

Extra and Intraparenchymal Renal Artery Aneurysms Causing Hydronephrosis: a Case Report

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Abstract

Renal artery aneurysm is an uncommon pathologic entity, which is being detected in recent times with increasing frequency due to increased use of cross-sectional imaging modalities. Although often asymptomatic, spontaneous rupture can occur with catastrophic consequences. We report the case of a 44-year old patient referred to our facility for Computed Tomography Urography (CTU) on account of suspected nephrolithiasis with hydronephrosis and a diagnosis of extra and intraparenchymal renal artery aneurysms (RAA) was made.

Keywords: Computed tomography urography; Hydronephrosis; Extra and intraparenchymal renal artery aneurysm

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Introduction

Renal artery aneurysm is an infrequent pathologic entity occurring in 0.1% of the general population [1]. RAA is a form of visceral artery aneurysms (VAA) and constitute the second most common of VAA accounting for 15-22% [2], with splenic artery aneurysm as the most common, accounting for (60%) [3] of all cases. Although considered rare, RAAs in recent times are being diagnosed with increasing frequency due to increased use of cross-sectional imaging modalities such as ultrasonography, CT and MRI. RAA is intraparenchymal in less than 10% of patients detected with this disorder [4,5]. The first case of RAA was reported by Rouppe in 1970, which was the case of a sailor who died following a fall on his right flank and an autopsy revealed a large false aneurysm with rupture [6]. RAA are encountered more commonly in female population in the 4th-6th decades of life [1,7,8]. They are often asymptomatic [9] and commonly detected incidentally during abdominal investigations for unrelated pathology [1]. About 73% of patients with RAA commonly presents with hypertension [1] and a complication of spontaneous rupture, is rare but usually with a catastrophic outcome when it occurs. There is paucity of data on RAA causing hydronephrosis. To the best of our knowledge, this is the first report on this rare entity in our setting.

Case Report

We present the case of a 44-year old female patient who was referred to our facility for CT Urography to investigate the cause of left renal hydronephrosis. Patient was suspected of having a renal stone with associated hydronephrosis following abdominal ultrasound scan. The suspected stone was not echogenic and

did not cast shadow. Consequently, patient was advised to do a CT urography for further assessment. The investigation was done using a GE 64 slice CT machine. Standard protocols of CT Urography were adopted. Pre and post IV contrast helical sections with coronal and sagittal reformations were obtained.

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The scan revealed multiple contrast filled saccular aneurysms in the left renal artery with intra and extrarenal locations as well as dilatation of the calyceal system. There are four aneurysms distributed two each in the intra and extrarenal locations (**Figures 1 and 2**). The largest of the masses is intrarenal and measure 4.69 x 3.95 cm. The second intrarenal aneurysm measures 1.86 x 1.79 cm. Extrarenal aneurysms measures 2.56 x 2.78 cm and 2.47 x 2.50 cm. Delayed CT images showed clubbing of the renal calyces (**Figure 3**). Abdominal CT angiography was also done to confirm the lesions. A diagnosis of extra and intraparenchymal renal artery aneurysms was made. Patient was referred for surgical evaluation and we lost her to follow-up.

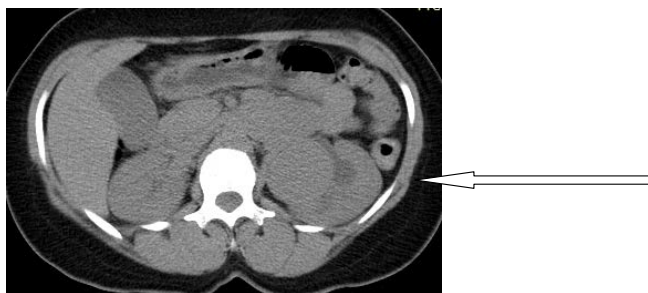


Figure 1 Non-contrast axial CT image shows multiple masses within and near the left kidney (arrow).

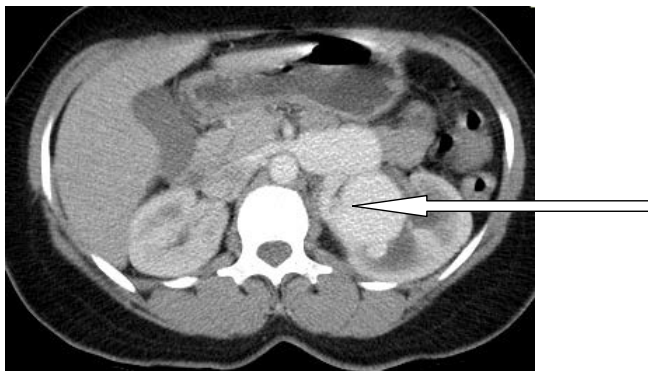


Figure 2 Early postcontrast CT image shows multiple intra and extrarenal aneurysm in the course of the left renal artery (arrow).

