Endovascular Treatment of a Delayed Renal Artery Pseudoaneurysm Following Blunt Abdominal Trauma

Ashwin Garg, Ashwini Gokhale, Prerna Garg, Prajakta Patil

Keywords: abdominal trauma, hematuria, renal artery, pseudoaneurysm, embolization

Urol J. 2007;4:184-6.
www.uj.unrc.ir

Department of Radiology, Lokmanya Tilak Medical College and Municipal General Hospital, Sion, Mumbai, India

Corresponding Author:
Ashwin Garg, MD
123/9 Civil Lines North, Across from the Railway Station, Muzaffarnagar (UP)-251001, India
Tel: +91 131 240 2348
Fax: +91 22 2418 5678
E-mail: ashwin_garg@yahoo.co.in

Received May 2007
Accepted August 2007

INTRODUCTION

Pseudoaneurysms of the renal artery occur most commonly after a penetrating trauma or as a complication of some renal interventional procedures such as kidney biopsy, percutaneous nephrostomy, and open or endoscopic surgeries on the kidney; however, their occurrence after blunt abdominal trauma is rare.[1] The average interval between injury and onset of the secondary renal hemorrhage is approximately 12 days (range, 2 to 36 days).[2] We present a case with renal artery pseudoaneurysm presented with gross hematuria 8 years after a blunt abdominal trauma.

CASE REPORT

A 30-year-old man was referred to the emergency room of our center with spontaneous onset of painless hematuria. On physical examination, the patient was conscious. Blood pressure and pulse rate were normal and the abdomen was soft. Joint movements were normal and there were no skin or mucosal sores or any other signs related to vasculitides such as Behcet syndrome. History of hypertension was found neither in the patient nor in his family. Urinalysis revealed presence of albumin (3+) and 100 to 120 red blood cells per high-power field.

Abdominal ultrasonography showed a large pseudoaneurysm at the upper pole of the right kidney. The pyelocaliceal system was dilated with internal echoes suggesting rupture of the pseudoaneurysm into the pyelocaliceal system. These findings were confirmed by CT angiography (Figure 1). There were no findings suggesting renal tumor or

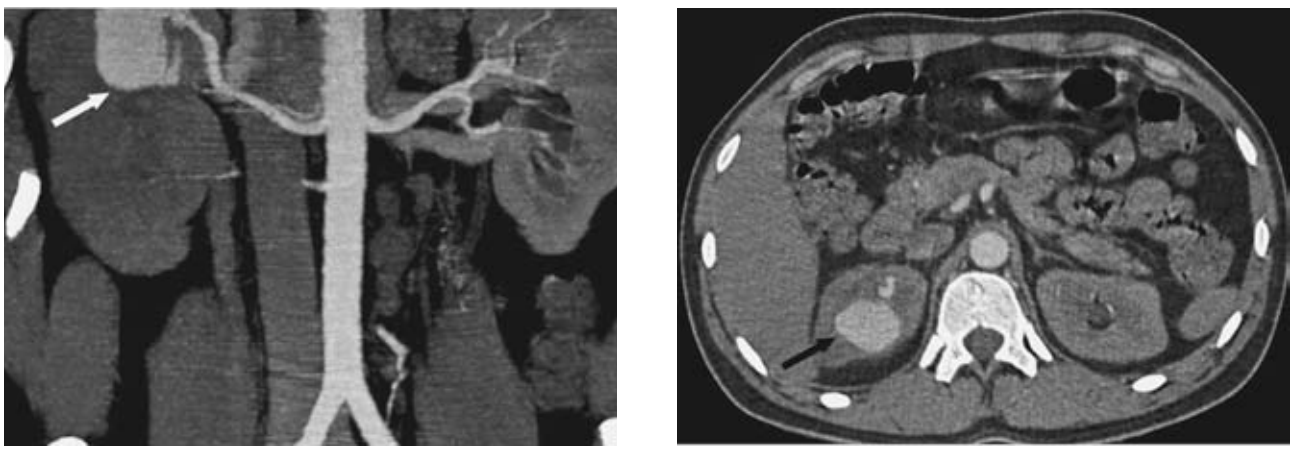

Figure 1. Multiplanar reformatted computed tomography **(left)** and axial computed tomography **(right)** showed pseudoaneurysm (arrows) arising from the segmental branch in the upper pole of the right kidney.

