

Case Report



The conservative management of a large hepatic subcapsular hematoma in a pregnant woman with preeclampsia: A case report

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Abstract

Hepatic subcapsular hematoma is a rare but potentially life-threatening complication that is caused by preeclampsia and hemolysis, elevated liver enzymes, and low platelet (HELLP) syndrome, which may be manifest with nonspecific signs and symptoms. The present case was a 36-year-old woman with a secondary subcapsular liver hematoma as a rare complication of HELLP syndrome. The patient complained of nausea, vomiting, pain in the right upper quadrant of the abdomen, epigastric pain, and severe pain in the right shoulder. On the fourth day after delivery, a computed tomography (CT) scan was performed on the patient, showing a large subcapsular hematoma around the liver. Six weeks after delivery, the follow-up ultrasound exhibited no residual hematoma or free peritoneal fluid, and the patient's blood pressure was controlled without taking medication.

Keywords: Subcapsular hepatic hematoma, Preeclampsia, Hemolysis, Elevated liver enzymes

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Introduction

Subcapsular hepatic hematomas caused by trauma or surgery differ from those caused by hepatic parenchymal bleeding since the damaged artery has many connections with intrahepatic and extrahepatic arteries in such cases (1). HELLP syndrome refers to the syndrome of hemolysis, elevated liver enzymes, and low platelets. On the other hand, it is classified as a complication or development of severe preeclampsia (2). Hepatic hematomas have been reported in 0.9% to 1.6% of cases of HELLP syndrome and can lead to maternal and fetal mortality (3). The most dangerous complication of HELLP syndrome is known as the rupture of the hepatic subcapsular hematoma. The rupture involves the right lobe of the liver in most cases, and hepatic parenchymal bleeding occurs before this involvement (4). Early diagnosis of hepatic subcapsular hematoma is highly important due to its high relevant mortality rate (5). In the case of an unstable patient, portable ultrasound seems to be a proper imaging technique for diagnosis without moving the patient. Computed tomography (CT) scan or magnetic resonance imaging (MRI) of the liver also has an extremely high sensitivity to diagnose liver rupture and assess the extent of the hepatic hematoma (6). Further, the embolization of intra- and extrahepatic arteries is recognized as an effective treatment for these hematomas, which are

generally absorbed and disappear after the hemostasis of the hematoma (7). In this study, we reviewed a patient with a large liver hematoma with HELLP syndrome who had been conservatively managed.

Case Presentation

A 26-year-old woman with G3 P2 (third gravidity and 2 parity) was admitted to Beheshti hospital in Isfahan at 35 weeks of gestation with preeclampsia. The patient complained of nausea, vomiting, pain in the right upper quadrant of the abdomen, epigastric pain, and severe pain in the right shoulder. Her previous medical history indicated fatty liver grade 2 with a negative family history. She had a history of taking aspirin of 80 mg during pregnancy. Moreover, her arterial blood pressure at admission was 100/180 mm Hg, which was not controlled with labetalol. The positive laboratory results included the following: Serum aspartate aminotransaminase (AST): 157 IU/L (N: 5-34), serum alanine aminotransferase (ALT): 192 IU/L (N: 0-55), serum lactate dehydrogenase (LDH): 901 IU/L (N: 125-480), normal serum urea and creatinine levels, white blood cell (WBC): 13200/mm³ (N: 4000-11000), hemoglobin (Hb): 12.2 mg/dL (N: 11.5-16.0), and platelet count (PLT): 49000/mm³ (N: 150000-450000). In addition, random proteinuria (+++) was reported in the urine sample, and the fetal heart rate was

140 beats per minute at the time of admission. Intravenous magnesium sulfate was given to the patient and the fetal heart was monitored. The portable ultrasound was performed to evaluate the origin of the pain due to severe upper quadrant abdominal pain, shooting pain in the shoulder, and the patient's emergency condition. A normal gallbladder was reported on ultrasound, while a hyperechoic region without vascular flow with a size of $59 \times 96 \times 153$ mm and an approximate volume of 464 cc was shown in the Morrison space, indicating a hepatic hematoma. The fetus suffered a frequent heart rate drop during the ultrasound. While receiving sulfate, the patient was referred to the operating room as an emergency. Following the general anesthesia, a midline incision was made on the skin of the abdomen, and after performing the cervical incision, an infant with fetal growth restriction with a weight of 1.76 kg was born with Apgar scores of 6 and 8 at 1 and 5 minutes. A general surgeon was present during the cesarean section according to the preoperative ultrasound report. After touching the liver, a large non-ruptured liver hematoma was diagnosed for the patient, and supportive treatment was initiated. Then, an abdominal drain was inserted, and the abdomen was closed after repairing the uterus. During surgery, 4 units of packed red blood cells, 4 units of fresh frozen plasma, and 10 units of platelets were injected. The blood pressure was controlled postoperatively with antihypertensive drugs, a high dose of corticosteroids was administered, and her movement was restricted. Afterward, the patient was transferred to the intensive care unit after the cesarean section. Labetalol and furosemide were used to control blood pressure for up to 24 hours, and the intravenous magnesium sulfate infusion was continued. The mother was kept on full bed rest, and intermittent pressure was used to prevent limb thrombosis. Her heart rate was 110 beats per minute, and her blood pressure measurement was reported to be 90/150 mm Hg. The laboratory results following the cesarean section were as follow: AST: 410 IU/L, ALT: 442 IU/L, LDH: 1570 IU/L, serum creatinine: normal, WBC: $20\,200/\text{mm}^3$, Hb: $8 \text{ m}^3/\text{dL}$, and PLT: $51\,000/\text{mm}^3$. Additionally, less than 1% of schistocytes were found in the peripheral blood smears. The portable abdominal ultrasound on the third day after the cesarean section revealed a hyperechoic subcapsular mass with a size of $38 \times 43 \times 126$ mm with a volume of 108 cc in the anterior part of the right lobe of the liver and free fluid in the pelvic cavity. The pain on the right side of the abdomen improved after three days. On the fourth day after delivery, a CT scan was performed on the patient, which showed a large subcapsular hematoma around the liver that had occupied 70% of the liver and shifted the right hemidiaphragm upward, causing atelectasis in the right lobe of the lung. However, the liver capsule was reported to be healthy, the patient's vital signs were stable, and abdominal pain decreased. The laboratory results 6 days after cesarean section were as follow: AST: 15 IU/L, ALT: 61 IU/L, LDH: 800 IU/L, serum creatinine: normal,

