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Renal Artery Aneurysm in pregnancy:
Diagnostic challenges and Missed diagnosis

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INTRODUCTION

Renal artery aneurysm (RAA) is a rare condition characterized by segmental dilatation of the renal artery to double or more its normal diameter with an estimated incidence of 0.1% [1]. A higher incidence is suspected in pregnancy due to various physiological changes such as increased renal blood flow, mass effect of the gravid uterus on the renal vasculature, and pregnancy-related hormone changes [2]. The diagnosis of RAA during pregnancy is challenging due to vague symptoms at presentation and the limitations of computed tomography angiography (CTA) given the potential radiation risk to the fetus. Delayed diagnosis of a ruptured RAA can result in devastating outcomes, with maternal and fetal mortality rates reaching up to 22.6% and 47.2% respectively [3].

METHODS

All data was collected from the medical records system. Data from previously published literature on RAA's was collected and analyzed to better interpret findings and management pathways.

CASE PRESENTATION

We report a case of a 24-year-old previously healthy female patient, who presented to the emergency department at 27 weeks of gestation with right flank pain, which was exacerbated upon lying on her right side, associated with vomiting. Patient was hemodynamically stable with no abdominal tenderness, palpable masses, nor bruits were noted on examination. Right-sided hydronephrosis and 2 cystic lesions that were suspicious for RAA were seen on abdominal ultrasound. [Figure 1].

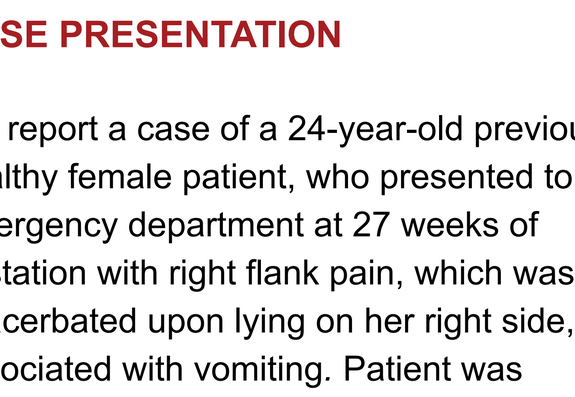


FIGURE 1 Abdominal USS
Renal USS detected two cystic lesions seen measuring 7.2x4.6 cm and 5.6x4.5cm. Colour map indicated venous flow. Mild hydronephrosis in the right pelvicalyceal system was detected.

The case was referred to the vascular surgery department for further investigations. She underwent magnetic resonance imaging (MRI) with time of flight (TOF) due to high irradiation risk from CTA. The MRI showed 2 large, interconnected cystic lesions in the right kidney with encircling intrarenal arterial branches and a compressed right renal collecting system. [Figure 2A, 2B] MRI and ultrasound were both suggestive of venous flow at the lesions making the diagnosis of RAA unlikely. The patient was kept under close observation throughout the pregnancy.

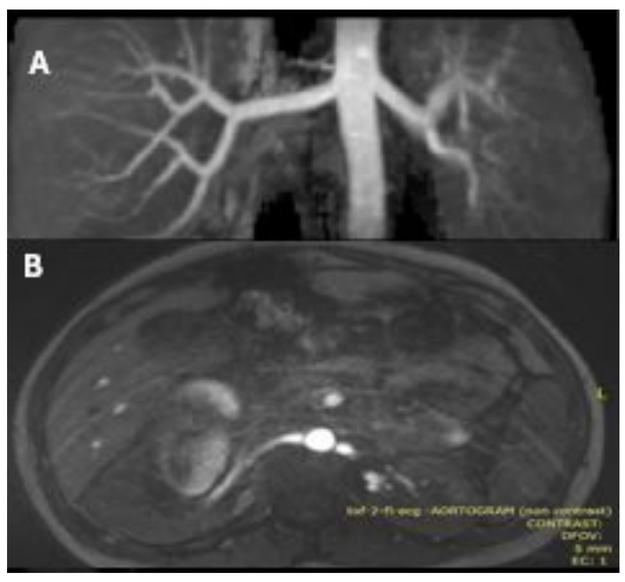


FIGURE 2 MRI with TOF
(A) Coronal plane- Arteriogram looks normal, however, there is splaying of intrarenal branches around the cystic regions. Splaying and compression of right renal collecting system.
(B) Axial plane- Two cystic lesions seen in the right kidney possibly venous varices/ aneurysms with multiple channels suggestive of vascular malformations due to slow flow.

