

Case Report

Ureteral obstruction by prostate cancer leads to spontaneous ureteric rupture: a case report

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Received July 24, 2015; Accepted September 10, 2015; Epub September 15, 2015; Published September 30, 2015

Abstract: Spontaneous ureteric rupture (SUR) is an unusual entity associated with perinephric or retroperitoneal extravasation of urine. Patients with SUR are often presented with severe and progressive abdominal or flank pain. It is commonly related to the obstruction of genitourinary system, among which urinary calculi represents the most frequent cause. Prostate cancer with ureteral orifice invasion can lead to ureteral obstruction, which can also be a threat to SUR. Herein, we present a case of a 68-year-old male with SUR after prostate cancer invaded the left ureteral orifice. To our best knowledge, this is the first case of SUR secondary to ureteral obstruction from prostate cancer.

Keywords: Spontaneous ureteric rupture, prostate cancer, contrast-enhanced computed tomography scan, obstruction

Introduction

SUR is defined as a rare condition of non-traumatic urinary leakage from the ureter, which is caused by the increase of intraluminal pressure resulting from genitourinary system obstruction [1, 2]. SUR is rare and urinary calculi accounts for the most frequent cause [1]. Prostate cancer is the most common cancer of men around the world and the second leading causes of death from malignancies in men [3]. It is estimated that as many as 10% of patients with prostate cancer present with upper urinary tract obstruction as their main symptom [3]. We report a rare case of SUR in a patient due to prostate cancer (T3N0M0) invading the left ureteral orifice.

Case report

A 68-year-old man was admitted to the Department of Urology, The Third Xiangya Hospital of Central South University (Changsha, China) with severe and progressive left flank pain for 10 days. In his history, he had diabetes for over 5 years and treated with metformin. Anamnesis also revealed that he was diag-

nosed with prostate cancer (T3N0M0) 18 months ago with symptoms of frequency, urgency and dysuria. He was treated with a bilateral orchidectomy 15 months ago and received regular hormone therapy. The patient denied having any previous calculi, ureteral operation or history of trauma related to the ureters, or recognizing that he had passed out any calculi. On physical examination, he was oriented and cooperative with normal vital signs. He had left costovertebral angle tenderness. Bowel sounds were normal and there was tenderness without rebound tenderness in the left abdomen. Laboratory evaluation revealed 1+ glucose and 416 red cells in urinalysis, tPSA 96.8 ug/L and fPSA 35.16 ng/ml in the blood. Other biochemical results including blood routine, hepatorenal function and E4A were within normal range.

Plain abdominal radiography revealed no signs of ureteral calculi while abdominal ultrasonography showed mild left ureterohydronephrosis, encapsulated effusion in left upper abdomen and prostate cancer with bladder invasion. Pelvis magnetic resonance imaging indicated that the prostate cancer had already invaded the bladder, the seminal vesicle gland and the



Figure 1. Postcontrast axial CT image showed the leakage of contrast media and perirenal fluid collection on the level of the upper ureter on the left side (arrow).

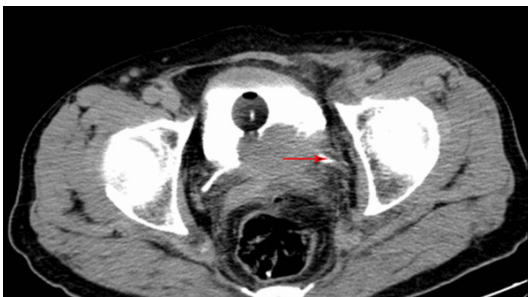


Figure 2. Postcontrast axial CT image showed prostate cancer with the left ureteral orifice invasion (arrow).

antetheca of rectum. Finally, intravenous contrast-enhanced computed tomography (CT) scan with a 40-min delay was conducted to show the leakage of contrast media, perirenal fluid collection on the level of the upper ureter on the left side and prostate cancer with the left ureteral orifice invasion (**Figures 1, 2**). With 3-D reconstruction of the delayed phase, extravasation of contrast medium in the perinephric and retroperitoneal areas was showed clearly, which extended from the level of L3 to the level of L4 (**Figures 1, 3**).

