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Renal Arteriovenous Malformation in a Patient with Chronic Kidney Disease and Multiple Hepatic and Splenic Abscesses - A Serendipitous Finding

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Abstract: ***Retroperitoneal arteriovenous malformations comprise a very small percentage of vascular malformations. They can occur anywhere in the body however are most commonly seen in the brain. Kidneys are rare site for development of arteriovenous malformation especially in non-trauma setting. We present a case of a 50 year-old female with chronic kidney disease, presenting with multiple hepatic and splenic abscesses who was found to have a renal arteriovenous malformation, an incidental finding.***

Keywords: Renal arteriovenous malformation, chronic kidney disease, vascular abnormality, incidental finding, hepatic splenic abscesses

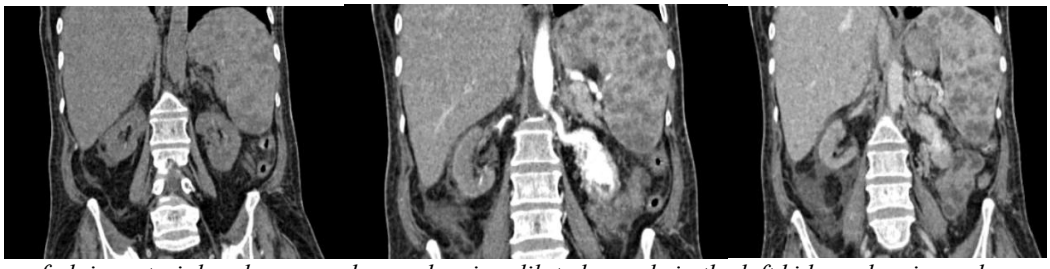
1. Introduction

Renal arteriovenous malformations (AVMs) are rare vascular anomalies characterized by abnormal communications between the renal arterial and venous systems. They may be congenital or acquired and can present with a wide spectrum of clinical manifestations, ranging from incidental findings to life-threatening hematuria or high-output cardiac failure.

Renal arteriovenous malformation (RAVM) is a vascular anomaly, with an estimated prevalence of <0.04%. Acquired communications, which constitute 70-75 % of these cases are usually secondary to needle biopsy of the kidney or trauma. Congenital or idiopathic arterio-venous malformations are a rare entity.

2. Case Report

A 50-year-old female who is a known case of type II diabetes and hypertension with history of surgery for a space occupying lesion in the brain presented with pyrexia of unknown origin, tingling in bilateral lower limbs and pain in abdomen. The patient was diagnosed with chronic kidney disease one year prior and was routinely undergoing hemo-dialysis. There was no history of renal biopsy having been performed. On examination of the cardiovascular system the patient had loud S1 with S3 gallop and hyperkinetic apical beat was present. Imaging with ultrasonography and contrast-enhanced CT demonstrated an incidentally diagnosed vascular lesion consistent with a renal arteriovenous malformation. It was characterized by early venous filling and dilated feeding vessels. A well marginated renal lesion showing enhancement similar to the blood pool was visualised, involving the mid and lower pole of the left kidney with early enhancement of the draining vein and multiple enlarged veins along the ipsilateral ureter and left psoas. The right renal vein was dilated and the right renal artery had a dilated tortuous course. Digital subtraction angiography/ Doppler ultrasound was not performed due to the critical condition of the patient.



Coronal images of plain, arterial and venous phases showing dilated vessels in the left kidney showing enhancement similar to the blood pool with dilated veins along the left ureter. The right renal artery appears dilated and tortuous.

3. Discussion

Vascular malformations of the kidney are disease processes that involve renal veins and arteries and include congenital arteriovenous malformations (AVMs) and arteriovenous fistulas. AVMs are congenital communications between arteries and veins with a vascular nidus that bypass the capillary bed. Congenital AVMs are rare and subclassified in cirsoid, angiomatous, and aneurysmal types. [3]

Patients were either asymptomatic or presented with gross hematuria and flank pain. Physical findings included hypertension, cardiomegaly, flank tenderness, and an abdominal bruit. IVP findings included filling defects in the

renal pelvis from blood clots, irregular mucosal pattern, or mass effect. [2]

When arteriovenous malformations (AVMs) are suspected, targeted angiography such as renal arteriography, abdominal CT angiography (CTA) or magnetic resonance angiography (MRA) should be performed. Renal arteriography is the gold standard for the diagnosis of renal AVMs. CTA and MRA have powerful 3D post-processing capabilities that allow clear visualization of the morphology, alignment and distribution of the renal vasculature from all angles. On CTA and MRA, renal AVMs often appear as abnormally tortuous vessels located around the renal sinus, typically with enlarged blood supplying renal arteries and draining renal veins. [1]

Interventional treatment is less invasive, more effective and less recurrent with maximum preservation of normal kidney tissue. Surgical approach is less commonly used because it usually involves removal of the kidney, which carries the risk of loss of kidney function. [1]

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