Case Report

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Spontaneous liver rupture after uncomplicated delivery: medical case report

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Introduction and importance: Spontaneous hepatic rupture is an uncommon and fatal complication that most often occurs in the setting of severe pre-eclampsia.
Case presentation: In this article, the authors describe a case of spontaneous liver rupture occurring on the sixth day of an uncomplicated pregnancy in postpartum.
Discussion: According to the literature, liver rupture in the obstetrical setting is mostly linked to pre-eclampsia and HELLP syndrome.
Conclusion: A collaborative multidisciplinary approach is required to define adequate medical and surgical management when there is suspicion of liver rupture in pregnant women.

Keywords: case report, pregnancy, spontaneous liver rupture

Introduction

Spontaneous liver rupture during pregnancy is one of the most serious complications associated with high maternal and perinatal mortality, making it a challenge for health professionals to manage[1]. The first description of this condition was made by Abercombie in 1844[2]. We report the case of a 41-year-old parturient, G3P3, who presented with spontaneous liver rupture occurring on the sixth day of postpartum not associated with pre-eclampsia.

HIGHLIGHTS

- Spontaneous hepatic rupture is a rare and fatal complication that most often occurs in the setting of severe pre-eclampsia.
- This complication requires multidisciplinary management.
- Treatment must be individualized according to the clinical presentation and condition of the patient and fetus.

Case presentation

We present a case of a 41-year-old woman; G3P3 with no medical or surgical history, her BMI was 33 kg/m². She was admitted to the delivery room for vaginal delivery of a 39-week pregnancy with no complications revealed during prenatal follow-up including hypertension or proteinuria. On admission, she was found to be hemodynamically and respiratory stable, apyretic, with negative proteinuria. The delivery was uneventful under epidural anesthesia with no manoeuvres or pressure on the abdomen during the deliver.

A biological workup found no abnormalities: HB: 12.6 g/dl, platelets :140 000/µl, prothrombin level: 89%. The delivery gave birth to a male newborn weighing 3 kg in good health with an estimated blood loss of 200 ml. Four days later, the patient presented with a large painful right leg with a positive Homans sign and Wells score of 4. The Doppler ultrasound of the right lower limb showed deep vein thrombosis in the popliteal vein. A hemophilia assessment was launched before administering curative anticoagulation based on LMWH 8000 IU/12 h on an RIETTE score of 2. Two days later, the patient presented with abdominal pain with sensitivity in the right hypochondrium. The clinical examination showed HR at 113 bpm, SBP: 79 mmHg, DBP: 40 mmHg with no signs of trauma and the biological assessment showed HB: 9 g/dl, platelets: 90 000/µl, ASAT:29 UI/l, ALAT: 14 UI/l, total bilirubin: 7.40 mg/l, direct bilirubin: 4 mg/l, prothrombin level :50%. Ultrasound and abdominal computed tomography scan showed heterogeneous liver with multiple linear and patchy lesions associated with dense intraperitoneal effusion of moderate size estimated at 400 ml without extravasation of contrast or image of neoplasia (Fig. 1). The patient was managed by a multidisciplinary team composed of resuscitators, obstetricians, surgeons, and radiologists. The treatment consisted of fluid resuscitation by 1000 ml of saline serum without recourse to transfusion and discontinuation of LMWH with close clinical and biological monitoring.

The patient's evolution was marked by clinical and biological stability without recourse to transfusion or surgery. After 12 days

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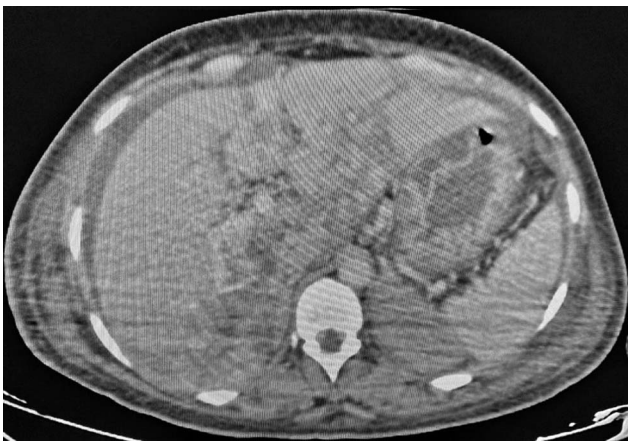

Figure 1. Cross-section showing fractured and lacerated liver involving almost the entire liver parenchyma.

of hospitalization, the patient was discharged home with a consultation appointment for re-evaluation and discussion of anticoagulation resumption.

This case report follows Surgical CAse REport (SCARE) guidelines[3].

