

A rare case of renal artery aneurysm - dawning of new treatment approach

Asyraf Mad Dan, Saiful Azli, Mohd Ghani Khairul-Asri¹, Arvind Vashdev Jagwani^{1,2}

Department of Urology, Hospital Serdang, Selangor, ¹Department of Surgery, Fakulti Perubatan Dan Sains Kesihatan, University Putra Malaysia, Kuala Lumpur, ²Department of Urology, Hospital Pengajar Universiti Putra Malaysia, Serdang, Malaysia

Abstract

Renal artery aneurysms are a rare occurrence, with a prevalence of about <1%. The majority of patients are asymptomatic and are diagnosed through incidental findings on imaging. In very rare occurrences, the aneurysm can rupture and cause significant morbidity and even death.

Keywords: Aneurysm, renal artery, spontaneous rupture

Address for correspondence: Dr. Arvind Vashdev Jagwani, Department of Urology, Hospital Pengajar Universiti Putra Malaysia, Serdang, Malaysia.
E-mail: this.jagwani2899@gmail.com

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INTRODUCTION

Spontaneous rupture of the kidney is a rare but well recognised surgical emergency. The two most common causes are renal carcinoma and angio-myolipoma. In most of these cases, the resulting hematoma is confined to either the subcapsular or perinephric space. We describe a case of spontaneous renal rupture due to a pseudoaneurysm of a renal artery branch with massive intra-abdominal haemorrhage that had been successfully embolized.

CASE REPORT

We report a 64-year-old man with multiple comorbidities who had just recently underwent a percutaneous coronary artery intervention. To add to his comorbidities is also the chronic kidney disease Grade V of which has been attributed to his lifestyle diseases of diabetes and hypertension of 15 years.

His symptoms started with loin to groin radiation of pain with associated vomiting at the heights of pain for about a day. A quick general examination and abdominal examination revealed that he was mildly pale with a huge mass at the left of the abdomen that he had not noticed in the past. The mass measured grossly at 10 cm by 8 cm and does not move with respiration.

There was no associated trauma or injury prior to presentation to ED and patient no past history of invasive renal-related procedure done.

While he was stable an urgent 4 phase computed tomography (CT) renal study was arranged which revealed an active contrast blush from the upper pole posterior branch of the left renal artery which has resulted in a huge perinephric hematoma measuring 6 cm × 8 cm × 15 cm (AP × W × CC) [Figure 1].

The case was referred to interventional radiologist for endovascular embolization. The left common femoral

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artery was approached in an antegrade manner and the left renal artery was catheterized [Figure 2]. A superselective cannulation of the mid pole posterior branch was performed. The left posterior renal artery was coiled using a 5 mm × 5 mm and 3 mm × 3 mm coil and immediate hemostasis was seen on the live video [Figure 3].

The patient recovered well and discharged 2 days after the procedure.

DISCUSSION

Renal artery aneurysm (RAA) is described as an enlarged segment of the renal artery that surpasses twice the diameter of a typical renal artery. It is uncommon, occurring in approximately 0.09% of the general population.^[1] RAA was first described by Rouppe^[2] back in the 17th century. Most of the time cases like this were encountered as incidental findings during imaging. In one large series, 55 percent of patients presented incidentally.^[3] Nowadays with more frequent advanced imaging such as magnetic resonance imaging (MRI), CT, and angiography for other diseases, the rate of RAA detection significantly increases. The aneurysm can be further divided into true or false (pseudo) aneurysms. A true aneurysm is a balloon-like dilatation of the vessel wall, whereas false aneurysm developed from tissues surrounding the arteries.^[4,5]

The causes of RAA have been reported to be from iatrogenic injury and blunt abdominal trauma.^[6] Iatrogenic injury occurs commonly from surgical intervention such as partial nephrectomy, percutaneous nephrolithotomy, renal biopsy, ureteroscopy with laser lithotripsy, and post renal transplant.^[7-10] Multiple risk factors for RAA including hypertension, fibromuscular disease, especially in women, concomitant atherosclerosis disease and concomitant other aneurysm diseases.^[3]

Consequently, the radiography evidence that can be seen is the presence of ring-like calcification on plain abdominal X-ray should raise suspicion of RAA as this sign is present in approximately 50% of the cases.^[11] Other than basic plain abdominal X-ray, other imaging modalities can be used including duplex ultrasound, CT scan, MRI angiography, and arteriography. In our case, the CT study with contrast was performed after clinical suspicion of palpable left renal mass.

In the case of spontaneous ruptured RAA, overall risk of ruptured RAA appears to be low. In one case series, looking at 252 sample participants, only 3 out of 252 (1.2%) had ruptured RAA. Those participants

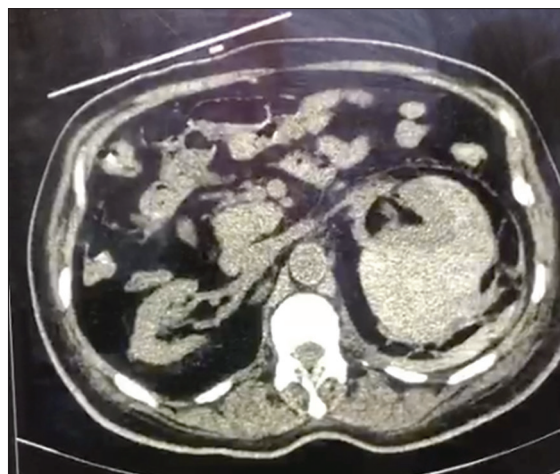


Figure 1: An axial cut of CT abdomen showing the perirenal hematoma



Figure 2: An angiography of the renal vasculature showing a blush at the middle posterior branch



Figure 3: A successful super-selective embolization of the middle posterior arterial branch

were under conservative monitoring group.^[3] Risk of ruptured RAA increases with pregnancy, larger diameter

aneurysm, and aneurysm secondary to inflammatory etiology.^[12,13] Therefore, the risk of ruptured RAA is very low in contrary to old belief when imaging was not widely available, and the patient presented with symptomatic ruptured RAA.^[14]

Management of RAA will be determined by several factors. Indication for intervention including aneurysm >3 cm, renovascular hypertension with lateralizing renin values, symptomatic aneurysm, aneurysm size expansion, renal embolization, and pregnancy.^[15,16] RAA embolization is known to be more limited and precise in terms of anatomical demarcation compare to invasive surgical intervention. This also will benefit the patient in terms of kidney preserving thus leaving functional kidney tissue. Besides the indication stated above, RRA may be treated conservatively with regular blood pressure, renal function monitoring, and annual renal duplex ultrasonography.^[17]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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