

## Aneurysm of renal artery mimicking as a renal cyst: A case report

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### Abstract

**Background:** Renal artery aneurysm is a dilated segment of renal artery that exceeds twice the diameter of a renal artery. Renal artery aneurysm is a rare condition and mostly asymptomatic. Most renal artery aneurysms diagnosed incidentally when imaging modality performed. We report a case of accessory renal artery aneurysm in a 48-year-old male mimicking as a renal cyst.

**Case Presentation:** A rare case of renal artery aneurysm in a 48-year-old male is presented. Patient came with left flank pain. Abdominal CT scan showed renal cyst on subcapsular left kidney with size of 7 x 4.6 x 9.2 cm. Patient underwent retroperitoneal exploration and excision of the mass and blood clots were found inside.

**Conclusion:** A renal artery aneurysm mimics the presentation of a renal cyst, clinically and radiologically. Therefore, renal artery aneurysm should be considered as a differential diagnosis, especially if the mass located near the renal sinus. Performing imaging such as CT angiography should be considered.

**Keywords:** Accessory Renal Artery Aneurysm; Renal Artery Aneurism; Renal Cyst

### 1. Introduction

Renal artery aneurysm (RAA) is defined as a dilated segment of renal artery that exceeds twice the diameter of a renal artery, and is a rare condition [1, 2]. Incidence in general population is 0.3-1% [3]. Most renal artery aneurysms are asymptomatic. Symptomatic renal artery aneurysms can cause hypertension, pain, hematuria and renal infarction [4]. Most RAA diagnosed incidentally when imaging modality performed [5, 6]. Most renal artery aneurysm incidentally discovered by CT scan. In CT scan scene, renal artery aneurysm may initially appear as mass-like lesions. Therefore, several differential diagnosis came up. But, more than half of the RAAs presented ring-like calcification [6]. We report a case of accessory renal artery aneurysm in a 48-year-old male mimicking as a renal cyst.

