SPONTANEOUS RUPTURE OF RENAL PELVIS

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SUMMARY

Spontaneous renal pelvis rupture is a rare situation. It is nearly always related to underlying renal abnormalities caused by calculus, infection, tumor or pregnancy, resulting in hydronephrosis. In some situations, it is iatrogenic, such as fluid overload during diagnostic or therapeutic interventions. Here, we present a case of spontaneous renal pelvis rupture with no predisposing factor found. [International Journal of Gerontology 2007; 1(3): 131–133]

Key Words: renal pelvis, spontaneous rupture

Introduction

Spontaneous rupture of the renal pelvis (SRRP) is a kind of renal rupture, and it was first described in 1935 by Abeshouse as separation from renal parenchyma1. It is rare and is related to the underlying renal disease, such as hydronephrosis caused by calculus, infection, tumor, pregnancy and so on. In some circumstances, the cause is iatrogenic as may be seen in fluid overloading due to preparation for examination or intervention. We present a case of SRRP with no obvious renal abnormality after examination, except for a renal stone found on the right side.

Case Report

A 76-year-old male presented to our emergency department (ED) with complaints of low-back pain and constipation for several days. His past history revealed that he had previously received extracorporeal shock wave lithotripsy because of renal and ureteral stones on the right side. He also had benign prostate hyperplasia and hemorrhoid. He went to Ali Mountain 1 week before arriving at our ED and ate dinner there. He suffered from diarrhea twice, followed by constipation, severe nausea, and vomiting 6 days prior to arrival at our ED. Then, he went to a local medical doctor for help and felt that his condition slightly improved after oral medication. Three days later, he had a sudden onset of pain in the left flank, and the pain aggravated with palpation or knocking. He denied any hematuria accompanied by dysuria and came to our ED for help.

At the ED, the patient’s vital signs were: body temperature, 37.2°C; pulse rate, 105/minute; respiratory rate, 20/minute; and blood pressure, 179/99 mmHg. Physical examination was performed and left flank tenderness was noted. Blood tests showed leukocytosis (white blood cell count, 12,230/µL) with a left shift (neutrophils, 87.4%); others were unremarkable. The counts were within normal limits in the urine analysis. Increased colon gas and spur formation of the lumbar spine were found in the kidney, ureter, and bladder (KUB) and thoracolumbar spine X-ray (Figure 1). Sustained left flank pain was the complaint although we gave intravenous fluid after two and a half hours of observation. The analgesic agent meperidine, 40 mg intravenous push, was given once for the persistent flank pain. We ordered an abdominal computed tomography (CT) with and without enhancement (Figure 2) and post-abdominal CT (Figure 3). Contrast medium extravasating from the left renal pelvis and accumulating in

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the perirenal space was found. Therefore, he was admitted to our urology ward under the impression of SRRP.

He received an ureterorenoscopy examination 2 days after admission. There was no tumor, diverticulum or stone in the bladder, and no stone was noted up to the upper ureter. Then, the renal-ureter catheter (RUC) was placed for him. A few days later, the follow-up X-ray of KUB (Figure 4) showed a left renal stone (empty arrow) and the renal-ureter catheter in place (black arrow).

Improvement in symptoms were recorded 5 days after admission. He was discharged after the removal of the RUC and Foley catheter without any sequel 6 days after admission.

**Discussion**

Polkey and Vynalek analyzed 178 cases of renal and circumrenal hemorrhages in 1933 and concluded that...
renal rupture is often associated with a diseased kidney. Shaw reported that the most common abnormality is calculus-related hydronephrosis. Other causes of hydronephrosis have been reported, such as infection, tumor, pregnancy and so on. SRRP is a kind of renal rupture, and Abeshouse first described it as separation from renal parenchyma in 1935.

In some cases of chronic hydronephrosis, the pelvic wall becomes thinner, fragile, and partially anoxic. Acute or intermittent changes in the renal pelvic pressure, such as coughing, sneezing, straining, nausea and vomiting, may induce rupture of the renal pelvis. Lenke described the symptoms of SRRP as pain, mass, and hemorrhage. Pain is the most common symptom and the presentation is sudden onset with pain radiating to the inguinal region. Gross hematuria is the commonly seen presentation in many studies.

Some imaging studies are helpful in the diagnosis of SRRP, such as abdominal radiography, intravenous urography, and abdominal CT. The most useful imaging study is abdominal CT. We confirmed the extravasation of the contrast medium and the site of rupture by CT study. Extravasation of the contrast medium was noted via the intravenous urography examination, but we cannot be sure of the site of rupture. The abdominal radiography is less useful because the gaseous bowel distension may obscure the kidney and the radiopaque urinary calculi.

The differential diagnosis of SRRP includes appendicitis, cholecystitis, diverticulitis, urinary stone disease, ischemic bowel disease, and abruptio placenta. A review of the literature found that SRRP is more commonly seen in pregnant women than in the others. It is rarely seen and is a significant complication in pregnancy. The gravid uterus is enlarged, leading to obstruction of the ureter, then ureteral dilatation, and eventually hydronephrosis. In 1905, Opitz described the mechanism of ureteral dilatation in pregnancy due to the pressure of the gravid uterus. Dure-Smith found the reason for ureteral dilatation in pregnancy: the ureter between uterus and the common iliac vessels is compressed at the pelvic brim. If the intrarenal pressure is rapidly increased, SRRP occurs. Therefore, if pregnant women complain of a sudden onset of flank pain, and we should take SRRP into consideration.

Middleton et al. recommended emergent surgical exploration as the treatment of choice in renal rupture, for either renal parenchyma or renal pelvis rupture. However, conservative and successful therapy with use of an indwelling ureteral catheter is recommended nowadays. Middleton et al. was against the treatment of SRRP with indwelling ureteral catheter which he considered as a contraindication due to the risk of infection and inefficient drainage of the extravasated urine.

In conclusion, we did not find any obvious predisposing renal disease except for the renal stone resulting in SRRP in this case. The patient presented with left flank pain at our ED without evidence of hematuria. He received treatment successfully with RUC drainage and without any sequel. As shown by this case, we can treat SRRP with indwelling catheter drainage, as is recommended in the literature.

References