



Conservative management for acute renal rupture in blunt trauma

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ABSTRACT

Renal injuries are commonly reported in blunt abdominal trauma and are usually associated to other abdominal injuries. Renal rupture may be misdiagnosed and its management, especially in severe lesions, is still controversial. We describe the case of renal rupture diagnosed in the Emergency Department and conservatively managed. The outcome was good thanks to the early diagnosis and the management of the renal trauma. Conservative management in renal rupture is possible in stable patients provided that the imaging is early done.

1. Introduction

Isolated renal rupture secondary to external blunt abdominal trauma is rare and account for up to 5% of trauma victims[1]. In 80% of cases, renal injuries are reported in blunt trauma[1]. This rare entity usually occurs in a previously diseased kidney[1, 2]. We describe here the case of a post-traumatic isolated renal rupture due to an obstructive calculus conservatively managed in the Emergency Department.

2. Case report

A 46-year-old man, with no medical or surgical history presented to the emergency department (ED) for a polytrauma caused in a public road accident (forward cars collision).

On admission in the Emergency Room, he was conscious, oriented, with a Glasgow Coma Scale at 14 points. He had periorbital ecchymosis, and a restricted mouth opening. He also complained

of a diffuse abdominal pain. On examination, he had a stable hemodynamic and respiratory status. The abdominal palpation noted a diffuse abdominal sensitivity.

Blood sample analyses on admission and 6 hours later showed no coagulation abnormalities. However, the creatinine level was at 126 $\mu\text{mol/L}$ with an urea level at 9.5 mmol/L.

A body CT scan was performed at the third hour after the trauma. It showed a 2 mm subdural frontal hematoma at the left side. Abdominal CT scan showed an extensive left-side para-renal effusion with extension to the intra and retro peritoneum space along the left abdomen. There was a hypotonic dilatation of the left kidney's excretory cavities with an obstructive calculation of 14 mm in lumbar ureter. There was a leak of contrast in the left kidney with an intra- and retroperitoneal medium abundance effusion. There was no enhancement of the excretory cavities in the intra-abdominal effusion, suggesting a urinoma. There were no other radiological abnormalities (Figure 1).

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Figure 1. A 46-year-old man with grade IV left renal injury.

(A) Contrast-enhanced axial CT scan at early excretory phase shows a leak of contrast in the left kidney with an intra- and retroperitoneal medium abundance effusion. (B) Sagittal reformats shows fluid collection and hypotonic dilatation of the left kidney's excretory cavities.

A urinary diversion by a CT scan guided percutaneous nephrostomy was decided urgently. It brought back 300 mL of hematic urine. The

patient had a clinical improvement within 48 hours. His diuresis was normal and his renal function was stable. Forty-eight hours afterwards, a transfer to urology department was agreed to continue his follow-up.

4. Discussion

Renal injuries account for only 1% to 5% of all abdominal injuries [2, 3]. The kidney is the third most common solid organ injury in blunt abdominal trauma after the liver and the spleen [2, 4]. Up to 80% of cases are secondary to blunt abdominal trauma and preexisting abnormalities increase the risk of renal injury [5, 6].

The most significant renal trauma is associated with injury to other major organs [2]. Hematuria is the most common clinical sign but some controversy exists since some injuries, such as ureteropelvic junction avulsion or renal vascular injuries, may not manifest with hematuria [4]. Moreover, these injuries seem to be underdiagnosed as the clinical signs may be masked by more obvious or compelling injuries elsewhere [2]. We report a rare case of early diagnosis of a renal rupture with an obstructive calculus in the lumbar ureter conservatively managed. In our Center, body CT scans are rapidly performed for each patient having severe trauma or a potentially severe mechanism. Multiphase contrast-enhanced multidetector computed tomography is done for patients having renal trauma. This technique is the standard recommended in the evaluation and grading of renal injury [2]. According to the American Association for the Surgery of Trauma, renal lesions are classified to 5 grades ranging from mild (Grade I) to severe lesions (Grade V) [1, 4, 6]. In our case, it was a grade IV injury with no other abdominal lesions. This grade is characterized by the presence of a hematoma or urinoma in the medial and perihilar region of the kidney [2]. Extravasation of opacified urine on excretory phase scans with opacification of the ureter distal to the injury helps confirm the diagnosis and differentiate complete from partial injury. In complete avulsion, the surgical repair is the best choice, while in a partial tear, there will be opacification of the ureter distally and these patients could be managed by minimal invasive techniques like placing a ureteric stent across the injury site or urinary diversion through a percutaneous nephrostomy tube [2, 4]. This latter approach was chosen in our case since the patient was still stable thanks to his early management. Surgery may be opted for if the above conservative methods fail to heal the injury [2, 4].

Our case demonstrates that early diagnosis and management of severe trauma is crucial to prevent late or misdiagnosis of renal injuries. Even in patients with severe renal injuries, conservative management can be indicated. Our patient was treated medically despite his high grade lesion, with a good outcome.

Conflict of interest statement

The authors report no conflict of interest.

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