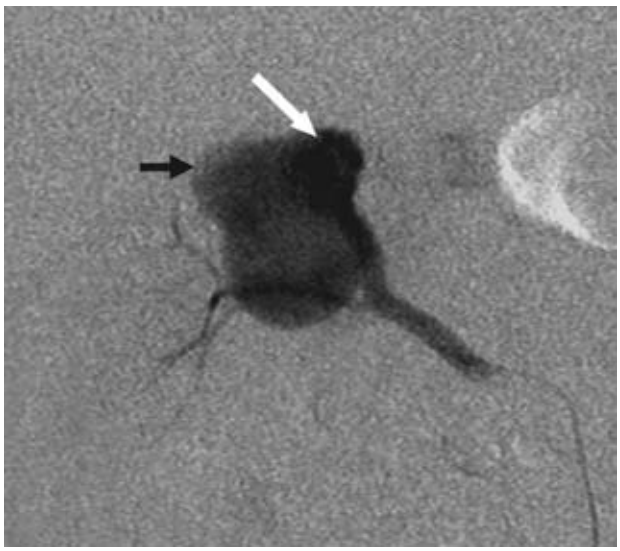

Figure 2. Arteriography confirmed the giant right renal pseudoaneurysm (black arrow), arising from the segmental branch demonstrating contrast outflow jet (white arrow).

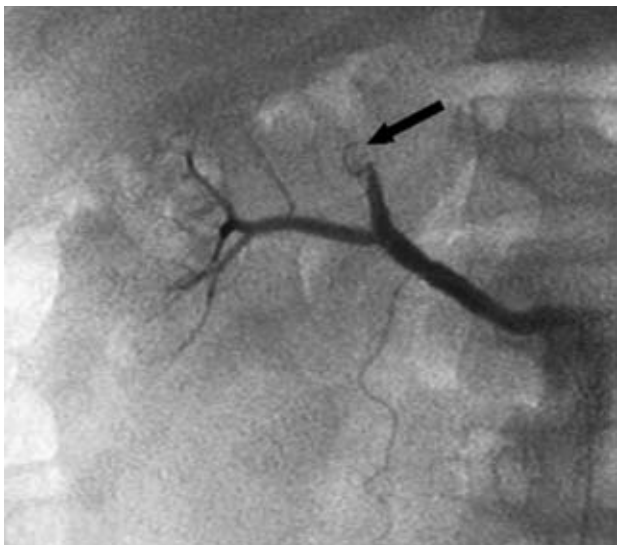

Figure 3. Postembolization control angiography revealed coil (arrow) occluding the renal artery branch that fed the pseudoaneurysm. No further extravasation of contrast was noted.

angiomyolipoma.

Initially, the patient denied any history of medical or surgical traumas, but on repeated enquiry, he recalled an abdominal trauma due to car accident 8 years earlier associated with stab wounds resulting from a few glass pieces piercing the abdominal wall. Exploratory laparotomy had not been performed for the patient. Glass pieces had been removed percutaneously and the patient had been discharged after 6 days of observation without hematuria. He has remained asymptomatic until the day of reference to our center.

Right renal arteriography was performed later with a 4-F Cobra catheter (Cordis, Rhoden, the Netherlands). Bleeding was detected on the segmental renal artery of the upper pole in the right kidney (Figure 2). Over the 0.035-in glidewire (Terumo, Tokyo, Japan), the catheter was advanced into the bleeding artery and embolization was performed using a 35-5-5 stainless steel coil (Cook, Bloomington, USA). Control arteriography after the embolization showed complete obliteration of the pseudoaneurysm (Figure 3). The accessory renal artery was intact. Hematuria ceased completely and the patient was discharged 5 days thereafter.