WBC: $18\,400/\text{mm}^3$, Hb: 10.8, and PLT: $135\,000/\text{mm}^3$.

Next, the patient was transferred to the ward with relative bed rest. One week later, the patient underwent another CT scan. The CT scan reported right pulmonary lobe atelectasis and hepatic subcapsular hematoma with no changes compared to the previous CT scan. The patient had no complaints two weeks after delivery and was discharged from the hospital in a stable condition. Six weeks after delivery, the follow-up ultrasound showed no residual hematoma or free peritoneal fluid, and the patient's blood pressure was controlled without taking medication.

Discussion

Hepatic subcapsular hematoma is a rare complication of preeclampsia and HELLP syndrome and a midwifery emergency, which increases the rate of severe complications and maternal-fetal mortality rates (8). A mild period limited to a lightning-fast process (e.g., multiple organ failure) can be seen in HELLP syndrome. The HELLP syndrome resolves spontaneously within 48 hours after delivery in most cases (9). The causes of subcapsular and intraparenchymal liver hematoma in HELLP syndrome are not fully known. Hepatic dilatation and, consequently, the right upper quadrant pain or epigastric pain may occur with the obstruction of blood flow in the hepatic sinusoids. This obstruction may also lead to necrosis around the port, and in severe cases, may lead to intrahepatic hemorrhage, the formation of subcapsular hematoma, or rupture of the liver. A fluorescent antibody technique was used to demonstrate fibrin deposits in the hepatic sinuses of eclampsia patients (8). The cases of subcapsular hepatic hematomas should be treated at Level 3 Centers for rapid diagnosis and optimal treatment since the disease prognosis can be changed with timely diagnosis and treatment (10). Ultrasound, CT, and MRI techniques can be utilized for diagnosis (11). Hepatic hematomas in pregnancy need to be carefully monitored and controlled by hemodynamic and coagulation parameters during the treatment of HELLP syndrome and other hypertensive disorders. It seems essential to perform serial evaluations with imaging techniques, avoidance of liver manipulation, and immediate replacement of blood products. The postoperative follow-up should include serial evaluations with ultrasound, CT, or MRI until the defect is repaired (12). Hemodynamically stable patients should be followed up conservatively. In addition, intensive medical support with the injection of fluids, the replacement of blood products, and the administration of recombinant factor VIIa may happen to help prevent bleeding and avoid surgery (13). The administration of high doses of corticosteroids in the post-delivery period is beneficial for recovery in patients not responding to surgical treatment. Therefore, it is strongly recommended to administer corticosteroids with 10 mg of dexamethasone every 12 hours (11). Surgery can be life-saving if a rupture occurs, and the patient becomes hemodynamically unstable. Hemostatic mesh can be

used for bleeding surfaces of the liver and omentum (14). Liver transplantation should be considered when bleeding cannot be controlled by conservative or by surgical techniques, and acute liver failure occurs. In Wicke and colleagues' study, 5 patients with subcapsular liver hematoma were followed up and reported. Three patients were managed conservatively, and two required immediate surgical intervention, one of whom needed a liver transplant (10). In our case, transabdominal sonography and CT displayed subcapsular liver hematoma and free fluid in the abdominal cavity without hepatic rupture. Accordingly, our case was hemodynamically stable, managed conservatively with blood products and steroids for the treatment of HELLP syndrome, and followed up daily with imaging techniques. In conclusion, subcapsular liver hematoma with HELLP syndrome or/and severe preeclampsia is a rare clinical entity and should be suspected in signs of clinical symptoms. Therefore, it is mandatory to closely monitor these patients with HELLP syndrome through advanced imaging techniques in the pre and postpartum period.

Conclusion

In conclusion, we found that liver hematoma in pregnancy can be successfully managed without surgery if the patient's hemodynamic status is stable and is closely monitored in a tertiary center.

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Author Contributions

Conceptualization: Somayeh Khanjani and Sheida Shabanian.

Investigation: Somayeh Khanjani.

Methodology: Sheida Shabanian.

Supervision: Somayeh Khanjani.

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Writing – review & editing: Sheida Shabanian.

Conflict of Interests

The authors declare no conflict of interests.

Ethical Approval

This report was published after obtaining the patient's consent. The protocol of this case report was approved by the Ethics Committee of Shahrekord University of Medical Sciences (code: IR.ARI.MUI.REC.1401.096).

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