive, in the left pararenal area was confirmed and no hematoma or abscess was observed.

Although late complications occur in 10% of perirenal abscess cases, the use of conservative or corrective treatments in the management of fornix rupture due to obstructive stones is controversial (6, 12, 13). In a case series treated conservatively, while no complication was observed in 40.7% of the cases, the remaining who developed complications were treated using interventional methods (12).

Urinomas with small diameter can be spontaneously reabsorbed without need of drainage. Recently, conservative treatment of spontaneous renal pelvis rupture is successfully performed using ureteral stents (14). Interventional treatment with ureteral stent alone can repair hydronephrosis and urinary extravasation. This method provides solution in acute period; however, 59.1% of patients require additional interventional treatments such as stone crushing treatment and ureterorenoscopic lithotripsy (3, 11). Surgical treatment of this clinical picture has been reported to be successful particularly in late diagnosis or cases with large urinoma and in other accompanying pathologies requiring surgical intervention (15). Ureteral stent was preferred in the present case, as well. The diameter of the urinoma was the most important criterion for this method of choice.

As it was a moderate-sized urinoma, endoscopic method was preferred rather than monitoring or open surgery. Another important criterion was primary pathology leading to urinoma in a patient. In patients with a pathology requiring open surgery, drainage of urinoma in the same session can be a more feasible choice. However, endoscopic treatment was decided as our case had a stone, 4 mm in size, localized at the distal ureter. Likewise, open surgery or additional interventional treatments were not required during the follow-up of the patient; the patient passed his stone spontaneously.

CONCLUSION

Renal pelvis or fornix rupture due to obstructive ureter stone is a rarely encountered complication. However, they should always be kept in mind due to their severe late complications. Conservative, interventional or surgical treatments can be applied according to size and localization of ureter stone, diameter of urinoma, and other additional pathologies and severity of symptoms.

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