Discussion

A spontaneous liver fracture during pregnancy is a rare but serious condition that can be life-threatening for both mother and fetus[4]. Pre-eclampsia and/or HELLP syndrome are the most common causes of this complication, but other cases may occur in the context of hepatocellular carcinoma or adenoma, vascular malformation, hemangioma, polyarthritis nodosa, and hepatic abscess[5]. There are two theories that explain this condition[6,7]: Fibrin deposition at the level of hepatic arterioles and sinusoidal capillaries secondary to acute disseminated microangiopathy can lead to multifocal hemorrhagic necrosis.
Hemorrhagic necrosis of the liver secondary to spasm of the portal capillaries due to the release of vasoactive substances in the context of uteroplacental ischemia.

Subcapsular hematoma of the right lobe is found in 75% of cases, in 15% of cases it is found in the left lobe and in 10% a rupture of the liver[8]. Most cases reported in the literature occur in the context of a complicated pregnancy or are associated with an underlying liver pathology[9]. Cases of liver rupture during pregnancy without any complications are rare. One such case was reported involving a 33-year-old patient, G2P1 who presented with subcapsular hematoma with liver rupture on the second day after cesarean[10].

The cause of liver rupture during an uncomplicated pregnancy is not yet fully understood. Lovenger *et al.*[11] suggest that an infarction with vascular disruption can occur, leading to intrahepatic hemorrhage, subcapsular hematoma, and ultimately rupture of Glisson's capsule with intraperitoneal hemorrhage. Another possibility which can explain our case is that hepatic infarction may result from factors such as gross ischemia and obstruction to sinusoidal blood flow due to deposited fibrin and relative hypovolemia.

In this case, hypoperfusion secondary to shock episodes may have contributed to hepatic infarction. It is unlikely that a vasospastic phenomenon which leads to endothelial cell damage, fibrin deposit, and obstruction of sinusoidal blood flow would occur in an uncomplicated pregnancy[12].

Our case reports a 41-year-old patient who presented with spontaneous rupture of the liver on the sixth day after delivery without any complications in a context of curative anticoagulation which joins the rare cases found in the literature. The patient was satisfied with the management.

This case report highlights the occurrence of a rare complication known as spontaneous rupture of the liver after an uncomplicated delivery, which requires prompt identification and management. It is important to consider this condition when experiencing upper abdominal pain and signs of hemorrhagic shock, even during an uncomplicated pregnancy.

Our patient was satisfied from our medical care.

Conclusion

Spontaneous liver rupture during pregnancy is a rare but serious complication that requires prompt diagnosis and management by a multidisciplinary team. This case report highlights the challenges associated with this rare obstetrical pathology, especially in the context of curative anticoagulation. Early recognition and appropriate management can improve maternal and perinatal outcomes, and close follow-up is necessary to ensure the safety of anticoagulation resumption. Further research is needed to better understand the risk factors and optimal management strategies for this rare but potentially life-threatening complication.

Ethical approval

The article type (case report), the ethical approval was not necessary.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Conflict of interest statement

None.

Guarantor

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This is not an original research project involving human participants in an interventional or observational study but a case report. This registration was not required.

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References

[1] Bis KA, Waxman B. Rupture of the liver associated with pregnancy. A review of the literature and report of two cases. Obstet Gynecol Surv 1976;31:763–73.

[2] Abercombie J. Case of hemorrhage of the liver. Lond Med Gaz 1844;34: 792–4.

[3] Agha RA, Franchi T, Sohrabi C, *et al*. pour le groupe SCARE. The SCARE 2020 guideline: updating consensus Surgical CAse REport (SCARE) guidelines. Int J Surg 2020;84:226–30.

[4] Abi F, El Faress F, Berrada R, *et al*. Les lésions hépatiques hémorragiques de la toxémie gravidique. J Chir 1986;12:742–5.

[5] Wolf JL. Liver disease in pregnancy. Med Clin N Am 1996;80: 1167–87.

[6] Langer B, De Manzini N, Boudier E, *et al*. Hématome sous-capsulaire du foie rompu. Conduite à tenir. A propos d'une observation Rev Fr Gynecol Obstet 1997;92:188–90.

[7] Aarnoudse JG, Houtholf HF, Weits J. A syndrome of the liver damage and intravascular coagulation in the last trimester of the normotensive pregnancy. A clinical and histopathological study. Br J Obstet Gynaecol 1986;93:145–9.

[8] Ben Aissa N, Battar S, Gara M, *et al*. Hématome sous-capsulaire du foie complication de la prééclampsie. J Magh Anesth Réanim 2001;8: 131–3.

[9] Hibbard LT. Spontaneous rupture of the liver in pregnancy: a report of eight cases. Am J Obstet Gynecol 1976;126:334–8.

[10] Matsuda Y, Maeda T, Hatae M. Spontaneous rupture of the liver in an uncomplicated pregnancy. J Obstet Gynaecol Res 1997;23: 449–52.

[11] Lovenger EH, Vujic I, Lee WM, *et al*. Hepatic rupture associated with pregnancy: treatment with trancatheter embolization. Obstet Gynecol 1985;65:281–4.

[12] Rolfes DB, Ishak KG. Liver disease in toxemia of pregnancy. Am J Gastroenterol l986;81:1138–44.