

---

# Pregnancy, labour and delivery in a Jehovah's Witness with esophageal varices and thrombocytopenia

---

Miriam J. Harnett FFARCSI,  
Andrew D. Miller MD,  
Ronald J. Hurley MD,  
Kodali Bhavani-Shankar MD

**Purpose:** An increasing number of women with cirrhosis are conceiving and carrying their pregnancies to term. However, the maternal mortality rate remains high (10 - 61%). This case report describes the management of a parturient with esophageal varices and thrombocytopenia. She was also a Jehovah's Witness.

**Clinical features:** A 25-yr-old Jehovah's Witness parturient with portal hypertension and esophageal varices secondary to cryptogenic cirrhosis was referred to our obstetrical unit at eight weeks gestation. In addition she was thrombocytopenic with platelet counts ranging from 42,000-67,000· $\mu\text{l}^{-1}$ . Her esophageal varices were banded prophylactically on three occasions during her pregnancy. Magnetic resonance imaging at 32 wk gestation showed extensive caput medusa and dominant midline varix. Therefore, the planned mode of delivery was changed from Cesarean section which could result in massive hemorrhage, to elective induction of labour with an assisted second stage. The patient refused any blood product transfusion except acute hemodilution and cell saving if necessary during labour and delivery. Despite elaborate preparations for a planned vaginal delivery, she underwent an unanticipated rapid labour. Spinal analgesia was provided to facilitate smooth assisted vacuum delivery.

**Conclusion:** Multidisciplinary care is the key for a successful outcome in parturients with cirrhosis. Periodic examination and banding of esophageal varices is recommended during pregnancy. Active consideration should be given to availing of the benefits of regional anesthesia.

**Objectif :** Un nombre croissant de femmes souffrant de cirrhose deviennent enceintes et mènent leur grossesse à terme. Cependant, le taux de mortalité maternelle demeure élevé (10 - 61 %). Le présent article décrit la démarche anesthésique adoptée avec une patiente, Témoin de Jéhovah, qui présente des varices œsophagiennes et une thrombocytopénie.

**Éléments cliniques :** Une parturiente de 25 ans, Témoin de Jéhovah, présentant une hypertension portale et des varices œsophagiennes secondaires à une cirrhose nodulaire postnécrotique, a été dirigée vers notre unité obstétricale à 8 sem de gestation. Elle avait aussi une thrombocytopénie, la numération plaquettaire étant de 42,000-67,000· $\mu\text{l}^{-1}$ . Trois fois pendant la grossesse, des bandes prophylactiques ont été posées sur les varices œsophagiennes. Un examen d'IRM, fait à 32 sem de gestation, a montré une tête de Méduse et une varice médiane dominante. Pour cette raison, on a remplacé la césarienne prévue, qui aurait pu provoquer une hémorragie massive, par une induction du travail et une expulsion assistée. La patiente refusait toute transfusion de produit sanguin, sauf une hémodilution et une autotransfusion immédiates, au besoin, pendant le travail et l'accouchement. Malgré les préparatifs élaborés en prévision d'un accouchement par voie vaginale, la patiente a connu un travail rapide imprévu. La rachianalgésie a été administrée pour faciliter un accouchement assisté en douceur.

**Conclusion :** Le succès de l'accouchement chez les parturientes atteintes de cirrhose repose sur une démarche multidisciplinaire. L'examen périodique et le bandage des varices œsophagiennes sont recommandés pendant la grossesse. On devrait considérer sérieusement les bénéfices qu'offre l'anesthésie régionale.

From the Department of Anesthesiology, Perioperative Medicine and Pain Management, Harvard Medical School, Brigham and Women's Hospital, 75 Francis St., Boston, MA 02115, USA.

