African Journal of Urology (2017) **23**, 78–85

African Journal of Urology

Official journal of the Pan African Urological Surgeon's Association
web page of the journal

www.ees.elsevier.com/afju
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Case report

Autosomal Dominant Polycystic Kidney Disease, incidental finding with trauma: Case report and review of the literature

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Received 7 October 2015; received in revised form 12 January 2016; accepted 17 January 2016
Available online 30 June 2016

KEYWORDS
Autosomal Dominant Polycystic Kidney Disease;
Renal trauma;
Pre-existing renal lesion;
Blunt abdominal trauma

Abstract
Introduction: Pre-existing renal lesions predispose kidneys to effects of otherwise insignificant blunt trauma, and may uncommonly present as an incidental finding in the workup of a suspected renal injury.
Observation: This is a case report of a 28-year-old male diagnosed incidentally with Autosomal Dominant Polycystic Kidney Disease (ADPKD) as part of the workup for suspected kidney injury secondary to assault by a brick. This case study serves as a learning opportunity and future reference in the cases and management of blunt trauma to kidneys with pre-existing lesions and also to raise the index of suspicion for renal abnormalities in future cases of mild blunt abdominal trauma that present with significant injury to the kidney. The study design takes the form of a case report and an overview of the relevant literature by searching the following databases: Pubmed, Google Scholar, Cochrane library and Medline. Search terms included: "Abnormal Kidneys", "Pathologic Kidneys", "Polycystic Kidneys", "Autosomal Dominant Polycystic Kidney Disease", "Trauma", "Blunt Trauma", "Blunt Abdominal trauma", "Blunt Renal Trauma", "Pre-Existing Renal Lesions". The literature search revealed 42 published cases of trauma to pre-existing renal lesions. 8 out of the 42 cases involved trauma to patients with Autosomal Dominant Polycystic Kidney Disease (ADPKD) (19%). Among the 8 cases of ADPKD, 4 cases presented with gross haematuria. Abdominal CT was the diagnostic imaging of choice in all cases and revealed injuries ranging from cyst rupture to AAST Grade IV injury to the kidney. Four out of the 8 cases required nephrectomy, and 3 cases were managed conservative-/non-operatively.

Abbreviations: ADPKD, Autosomal Dominant Polycystic Kidney Disease; UPJ, congenital ureteropelvic junction obstruction; HK, horseshoe kidney; RCC, renal cell carcinoma; MVA, motor vehicle accident; PVA, pedestrian vehicle accident; GH, gross haematuria; AP, abdominal pain; FP, flank pain; S, shock; Lap, laparotomy.

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Peer review under responsibility of Pan African Urological Surgeons' Association.

http://dx.doi.org/10.1016/j.afju.2016.01.005

Conclusion: Patients with abnormal kidneys require counselling regarding increased risk of injury following blunt abdominal trauma.
The decision to transfuse a patient following renal trauma to pre-existing renal lesion possibly requiring a renal transplant, should be done with consideration of the increased risk of antigen sensitization. Patients that present with signs and symptoms out of proportion with the mechanism of trauma should raise the suspicion of undiagnosed pre-existing renal lesions.
In cases of blunt renal trauma with a history suggesting the possibility of a pre-existing lesion, the threshold for requesting CT of the abdomen should be lowered, even in absence of gross haematuria.

Introduction

Traumatic injuries are common in South Africa and result from a variety of causes ranging from interpersonal violence, motor vehicle accidents to sports- and occupational injuries. Renal injury following trauma is a common occurrence (up to 5% of all trauma cases) and usually results from a blunt insult, which is about 9 times more common than penetrating trauma of the kidneys [1,2]. Kidneys are retroperitoneal organs that are generally well protected by fat in the anterior abdominal wall, abdominal viscera, as well as the spine and muscles posteriorly [3]. Blunt renal injuries therefore most commonly present with a history of major trauma followed by flank/abdominal pain and haematuria. A direct correlation between the mechanism and grading of renal injury usually exists [4].

Pre-existing renal lesions, however, predispose kidneys to effects of otherwise insignificant blunt trauma, and may uncommonly present as an incidental finding in the workup of a suspected renal injury. Abnormal kidneys may complicate or alter the course and outcome of blunt trauma to the kidneys, as trivial trauma can potentially lead to serious injury, an uncommon occurrence in normal kidneys [1,5]. Biomechanical research was performed which aims to prove the mechanism responsible for the higher risk of injuries to abnormal kidneys subjected to trivial trauma [3]. Minor blunt trauma that results in significant renal injury should therefore raise suspicion of a pre-existing renal lesion and should encourage further work up.

This is a case report of a patient diagnosed incidentally with Autosomal Dominant Polycystic Kidney Disease (ADPKD) as part of the workup for suspected kidney injury secondary to blunt abdominal trauma.

Literature review

A literature search was done and revealed 42 published cases of trauma to pre-existing renal lesions. Table 1 summarizes the published cases found in the literature review according to; demographics, pre-existing renal lesion, mechanism of injury, presentation, special investigations, and treatment. The table serves as a quick reference of the currently available literature.

In the published cases the most common abnormalities that presented with trauma were horseshoe kidneys (11/42 = 26%), followed by congenital uretero-pelvic junction obstruction (10/42 = 24%). Literature search revealed 8 out of the 42 cases involved trauma to patients with Autosomal Dominant Polycystic Kidney Disease (ADPKD) (19%). The most common presenting complaint involved gross haematuria (21 cases) and abdominal/flank pain (18 cases). CT abdomen was the diagnostic imaging of choice in 34 cases and revealed various grades of injuries and abnormalities. Of the 42 cases, 15 cases required laparotomy and of those, 12 cases required nephrectomy. Ten of the 42 cases could be managed conservatively/non-operatively.

Among the 8 cases of ADPKD, 4 cases presented with gross haematuria. Abdominal CT was the diagnostic imaging of choice in all cases and revealed injuries ranging from cyst rupture to AAST Grade IV injury to the kidney. Four out of the 8 cases required nephrectomy, and 3 cases were managed conservative-/non-operatively.

Objectives

The objective of this case study is to report a case of Autosomal Dominant Polycystic Kidney Disease incidentally found in the investigation of suspected renal injury secondary to blunt abdominal trauma. Although there are many articles published regarding the protocol of management of blunt renal trauma, the management of trauma to an abnormal kidney is still a controversial topic. This case study serves as a learning opportunity and future reference in the cases and management of blunt trauma to kidneys with pre-existing lesions and also to raise the index of suspicion for renal abnormalities in future cases of mild blunt abdominal trauma that present with significant injury to the kidney. A review of the literature and cases to date is also done.

The study design takes the form of a case report and an overview of the relevant literature. The rationale for this format is to supply the reader with a comprehensive background of the topic and to compare the information with international case reports. The case was referred form Citrusdal Hospital (Primary Health Care Facility) and managed and reported at Tygerberg Hospital (Tertiary Health Care Facility). A thorough literature review of the published cases of abnormal kidneys that presented incidentally with trauma was done by searching the following databases: Pubmed, Google Scholar, Cochrane library, and Medline. Studies published in English were reviewed and search terms included: "Abnormal Kidneys", "Pathologic Kidneys", "Polycystic Kidneys", "Autosomal Dominant Polycystic Kidney Disease", "Trauma", "Blunt Trauma", "Blunt Abdominal trauma", "Blunt Renal Trauma", "Pre-Existing Renal Lesions".