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Subcapsular Hepatic Hematoma: Considerations and Strategies of a Rare Complication of HELLP Syndrome

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Abstract:
Hemolysis, elevated liver enzymes, and low platelets (HELLP) is a relatively raresyndrome in pregnancy that can lead to disastrous complications when missed. Here,we present a case of HELLP syndrome complicated by development of subcapsularliver hematoma. The patient was managed conservatively and underwent hepaticartery embolization for the non-ruptured hematoma. Although this condition is rare, itmay present indolently, and labs may not correlate with severity of symptoms.Therefore, high clinical suspicion is warranted, especially in those with a history of preeclampsia and preterm deliveries. More investigation is needed to establish a protocol for monitoring and preventing this condition.

Key Words: Subcapsular Hepatic Hematoma, HELLP Syndrome

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Introduction

Pre-eclampsia, or proteinuria with the diagnosis of hypertension beyond 20 weeks gestation, is uncommon but can often be life-threatening in pregnancy. Although controversial, HELLP syndrome is considered to be a more severe and rare form of this disorder.Patients may present with vague right upper quadrant pain however the condition is

acronymized by the triad of lab results including hemolysis, elevated liver enzymes, and low platelet count. Common complications of HELLP syndrome include bleeding, disseminated intravascular coagulation (DIC), and abruptio placentae. Here, we present the case of a peri-partum subcapsular liver hematoma, a rare and dangerous complication of HELLP syndrome.

Case Description:

A 29-year-old woman, gravida 4, para 3, presented at 27-weeks gestation with acute onset epigastric and pelvic pain over the last day. She had a history of pre-eclampsia with prior pregnancies. Her severe, intermittent epigastric pain radiated laterally down to the pelvis and was aggravated when laying down. She was otherwise hemodynamically stable upon arrival, and initial exam revealed mild tenderness in the right upper quadrant (RUQ). Labs were significant for high ALT 233 U/L, AST 378 U/L, low platelets 108,000/microL, and high LDH 519 IU/L. The decision was made to pursue an emergent C-section at admission for concerns of HELLP syndrome. Following the successful C-section, a RUQ ultrasound showed two complex hypoechoic hepatic mass-like areas measuring 9.3cm and 3.5 cm, in the setting of hepatomegaly and diffuse hepatic steatosis suggestive of focal fatty sparing or cavernous hemangioma. Biliary sludge without cholecystitis or cholelithiasis was also noted. An MRI with IV contrast with liver mass protocol was obtained, which showed a hepatic subcapsular hematoma with dimensions 24 cm x 9.2 cm x 3.9 cm at the level of the right hepatic lobe [Figure 1, 2].

