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Case Report

A Case Report of Hepatic Rupture Associated with Hellp Syndrome

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Abstract

HELLP syndrome is a severe variant of preeclampsia, characterized by hemolysis, elevated liver enzymes, and low platelet count, often resulting in significant maternal and fetal morbidity. One of its most catastrophic but rare complications is hepatic rupture, typically secondary to the development of a subcapsular liver hematoma. This case report describes a patient with hepatic rupture associated with HELLP syndrome, managed at the Leonor Mendes de Barros Maternity Hospital in São Paulo.

A retrospective review of the literature shows that hepatic rupture in the context of hypertensive disorders of pregnancy remains a rare but life-threatening event. According to a study analyzing cases published between 2000 and 2018, 93 instances of hepatic hemorrhage were identified, primarily in patients with HELLP syndrome. Among those with hepatic rupture, maternal mortality reached 78% when the diagnosis was made only at autopsy. The clinical presentation is often nonspecific, including right upper quadrant pain, hypotension, and signs of hypovolemic shock.

Early recognition, imaging with CT or ultrasound, and timely surgical intervention — such as exploratory laparotomy with perihepatic packing, hepatic artery embolization, or even liver transplantation — are essential for improving outcomes. In our case, prompt diagnosis and intervention were crucial for the patient's survival. This article aims to emphasize the importance of clinical suspicion, rapid diagnosis, and effective surgical and supportive management in enhancing maternal and fetal outcomes in such critical cases.

Case presentation

J.F.N., a 40-year-old woman, G4P2A1, with a history of gestational hypertension managed with methyldopa, was admitted to the Leonor Mendes de Barros Hospital at 33 weeks and 4 days of gestation after referral from an external facility. She presented with a hypertensive crisis (BP 228/128 mmHg) accompanied by epigastric pain radiating to the right hypochondrium.

Upon evaluation in the emergency department, blood pressure had decreased to 130/80 mmHg, heart rate was 126 bpm, uterine tone was increased, and fetal heart rate was noted at 84 bpm. Due to suspicion of premature placental abruption, she was immediately transferred to the obstetric surgical center for cesarean delivery.

Intraoperatively, a significant volume of hemoperitoneum was observed, and hemoamnios was noted upon hysterotomy. Following delivery, a thorough inspection of the abdominal cavity revealed a 15 cm hepatic rupture located in the anterior segment of the liver. Damage control was achieved through hepatic packing with compresses. At the end of the procedure, both mother and newborn were clinically stable, and magnesium sulfate infusion was initiated for seizure prophylaxis.

Laboratory investigations revealed:

- Platelet count: 79,000/mm^3
- Urea: 71 mg/dL
- Creatinine: 2.83 mg/dL
- AST: 506 U/L
- ALT: 462 U/L
- Indirect bilirubin: 1.24 mg/dL
- Total bilirubin: 2.88 mg/dL

Twelve hours postoperatively, imaging confirmed a subcapsular hepatic hematoma with active bleeding, extending approximately 20 cm into the right hepatic lobe. A second surgical intervention was performed, and the liver was re-packed.

Seventy-two hours later, a third-look surgery was performed for compress removal. Active bleeding had ceased, and a healing area was noted in the right lobe. The patient remained in the intensive care unit under close monitoring and hemodynamic support. She progressed favorably and was discharged 30 days later in stable condition.

Follow-up abdominal ultrasonography showed a liver with normal dimensions, smooth contours, a thin capsule, and homogeneous echotexture. A hyperechoic lesion with irregular borders was identified in segment VII, measuring approximately 5.3 × 4.5 cm. The portal vein and hepatic veins showed no abnormalities (Figures 1,2).

The patient's clinical condition progressively improved, and she was discharged in stable condition after 30 days of hospitalization, without further complications.

Consent

Written informed consent was obtained from the patient for the publication of her clinical information and the specific images included in this report.

