



Successful Packing of Hepatic Hematoma Rupture Following Preeclampsia: A Case Report (Running title: Hepatic Hematoma and Preeclampsia)

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Introduction: Hepatic hematoma rupture following preeclampsia is a rare finding in the postpartum. Diagnosis of this critical condition requires a high index of suspicion. Many other clinical conditions may also complicate the diagnosis and mask the hemorrhage.

Case Report: We presented a case of hepatic hematoma rupture in the postpartum period in a patient with preeclampsia. After a successful cesarean section, the patient experienced gradual hypotension and underwent bedside ultrasonography due to the rapid decrease of fetal heart rate in the setting of preeclampsia. Free fluid was prominent, and due to gallbladder stones, dilated bile duct, and high body mass index, only a small, suspicious mass was visualized in the liver. In the operating room, hysterectomy was performed due to free blood within the abdominal cavity, uterine inertia, and hematoma in the broad ligament and bladder. However, hemorrhage started again from the abdominal drains one hour after hysterectomy. After examining the entire abdomen, a bleeding hematoma was observed on the inner site of the liver and packed successfully. Two days after packing, gauzes were removed from the abdomen, and the patient was discharged in good condition four days later without any complications in the follow-up visits.

Conclusion: Ruptured hepatic hematoma requires immediate management and close follow-up. Gynecologists and surgeons should consider that simple surgical techniques, such as packing, could be applicable in hepatic bleeding hematomas if further hemodynamic monitoring and experienced surgeons are available.

Introduction

Hepatic hematoma and rupture are unpredictable, rare findings in the pregnancies complicated with preeclampsia. High index of suspicion is mandatory for the timely diagnosis and management of these conditions. Management of hepatic hematoma rupture relies on a multidisciplinary approach with intensive hemodynamic support (1). Imaging modalities, such as ultrasonography and computed tomography (CT), are useful in such cases and help clinicians to provide appropriate management (2). While the majority of the cases with hepatic hematoma rupture present with unstable hemodynamics, surgical management with adequate reanimation, along with close postoperative follow-ups, are mandatory for these women (2). In this report, we presented a case of postpartum hepatic hematoma rupture, which was successfully managed by perihepatic packing.

Case Presentation

A 44-year-old woman with gestational age of 36 weeks (gravid: 5, labor: 2, abortion: 2) was transferred from a general clinic to the emergency department of Mobini Hospital in Sabzevar, Iran due to severe epigastric pain and nausea and vomiting. The patient had a positive urine protein test (+++), elevated alanine aminotransferase (70 IU/L), and increased aspartate aminotransferase (50 IU/L). Upon admission, the patient was conscious and afebrile with the blood pressure of 130 mmHg/80 mmHg (systolic/diastolic blood pressure). One hour later, fetal heart rate began to drop to 100 beats per minute,

and the patient was immediately transferred to the operating room for cesarean section. During the cesarean section, the amniotic fluid was warm, and the umbilical cord was

compressed and circulated around the fetus' neck. Moreover, severe adhesion of the intestine to the uterus and abdominal wall was prominent.

The patient gave birth to a female fetus with the birth weight of 2,580 grams and one- and five-minute Apgar scores of 4 and 7, respectively. The newborn was reanimated by a neonatologist and transferred to the neonatology ward in good condition. Due to the presence of preeclampsia and severe intra-abdominal adhesion in the mother, a drain was inserted into her abdominal cavity, and complete hemostasis was performed.

The patient was transferred to the recovery room after cesarean section and had an uneventful recovery. Two hours after the surgery, her blood pressure dropped to 80 mmHg/60 mmHg (systolic/diastolic blood pressure), and her pulse rate increased to 110 beats per minute. Serum therapy and oxygen therapy were initiated immediately, and bedside ultrasonography was ordered as well. Although the intra-abdominal drainage showed no sign of hemorrhage, the abdominal ultrasonography revealed free fluid within the abdominal cavity, as well as dilated intrahepatic ducts and a small, cystic mass near the gallbladder. The nature of the mass could not be verified in radiography as there were stones in the gallbladder, and visualization was poor due to the high body mass index of the patient. Considering the medical condition of the patient and presence of free fluid within the abdominal cavity, we

decided to explore the abdomen in order to find the possible site of hemorrhage. During the operation, approximately 800 cc of free blood was suctioned from the abdominal and pelvic cavities. Additionally, multiple hematomas were observed at the posterior site of the bladder, within the broad ligament and pelvic floor. However, none of them were considered to be the bleeding site. These findings, along with uterine inertia, necessitated abdominal hysterectomy.

