Traumatic Blunt Injury in Polycystic Kidney Disease: An Unfortunate Event

Polikistik Böbrek Hastalığında Travmatik Künt Yaralanma: Talihsiz Bir Olay

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ABSTRACT

Polycystic kidney disease is not a common genetic disorder. Unlike kidneys of a healthy individual, they are well protected by abdominal wall and other visceral organs. Pathological kidneys especially those with organomegaly are predisposed to trauma, even in trivial injury. The management of such cases is still controversial. In this case report, we highlight a middle aged man who was diagnosed with polycystic kidney disease only after he sustained a blunt kidney injury. His condition was unstable requiring emergency left nephrectomy.

Key Words: Trauma, polycystic kidney disease, nephrectomy

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ÖZET

Polikistik böbrek hastalığı sık görülen bir genetik bozukluk değildir. Sağlıklı bir bireyin böbreklerinden farklı olarak, karın duvarı ve diğer iç organlar tarafından iyi korunurlar. Patolojik böbrekler, özellikle organomegali olanlar, travmaya, hatta önemsiz yaralanmalara bile yatkındırlar. Bu gibi vakaların yönetimi hala tartışmalıdır. Bu olguda künt bir böbrek hasarı geçirdikten sonra polikistik böbrek hastalığı tanısı konan orta yaşlı bir erkeği sunduk. Durumu stabil olmadığı için acil sol nefrektomi gerektirdi.

Anahtar Sözcükler: Travma, polikistik böbrek hastalığı, nefrektomi

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INTRODUCTION

Polycystic kidney disease is a genetic disorder characterised by multiple cysts formation in the kidney and other organs. It is multi systemic throughout the body and progressive in nature. It may be inherited as an autosomal dominant (more common) or recessive trait. It occurs in all races with a prevalence of 1 in 400 to 1 in 1000 (1,2). Kidneys are retroperitoneal organs thus are well protected by abdominal wall and other viscera. Hence, renal injury is not uncommon in trauma especially in blunt trauma. Pre-existing renal lesions predispose kidney to even trivial trauma (3,4).

Polycystic kidney disease may be identified incidentally during imaging for any other reason or as part of the workup in trauma. Herein, we describe a case of newly diagnosed polycystic kidney disease in a man after he sustained a fall from height. It was found incidentally during the imaging workup in trauma.

CASE REPORT

A 46-year-old gentleman with no known medical condition had an alleged fall from 4 feet height. He landed on his abdomen anteriorly, on the left side. There was no open wound or external bleeding. He experienced severe generalised abdominal pain with complains of frank blood in his urine. He went to seek medical attention on the same day and noted to be hypotensive (systolic pressure of 83 mmHg and diastolic pressure of 62 mmHg). His abdomen was distended and guarded, blood seen in urinary drain.

Focused Assessment with Sonography for Trauma (FAST) scan detected free fluid in the abdomen. Haemoglobin level was 6 g/dL (normal value: 13-17 g/dL) with deranged renal profile of serum urea of 13 mmol/L (normal value: 3.2-7.4 mmol/L) and serum creatinine of 292 µmol/L (normal value: 63-110.5 µmol/L). Arterial blood gas shows metabolic acidosis with pH of 7.2 (normal value: 7.35-7.45) and bicarbonate of 16.4 mmol/L (normal value: 24-32 mmol/L).

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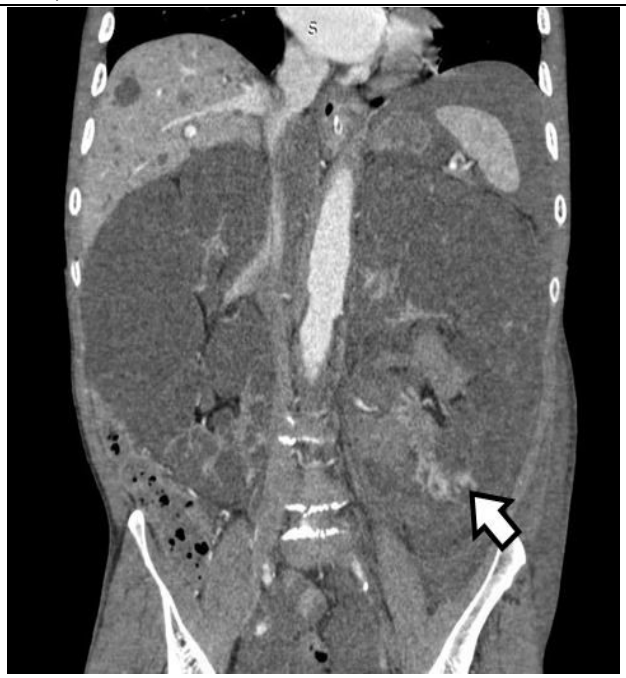

Figure 1: Post trauma Computed Tomography (coronal view) shows contrast extravasation at the lower pole of left kidney (white arrow).

He was fluid resuscitated and was intubated prior to transfer to tertiary hospital. Computed Tomography (CT) of abdomen and pelvis shows polycystic kidney disease with active bleed within the large hematoma arising from the lower pole of the left kidney which extends into the peritoneum (Figure 1 and 2).