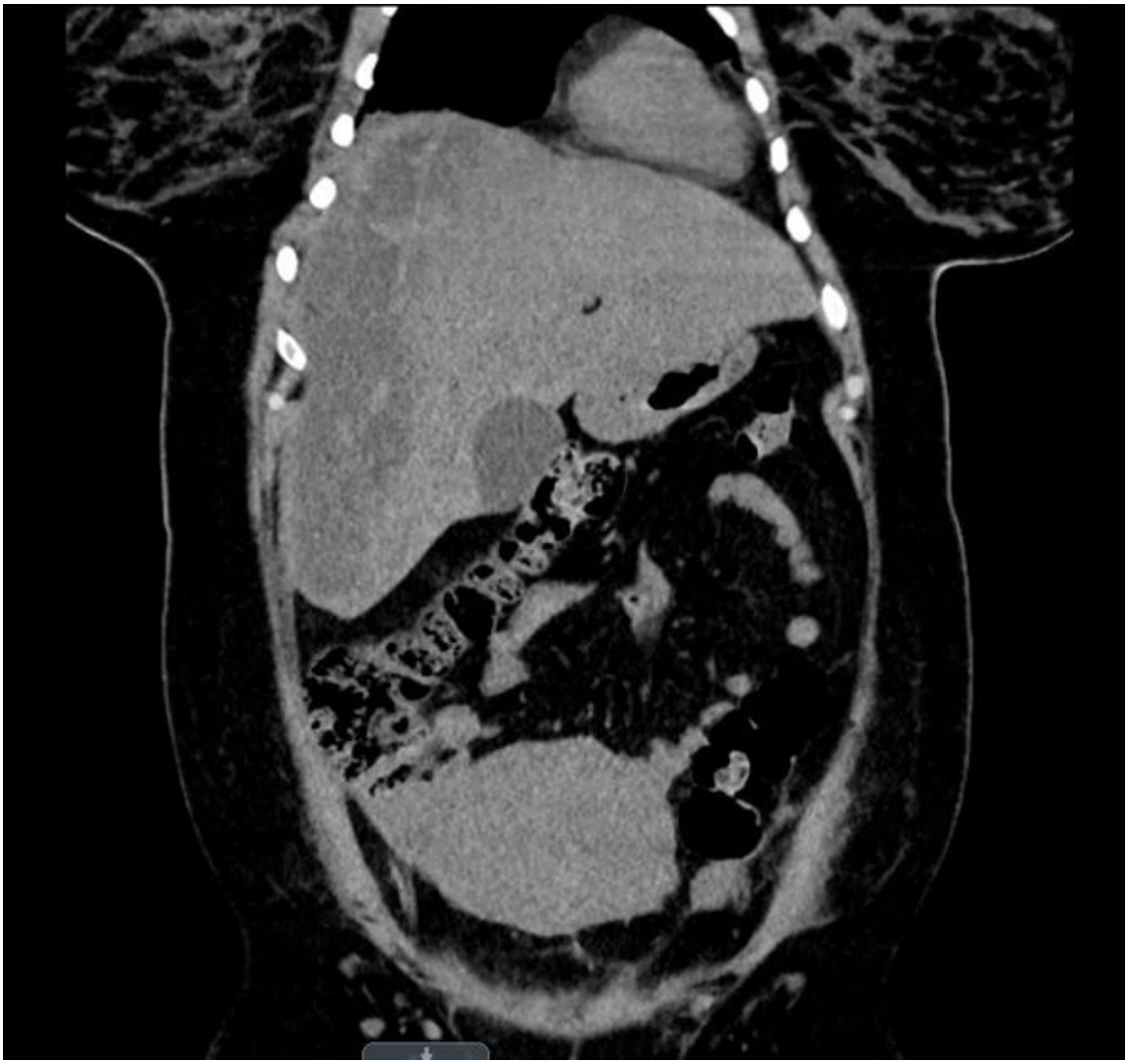

Figure 1: Coronal section of CTA abdomen and pelvis demonstrates subcapsular hematoma.

