CASE REPORT

Bagcilar Med Bull 2024;9(1):74-76
DOI: 10.4274/BMB.galenos.2023.2023-11-101

A Rare Case of Pediatric Pelvic Ectopic Kidney Injury Management

Nadir Bir Pediyatrik Pelvik Ektopik Böbrek Yaralanması

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Abstract

Renal injury occurs in 10-20% of all abdominal blunt traumas and 3-4% of penetrating traumas in the pediatric population. A 6-year-old girl who had blunt abdominal trauma as a result of a motor vehicle accident was evaluated in the emergency department of our hospital. She complained of a severe left flank and abdominal pain. Defensiveness was detected in the left quadrants of the abdomen and costovertebral angle tenderness was detected in the left. Abdominal computed tomography revealed a left pelvic ectopic kidney with a grade three laceration. The patient was admitted to our urology department, and conservative follow-up was decided after hemodynamic stability was achieved. During the follow-ups, clinical manifestations, vital signs, and laboratory values remained stable, the patient was discharged. In conclusion, based on this experience, we believe that the management of child pelvic ectopic kidney injury can be similar to that of orthotopic kidneys in accordance with the classification of the injury.

Keywords: Acute kidney injury, conservative treatment, ectopic pelvic kidney

Öz

Pediyatrik popülasyonda ise tüm abdominal künt travmaların %10-20'sinde ve penetran travmaların %3-4'ünde renal yaralanma meydana gelmektedir. Motorlu araç kazası sonucu künt batın travması geçiren 6 yaşındaki kız çocuğu hastanemiz acil servisinde değerlendirildi. Şiddetli sol yan ve karın ağrısı şikayeti vardı. Karın sol kadranlarda defans ve yine solda kostovertebral açı hassasiyeti saptandı. Abdomen bilgisayarlı tomografisi neticesinde sol pelvik ektopik böbrek ve bu böbrekte grade üç laserasyon saptandı. Hasta üroloji servisimize yatırıldı ve hemodinamik stabilite sağlandıktan sonra konservatif izleme karar verildi. Takiplerinde kliniği, vital bulguları ve laboratuvar değerleri stabil seyreden hasta taburcu edildi. Sonuç olarak bu deneyimden yola çıkarak çocuk pelvik ektopik böbrek yaralanması tedavi yönetiminin, yaralanmanın sınıflamasına uygun olarak ortotopik böbrekler ile benzer şekilde yapılabileceği düşüncesindeyiz.

Anahtar kelimeler: Akut böbrek hasarı, ektopik pelvik böbrek, konservatif tedavi

Introduction

Renal injury occurs in 10-20% of all abdominal blunt traumas and 3-4% of penetrating traumas in the pediatric population (1). It has been reported that the incidence of pelvic ectopic kidney varies between 1/500 and 1/1200. While pelvic ectopic kidneys are often associated with anomalies such as hydronephrosis and vesicoureteral reflux, they are typically asymptomatic (2).

After blunt abdominal trauma, the probability of urinary tract injury in children is higher than in adults due to various anatomical differences such as weaker abdominal muscles, relatively lower location of the kidneys in the abdomen, and less perirenal adipose tissue (3). The lack of protective anatomical structures in the pelvic kidneys causes them to be more prone to injury in blunt trauma (4).

Over the past few decades, there has been a major shift in the management of renal trauma in children, with the primary focus being on conservative follow-up instead of surgical intervention (5).

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Cite this article as: Yakut E, Öztorun K. A Rare Case of Pediatric Pelvic Ectopic Kidney Injury Management. Bagcilar Med Bull 2024;9(1):74-76

A lack of adequate data exists in the literature regarding the management of pelvic ectopic kidney injuries. In this case report, we aimed to present ectopic pelvic left kidney injury after blunt abdominal trauma.

Case Report

A 6-year-old female presented to the emergency department following a motor vehicle collision, suffering from blunt abdominal trauma. She complained of a severe left flank and abdominal pain. Vital signs were notable for hypotension with a blood pressure of 83/58 mmHg, tachycardia with a heart rate of 108 beats per minute, a respiratory rate of 18 breaths per minute, and an oxygen saturation of 96%. She had no previous history of chronic disease.

