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Case Report

Isolated rupture of renal pelvis after blunt chest trauma: First description of a case ☆☆☆

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ABSTRACT

Isolated post-traumatic rupture of renal pelvis (IPTRRP) is an extremely rare condition and only a few cases following blunt abdominal trauma have been reported in the literature.

To our knowledge, no cases of IPTRRP following blunt chest trauma have been reported.

We present the case of an 84-year-old woman who was admitted to our Emergency Department due to persistent left flank pain that started after she had fallen to the ground 4 days before, with blunt trauma on her chest.

CT showed a rupture of the left renal pelvis with contrast extravasation, associated with multiple rib fractures. No renal and other parenchymal injuries were detected.

The patient was managed conservatively with the implantation of a ureteral stent and discharged in good clinical conditions.

Our case shows the first description that IPTRRP might be an uncommon but possible complication of blunt chest trauma and must be included in the differential diagnosis.

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Introduction

Isolated rupture of renal pelvis (IRRP) is usually associated with underlying renal disease such as obstructive uropathy causing excessive intraluminal pressure, while other causes include surgery, neoplasms and trauma [1–3].

Post-traumatic rupture of renal pelvis (PTRRP) usually occurs in association with renal parenchyma injury, while isolated post-traumatic IRRP is extremely rare [2].

Computed tomography is the gold standard diagnostic technique since it can demonstrate contrast agent extravasation as well as the location of the rupture [4].

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We present the case of an isolated rupture of the renal pelvis following blunt chest trauma.

Case report

An 84-year-old woman was admitted to our Emergency Department due to persistent left flank pain after she had fallen to the ground 4 days before, hitting the lower part of her left hemithorax.

Physical examination revealed tenderness and ecchymosis in the left hemithorax and left flank. Blood tests were unremarkable.

Laboratory tests ruled out signs of urinary tract infections.

Contrast-enhanced CT revealed a large perirenal urinoma with no opacification of the left ureter in the delayed excretory phase. Unenhanced CT showed also intraluminal hyperdense material in the left calyces and renal pelvis, consistent with fresh blood clots (Fig. 1).

No other causes of renal injuries were present, the renal cortex and medulla showed a normal pre- and postcontrast CT appearance, and no other abdominal organs' injuries were observed.

Fractures from the 7th to 12th left ribs and bilateral pleural effusion were also detected (Fig. 2).

The patient was treated with the positioning of a left double-J ureteral stent.

A follow-up CT scan performed 2 days after the procedure showed a reduction in the size of the urinoma and the amount of contrast medium extravasation (Fig. 3).

The patient was discharged in good clinical condition 3 days after the procedure.

Discussion

We presented a case of isolated renal pelvis rupture (IRRP) occurring after blunt chest trauma which, to the best of our knowledge, hasn't been reported yet in the literature.

Only a few cases of IRRP following blunt abdominal trauma have been reported [1,2].

PTRRP usually occurs in association with renal parenchyma injury, while isolated PTRRP (IPTRRP) in blunt trauma is an extremely rare clinical entity [3,5,6]. It may be caused by a sudden increase of the intraluminal pressure and/or a rapid acceleration-deceleration mechanisms.

The patient may present with acute and persisting flank pain, hematuria, nausea, vomiting, fever, peritoneal irritation signs and sepsis [7]. The absence of hematuria does not exclude renal or collecting system injury [8].

Contrast-enhanced CT is the gold standard diagnostic technique, since it may demonstrate contrast extravasation as well as showing the precise site of rupture. CT is more sensitive and specific than ultrasound and urography, being helpful to evaluate the type and severity of injury, the presence of active bleeding, the state of renal vessels; in these cases, a multiphase protocol with unenhanced, corticomedullary, nephrographic and excretory phase is recommended [4,9,5].

CT is recommended when the mechanism of injury or physical examination findings suggest a renal injury (eg, rapid deceleration, rib fractures, flank ecchymosis) [2].

Presently, most cases of renal pelvis rupture are successfully treated with ureteral stent implantation. Small-sized urinomas may be resorbed spontaneously without drainage. Surgery is recommended in case of ineffective conservative treatment [2].