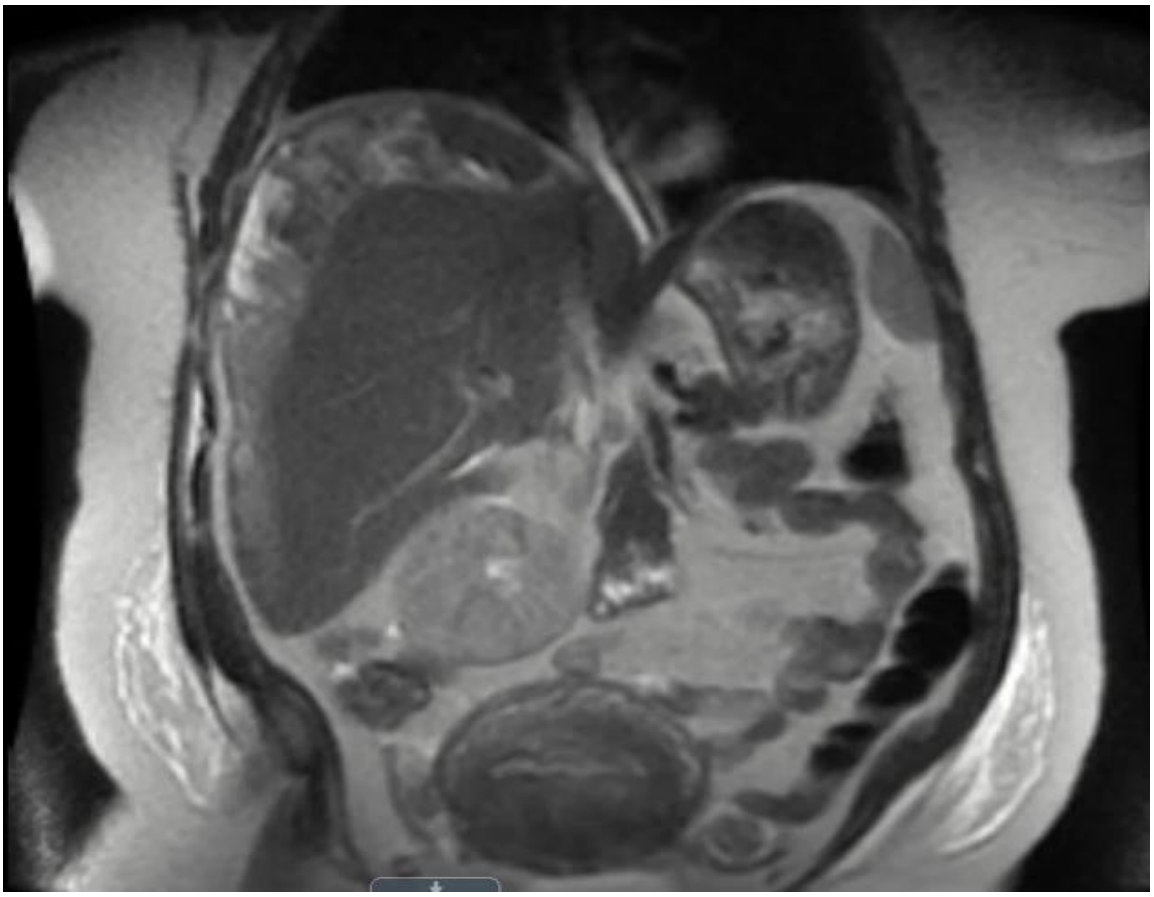

Figure 2: Coronal section of MRI with IV contrast (Liver mass protocol) of abdomen and pelvis demonstrates subcapsular hepatic hematoma involving the hepatic dome and right hepatic lobe, approximately measuring 24 cm in craniocaudal dimension.

The patient's pain continued to worsen with a new drop in hemoglobin from 12.8 gm/dl at admission to 7.1 gm/dl on day 4, and a downtrend in her liver enzymes following the C-section.

Interventional radiology was consulted for concerns of hematoma rupture and recommended CT angiography of the abdomen and pelvis with and without arterial/venous phase that showed a similar appearing subcapsular hematoma without active bleeding. Sheunderwent image-guided hepatic angiography which showed a large perihepatic hematoma along the right lateral abdominal wall without active contrast extravasation. A right hepatic artery embolization was completed with a reduction in peripheral hepatic arterial blood flow by 25%. After the embolization, her hemoglobin remained stable, and she was ultimately discharged six days later in stable condition with a complete normalization of her liver enzymes.

Discussion:

Subcapsular hematoma is a rare but potentially life-threatening complication of HELLP syndrome associated with poor maternal and perinatal outcomes with an incidence of about 1% [1,2]. It can often present nonspecifically, such aswith nausea, vomiting, and right upper quadrant that may refer to the shoulder or may present sub-clinically with just a mild elevation of liver enzymes[3]. Due to its obscure presentation, it can be misdiagnosed for other, more common emergencies in pregnancy, such as a pulmonary embolism or cholecystitis [4].

A subcapsular hematoma forms throughrupture of the subcapsular liver veins or sinusoids, specifically between the Glisson's capsule and liver parenchyma. While the exact mechanism of how this phenomenon occurs in HELLP syndrome is not known, a leading theory discusses ischemic liver lesions that form due to pre-eclampsia-associated

microangiopathy that further progresses to hepatic necrosis and hemorrhage [1]. Neovascularization in the affected area creates fragile vessels that are more prone to bleeding, especially in the setting of hypertensive pre-eclampsia. The subsequent intrahepatic hemorrhage can then develop into a subcapsular hematoma, which can carry a very high mortality rate of greater than 80%, even without rupture into the peritoneal cavity [5]. In one case of repeat subcapsular hematoma managed conservatively during the first pregnancy, the patient experienced rupture of the hematoma upon the second pregnancy and eventually required embolization and surgery. An arteriogram showed numerous pseudoaneurysms suggesting that underlying vasculopathy may influence the pathogenesis of this complex disorder[6].

Given such a high mortality rate, early diagnosis is critical. While there is no "best" test for diagnosis, an ultrasound is an effective and non-invasive modality that is both the quickest and easiest. Both CT and MRI have similar excellent sensitivity for identifying and assessing the hematoma, however, CT imaging may be preferred as it is more readily available [7]. Screening patients who present with HELLP syndrome may also be beneficial as the liver panel and lab testing do not correlate well with severity on imaging [1]. Liver histopathology findings may include fibrin deposition in the sinusoid, with or without periportal hemorrhage and lobular necrosis. Steatosis is present in roughly 30% of patients [1].

The treatment of hepatic subcapsular hematoma depends on the severity of the hematoma and the presence of active bleeding, therefore, they typically require ICU-level monitoring. Conservative management is appropriate for an unruptured, nonbleeding hematoma, as well as for small and contained bleeds, if otherwise hemodynamically stable [1,7]. Any unintentional trauma,including abdominal palpation or even moving the patient during transport, must be avoided to prevent the rupture of the fragile hematoma. Repeat imaging is important to monitor the progression of the hematoma. Complete resolution may take months; therefore, outpatient follow-up is reasonable if the hematoma is not enlarging and both mother and baby are otherwise stable [1]. Further investigation is needed to determine the modality and the appropriate length for follow-up of subcapsular hematoma.