After receiving pack cells and adequate hydration during the surgery, abdominal drains were placed again, and the patient remained in the operating room for close hemodynamic monitoring. One hour after hysterectomy, the blood pressure of the patient began to drop, and the drains started to bleed. After checking for re-bleeding, we were not able to find any bleeding site. While exploring the upper segments of the abdomen, we encountered a bleeding cystic mass in the internal aspect of the liver. The hemorrhage was discontinued through direct pressure and packing. In order to maintain the pressure, long gauzes were placed over the liver.

There were no signs of hemorrhage after exploring the entire abdomen. As such, the patient was transferred to the intensive care unit in a stable condition. The long gauzes were removed after 48 hours, and the patient was transferred to the gynecology ward from the intensive care unit after four days. Two days later, the patient was discharged in a healthy condition without complications, and abdominal ultrasonography was requested within a month.

Conclusion

While preeclampsia has a rapid and heterogeneous process, few clinical trials

have been focused on this challenging condition (3). In fact, expert opinions and small-scale studies are the only approach to achieving possible successful management. Preeclampsia is often diagnosed when a pregnant woman presents with new-onset hypertension associated with proteinuria and evidence of end-organ involvement or uteroplacental dysfunction after week 20 of gestation (3). Even in high-resource settings, preeclampsia leads to maternal death in more than half of the cases. Timely diagnosis and management is the cornerstone of preeclampsia treatment (3).

Despite some known risk factors for preeclampsia, these factors may not always be present, and physicians should not underestimate preeclampsia. It has been proposed that the combination of maternal risk factors, serum biomarkers, and uterine artery Doppler could provide a high predictive value for preeclampsia (3). However, these techniques are not readily available in every hospital. Severe preeclampsia is associated with various complications. In a survey in Iran, the most prevalent complications in severe preeclampsia were reported to be coagulopathy and placental abruption (4). In the mentioned study, only 0.3% of the subjects had hepatic hematoma (4). In complicated cases, tight blood pressure control and cardiac function monitoring are essential to reducing post-delivery and long-term complications (3).

In addition to preeclampsia, other conditions such as trauma, liver hemangioma, biliary tract disease, and vascular anomalies are responsible for postpartum hepatic hematoma. Women with the mean age of 30 years are more likely to develop sub-capsular

hematoma and rupture, and 40% of the cases occur within the first day after delivery (5). Most cases of sub-capsular hematoma occur at the anterior and superior surface of the liver. Hepatic rupture manifests through hypotension, peritonitis or hemoperitoneum. Since vaginal delivery may induce hepatic hematoma rupture, cesarean section is preferred in such cases (5).

Observational management is preferred in stable patients with hematoma, and those with ongoing blood loss or expanding hematoma should undergo operative management. Bleeding hematoma could be managed by various methods depending on the clinical condition of the patient. Some of the main approaches in this regard include hemostatic agents, diathermy, Pringle maneuver, and perihepatic packing (5). Considering that packing and drainage have been reported to yield better outcomes, we used perihepatic packing in the present study, which could successfully discontinue hemorrhage. Since re-bleeding is an important complication after

stopping bleeding hematoma, such patients should be admitted to the intensive care unit and receive careful hemodynamic support and monitoring (5).

Other common postoperative complications of ruptured hepatic hematoma are sepsis, pulmonary embolism, and pleural effusion, none of which occurred in our patient (5). Although our patient received pack cells and had multiple operations, the recovery period in the intensive care unit was uneventful, and she was discharged six days after admission. This seems acceptable as opposed to the average 31 days of hospital stay stated by Bis et al. (6).

In conclusion, ruptured hepatic hematoma following preeclampsia is a rare and life-threatening condition, which requires immediate management and close follow-up. Therefore, gynecologists and surgeons should consider simple surgical techniques (e.g., packing) in hepatic bleeding hematomas if further hemodynamic monitoring and experienced surgeons are available.

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