DISCUSSION

Nontraumatic causes of renal aneurysms are rare,[1] mainly including atherosclerosis and fibromuscular disease. Additionally, aneurysms may be associated with kidney tumors, angiomyolipoma, or vasculitides such as polyarteritis nodosa or Behcet syndrome. Although Behcet syndrome affects mostly young people in Asia, Middle East, and Far East, it is rarely thought of as initial diagnosis because its symptoms present occasionally and it may take months or sometimes years to have full spectrum of the symptoms.

The pathogenesis of renal pseudoaneurysms after blunt trauma is not as well understood as those after penetrating trauma or iatrogenic injuries. In blunt trauma, psueudoaneurysms are most likely secondary to rapid deceleration injury with laceration of the arterial wall.[1,3] After the disruption of the artery, bleeding is stopped temporarily due to the tamponade effect of the surrounding hematoma; however, with resolution of hematoma, artery may restart bleeding into the resultant cavity and form a pseudoaneurysm days or even weeks after the initial injury.

Clinically, pseudoaneurysms may present with gross hematuria, lumbar pain, renovascular hypertension, or azotemia. They may also be asymptomatic for a long time or may be even thrombosed spontaneously. It has been described that the average interval between injury and onset of the secondary renal hemorrhage was approximately 12 days (range, 2 to 36 days).[2] Pastorin and colleagues reported a case of a patient with blunt abdominal trauma who presented with

hematuria 5 months after the initial trauma.[3] To our best knowledge, our present case is the only one with such a delayed presentation of the disease. After taking the history of abdominal trauma, we re-evaluated the CT images; however, no foreign body or streak artifact attributed to the possible penetrated glass pieces was found.

Although clinically silent and small pseudoaneurysms may be managed conservatively, because of the risk of spontaneous rupture and mortality, many physicians recommend surgical management. Surgical exploration or nephrectomy used to be the only treatment; however, recent advances in interventional radiological techniques allow superselective catheterization. Thus, nowadays, pseudoaneurysms can be treated with minimally invasive procedures such as embolization using either coils alone or combined with other materials like nonresorbable glues or onyx which result in rapid hemostasis and more effective preservation of kidney function.[4,5]

In conclusion, renal artery pseudoaneurysm is a rare complication after blunt abdominal trauma which may form days, weeks, or even years after the initial injury. Hence, a follow-up is recommended while conservative management of the blunt abdominal trauma.[6]

CONFLICT OF INTEREST

None declared.

REFERENCES

1. Lee RS, Porter JR. Traumatic renal artery pseudoaneurysm: diagnosis and management techniques. J Trauma. 2003;55:972-8.
2. Heyns CF, de Klerk DP, de Kock ML. Stab wounds associated with hematuria--a review of 67 cases. J Urol. 1983;130:228-31.
3. Pastorin R, Rodriguez N, Polo AM, Vicente JM, Lujan M. Posttraumatic giant renal pseudoaneurysm. Emerg Radiol. 2007;14:117-21.
4. Sofocleous CT, Hinrichs C, Hubbi B, et al. Angiographic findings and embolotherapy in renal arterial trauma. Cardiovasc Intervent Radiol. 2005;28:39-47.
5. Poulakis V, Ferakis N, Becht E, Deliveliotis C, Duex M. Treatment of renal-vascular injury by transcatheter embolization: immediate and long-term effects on renal function. J Endourol. 2006;20:405-9.
6. Blankenship JC, Gavant ML, Cox CE, Chauhan RD, Gingrich JR. Importance of delayed imaging for blunt renal trauma. World J Surg. 2001;25:1561-4.