



Devastating Renal Injury After a Low Energy Trauma

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Abstract

Introduction: Renal traumas are quite commonly encountered in emergency departments. Low-energy traumas are often considered non-significant, but the presence of a pre-existing renal lesion predisposes the kidneys to more severe damage in the setting of even minor traumas, which may be accompanied by devastating results, should they remain unattended.

Case Presentation: Here we report an incidental diagnosis of bilateral ureteropelvic junction obstruction in a patient who presented with unexpected shattered kidney following a low-energy flank injury.

Conclusions: Patients with a pre-existing renal lesion are vulnerable to severe traumatic renal injuries, even after minor trauma. The severity of renal injuries may be much more than expected, making the clinical and imaging findings complex and confusing in these patients.

Keywords: Non-Penetrating Wound, Kidney, Hydronephrosis, Computed Tomography

1. Introduction

Renal injuries occur in 8 - 10% of trauma patients (1). Considering factors such as the presence of hematuria, hypotension, patient's age, and mechanism of trauma helps the physician in a timely diagnosis. A less common but notable issue is the presence of pre-existing renal lesions (PERLs), which predispose the kidneys to more severe damage with even less significant impacts (2).

Here we report the incidental diagnosis of PERL in a patient who presented with unexpected shattered kidney following a low-energy flank trauma.

2. Case Presentation

A 52-year-old man presented after a low energy trauma to the right flank complaining of abdominal pain. On the physical examination, vital signs were stable and mild generalized abdominal tenderness without guarding was detected.

Routine laboratory results were normal except for gross hematuria. An abdominal CT scan with intravenous contrast was requested that revealed grade V right kidney laceration (shattered kidney) with a perinephric hematoma. Additionally, the CT scan showed bilateral hydronephrosis (Figure 1).

The patient was admitted to the intensive care unit (ICU). Due to the stability of his hemodynamics and blunt

mechanism of the trauma, he was selected for conservative non-operative management.

The intravenous fluids administration, close monitoring, serial hematocrits, and renal function evaluations were carried out. He was kept on bed rest until the urine became clear. On repeated CT scan, no expansion of the hematoma or intraperitoneal hemorrhage was detected. In the further urologic evaluation, the initial diagnosis of bilateral UPJO was confirmed.

3. Discussion

Kidneys are retroperitoneal structures. Although they are protected by perinephric and pararenal fat and adjacent anatomic organs (1), they can be injured during blunt or penetrating traumas (3). With the recent increase in motor vehicle accidents, renal traumas are increasing in frequency to constitute 8 - 10% of patients admitted to the emergency departments for abdominal and flank trauma (4). The most significant injuries occur through acceleration-deceleration mechanisms or crush injuries (3, 5). Imaging is indicated in hemodynamically stable patients to evaluate the grade of renal trauma and assess the presence of concomitant visceral injuries (4). As the current clinical practice tends to manage most renal injuries conservatively, it is important to precisely determine the management strategy in renal trauma (6). This is especially important for patients with a pre-existing renal



Figure 1. Axial (a) and coronal maximum intensity projection (b) images of abdominal CT scan with intravenous contrast showing bilateral hydronephrosis (arrows in a) and perinephric hematoma (asterisks in a and b). The lower pole of the right kidney is shattered. There is also a stricture (arrow in b) at the ureteropelvic junction on the left side suggesting ureteropelvic junction obstruction (UPJO) as the etiology of bilateral hydronephrosis.

lesion (PERL) who are vulnerable to severe traumatic renal injuries after a minor trauma (7). The severity of renal injuries may be much more than expected, making the clinical and imaging findings complex and confusing (8, 9). Our patient represented an interesting case of incidentally found bilateral hydronephrosis after a minor blunt trauma. The presence of gross hematuria in the context of flank trauma led us to request contrast-enhanced abdominal CT scan. Surprisingly, we found a shattered kidney due to a minor impact as simple as falling on the ground! This proved to be a blessing in disguise and helped us reveal a PERL that would cause eventual irreversible renal damages if remained undiagnosed.

Although most grade V traumatic renal injuries need operative intervention, in this patient, we chose non-operative management because of the stable hemodynamics, young age, and sparing of renal pedicle (10). The patient experienced an uneventful recovery.

Footnotes

Authors' Contribution: Bahram Zarmehri and Reza Akhavan: Drafting of the manuscript or revising it critically for important intellectual content, Bitā Abbasi: Final approval of the manuscript to be submitted, Ehsan Bolvardi: Analyzing the images.

Informed Consent: A written consent was obtained from the patient.

Conflict of Interests: The authors declare no conflicts of interest.

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