Case Report

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Postpartum Spontaneous Rupture of Spleen in a Woman with Severe Preeclampsia: Case Report and Review of the Literature

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ABSTRACT

Splenic rupture during pregnancy is considered a catastrophic condition associated with high maternal and fetal mortality and morbidity. Herein, we report a case of severe preeclampsia that underwent cesarean delivery with subsequent spontaneous splenic rupture. A 21-year-old primigravid woman was transferred to our center due to severe preeclampsia that underwent cesarean delivery because of uncontrolled blood pressure and low platelet count. She developed coffee ground vomiting postoperatively and clinical evidence of free fluid was present. Emergency laparotomy was performed and revealed an approximately 2.5–3 cm defect in splenic capsule with active bleeding from the ruptured site. The site of splenic laceration was packed with gauze. Postoperative period was uneventful and she was discharged on day 15 after admission. As spontaneous splenic rupture is associated with severe complications, its differential diagnosis should be kept in mind in pregnant women with severe preeclampsia.

Keywords: Preeclampsia; Splenic Rupture; Spontaneous; Cesarean Delivery

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Introduction

Spontaneous rupture of the spleen in pregnancy is a rare entity occurring mostly in third trimester or puerperium [1]. Spontaneous splenic rupture during pregnancy is usually associated with underlying pathologic conditions including preeclampsia [2]. Splenic rupture during pregnancy is considered a catastrophic condition associated with high maternal and fetal mortality and morbidity. Because of the vague presentation, the diagnosis is usually made late in the course of the disease with poor outcome. Several reports exist in the literature about the spontaneous rupture of spleen during pregnancy secondary to preeclampsia. However the postpartum spontaneous rupture of spleen as a result of preeclampsia is very rare. Herein, we report a case of severe preeclampsia that underwent cesarean delivery with subsequent spontaneous splenic rupture.

Case Presentation

A 21-year-old primigravid woman with gestational age 33 weeks and 4 days based on her last menstrual period (LMP) was transferred to our center, with diagnosis of severe preeclampsia, from a secondary healthcare unit. She was diagnosed as having preeclampsia during her current pregnancy and was under close follow-up. She had developed diplopia before presentation. On physical examination she was found to be anxious but well oriented. Her initial blood pressure was 160/100 mmHg with pulse rate (PR) of 84 and respiratory rate (RR) of 14. On abdominal examination the uterus was of 32 weeks size and fetal heart sounds were clearly heard

(FHR=148). She received hydralazin, magnesium sulfate and one dose of betamethasone. Complete blood count (CBC) revealed platelet count of 22,000 for which 5 bags of fresh frozen platelet (FFP) was prescribed. Because of uncontrolled blood pressure and low platelet count, the patient was transferred to operation room and cesarean delivery was performed. The neonate had mild cyanosis and respiratory distress and was moved to NICU. The woman was also transferred to ICU. After the operation, her blood pressure was 185/140 mmHg despite receiving hydralazin and magnesium sulfate. Thus intravenous nitrous was started for her. She became agitated 4 hours after operation and developed coffee ground vomiting for which NG-washing was performed. There was tenderness across the abdomen with maximum intensity in left lumbar region and radiating to the left shoulder. Clinical evidence of free fluid was present and the blood pressure fell to 90/60 mmHg. Emergency laparotomy was done and approximately 2 liters of fresh and clotted blood was removed. Exploration revealed an approximately 2.5×3 cm defect in splenic capsule with active bleeding from the ruptured site. The site of splenic laceration was packed with gauze. Uterus was intact and the liver was normal. Three unit of packed cells, three bags of FFP and five bags of platelets were transfused during the operation. Postoperative period was uneventful and she was discharged on day 15 after admission.

Discussion

Splenic rupture is considered a common complication of any degree of trauma to a normal spleen or minimal trauma to enlarged and congested spleen. However, spontaneous rupture in pregnancy without antecedent trauma is rare and occurs most commonly in the third trimester or puerperium [3]. A previous study by Denehy *et al.*, [4] demonstrates that only 2.2% of 89 cases of splenic rupture in pregnancy were documented to be spontaneous in the puerperium. Spontaneous splenic rupture should be suspected when all other causes have been ruled out. These include antecedent trauma, any systemic disease, or evidence of gross pathology at the time of exploration. In the same way, the spleen parenchyma, vasculature, and capsule should be normal macroscopically and histologically [1].

Spontaneous splenic rupture during pregnancy has already been reported and is an important and lethal complication of preeclampsia [3-6]. The late diagnosis because of vague presentation is the main problem which results in poor outcome and high rate of mortality. The classical signs include abdominal pain, left shoulder pain and shock which were observed in our patient.