*Address correspondence to:* Dr. Miriam Harnett; Phone: 617-732-8220; Fax: 617-732-6798; E-mail: mharnett@bics.bwh.harvard.edu  
*Accepted for publication August 30, 2000.*

**T**HE prevalence of cirrhosis in the reproductive age group is 0.45/1,000 persons, with a maternal mortality rate of 10-61%.<sup>1</sup> With improvement in both the medical and surgical care of women with advanced cirrhosis an increasing number are conceiving and carrying their pregnancies to term.<sup>2,3</sup>

We were presented with a parturient with cirrhosis who was a Jehovah's Witness. Her management posed several medical and ethical issues - management of esophageal varices during pregnancy, management of a potential esophageal bleed, timing and mode of delivery, type of analgesia /anesthesia in view of her thrombocytopenia and our ethical and moral responsibilities to the mother and fetus because the patient was a Jehovah's Witness.

#### Case report

A 25-yr-old Jehovah's Witness gravida 1, para 0 was referred at eight weeks gestation for high risk obstetric anesthesia consultation. She had a three year history of portal hypertension with esophageal varices secondary to cryptogenic cirrhosis. She had no episode of esophageal bleeding before pregnancy. Her liver function tests were ALT 102(7-32U·L<sup>-1</sup>), AST 89(9-30U·L<sup>-1</sup>), ALK PHOS 205(36-118U·L<sup>-1</sup>). Her platelet count ranged from 42,000- 67,000 ·µl<sup>-1</sup> and her coagulation screen was normal. Medication included 80 mg propranolol *tid* (to reduce portal pressure), and 300 mg ursodiol *tid* (to prevent gallstones). She refused blood product transfusion even in the presence of life threatening hemorrhage.

Her esophageal varices were banded via endoscopy, prophylactically at 17, 21 and 23 wk gestation. At 32 wk, magnetic resonance imaging of the abdomen and pelvis revealed her umbilical vein recanalised with caput medusa. The plan for delivery was therefore changed from Cesarean section (with the potential for massive hemorrhage) to induction of labour at 39 wk gestation. Following further discussion with the patient and her husband, she agreed to acute hemodilution and the use of cell saving if necessary.

At 39 wk gestation, prostaglandin gel was applied to her cervix in the evening hours prior to planned commencement of intravenous oxytocin 12 hr later to facilitate delivery the following day. Platelet count was 67,000·µl<sup>-1</sup>, coagulation screen was normal and thromboelastographic (TEG) parameters were within normal limits. She awoke with intense labour pains when her cervix was found to be fully dilated with the fetal head at +1 station. A spinal anesthetic was performed with 1 ml bupivacaine 0.25% and 25 µl fentanyl using a 25G Whitacre needle. Adequate

anesthesia was obtained for assisted vacuum extraction delivery of a live male infant. Blood loss was minimal. Her postpartum course was uneventful and she was discharged home on postpartum day two.

#### Discussion:

Pregnancy in women with advanced cirrhosis is uncommon: the causative factor being infertility owing to altered metabolism of sex steroids.<sup>1</sup> Over the last few decades an increasing number are conceiving and carrying their pregnancies to term although the mortality rate remains high for parturients with liver cirrhosis.<sup>2,3</sup> The risk of bleeding from esophageal varices during pregnancy ranges from 62-78% if there are endoscopically visible varices.<sup>4</sup> Therapeutic measures that have been advocated to reduce the incidence of variceal bleeding include variceal banding, sclerotherapy, porto-systemic shunting, esophageal transection and lowering of portal pressure using beta blockers and vasodilators.<sup>5</sup>

Because maternal exsanguination would probably be fatal, conflict arises for the physician caring for the pregnant Jehovah's Witness patient between his obligations to the mother and the fetus. In the case of our patient all these questions were put to her early in her pregnancy - would she accept blood transfusion if there was fetal distress secondary to variceal bleeding? Would a certain gestational age influence her decision on blood transfusion - i.e. viable *vs* nonviable fetus? However, she remained adamant that she would refuse blood transfusion under any circumstances. Therefore a departmental decision was made that anyone who felt uncomfortable withholding blood from this patient would not, if at all possible, be involved in her care.