Defensiveness was detected in the left quadrants of the abdomen and costovertebral angle tenderness was detected in the left. Macroscopic hematuria was not detected in the patient with a Foley catheter. Laboratory tests revealed hemoglobin 12 g/dL, hematocrit 36%, urea 12 mg/dL and creatinine 0.5 mg/dL.

In the radiological evaluation, chest radiography was unremarkable. Abdominal computed tomography (CT) revealed a left pelvic ectopic kidney with a grade three laceration (Figure 1).

The patient was admitted to our urology department, and conservative follow-up was decided after hemodynamic stability was achieved. Typical conservative follow-up procedures include supportive care, bed rest, periodic monitoring of vital signs and laboratory tests, and close monitoring of the patient's condition using imaging techniques. During the follow-ups, the patient's clinical manifestations, vital signs, and laboratory values remained stable. After a significant improvement was detected on the control ultrasonography and abdominal CT performed on the seventh day, the patient was discharged. Informed consent was obtained from the relatives.

Figure 1. Image of abdominal computed tomography revealed a left pelvic ectopic kidney with a grade three laceration

Discussion

Six-eight weeks of fetal development kidney formation begins. Pathologies in this process may lead to ectopic kidney development (6). The ectopic kidney is classified as an abdominal, lumbar, or pelvic kidney according to its location in the abdominal cavity. On the other hand, it is rare in the thoracic cavity (7).

Kidney traumas are more risky in children due to their anatomical structure compared to adults. Children's kidneys are less protected because they have larger kidneys relative to their body size, the kidneys are located lower in the abdomen, there is less peri-renal adipose tissue around them, and the abdominal wall muscles are weaker.

Children are more likely to have renal parenchymal laceration, bleeding, and urinary leakage than adults. Because the renal capsule and gerota fascia are weaker (4). The incidence of renal injury after blunt abdominal trauma is approximately 10% (4). As abnormal kidneys, including those located ectopically, are generally located in a less protected location in the retroperitoneal space, they may be more vulnerable to injury (8). According to a meta-analysis, ectopic kidneys account for 7% of all abnormal kidney injuries. In most cases of ectopic kidneys, patients are asymptomatic and are diagnosed incidentally. The diagnosis is usually made on the evaluation of infection, pain, kidney stone, or trauma, as in our patient (9). In blunt abdominal trauma, peritoneal lavage, focused assessment with sonography in trauma examination, and CT can be performed for diagnostic purposes after patient history and physical examination. Abdominal CT good recognition tool for the diagnosis of organ injury and the detection of incidental findings after blunt abdominal trauma (10). Because clinical manifestations may not be a reliable indicator of the severity of visceral organ injury, notably in children, CT should not be delayed to avoid a delay in the diagnosis of kidney injury (11). Thus, we also quickly performed an abdominal CT on our pediatric patient and found a grade 3 laceration in the left pelvic ectopic kidney.

Pelvic kidney injuries can be treated just like normal kidney injuries. Low-grade renal injuries and selected Grade IV, and Grade V renal trauma can be managed with conservative follow-up (12). Hence, we followed a 6-year-old girl with a Grade III laceration and an ectopic kidney in the left pelvis with conservative follow-up in accordance with our standard procedure for orthotopic kidney injuries. In the follow-up examination, the patient's hemodynamics were stable, and no surgical intervention was required.

In conclusion, based on this experience, we believe that the management of pelvic ectopic kidney injury can be similar to that of orthotopic kidneys in accordance with the classification of the injury.

Ethics

Informed Consent: Informed consent was obtained from the relatives.

Authorship Contributions

Surgical and Medical Practices: E.Y., K.Ö., Concept: E.Y., Design: E.Y., Data Collection or Processing: E.Y., K.Ö., Analysis or Interpretation: E.Y., K.Ö., Literature Search: E.Y., K.Ö., Writing: E.Y.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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