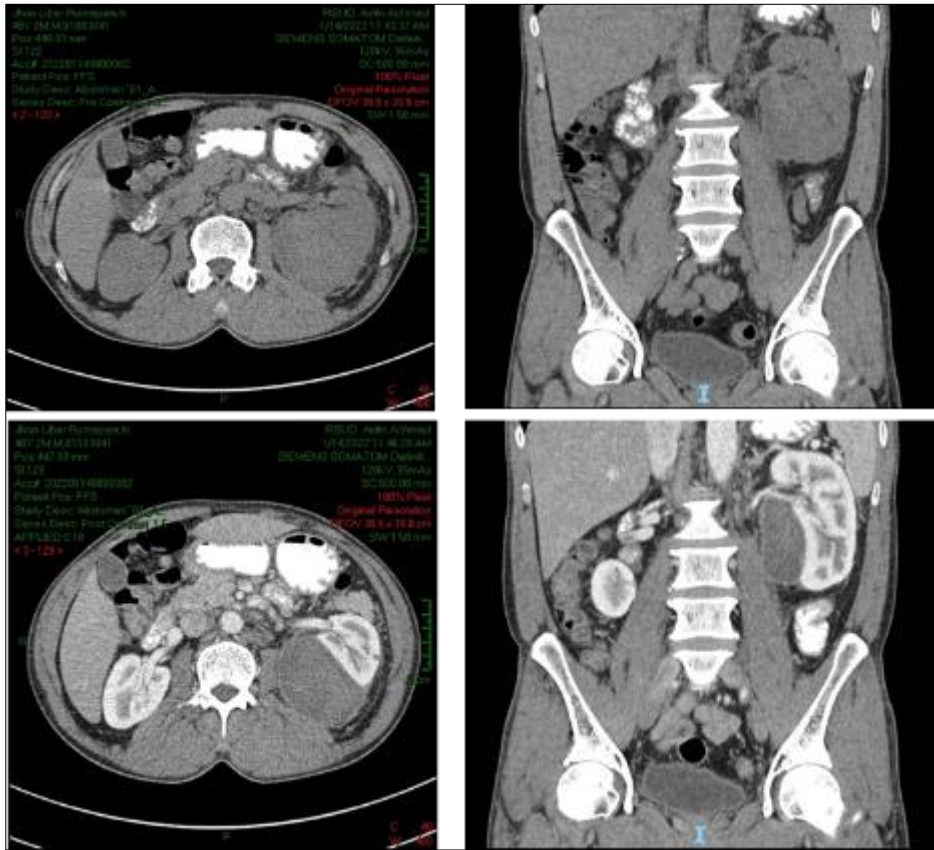
### 2. Case report

A 48-year-old male with no significant medical history presented with a 7 months intermittent left flank pain. There was no history of reddish urine. From the physical examinations palpable mass on the upper left abdominal quadrant was found. Approximately the size of the mass as big as tennis ball with soft consistency and mobile. Tenderness presented on pressure. Vital signs were within normal range. Other physical examination was unremarkable.

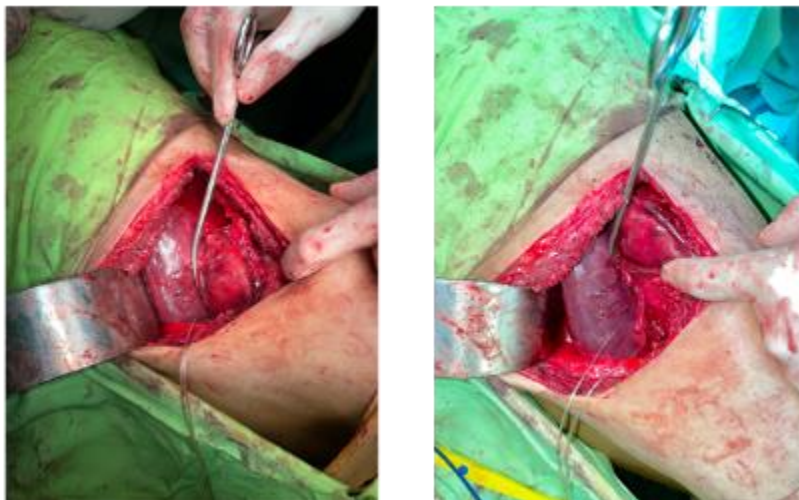
Blood and urine analysis were performed and showed no remarkable findings. Abdominal CT scan was performed and showed one large cyst on subcapsular left kidney with size of 7 x 4.6 x 9.2 cm and slightly thickened wall and septa classified as Bosniak IIF or III (Figure 1). Pre-contrast CT scan showed isodense lesion attached to left kidney. Post-

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contrast CT scan showed no contrast enhancement in the suspected mass and showed contrast enhancement in left kidney.



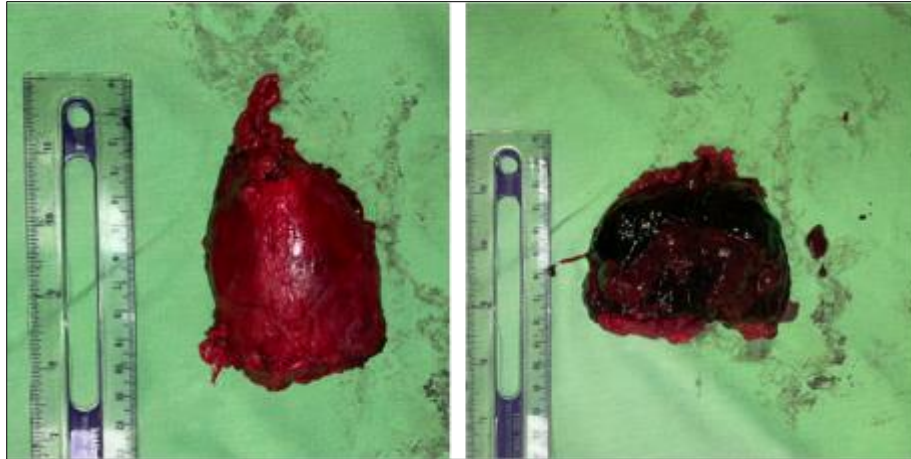
**Figure 1** CT scan findings pre and post contrast (a) pre-contrast transversal plane, (b) post-contrast transversal plane, (c) pre-contrast coronal plane, (d) post-contrast coronal plane



