Case Report

Splenic artery aneurysm rupture during pregnancy: a case report

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Abstract:
Splenic artery aneurysm (SAA) is a rare clinical entity that carries the risk of rupture and fatal hemorrhage. Ruptured SAA, especially during pregnancy has fateful consequences for the mother, foetus or both. The role of the Radiologist is very important in preventing mortality. A diagnosis of ruptured SAA should be considered in any pregnant patient who complains of sudden epigastric or upper abdominal pain, with or without shock.

We report a rare case of splenic artery aneurysm rupture during pregnancy in a young woman. Radiological embolism treatment was initially performed. The failure of this treatment, bring us to the surgery. The evolution was unfavorable

Key words: Splenic artery, aneurysm, rupture

INTRODUCTION

Splenic artery aneurysm (SAA) is a rare clinical entity with an estimated incidence of 0.16-0.18 (1). It carries the risk of rupture and fatal hemorrhage. It occurs more frequently in young women (58%) and in pregnant women.1 Ruptured SAA during pregnancy can be disastrous for both the mother and the fetus. Patients with SAA are usually asymptomatic until the aneurysm ruptures. Sudden severe epigastric or left upper quadrant pain heralds the onset of rupture of the aneurysm with immediate or delayed onset of hypovolemic shock. The size of the aneurysm is also an important factor in predicting rupture. An aneurysm of two centimeters in diameter is highly prone for rupture. In this case, the maternal-fetal prognosis is engaged. We report on this observation the case of a rupture of a splenic artery aneurysm in a pregnant woman.

CASE PRESENTATION

It is about a 38-year-old patient with a past medical history of diabetes. She is pregnant at 26 weeks. She presents asthenia and abdominal pain, progressing for 24 hours. On physical examination, the patient was pale, painful, her blood pressure was at 110/70 mmhg, her pulse was at 85. The abdomen was slightly distended with a tenderness of the left hypochondrium. There is no individualized vaginal bleeding. Laboratory data shows metabolic acidosis,
hemoglobin was at 9.5 g / dl, there is no ionic disorders. The renal function was normal.
The diagnosis of diabetic ketoacidosis was retained and an urgent treatment was quickly initiated. Indeed, the patient reported the absence of active fetal movements for 24 hours. The ultrasound showed no fetal heart activity. The diagnosis of fetal death in utero was confirmed. Furthermore, the ultrasound showed a very abundant intra-abdominal effusion. An abdominal computed tomography scan was performed showing a ruptured 21*11 mm aneurysm of the splenic artery with a 12 mm sub-capsular hematoma of the spleen, an interspleno-gastric and sub-splenic hematoma extended over approximately 17 mm, with an intraperitoneal effusion of great abundance (Figure 1). In addition, the splenic artery was the site of multiple other uncomplicated aneurysms.

We opted for radiological treatment by arterial embolization. An embolization using 3 coils, one of which was 8 mm and two of 5 mm in diameter, had been performed. Post-embolization control shows a persistence of flow at the level of the aneurysm (Figure 2). We therefore performed an embolization using fragments of Curaspon to stop the flow in the aneurysm and the distal part of the splenic artery. The patient presented with a drop in her blood pressure with tachycardia to 120. An emergency blood count showed hemoglobin at 5 g / dl. A blood transfusion was initiated and the patient was brought to the operating room. Emergent laparotomy was performed. Aa large amount of hematic effusion was observed, related to active jet bleeding from the ruptured aneurysm of the splenic artery. Splenectomy with caudal pancreatectomy was performed (Figure 3). The evolution was fatal.

Figure 1: Enhanced abdominal CT scan showing a ruptured 21 * 11 mm splenic artery aneurysm (arrow) with a fluid collection around the spleen (asterix).

Figure 2: Selective angiography of the splenic artery showing the post embolisation aspect of the aneurysm (arrow)
**DISCUSSION**

We reported in our observation a rare and interesting case of a ruptured SAA supported in our department. The perspective of preserving the spleen in a young patient by performing selective splenic arterial embolization was further an argument in favor of conservative treatment.

Several causes can be implicated during pregnancy: the main ones are the subcapsular hematoma of the liver, the rupture of uterine vessels and the rupture of a splenic artery aneurysm.\(^2\) The splenic artery is the 3rd most frequent location of abdominal aneurysms after the aorta and iliac artery, and represents the most common location (60%) of aneurysms of the digestive arteries.\(^3,4\) The risk of spontaneous rupture of SAA is 3% to 9% in the general population and is higher in women.\(^5\) Pregnancy, and particularly during the 3rd trimester, is a major risk factor for SAA rupture.\(^6\)

During pregnancy, 2 main mechanisms can explain the relative frequency of onset and / or rupture of SAA. First, the physiologic hormonal changes contributing to the weakening of the vascular walls (medial degeneration of the vessel wall caused by increased estrogen and progesterone, the enhancement of the elasticity of vessel wall caused by elevated levels of relaxin leading to aneurysmal dilation). Second, increased splanchnic and splenic arterial flow related to compression of the aorta and iliac vessels by the pregnant uterus.\(^5,6,8\)

Patients with SAA are more often asymptomatic. Aneurysm rupture is often correlated with an abdominal pain, especially in the left hypochondrium, associated with deglobulization. In our case, the patient maintained relatively stable vital signs for several hours, and then the hemodynamic statut abruptly collapsed. This has been described as the “double rupture phenomenon”: first, the initial hemorrhage is temporarily contained within the lesser sac by blood clots blocking the foramen of Winslow and by the transverse mesocolon. This would increase the chances of survival as it saves additional time for diagnosis and appropriate treatment. Few hours later, free rupture into the peritoneal cavity may occur leading to massive intraperitoneal hemorrhage.\(^6,9\)

The hemodynamic adaptation mechanisms allow a redistribution of maternal blood flow, by reducing the placental perfusion for the benefit of the splanchnic networks, thus explaining the excess fetal mortality.\(^8\) Indeed, the rupture of ASA is associated with a maternal and fetal mortality rate of 75% and 95% respectively.\(^7,10\)

In a pregnant woman who consults for abdominal pain with deglobulization, the diagnosis of ruptured ASA can be suspected by viewing a large intraperitoneal effusion on transvaginal ultrasound. In our case, since fetal death has already been confirmed and abdominal irradiation is no longer prohibited, we were able to supplement with an abdominal computed tomography angiography to support the diagnosis. There are no standardized recommendations for the management of SAA in pregnant women. However, due to the increased risk of rupture during pregnancy, several authors recommend preventive surgery for SAA in women of childbearing age and pregnant women. Surgical techniques may consist of Surgical exclusion, ligation, resection or arterial bypass.\(^1,8\) Endovascular techniques such as arterial embolization can be attempted for all splenic artery aneurysms except those located near the...
hilum of the spleen and in pregnant patients due to the risk of fetal radiation exposure. In the event of SAA rupture in a pregnant woman, early and appropriate medical resuscitation is essential. The choice of the type of operation is determined by the urgency and location of the lesion.

Proximal aneurysm may be treated by simple ligation, resection or exclusion, without arterial reconstruction, provided there is sufficient collateral blood flow via the short gastric arteries to prevent splenic infarction. Distal aneurysm may need to be resected in conjunction with a splenectomy. It’s recommended to delay the delivery of the fetus until the splenic vessels are clamped in order to avoid another source of maternal hemorrhage which may be responsible for a fatal outcome.

CONCLUSION
Splenic artery aneurysm rupture during pregnancy is rare. In the absence of improvement by radiological treatment, surgical treatment should be required.

REFERENCES