She underwent a CTA immediately after delivery. As per initial suspicion, CTA revealed right renal aberrant artery fusiform aneurysms, with the largest measuring 8x5.8x5cm, displacing the right hepatic lobe and gallbladder, requiring urgent intervention. [Figure 3A, 3B] A saccular, splenic artery aneurysm and pelvic congestion syndrome with tortuous varicosities and dilated ovarian veins were also seen. Management and complications were discussed with the patient and her family in a multidisciplinary setting. A medical report was prepared, but the patient was lost to follow up.

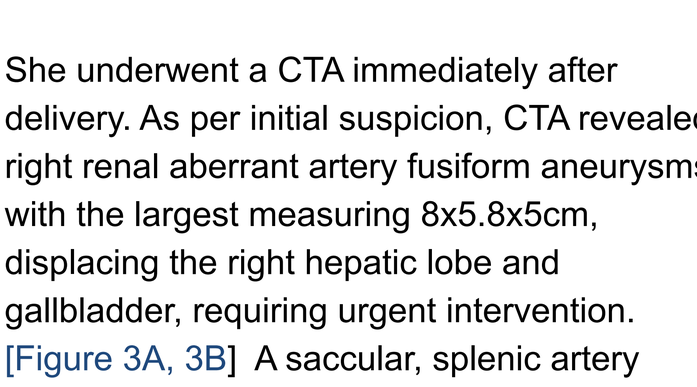
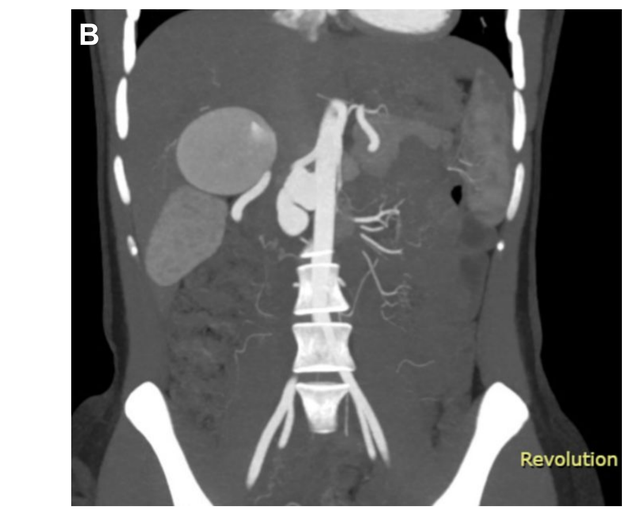


FIGURE 3 CTA Abdomen with contrast
(A) axial plane



(B) Coronal plane - Tortuous and dilated arteries from right anterolateral aspect of abdominal aorta shows 3 fusiform aneurysms: a bilobed aneurysm (3.5x3x3.8 cm) causing anterior displacement of pancreatic head, an aneurysm at right renal pelvis (8x5.8x5 cm) and an aneurysm at lower pole of right kidney (4.5x5.2x5.6 cm). Aneurysms causing pressure symptoms resulting in right-sided hydronephrosis. Multiple pelvic tortuous varicosities can be seen.

DISCUSSION

This case report highlights the importance of close follow-up and timely diagnosis and intervention in pregnant patients with suspected RAA. Increased maternal and fetal risks limit the use of diagnostic imaging, therefore maintaining a high index of suspicion for early diagnosis of RAA is essential.[4,6] Close monitoring through multidisciplinary management is crucial to ensure optimal outcomes and prevent complications. Missed diagnoses due to imaging limitations may encourage early diagnostic and therapeutic interventional procedures in the future to improve prognosis and eliminate risk in cases where RAA is highly suspected.[5]

CONCLUSION

Renal artery aneurysms (RAA) are a rare yet fatal occurrence in pregnant patients. Ensuring a systematic, multidisciplinary approach in the diagnosis and management of RAA in such patients is essential to avoid missed diagnoses, optimize management and reduce poor outcomes in patients overall.

BIBLIOGRAPHY