Splenic artery aneurysm rupture during pregnancy

Adekunle A. Sobande, MRCOG, Hassan M. Al-Bar, FRCSC.

ABSTRACT
Splenic aneurysm rupture during pregnancy is an uncommon obstetric acute emergency which requires prompt communication between the obstetrician and the surgeon. Our case illustrates the importance of suspecting the condition early, and prompt surgery in order to salvage the mother and the fetus. The obstetrician should entertain strongly the diagnosis of ruptured aneurysm of the splenic artery in a pregnant woman who complains of pain in the left upper quadrant, especially in the third trimester irrespective of her clinical status. We did not suspect the condition early enough and as a result could not salvage the fetus. The maternal and fetal survival depends on the awareness of this rare condition and immediate surgery to deliver the fetus and arrest hemorrhage.

Keywords: Splenic artery aneurysm rupture, pregnancy, maternal survival.


Rupture of splenic artery aneurysm during pregnancy is a rare event with catastrophic consequences. Reported mortality rate in literature for ruptured splenic artery aneurysm is 25%.1 Among pregnant women, the mortality rate is disproportionately higher at 75%, with a fetal mortality rate of 95%.1 However, it was demonstrated that the maternal and fetal mortality has been steadily declining in recent years.2 This is probably due to better use of ancillary laboratory facilities, advances in surgery and increased awareness of the condition. In 25% of patients, the double rupture may occur whereby the initial bleeding is followed by a period of recovery lasting from minutes to several weeks before sudden massive intraperitoneal hemorrhage and shock occurs. In this case, intervention may be delayed with resulting increase in maternal and fetal mortality as in our patient who had a double rupture phenomenon. To further decrease maternal and fetal mortalities associated with this condition, the obstetrician should anticipate this condition in a pregnant woman who complains of epigastric or left upper quadrant pain especially in the third trimester irrespective of her cardiovascular status.

Case Report. A 26 year old booked patient gravida 8 para 5, with 2 previous abortions presented at the emergency room (ER) at 37 weeks gestation, with a history of severe pain in the left upper quadrant of sudden onset. There was associated nausea, dizziness and weakness. On examination, she was restless with a pulse rate of 140 beats/min and a blood pressure of 90/70 mmHg. Her booking blood pressure was 100/70 mmHg. The abdomen was tender in the left upper quadrant and there was rebound tenderness in the area. She was sent to the labor ward to exclude abruptio placenta. The uterus was term size and non tender while vaginal examination revealed that she was not in labor. Ultrasound scan showed an active fetus with good biophysical profile. The fetal heart rate as recorded on the cardiotocograph was normal. The
patient was transferred back to the emergency room and was then seen by the surgeon after about 6 hours of presentation in the ER. Meanwhile, initial laboratory studies showed a hemoglobin of 8.6 gm/dl, random blood sugar of 31.5 mmol/l. Both liver function and renal function were within normal levels. Her blood pressure dropped further to 60/40 mmHg with a pulse rate of 140 beats/min, and she was then taken to the operating room by a team comprising of obstetricians and the general surgeons. Under general anesthesia, the abdomen was entered through a longitudinal midline incision and cesarean section was carried out by delivering a female fresh still born weighing 3500gs. There was no apparent hemoperitoneum. The placenta was delivered and showed no evidence of abruptio placenta. The vertical incision was extended about 5 cm above the umbilicus where a large blood clot estimating about 1600 mls was found in the right and left upper quadrant as well as considerable retro peritoneal hematoma in the region of the tail of pancreas. There was also a large blood clot in the lesser sac. The spleen was mobilized anteriorly and the ruptured splenic artery aneurysm was seen with severe bleeding. The spleen and splenic artery with the accompanying aneurysm were removed. The uterine and abdominal incisions were closed routinely. The mother tolerated the procedures well and had 5 units of packed cells transfused together with fresh frozen plasma. She made remarkable post operative progress and she was discharged home on the 9th post operative day in good condition. Histopathology report confirmed ruptured splenic artery aneurysm.

