

Spontaneous rupture of splenic artery aneurysm in pregnancy: a case report

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Received 25.01.2008
Accepted 24.04.2008
Advances in Medical Sciences
Vol. 53(2) · 2008 · pp 341-343
DOI: 10.2478/v10039-008-0016-x
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ABSTRACT

Splenic artery aneurysms (SAA) occur predominantly in women, and the majority of them are asymptomatic until rupture. Over half of those that rupture occur during pregnancy. Spontaneously ruptured SAA during pregnancy is always a life-threatening surgical entity for both the mother and the fetus. We report the case of a 29-year-old woman at 34 weeks' gestation with spontaneous rupture of SAA who underwent emergency exploratory laparotomy and splenectomy. This case illustrates the need to consider ruptured SAA as part of important differential diagnosis in haemodynamically unstable pregnant women.

Key words: Splenic artery, aneurysm, pregnancy, rupture

INTRODUCTION

Splenic artery aneurysm (SAA) is a rare clinical entity that carries the risk of rupture and fatal hemorrhage [1]. Ruptured SAA during pregnancy is an event with fatal consequences for the mother or fetus or both. It is more frequent during the third trimester of pregnancy.

Atherosclerosis and the congenital defects of the arterial wall has been described as the major causes of SAA [2]. Preliminary weakness of the arterial wall with a concomitant increase in blood pressure is considered to promote aneurysm formation [2].

The patients usually have acute pain in the epigastrium. Initially, the bleeding remains confined in the lesser sac, followed 6-96 hours later by free intraperitoneal hemorrhage and collapse. The initial phase where hemorrhage remains confined to the lesser sac may provide vital time for diagnosis and preparation for intervention. However, in pregnancy, the bleeding remains confined, and rupture to the peritoneal cavity and the development of the symptoms is rapid.

We report an interesting and rare case of a spontaneous rupture of a splenic artery aneurysm in a 29-year-old woman at 34 weeks' gestation.

CASE PRESENTATION

A 29-year-old woman was presented at 34 weeks' gestation, in an otherwise uneventful pregnancy, with severe acute abdominal pain. Symptomatology initiated 3 hours earlier with the sudden onset of abdominal pain and vomiting. On physical examination, her abdomen was tender with signs of peritoneal irritation. The patient was hemodynamically unstable. The patient was resuscitated with crystalloid fluids through a central vein while hematological and biochemical investigations were requested. All investigations were within the normal range, apart from hemoglobin of 8.1 gm/dl.

The patient was taken to the operating room within 30 minutes, where she underwent exploratory laparotomy. The abdominal cavity and the lesser sac were full of blood. We incised the gastrocolic ligament and the transverse mesocolon to approach the splenic artery aneurysm, which was found with a 4-mm long rupture, involving the distal third portion of the splenic artery. Proximal ligation of the splenic artery and splenectomy were performed. Unfortunately, the fetus was dead. The patient made an uneventful recovery and was discharged to her home on the 9th postoperative day. She was commenced on prophylactic penicillin V and received polyvalent pneumococcal, meningococcus, and Hemophilus influenza vaccine.

DISCUSSION

Spontaneous rupture of splenic artery aneurysm (SAA) during pregnancy is a rare, life-threatening surgical entity with a reported mortality rate of 70% and a fetal loss rate of 95%. About 95% of cases occur in the antenatal period with the remaining 5% presenting in the puerperium [3]. SAA occurs most often in the distal portion of the splenic artery and is multiple in approximately 20% of cases and is usually sacular in form [2].

The pathogenesis of SAA during pregnancy is not well understood [1]. The compression of the aorta and iliac arteries by the pregnant uterus with portal congestion are important pathogenic factors, resulting in an increase flow through the splenic artery [4]. It is also known that weakness in the arterial wall and an increase in the blood pressure constitute the main factors of aneurysmal dilatation of an artery [5]. In pregnancy, estrogens and progesterone result in histological alteration of the arterial wall leading to aneurysmal dilatation [6]. In addition, another hormone named relaxin may augment the effect of the previous two hormones by further enhancing the elasticity of splenic artery [7]. Physiological changes during pregnancy, which include enhanced cardiac output, increased blood volume and portal hypertension, also enhance the stress on the arterial wall [8].

Patients with a spontaneous rupture of SAA usually have acute upper abdominal pain (either in the epigastrium or more often in the left hypochondrium), nausea, vomiting, hypotension and anemia or hemodynamic instability. However, in 20-25% of cases, the rupture can be a two-stage rupture [7, 9]. This is characterized by an initial rupture within the lesser sac where blood clots block foramen of Winslow and is followed by free rupture into the greater sac when the tension into the lesser sac increases [1]. Richardson et al [10] described a case presenting a similar massive pulmonary embolism characterized by left sided chest pain, breathlessness and low oxygen saturation. Therefore, ruptured SAA should be included in the differential diagnosis of any woman presenting the above symptoms [11]. Preoperative investigations for ruptured SAA should be performed if the patient's condition remains stable. Abdominal x-ray may show a calcified ring with a central lucent area to the left of the first lumbar vertebral body [12]. Ultrasound or computed tomography can confirm an intra-abdominal hemorrhage and localize the aneurysm. Angiography is the most valuable investigative tool to localize the source of bleeding and assess the collateral flow [13].

The management of asymptomatic SAA remains controversial. It is suggested that aneurysms larger than 2 cm should be treated [14]. In pregnancy, minimally invasive techniques as transcatheter or percutaneous angiographic embolization and laparoscopic ligation or resection have been proposed [15]. In symptomatic SAA, the management may be open, laparoscopic or as embolization of the aneurysm [15], while in ruptured SAA, the purpose is immediate resuscitation and control of bleeding.

In our case, we approach the aneurysm through a median laparotomy. The most common approach is through the lesser sac with incision of the gastrocolic ligament. The others are a superior approach through the minor omentum, and an inferior approach with an incision of the gastrocolic ligament and transverse mesocolon. In the case described, the aneurysm was located in the distal portion of the splenic artery, and we incised the gastrocolic ligament and the transverse mesocolon to approach it.

The prevention of serious life-threatening infections by vaccination and antibiotic prophylaxis in splenectomized patients includes immunization with a polyvalent pneumococcal, meningococcus, and Hemophilus influenza vaccine within 2 weeks of splenectomy [16].

CONCLUSIONS

Although spontaneous rupture of SAA is uncommon, good materno-fetal outcome can only be achieved by early diagnosis and prompt treatment. It is therefore important to increase awareness of this condition in any pregnant woman who presents severe upper abdominal pain. Immediate surgical intervention is needed to ensure survival of the mother and fetus.

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