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Spontaneous rupture of the ureter: A rare case

Spontan üreter rüptürü: Nadir bir olgu

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Abstract
Spontaneous rupture of the ureter is a rare condition defined as non-traumatic urinary leakage from the ureter. It is generally associated with calculous diseases. It can be present with acute abdomen and may be misdiagnosed as other surgical conditions. Ureteral rupture can lead to numerous complications, including abscess formation, urinomas and urosepsis. We have presented a rare case of spontaneous rupture of the ureter and have observed the diagnosis and treatment methods in the light of the available literature.
Keywords: Spontaneous rupture, Ureteral rupture, Ureter

Öz
Spontan üreter rüptürü, üreterin travmatik olmayan idrar kaçağı olarak tanımlanan nadir bir durumdur. Genellikle böbrek taşı türünden hastalıklarda görülür. Akut karın ile ortaya çıkabilir ve diğer cerrahi hastalıklar olarak yanlış tanı alabilir. Üreter rüptürü apse formasyonu, ürinom ve ürosepsis gibi çeşitli komplikasyonlara yol açabilir. Biz burada nadir olarak görülen spontan üreter rüptürü olgusunu tanı ve tedavi yöntemleriyle mevcut literatür eşliğinde sunduk.
Anahtar kelimeler: Spontan rüptür, Üreter rüptürü, Üreter

Introduction

Spontaneous rupture of the ureter, which is defined as nontraumatic urinary leakage from the ureter, is a rare urological disorder and only a small number of cases have been reported in the literature [1]. It occurs due to trauma, ureteral obstruction by a calculus, stricture, tumor, retroperitoneal fibrosis and posterior urethral valves [2]. Peritoneal irritation by urine may lead to symptoms of acute abdomen, sometimes except any urinary symptoms or urinalysis abnormalities. It is often misdiagnosed as appendicitis or diverticulitis due to its presentation [3]. We have presented a rare case of spontaneous rupture of the ureter and have observed the diagnosis and treatment methods in the light of the available literature.

Case presentation

A 32-year-old male presented to the emergency department (ED) with acute abdominal pain accompanied by nausea and vomiting for the past six hours. The patient's past medical history was unremarkable. He was well nourished and in a good general condition. Upon admission, his body temperature was 37.2°C, heart rate was 120 beats/min, respiratory rate was 18 breaths/ min and blood pressure was 100/60 mmHg. Physical examination revealed only diffuse tenderness in the right lower quadrant radiating to the right flank. His bowel sounds were normal.

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Laboratory evaluation revealed normal creatinine and blood urea nitrogen levels. Other biochemical results, including complete blood count, hepatic function tests and C-reactive protein level, were also within normal ranges. Urine analysis showed microscopic hematuria. Plain abdominal radiography was unremarkable, while abdominal ultrasonography (USG) showed mild right hydronephrosis and there was a fluid collection at the right perirenal and pelvic spaces. Despite of intravenous proton pump inhibitor, analgesic, antiemetic and intravenous normal saline of 1000 mL, his pain did not decrease. He continued vomiting and abdominal computed tomography (CT) scan was performed for differential diagnosis. Contrast-enhanced CT showed mild right hydronephrosis with a marked fluid collection at the right perirenal and pararenal spaces. There was contrast medium leakage around the right ureteropelvic junction, causing an absence of enhancement of the right ureter (Figure 1-2). A tiny calculus was also noted at the right ureterovesical junction.

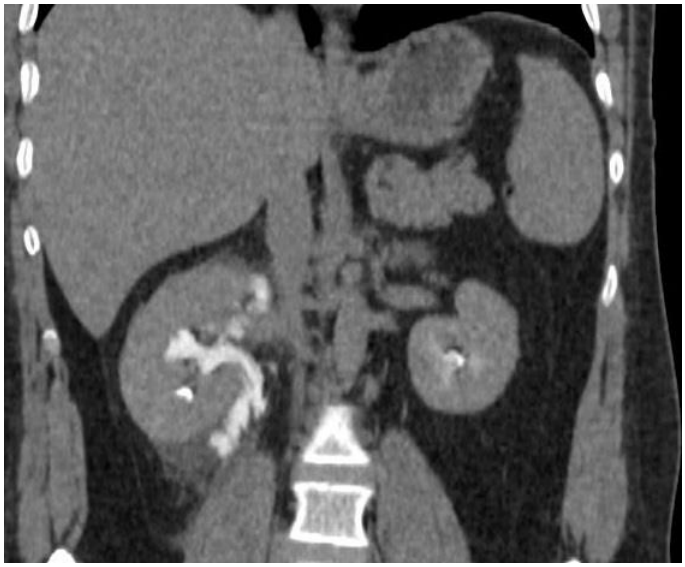

Figure 1: Coronal view of the abdominal CT shows contrast extravasation from the right upper ureter