**Discussion.** Splenic artery aneurysms are the 3rd most common abdominal aneurysms after renal and iliac artery aneurysms. Although the overall prevalence is unknown, they are found in approximately 0.07% of routine post-mortems, and (0.78%-7.1%) in selected patients with known arteriopathic disease during angiographic studies. Its incidence is said to be highest in pregnancy notably with multiparity. MacFarlane and Torbjarnason in their review reported that 12% of cases of ruptured splenic aneurysms occurred in the first 2 trimesters, 69% of the cases occurred in the 3rd trimester, 13% during labor and 6% post partum. There is no known definitive cause but atherosclerosis is most commonly associated with aneurysms. In splenic artery aneurysm, atherosclerosis is thought to occur secondary to events which occur during pregnancy which include degenerative processes in the media of the vessels frequently leading to outpouchings at bifurcation of the vessel where supportive tissue is more sparse, increased vascular volume with portal congestion. The increased arterio venous shunting in the splenic artery during pregnancy may explain why the splenic artery is more often affected with aneurysm during pregnancy more than other visceral arteries. Splenic artery aneurysms are unusual because they occur more frequently in women and they are seen at a relatively younger age than other aneurysms. The presenting symptoms of ruptured splenic artery aneurysm depend on whether it ruptures freely into the peritoneal cavity (75% of cases) or as in the case of the double rupture syndrome, i.e bleeding into the lesser sac followed by rupture of the hematoma into the free peritoneal cavity. Left upper quadrant pain, dizziness, weakness and other signs of hypovolemic shock may be present. The symptoms occur as a result of bleeding into the free peritoneum. The second type of presentation occurs in about 25% of cases. Here, the bleeding is initially contained in the lesser sac accompanied by syncope, hypotension and flank pain. Partial tamponade occurs when the lesser sac fills with the clot, thus allowing the blood pressure some recovery. A second rupture occurs within minutes or hours with blood and clots escaping from the lesser sac through foramen of Winslow into the peritoneal cavity. The abdominal pain is accentuated at this stage and the shock becomes more profound. Our patient was a grandmultipara, therefore a typical patient for splenic artery aneurysm. She presented with left upper quadrant pain, dizziness and weakness, but she maintained her blood pressure of 90/70 mmHg, (her booking blood pressure was 100/70 mmHg) for about 6 hours until it dropped to 60/40 mmHg when the 2nd rupture presumably occurred. The diagnosis was missed initially because of the random blood sugar of 31.5 mmol/l which made acute pancreatitis to be suspected even though the serum amylase was not elevated, neither was there any leukocytosis. Precious time was wasted consulting the physician to exclude pancreatitis. Had we entertained the diagnosis early, we might have been able to salvage the fetus. The laparotomy was performed on account of deteriorating cardiovascular status of the patient and increase pallor, probably due to a bleeding ruptured organ. The findings in the operating room also suggest the (double rupture) type. The differential diagnosis may include abruptio placenta, ruptured uterus, pulmonary embolism or rupture of the spleen or liver, or of an arterial aneurysm. There are no guidelines regarding the management of non acute cases of splenic artery aneurysm diagnosed during pregnancy. It is thought that arteriography should be considered bearing in mind the very small risk of the procedure to the fetus. If the aneurysm is small, or less than 2cm in diameter, one option would be to allow the pregnancy to continue with the patient in hospital and aim for elective cesarean section and treatment of the aneurysm at the same time at term. For a larger aneurysm careful surgery during the 2nd trimester would probably be the best management. In acute cases, the treatment is
emergency surgery. Resection or ligation of the aneurysm whenever possible with retention of the spleen is generally accepted as the optimal treatment. In case reports of maternal and fetal survival, splenectomy was performed in most of the cases, and it seems that vascular surgeons favour immediate splenectomy rather than wasting time trying to identify the aneurysm.

In conclusion, a diagnosis of ruptured aneurysm of the splenic artery should be considered in any pregnant woman complaining of left upper quadrant pain of sudden onset regardless of her clinical condition at the time of initial evaluation.

References

1. de Vries JE, Shattenkerk ME, Malt RA. Complications of splenic artery aneurysm other than intraperitoneal rupture. Surgery 1982; 91: 200-204