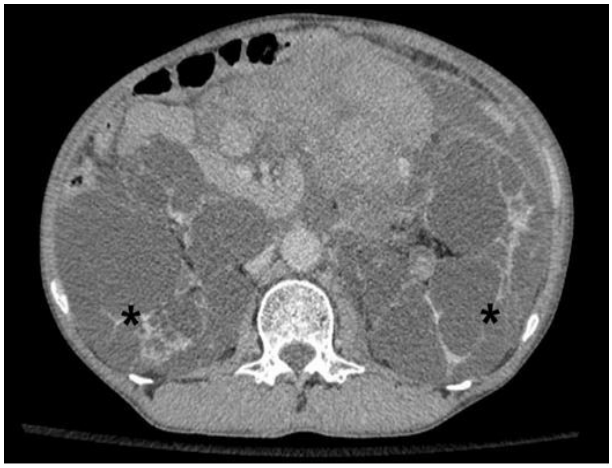

Figure 2: Post trauma computed tomography (axial view) reveals multiple kidney cysts (asterisk).

He underwent emergency exploratory laparotomy and intraoperatively noted grade 4 left renal injury with descending mesocolon and small bowel serosal tear. Left nephrectomy, small bowel repair, resection of descending colon and end colostomy were performed (Figure 3). Post operatively he had worsening renal function requiring haemodialysis. He recovered well from the operation and was able to function independently in terms of activities of daily living. He was planned for long term haemodialysis and was transferred back to district hospital for continuation of care after 2 weeks of admission.

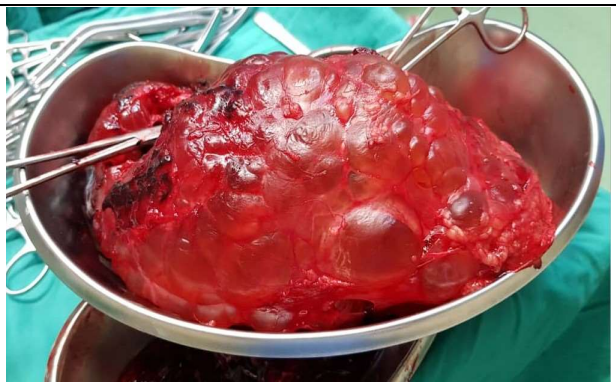

Figure 3: Left nephrectomy specimen shows multiple renal cysts.

DISCUSSION

Most patients with polycystic kidney disease remain clinically silent. It may be found incidentally during imaging for other reason or presents with sign and symptom such as haematuria, flank pain, abdominal mass and hypertension or renal insufficiency. In trauma case, patient with polycystic kidney disease might present like any other intraabdominal injury case, namely abdominal pain, distension or haemodynamic instability.

The imaging of choice is CT scan in stable patient, which can detect renal parenchymal laceration, vascular involvement and extend of hematoma. It can help in differentiating bleeding from ruptured renal cyst, based on density difference in CT. CT scan has better anatomic coverage and this is very important to rule out other organ injury in trauma cases (5). Ultrasonography is helpful as first imaging modality as in FAST scan but it overall lacks the diagnostic accuracy and other advantages offered in CT scan. It has the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) of 75.8%, 97.4%, 37.3% and 99.5%, respectively, in detecting solid organ injury (6).

There is limited evidence and guideline for the management of trauma cases with pre-existing renal lesions. However, based on the severity and patient stability, the management of such patient ranged from conservative with watchful observation to emergency operation which may include nephrectomy. Stable grade 1 and 2 kidney injuries might benefits from conservative management while grade 5 usually needs surgical exploration. Grade 3 and 4 kidney injuries in stable patient are in the grey area in which the subsequent management is based on the progression of the patient condition. Generally, operative management is applicable for cases with unstable patient, grade 5 renal injuries and patients with associated injuries requiring surgical exploration. Another treatment option in selected cases is radiologic intervention (selective arterial embolization) (3). This procedure is less invasive and open surgery can be avoided. However this modality is not suitable for unstable patient and this technique is not always readily available, from operator factor to infrastructure factor.

Unilateral nephrectomy in healthy patients can survive by depending on the contralateral side. However, it does not apply to the pathological kidney. It is estimated that 45-70% of the patient with polycystic kidney disease alone will progress to end stage renal disease at the age of 65 (7). Most of these patients require long term renal replacement therapy. The choice of renal replacement modality (haemodialysis, peritoneal dialysis and kidney transplantation) is dependent on several factors, including patient choice, physicians' advice and resource availability (8).

CONCLUSION

Kidney injury after blunt trauma is not uncommon but pre-existing kidney cysts contributes to predisposition to trauma. Higher attentions need to be carried out if the patients present with haematuria or flank pain even after trivial injury. CT scan is the diagnostic imaging modality of choice. Management ranges from conservative with watchful observation to emergency operation which may include nephrectomy, depends on the severity and progression of the patient condition.

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

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