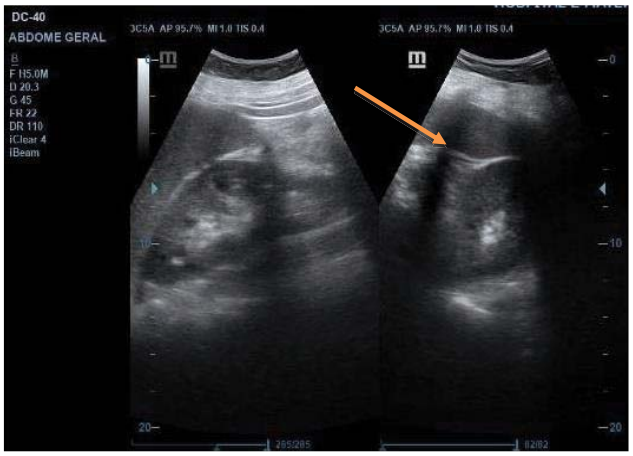

Figure 1: Subcapsular Hematoma.

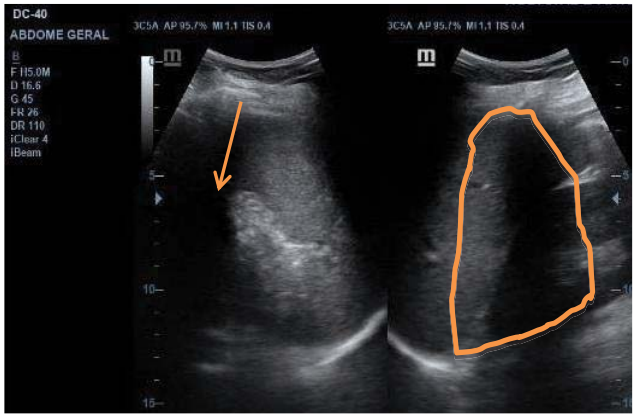

Figure 2: Hepatic rupture.

Discussion

HELLP syndrome is a life-threatening obstetric complication, considered a severe form or variant of preeclampsia. It is characterized by hemolysis, elevated liver enzymes, and low platelet count, affecting approximately 0.5% to 0.9% of all pregnancies and up to 20% of those with severe preeclampsia [1,2]. Its diagnosis is clinical and laboratory-based, requiring high suspicion in pregnant patients presenting with hypertension and right upper quadrant or epigastric pain [2].

One of the rarest but most severe complications of HELLP syndrome is hepatic rupture, with an estimated incidence of 1–2 per 100,000 pregnancies [3,4]. Pathophysiologically, hepatic rupture is believed to result from periportal necrosis and hepatic sinusoidal obstruction, leading to subcapsular hematoma formation and eventual rupture [4]. The condition often presents with nonspecific symptoms, such as epigastric or right hypochondrial pain, which may mimic other obstetric or gastrointestinal emergencies [5].

In the case presented, the initial symptoms of severe hypertension and epigastric pain were attributed to suspected placental abruption; however, intraoperative findings revealed a spontaneous hepatic rupture. This underscores the importance of considering hepatic involvement in HELLP syndrome patients with abdominal pain, particularly when associated with hemodynamic instability [5].

According to Sibai, et al. [2], maternal morbidity and mortality in HELLP syndrome remain significant, particularly in the presence of hepatic complications. In a cohort of 442 cases, maternal mortality reached 1.1%, and hepatic rupture was among the most serious contributors to poor outcomes [1]. In the series reviewed by Troja, et al. [4], early diagnosis and aggressive surgical intervention were key determinants of survival.

In hemodynamically unstable patients, immediate laparotomy is the preferred management. In this case, perihepatic packing was effective in controlling hemorrhage—a strategy supported by multiple studies as a viable first-line damage control technique [4,6,7]. Liver packing is especially useful in centers without access to more advanced techniques, such as hepatic artery embolization or liver transplantation, which remain reserved for refractory or recurrent bleeding [7-9].

Zhang, et al. [5] described a case of hepatic rupture in the second trimester of pregnancy that was managed conservatively, illustrating that treatment should be individualized based on clinical stability and imaging findings. However, in most reports, surgical approaches remain the mainstay of treatment due to the unpredictable and rapidly evolving nature of the condition [4,10].

Newer surgical technologies, such as the argon beam coagulator, have been successfully applied to control liver bleeding in HELLP-associated ruptures, although their use is limited to specific institutions [11]. In our case, successful hemostasis was achieved through repeated packing and delayed removal after 72 hours, aligning with current recommendations for staged surgical management [7,4].

Lastly, prompt ICU care, strict blood pressure control, and management of renal and coagulation parameters were essential for favorable outcomes. The patient's discharge after 30 days of intensive support reinforces the value of multidisciplinary management in such complex scenarios.

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