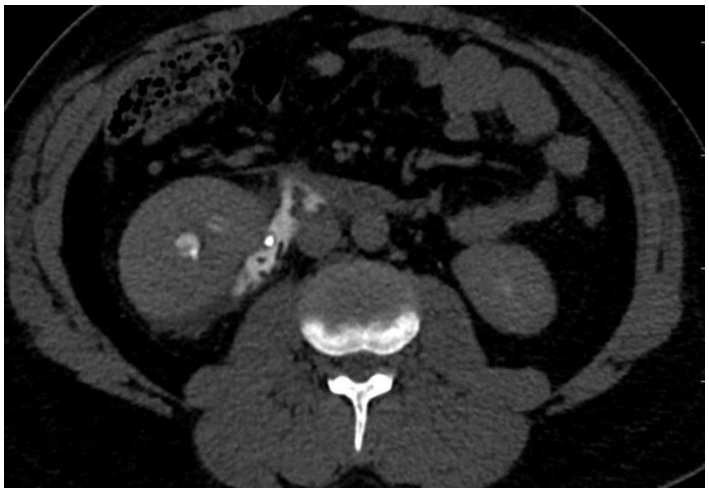

Figure 2: Axial CT image shows leakage of radiocontrast media at the level of the upper ureter

The patient was initially managed by an endourological procedure and a double-J catheter was inserted. His Foley catheter was removed the next day and he was discharged with no complications. Two months later, his catheter was removed, without any complication. His ruptured ureter healed completely.

Discussion

Spontaneous rupture of the ureter is a rare disease. It is usually caused by ureteral stones. There is no reasonable explanation in the literature yet; only two theoretical mechanisms have been proposed. First, impaction of stones may cause erosion of the ureteral wall, which is directly causes ureteral rupture. Second, a downward-moving calculus may lead to ureteral rupture at the distal ureteral obstruction, with elevation of the intraureteric pressure [4,5]. In addition, malignancy, retroperitoneal fibrosis, bladder outlet obstruction, connective tissue disease such as Klinefelter syndrome were also reported. In some cases, the cause is unknown [6-9]. In our patient, similar to the literature rupture occurred due to the ureteral calculi.

Patients with spontaneous rupture of the ureter may present to the hospital with very different clinical findings. Patients usually have symptoms such as sudden onset abdominal pain and flank pain associated with nausea and vomiting. In some cases, diagnosis may be difficult due to nonspecific symptoms. The differential diagnosis includes urinary lithiasis, appendicitis, cholecystitis, diverticulitis and other possible causes of abdominal pain [10]. In our case, the patient presented to ED with similar complaints.

Previously, intravenous pyelogram was the gold standard for the diagnosis of ureteral rupture. However, advances in technology, USG and CT scan have gained popularity. USG can easily accessible and time saving in the ED. In cases of ureteral rupture, USG can detect fluid collection and hydronephrosis and exclude other abdominal pathologies. CT is also an excellent tool in evaluating urological disease. It also helps in the diagnosis of diseases other than urogenital problems , including vascular disease including abdominal aortic or iliac artery aneurysm and gastrointestinal diseases such as acute appendicitis, diverticulitis or cholecystitis [11,12]. We prefer USG and abdominal CT scan in assessing patients with suspicious ureteral rupture in ED, rather than intravenous pyelogram.

Due to the rarity of spontaneous ureteral rupture, there is no standardized management for this situation. Complications such as urinoma, perinephric or retroperitoneal abscess formation, and urosepsis require prompt evaluation and intervention [8,13]. Akpinar et al [8], were reported spontaneous healing of the rupture was documented in 7 days or less by CT scan after conservative medical management. If conservative management fails, endourological intervention may be necessary.

In a conclusion, spontaneous rupture of the ureter is a rare entity that can be present with acute abdomen and may be misdiagnosed as other surgical conditions. Patient's symptoms, physical examination and urinalysis are unreliable. Thus, a high level of alertness is important. Further examination including ultrasonography or abdominal CT should be considered for suspected cases. In patients with acute abdominal or flank pain, physicians should properly evaluate this diagnosis, imaging and treatment should be done quickly.

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