Indications for surgical intervention include an increase in hematoma size or clinical deterioration of the patient. Embolization of the hepatic artery, such as in our patient, may also be considered in nonsurgical candidates and has shown higher maternal survival rates [1,7]. In a study by Onishi et al., 34 patients underwent transcatheter arterial embolization for subcapsular hematoma caused primarily by liver tumor rupture and trauma. Results showed a technical success rate of 94.1% and a clinical success of 73.5%, without a statistically significant difference between the two measures, showing that embolization is safe and effective for the management of subcapsular hematoma [8].

An acute rupture of the hematoma requires different, more intricate surgical techniques, including abdominal packing and drainage of the site, ligation of a portal vein or hepatic artery branch, patching of the omentum, and possibly even partial liver resection [1]. Ultimate options include a liver transplant for refractory hemorrhage or rapidly progressing liver failure.

For patients who may become pregnant again, it is important to monitor them for early signs of pre-eclampsia and HELLP syndrome. Prevention with a lose-dose aspirin should be offered for women with a history of early-onset pre-eclampsia or HELLP syndrome, preterm delivery at less than 34 weeks, or multiple pregnancies with pre-eclampsia [1].

Conclusion:

Overall, diagnosis of hepatic subcapsular hematoma is tricky as it may present vaguely and can easily be misdiagnosed. Lab findings do not correlate with imaging severity, therefore, screening high-risk patients with simple bedside US imaging is prudent. Management revolves around the prevention of hematoma rupture as patients can deteriorate quickly and may require advanced surgical options and even liver transplant. As data on pregnancy outcomes following liver hematoma and recurrence rates are scarce, more studies are required to investigate this unique phenomenon, especially with regards to post-partum management and evaluation of future pregnancies.

References:

1. Ditisheim A, Sibai B. Diagnosis and Management of HELLP Syndrome Complicated by Liver Hematoma, Clinical Obstetrics and Gynecology: March 2017 - Volume 60 - Issue 1 - p 190-197 doi: 10.1097/GRF.0000000000000253
2. Sibai BM, Ramadan MK, Usta I, Salama M, Mercer BM, Friedman SA. Maternal morbidityand mortality in 442 pregnancies with hemolysis, elevated liver enzymes, and low platelets (HELLP syndrome). Am J Obstet Gynecol. 1993 Oct;169(4):1000-6. doi:10.1016/0002-9378(93)90043-i. PMID: 8238109.
3. Xavier P, Melo R, Amândio V, Beires J, Pereira-Leite L. Subcapsular hepatic hematoma inan otherwise uncomplicated pregnancy. Arch Gynecol Obstet. 2002 Jan;266(1):44-5. doi: 10.1007/pl00007498. PMID: 11998964.
4. Haram K, Svendsen E, Abildgaard U. The HELLP syndrome: clinical issues and management. A Review. BMC Pregnancy Childbirth. 2009 Feb 26;9:8. doi: 10.1186/1471-23939-8. PMID: 19245695; PMCID: PMC2654858.
5. Stella CL, Malik KM, Sibai BM. HELLP syndrome: an atypical presentation. Am J ObstetGynecol. 2008 May;198(5):e6-8. doi: 10.1016/j.ajog.2007.12.034. Epub 2008 Mar 14. PMID:18342825.
6. Greenstein D, Henderson JM, Boyer TD. Liver hemorrhage: recurrent episodes duringpregnancy complicated by preeclampsia. Gastroenterology. 1994 Jun;106(6):1668-71. doi: 10.1016/0016-5085(94)90425-1. PMID: 8194715.
7. Wicke C, Pereira PL, Neeser E, Flesch I, Rodegerdts EA, Becker HD. Subcapsular liver hematoma in HELLP syndrome: Evaluation of diagnostic and therapeutic options--a unicenter study. Am J Obstet Gynecol. 2004 Jan;190(1):106-12. doi: 10.1016/j.ajog.2003.08.029. PMID: 14749644.
8. Onishi Y, Shimizu H, Oka S, Taniguchi T, Kawahara S, Ishisaka Y, Isoda H, Nakamoto Y. Transcatheter arterial embolization for subcapsular hematoma of the liver. AbdomRadiol (NY). 2023 Feb;48(2):765-772. doi: 10.1007/s00261-022-03732-w. Epub 2022 Nov 15. PMID: 36378282.