A Case of Spontaneous Peripelvic Extravasation
Associated with Ureteral Calculus

Takaya Tanaka, Fumihiro Nozu, Nobuaki Matsuo, Kenichi Kato, Yoshiyuki Itoh and Naoshi Takeyama

Emergency Care Unit, Kansai Medical University, Moriguchi, Osaka 570, Japan
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Abstract

A patient with renal extravasation due to ureteral calculus is described. A 58-year-old male visited our hospital with pain in the right lower abdomen, and showed peripelvic extravasation of the contrast medium by DIP and CT. Extravasation was absent in DIP and the symptoms were alleviated 2 days after admission. The patient was discharged after 5 days. Peripelvic extravasation must be clearly differentiated from spontaneous rupture of the kidney.

Peripelvic extravasation is a relatively uncommon condition, which is considered to be caused by renopelvic reflux due to obstruction of the urinary tract or compression of the ureter. This report describes a patient with peripelvic urinary extravasation due to ureteral calculus.

Around noon on August 26, 1987, a 58-year-old male noted pain of the right lower abdomen and right back, which disappeared spontaneously after about 2 hours. The patient presented with pollakiuria the next morning, and later developed oliguria while occasionally showing hematuria. As pain occurred at the same sites about 9 p.m. the same day and deteriorated, the patient visited our hospital.

There was no relevant clinical history. On admission, the patient had a medium body build and showed a good nutritional condition, body temperature of 36.5°C, blood pressure of 130/70 mmHg, and regular heart rate of 65/min. Slight tenderness was noted in the right lower abdomen and right back, but no external trauma was observed.

The laboratory data on admission included: RBC 489 x 10^4, WBC 9,200, Hb 14.9 g/dl, GOT 28 IU/l, GPT 16 IU/l, LDH 475 IU/l, Na 133 mEq/l, K 3.6 mEq/l, Cl 101 mEq/l, BUN 12 mg/dl, Cr 1.4 mg/dl, and blood glucose 160 mg/dl. The results of urinalysis were: protein (−), glucose (+), urobilinogen (+), and occult blood (+).

DIP was performed, suspecting ureteral calculus, and the contrast medium was found to
leak from the renal pelvis (Fig. 1). Abdominal CT further suggested escape of the contrast medium into the peripelvic region (Fig. 2, 3). Considering the general condition and the clinical symptoms, the patient was fasted and kept at rest after securing the vein. The pain was nearly relieved and no extrarenal efflux of the contrast medium was observed by DIP after 2 days (Fig. 4). The patient was discharged 5 days after the admission. Ureteral calculus was noted by DIP performed after 2 days.

Discussion

The contrast medium for urography escapes from the urinary tract in conditions such as urinary reflux, extravasation, and pelvic rupture. Urinary reflux occurs first in the renal pelvis and extends to the renal sinus, veins and lymphatic vessels via the papillary ducts or
Fig. 4 DIP obtained 2 days after admission. No peripelvic extravasation is observed.

Fig. 3 An enlargement of Fig. 2

the fornix of the calices\textsuperscript{4, 5}, and is considered to develop into extravasation. It is likely to be confused with spontaneous pelvic rupture, but the two conditions must be clinically differentiated. The fornix is considered to rupture in average individuals when the intrarenal pressure increases to about 50 mmHg\textsuperscript{9, 10}. Suggested diagnostic criteria are 1) no mechanical manipulation of the ureter, 2) no history of operation, 3) no renal lesion, 4) no history of trauma, and 5) no compression during urography\textsuperscript{7, 11}.

Reflux to the fornix of the calix is observed in 1.6—3.7\% of those who underwent urography without compression\textsuperscript{1, 5, 8} and in 2.1\% without compression\textsuperscript{2, 3}. Considering the total number of subjects in these studies, the number of those showing reflux appears to be large. In addition, reflux was observed in those who had permanently enlarged calices or pelvis as patients with hydro-

nephrosis. Pyelospasm is, therefore, likely to be a cause of reflux\textsuperscript{12}.

Spontaneous peripelvic extravasation can be differentiated from renal rupture according to the following findings: 1) leakage of the contrast medium is especially notable around the calices in extravasation, 2) contrast medium is not transported to the ureter in rupture of the calices, but the ureter is contrasted in urography in extravasation, 3) the contrast medium disappears with time in extravasation, but remains unchanged in rupture, 4) dilatation of the ureter and pelvis due to calculus or spasm is noted in extravasation, and 5) clinical symptoms are severe and pain is intense in rupture, but the symptoms are milder and pain is often tolerable in extravasation.

Extravasation is generally treated conservatively, but rupture requires emergency operation. However, careful follow-up is needed after conservative therapy, because extravasation was followed by peripelvic urinary granuloma, abscess, urinary granuloma, and fibrosis in some patients\textsuperscript{7, 9, 13}.

**Closing Remarks**

A patient with spontaneous peripelvic extravasation secondary to ureteral calculus was treated conservatively with good results.

**References**