The possible mechanisms for spontaneous rupture of spleen include repeated torsion of the spleen from increased motility, obstruction of collateral drainage or portal vein thrombosis and spasm of the splenic vein that leads to congestion [7]. Increased volume along with delivery trauma and congenital factors like a short splenic pedicle or a deeply recessed location of spleen will result in spontaneous rupture of splenic capsule [8]. This explanation suits our case best with postpartum spontaneous splenic rupture and no history of trauma. In this context, Sakhel *et al.*, [1] concluded that abdominal packing and forceful tractions during cesarean section will result in postpartum spontaneous splenic rupture especially in those with high blood pressure.

The etiology of spontaneous postpartum splenic rupture remains speculative at best. It has been suggested that splenic enlargement and increased blood volume normally seen in pregnancy in addition to the trauma of parturition could be implicated in the pathogenesis of some cases of splenic rupture, but this is controversial. Traction with undue force with sharp- or blunt-edged instruments during cesarean delivery and insertion of packs could theoretically cause abrasive injuries to an already congested organ such as the spleen. Excessive force in exploring the upper abdomen and manual expression of the fetus by forceful pushing on the upper abdomen at the time of cesarean delivery or even while removing clots from the paracolic gutters might lead to splenic injury. However, in the first patient reported here, both cesarean delivery and hysterectomy were performed via a Pfannenstiel incision. The triplets were delivered by complete breech extraction with no suprafundic pressure on the abdomen; no upward traction was applied, nor was any packs used. Though massaging of the uterus was performed postcesarean delivery, it is unlikely to have caused an injury in the subphrenic region of a normal-sized spleen. In the second case, an infraumbilical incision was performed, and no packing was used. Several authors have suggested a short splenic pedicle or deeply recessed location of the spleen as congenital factors that might contribute to rupture by compressing the diaphragm during coughing, sneezing, or vomiting [8]. A short splenic pedicle was indeed noted in the first case.

The differential diagnosis of spontaneous splenic rupture in the general, nonpregnant population includes local splenic disorders, such as splenic cysts and diffuse angiomatosis; hematologic diseases, such as hemophilia, congenital afibrinogenemia,

and hemolytic anemia; metabolic disorders, such as amyloidosis, Wilson's disease, Gaucher's and Niemann-Pick disease; drug-induced, such as intravenous heparin, warfarin, and streptokinase; iatrogenic causes, such as extracorporeal shock wave lithotripsy and clamping of the portal triad; and miscellaneous, such as vomiting, uremia, systemic lupus erythematosus and other connective tissue disease. Most notable in the differential diagnosis are the infectious causes, such as infectious mononucleosis, which is considered the most common cause of spontaneous splenic rupture, as well as malaria [9].

As spontaneous splenic rupture is associated with severe complications, its differential diagnosis should be kept in mind in pregnant women with severe preeclampsia. Physical examination and ultrasonography would help its early diagnosis.

Conflict of Interest: None declared.

References

1. Sakhel K, Aswad N, Usta I, Nassar A. Postpartum splenic rupture. *Obstet Gynecol* 2003;**102**(5 Pt 2):1207-10.
2. Barrilleaux PS, Adair D, Johnson G, Lewis DF. Splenic rupture associated with severe preeclampsia. A case report. *J Reprod Med* 1999;**44**(10):899-901.
3. McCormick GM, Young DB. Spontaneous rupture of the spleen. A fatal complication of pregnancy. *Am J Forensic Med Pathol* 1995;**16**(2):132-4.
4. Denehy T, McGrath EW, Breen JL. Splenic torsion and rupture in pregnancy. *Obstet Gynecol Surv* 1988;**43**(3):123-31.
5. Kaluarachchi A, Krishnamurthy S. Post-cesarean section splenic rupture. *Am J Obstet Gynecol* 1995;**173**(1):230-2.
6. Bhagrath R, Bearn P, Sanusi FA, Najjar S, Qureshi R, Simanovitz A. Postpartum rupture of the spleen. *Br J Obstet Gynaecol* 1993;**100**(10):954-5.
7. Weiss SJ, Smith T, Laurin E, Wisner DH. Spontaneous splenic rupture due to subcutaneous heparin therapy. *J Emerg Med* 2000;**18**(4):421-6.
8. Orloff MJ, Peskin GW. Spontaneous rupture of the normal spleen; a surgical enigma. *Int Abstr Surg* 1958;**106**(1):1-11.
9. Debnath D, Valerio D. Atraumatic rupture of the spleen in adults. *J R Coll Surg Edinb* 2002;**47**(1):437-45.