**Figure 2** Intraoperative Findings

Patient was diagnosed with a left renal cyst and planned to undergo retroperitoneal exploration and cyst removal. During operation, the mass was attached to the left kidney. The size of the mass a little bit smaller than tennis ball, consistency was soft and no significant bleeding presented. (Figure 2).

The mass was freed from the surrounding tissues, excised, and sent for further examination. Mass was incised and blood clots were found inside (Figure 3). After the surgery, patient was discharged on the third post-operative days. On the follow up, patient was remarkable with no complaint.



**Figure 3** Excised mass

### 3. Discussion

RAA is a rare condition and an unusual diagnosis [2]. Between 0.3-1% patients who undergo imaging examination may discovered renal artery aneurysm [3]. Related to age and sex, peak incidence of RAA is in the age of 30 – 50 and dominated by female [5]. Most renal artery aneurysms are located in the main renal artery or the first-order branches [7]. Another rare condition is aneurysm in accessory or polar renal artery [8]. Aneurysm in accessory or polar renal artery being a very rare condition because only two cases reported so far. Chamberlin and Hovenanian [8] reported aneurysm of accessory renal artery in 1953 and Roberts et al [9] in 2018.

Aneurysm in renal artery has slow growth rate, therefore most patient with RAA did not present any symptom and diagnosed incidentally from patient who undergo CT scan imaging or surgery [5]. Misdiagnose reported in most patient who performed ultrasonography as an initial imaging before the CT. As in our case report, our patient diagnosed with suspected renal cyst after initial imaging by ultrasonography. Even patient underwent CT scan imaging after, diagnose remain the same because CT scan findings showed similar pattern on both renal artery aneurysm and renal cyst.

Misdiagnose in patient with renal artery aneurysm have been reported worldwide. Mohammadi et al [5] and Chen et al [10] reported patient with renal artery aneurysm mimicking renal calculi. In Mohammadi et al [5] case, patient diagnosed with nephrolithiasis and ureterolithiasis after ultrasonography imaging. Possibility of RAA considered after reviewing imaging findings and revealed suspicious mass-like lesion, CT angiography performed after [5]. Otherwise in Chen et al [10] case, patient performed ultrasonography and presented calculi on both kidney. KUB imaging performed and the results supported ultrasonography findings. Patient underwent PCNL and found out no calculi but aneurysm [10]. Singh et al [11] reported patient with renal artery aneurysm mimicking renal cell carcinoma from ultrasonography and contrast CT scan result. Patient's provisional diagnosed was renal cell carcinoma. Patient underwent laparoscopic exploration and revealed renal artery aneurysm [11].

Based on all cases reported above. Most renal artery aneurysm incidents were not estimated or identified at the beginning. Maybe because RAA is a rare condition and the incidence rate is low [2, 3]. Even after CT scan performed, renal artery aneurysm haven't thought of being one of differential diagnoses. Although most aneurysm in renal arteries do not require any intervention [4]. Misdiagnose can lead to mismanagement and can harm the patient.

### 4. Conclusion

Renal artery aneurysm is a rare condition, and usually discovered incidentally in patient who undergo imaging. Renal artery aneurysm can mimick the presentation of renal cyst, clinically and radiologically. It is important to consider renal artery aneurysm as a differential diagnosis, especially if the mass is located near the renal sinus. Performing imaging such as CT angiography should be considered.

## Compliance with ethical standards

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### *Disclosure of conflict of interest*

The authors declare no conflict of interest.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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