Initially, we tried to insert a double-J stent under ureteroscopy but failed since the left ureteral orifice cannot be pinpointed because of the invasion from the prostate cancer. Consequently, the patient was managed by a percutaneous nephrostomy, a double-J catheter and a nephrostomy tube were inserted. His flank pain disappeared 3 days later and his Foley catheter was removed 7 days after the surgery. The patient was discharged and asked to come back one month later for the further treatment

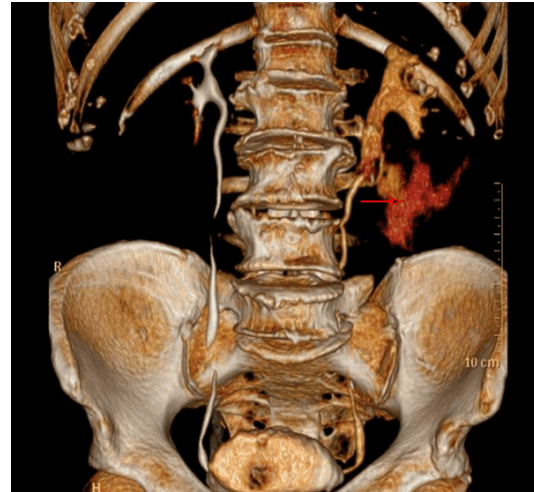


Figure 3. Postcontrast CT image with 3-D reconstruction showed the extravasation of contrast medium extending from the level of L3 to the level of L4 (arrow).

of the prostate cancer because he was too weak for it at that time. The follow-up is now in procedure.

Discussion

SUR is a rare entity without plausible explanations up till now; only theoretical mechanisms have been reported. The increase of intraluminal pressure from genitourinary system obstruction is often considered as the precondition of SUR [1]. Ureteral calculi represents the most common cause of SUR, which is also associated with erosion and ulceration of the ureteral wall [4]. Besides, other causes of SUR, such as ureteral urothelial carcinoma, idiopathic retroperitoneal fibrosis, dermatomyositis, malignant lymphoma and urinary retention, have also been reported [5-9]. In this present case, the prostate cancer invaded the left ureteral orifice and led to ureterohydronephrosis. Consequently, the increased ureteric pressure resulted in SUR.

The initial diagnosis of SUR can be difficult since it lacks specific clinical signs. The patients are often associated with sudden, severe, persistent low abdominal or flank pain [10, 11]. Other symptoms include nausea, vomiting, dysuria, frequency and haematuria [2]. On physical examination, the patients are commonly presented with abdominal tenderness and costo-vertebral angle tenderness on the ipsilateral

side [4]. Owing to the nonspecific symptoms, SUR must be differentiated with other causes of abdominal pain, such as urinary lithiasis, appendicitis, cholecystitis and diverticulitis [4].

SUR can be clearly diagnosed through imageology. Excretory urography was used to be considered as the most sensitive way for SUR because it can enable doctors to visualize the urinary tract and the location of leakage [10]. Contemporarily, intravenous contrast-enhanced CT scan is widely regarded as the most valid means for SUR with a higher sensitivity than other ways, since it can clearly reveal the location of leakage and the size of the urinoma [9]. In our patient, we used intravenous contrast-enhanced CT scan to diagnose SUR, with contrast medium leakage in the perinephric and retroperitoneal areas.

Once the diagnosis of SUR is established, individualized treatment must be applied immediately since it may lead to serious consequences such as urinoma, perinephric or retroperitoneal abscess and urosepsis [4]. Open surgery is rarely indicated because of its late complications, including ureteric stricture, ureteropelvic stenosis and peri-ureteric fibrosis [9]. A double-J stent placement and percutaneous drainage with a percutaneous nephrostomy were reported to be beneficial to the patients with SUR [1]. Insertion of a double-J stent under ureteroscopy is also highly recommended as a way of minimally invasive surgery [12]. Besides, conservative treatment with antibiotics has also been reported in the literature [11].

In conclusion, SUR is rare and can be caused by ureteral obstruction resulting from prostate cancer. The leakage can be clearly detected with contrast-enhanced CT scan. Because of its serious complications, individualized and prompt treatment must be applied once the diagnosis is assured.

Acknowledgements

This study was supported by the Science and Technology program of Hunan Scientific Committee (Grant No. S2013W2053).

Disclosure of conflict of interest

None.

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