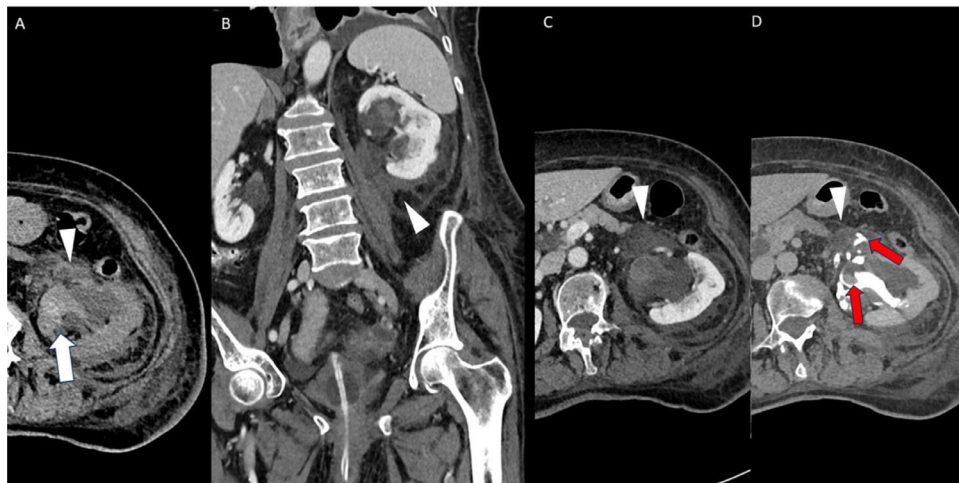


Fig. 1 – Contrast-enhanced abdominal CT (A: axial unenhanced, B and C: coronal and axial nephrographic phase, D: axial delayed excretory phase) showing perirenal urinoma (white arrowheads in A, B, C, and D) with no opacification of the left ureter and contrast extravasation in the delayed excretory phase (red arrows in D). Unenhanced CT (A) showing intraluminal hyperdense material in the left calyces and renal pelvis, consistent with fresh blood clots (arrow).

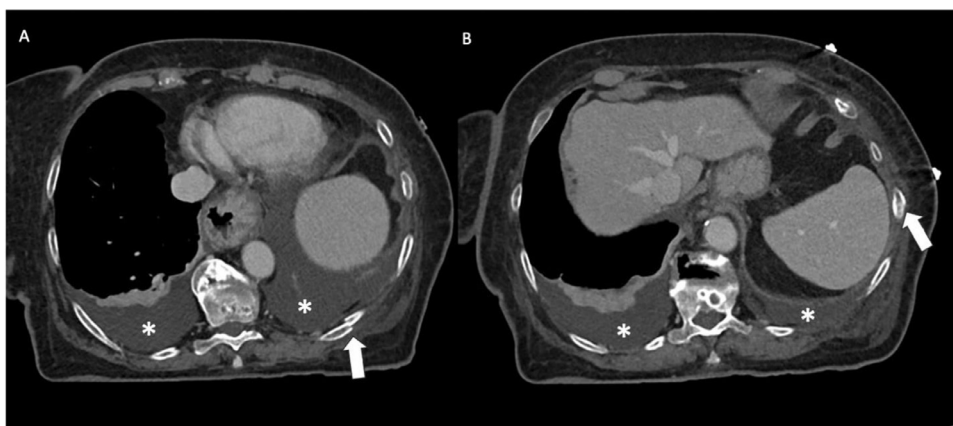


Fig. 2 – Contrast-enhanced CT scan showing fractures from the 7th to 12th left ribs (arrows) and bilateral pleural effusion (asterisks).



Fig. 3 – Contrast-enhanced follow-up CT after the positioning of double-J ureteral stent (arrowheads in A, C, and D) showing a reduction in the size of the urinoma and of the amount of contrast agent extravasation (arrows in A, B).

Conclusions

IRRP may occur as a complication of blunt chest trauma. Radiologists must be aware of this condition since early diagnosis and conservative treatment may provide an excellent patient outcome and avoid complications.

Patient consent

Informed consent was obtained from all individual participants included in the study.

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