Until recently, the use of cell salvage was generally not considered an option in obstetrics for fear of reinfusion of amniotic fluid, potentially resulting in an amniotic fluid embolus. However, recent studies have demonstrated that the protein elements of amniotic fluid can be effectively removed by cell salvage processing and the number of fetal squames can be significantly reduced.<sup>6</sup> Moreover, the salvage and reinfusion of shed blood during Cesarean delivery has been reported without sequelae.<sup>7</sup> Hence, we considered the use of cell salvage in the event of a Cesarean delivery. We also considered the use of acute hemodilution if time prevailed as acute hemodilution has been used and is well tolerated in parturients at risk of bleeding undergoing Cesarean section.<sup>8</sup> The use of erythropoietin during pregnancy has been described, but we did not use it in our patient.

The obstetric plan for our patient was vaginal delivery with assisted second stage as Cesarean section is

associated with greater morbidity.<sup>1</sup> Our plan was to place an epidural catheter as soon as a labour pattern was established. However, subsequently we provided a single shot spinal anesthetic for an assisted vacuum extraction, as she would not remain still to allow us to locate the epidural space. Our intention was to place an epidural catheter if she did not deliver her baby within 30 min of the initial provision of labour analgesia.

Thromboelastography has recently been used to test the adequacy of clot formation, before performing regional anesthesia in patients with low platelet counts.<sup>9</sup> Although the level of thrombocytopenia and TEG parameters that safely allow epidural placement is not known, a normal MA (maximum amplitude) of TEG which mirrors platelet function, normal R (time to initial clot formation) of TEG which indicates clotting factor activity, in addition to a normal PT and PTT were reassuring in our decision to utilize regional analgesia.

Although pregnancy, labour and delivery proceeded uneventfully we were prepared to manage any complications that might have occurred. Multidisciplinary care which included antenatal care, periodic prophylactic banding of her esophageal varices, and high risk obstetric anesthesia service facilitated a favourable outcome.

#### References:

- 1 *Russell MA, Craigo SD.* Cirrhosis and portal hypertension in pregnancy. *Semin Perinatol* 1998; 22: 156–65.
- 2 *Cheng Y-S.* Pregnancy in liver cirrhosis and/or portal hypertension. *Am J Obstet Gynecol* 1977; 128: 812–22.
- 3 *Pajor A, Lehoczky D.* Pregnancy and extrahepatic portal hypertension. Review and report on the management. *Gynecol Obstet Invest* 1990; 30: 193–7.
- 4 *Homburg R, Bayer I, Lurie B.* Bleeding esophageal varices in pregnancy. A report of two cases. *J Reprod Med* 1988; 33: 784–6.
- 5 *Pajor A, Lehoczky D.* Pregnancy in liver cirrhosis. Assessment of maternal and fetal risks in eleven patients and review of the management. *Gynecol Obstet Invest* 1994; 38: 45–50.
- 6 *Catling SJ, Williams S, Fielding AM.* Cell salvage in obstetrics: an evaluation of the ability of cell salvage combined with leucocyte depletion filtration to remove amniotic fluid from operative blood loss at Caesarean section. *Int J Obstet Anesth* 1999; 8: 79–84.
- 7 *Potter PS, Waters JH, Burger GA, Mraovi B.* Application of cell-salvage during Cesarean section. *Anesthesiology* 1999; 90: 619–21.
- 8 *Grange CS, Douglas MJ, Adams TJ, Wadsworth LD.* The use of acute hemodilution in parturients undergoing Cesarean section. *Am J Obstet Gynecol* 1998; 178: 156–60.
- 9 *Sharma SK, Philip J, Whitten CW, Padakandla UB, Landers DF.* Assessment of changes in coagulation in parturients with preeclampsia using thromboelastography. *Anesthesiology* 1999; 90: 385–90.