

Renal Aneurysm In Pregnancy: A case of a renal aneurysm rupture with fetal demise.

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Abstract

BACKGROUND

Renal artery aneurysms (RAA) account for 1% of all aneurysms and 22% of visceral aneurysms. The incidence of RAA is approximately 0.09% and most are identified at autopsy or as an incidental finding on CT. ¹ Although the incidence of rupture is relatively low, mortality to both fetus and mother is extremely high in RAA rupture during pregnancy and the consequences are often devastating with reported mortality rates of 70-80%. ² Herein, a rare case of a ruptured renal artery aneurysm during pregnancy is presented. The influence of physiological changes of pregnancy in the progression of an existing RAA and the management of a newly discovered renal artery aneurysm in pregnancy are explored.

CASE REPORT

A 30-year-old female, G2P1001, at 39 weeks and 5 days of gestation was found unresponsive upon arrival to the emergency room. The patient's husband reported that the patient had awoken from sleep complaining of sudden onset of severe abdominal pain and then had a change in mental status. The vital signs upon arrival were BP 88/40, HR 136, RR 24 and temperature 95.9. There were no signs of trauma. Ultrasound showed fetal bradycardia in the 60's bpm without gross evidence of placental abruption. The cervix was closed and there was no vaginal bleeding. The patient was subsequently intubated due to declining status; aggressive resuscitation had been initiated. The patient remained hypotensive and tachycardic. A repeat ultrasound showed intrauterine fetal demise with no other findings noted. Blood gas showed a pH of 6.9 with a base deficit of 24. The patient was taken to the OR for exploratory laparotomy at which time her BP was 88/47 with an H/H of 7.8/23.

Upon gaining access into the peritoneal cavity, no gross abnormalities were noted. The demised fetus was removed and the uterus was evaluated and found to be free of signs of abruption. The demised fetus was found with no amniotic fluid and given APGARs of 0 at 1 and 0 at 5 minutes. Following closure of the uterus, an expanding hematoma of the left pelvic side-wall was noted. Upon further exploration by the surgical team, a ruptured left RAA was discovered. Vascular surgery became involved and the renal hilum and vessels were ligated and transected; all bleeding was secured. The patient was then transferred to the intensive care unit in critical condition. The patient's recovery was slow but steady. The patient was successfully extubated on post-operative day 9 and after a 20 day recovery period, the patient was discharged home without complications.

DISCUSSION

Factors that predispose patients to RAA include congenital malformation of the kidneys or associated vessels, lack of aneurismal calcification, atherosclerosis, polyarteritis nodosa, fibromuscular dysplasia, trauma and pregnancy. ⁶ It is believed that increased intra-abdominal pressure and hemodynamic changes such as increased renal blood flow from higher maternal cardiac output and blood pressure and volume affect the arterial wall during gestation and may play a role in the increased risk of rupture. ³ In addition, connective tissue laxity that develops during pregnancy as a result of sustained release of matrix-altering substances caused by changes in hormone and enzyme activity also increase the risk of rupture in pregnant over non-pregnant women. ²

Spontaneous intra-abdominal and retroperitoneal bleeding during pregnancy is an uncommon event. However, if not promptly identified and properly dealt with, it can have devastating outcomes. Diagnosis of a ruptured RAA during

pregnancy is very difficult since there is no pathognomonic pain or presentation and the only clue may be the signs and symptoms of an abdominal catastrophe in a patient in frank shock. ⁴ When rupture occurs during pregnancy, the clinical presentation can often be confused with that of more common conditions like placental abruption or uterine rupture.

Non-specific abdominal pain in patients with RAA often results in a late diagnosis not made until the patient has become hemodynamically unstable. Early evaluation by CT scan with i.v. contrast or angiogram remains the gold standard for evaluation of the abdominal vasculature. ⁶

The presence of a RAA is a well established indication for surgical intervention since there are several potential complications of RAA including peripheral dissection, thrombosis, renal infarction and rupture with hemorrhage. ⁵ Women of child-bearing age with known RAA should have the aneurysm repaired if they are considering pregnancy. ⁷ Young women with anticipated pregnancy meet the most widely accepted criteria for repair since it avoids surgical complications associated with pregnancy, and pregnant women found to have a RAA should have it repaired electively as soon as possible after it is discovered to avoid the high risk of rupture with high associated mortality rates for both mother and fetus. ⁶ In non-pregnant patients, RAA is associated with death in less than 10% of cases. ⁷ Although Dzinich et al. and others suggest that a RAA of any size should be repaired in women who may become pregnant, others have proposed more conservative approaches to treatment of renal artery aneurysms in pregnancy. K.B. Soliman et al have proposed that if an aneurysm is non-calcified or smaller than 2 cm, conservative treatment should

be followed. However if the patient has extensive renal injury or is hemodynamically unstable, a life saving aneurysmal resection and vascular reconstruction with end to end anastomosis or nephrectomy should be performed. ¹¹ It should be noted that reconstruction and repair of these aneurysms with preservation of the kidney is the preferred treatment. ^{9,11} In addition to invasive surgical options, less invasive procedures such as percutaneous techniques including various embolization procedures and stent-grafts have been used in elective treatment of aneurysms in various anatomic locations including the kidney. However percutaneous techniques have never been used in the treatment of a ruptured renal artery aneurysm in pregnancy. ⁸

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