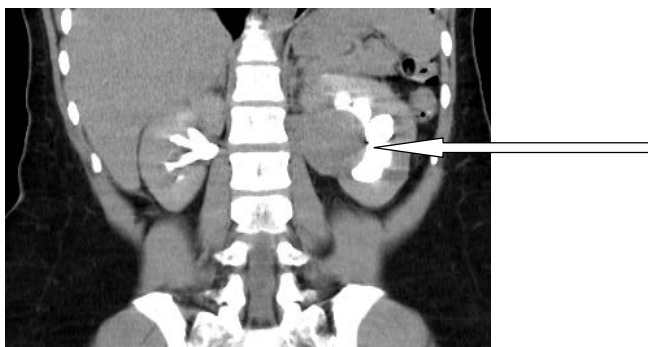


Figure 3 Delayed coronal CT image shows left hydronephrosis (arrow).

Discussion

Renal artery aneurysm is a type of visceral artery aneurysms (VAA), which affects the celiac, splenic, superior and inferior mesenteric arteries. Renal artery aneurysm is a localized dilatation of the renal artery greater than twofold the diameter of the normal renal artery [10]. Renal artery aneurysm are mostly saccular and non-calcified [9,11], more common on the right, unilateral in 80%, and multiple in 1-30% of cases [12]. In less than 10% of the patients with RAA, the lesion may be intraparenchymal in location [4,5]. RAA is common in females; likewise our patient is a female in her 4th decades, which is in agreement with previous reports [7].

In this patient under review, aneurysms are saccular and left sided. This is consistent with the report of the study conducted by Prevljak et al. [13]. Nevertheless, renal artery aneurysm is known to be common on the right renal artery.

RAA can be symptomatic causing hypertension, pain, haematuria and renal infarction [14]. However, most aneurysms are asymptomatic and found incidentally during investigations for unrelated intra-abdominal disorder. Our patient did not present with any symptom that is related to renal pathology. The aneurysm in our patient was detected incidentally during routine abdominal ultrasound scan and confirmed with contrast CT scan. In this patient, the aneurysm is multiple with both extra and intraparenchymal (IPRAA) lesions causing obstruction of the calyceal system with resultant hydronephrosis. Porcaro [15] in a related article documented that although RAA is commonly asymptomatic, it may present with symptoms and signs related to complications. Similarly, it has been documented that RAA can rarely cause hydronephrosis as it is commonly located in the main renal artery and its primary branches without obstructing the pyelocalyceal system [16]. IPRAA normally occur secondary to disease or injuries of the renal vasculature and are grouped into true, false, saccular, fusiform, dissecting and microaneurysm [15]. Nevertheless, our patient denied any history of renal disease or surgery suggesting that the aneurysm may be inherited as documented in the literature [13,17].

Spontaneous rupture is the most devastating complication of RAA, which can lead to death in about 80% of cases [18]. Factors leading to rupture may include intraparenchymal location of aneurysm, hypertension, aneurysm greater than 2 cm in size [12], and pregnancy with an increased risk in the third trimester [19]. Rupture in post partum period has also been reported [5,20]. The patient under review although in her late reproductive period, is at increased risk of rupture because her aneurysm is intraparenchymal and greater than 2cm in size.

Diagnosis of RAA is purely radiological and can be made with contrast CT or MRI of the abdomen. Non-contrast CT shows RAA as soft tissue mass in the region or course of the renal artery, which on post contrast CT is seen as contrast filled outpouching in the course of the renal artery. The role of Contrast CT in the diagnosis of RAA has been emphasized by many authors [13,16]. Similarly, the diagnosis of RAA in our patient was made possible by contrast CT of the abdomen.

RAA can present as an emergency with such complication

as rupture. Nevertheless, most renal artery aneurysms are asymptomatic and management depends on various factors such as size and anatomic location of the aneurysm and whether or not symptoms are present. For aneurysm less than 2 cm, treatment is observational while that greater than 2 cm, treatment is surgical to avert life threatening complications.

Conclusion

Renal Artery Aneurysm is an uncommon pathology of the renal

artery. It is mostly asymptomatic but can present with symptoms such as hypertension. Complications of RAA may include hydronephrosis and rupture, which could be life threatening. RAA should be remembered in the differential diagnosis when evaluating pararenal and intrarenal masses. Contrast CT is the mainstay of diagnosis and once diagnosis is confirmed, surgical assessment is required to avert unpleasant consequences.

Conflict of Interest: None declared.

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