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Case Report

Bilateral Rectus Sheath Hematoma in a Patient with Partial HELLP Syndrome: A Case Report

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Abstract:

Partial HELLP Syndrome (PHS) has a much smaller incidence than HELLP syndrome. Postoperative PHS is unusual and can have serious consequences. Here, we report a case of partial HELLP syndrome following Caesarian section (CS) in a pregnant patient at term maturity with a provisional diagnosis of Preeclamptic toxemia. The patient was showing symptoms and signs of severe preeclampsia, including headache, high blood pressure, and +3 proteinuria by urine dipstick. Her Preelcamptic -workups were normal. After the blood pressure was stabilized, a successful lower segment cesarean section (LSCS) was performed. On the second day postoperatively, her platelet counts decreased, and her liver enzymes and lactate dehydrogenase levels increased without any drop in hemoglobin. This led to the diagnosis of partial HELLP syndrome. On the fifth day postoperatively, the patient suffered from lower abdominal pain and swelling in the lower abdomen; trans-abdominal ultrasound was done and revealed bilateral rectus sheath hematoma.

Keywords: hypertension with pregnancy; partial hellp; rectus sheath hematoma

Introduction

Weinstein first described HELLP syndrome in 1982; it is considered a dangerous complication of severe Preeclampsia [1]. It is reported that the incidence of HELLP syndrome is 0.18%-0.19% of pregnancies [2]. HELLP syndrome is a serious condition in pregnant women. It involves hemolysis (RBC appearance), elevated LDH levels (>600 IU), and serum bilirubin levels (>1.2 mg/dl). The second criterion is elevated liver enzymes, specifically aspartate aminotransferase (AST > 70IU). The third criterion is thrombocytopenia (<100,000/ml). If a patient only has one or two of these criteria but not all of them, then they may be diagnosed with partial HELLP syndrome. Partial HELLP syndrome is generally less severe than complete HELLP syndrome and has a lower incidence [3]. It is important to note that Postoperative HELLP syndrome leads to serious consequences. While it is uncommon for Partial HELLP to occur post-operatively, it can still cause the same complications as complete HELLP [4]. Our report involves a case of partial HELLP syndrome that occurred five days after a Caesarian section (CS).

Case Presentation:

A 29-year-old woman, who had a previous C-section and has no significant medical history, is 38 weeks pregnant (she was not in labor). She arrived at the hospital complaining of headache and bilateral lower limb edema. During examination, her blood pressure was high, and albuminuria was detected. The Preeclampsia work-up showed normal levels of complete blood count (CBC), platelet count. The patient had normal prothrombin and partial prothrombin time. Levels of ALT, AST, and Lactate dehydrogenase (LDH) were at normal range. We decided termination of pregnancy after controlling blood pressure with antihypertensive medication (labetalol 100 mg infusion) and Magnesium Sulphate (The loading dose of 4 grams was slowly injected intravenously, then continuing with 1 gram/ hour for 24- hours).

The patient asked for a Cesarean Section due to her refusal to go through induction of vaginal delivery. A Lower Segment Caesarean Section (LSCS) was performed. The procedure was uncomplicated.

Following a cesarean section, control of blood pressure was accomplished by labetalol 200mg every 8-hour Comprehensive laboratory tests are conducted daily for all pre-eclamptic patients until discharge in our hospital. Table 1 summarizes the laboratory findings of patients at different days after CS.

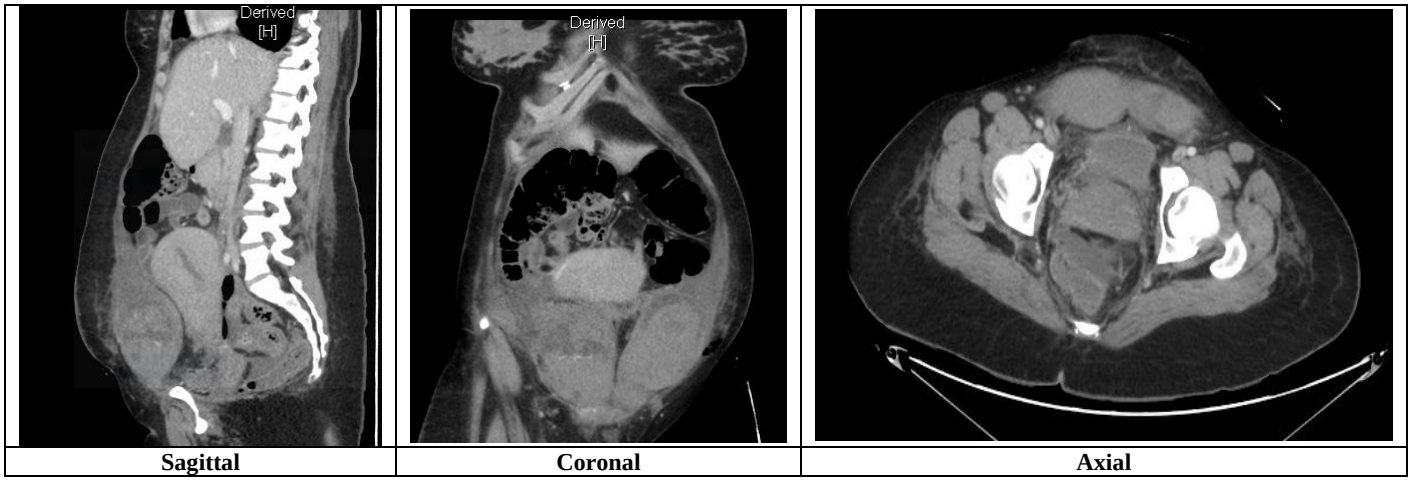
Post-operative Days	Hemoglobin (mg/dl)	Platelet x10^3	Alanine transferase (IU)	Aspartate Transferase (IU)	Lactate dehydrogenase (IU)
CS Date	10.5	110-127	31	42	416
1st	10.3	140	37	46	483
2nd	10	142	39	48	490
3rd	10	138	37	46	490
4th	9	120	33	46	616
5th: Two unit packed red blood cells was transfused at day 5 post CS.	8.7	100	39	40	800
6th	10	150	37	35	815
12th	11	170	37	39	400

Table 1: Laboratory findings of patient from admission to discharge

The patient showed decreased hemoglobin and platelets post-operation, while liver enzymes, alanine and aspartate transaminases (ALT and AST), remained within normal range. LDH levels increased to 815IU. On the 4th day post-CS, partial HELLP was diagnosed, meeting all criteria except for normal liver enzymes.

On the fifth day postoperatively, the patient reported sudden pain in the lower abdomen. Upon examination, swelling was observed on both sides of the incision scar from the cesarean section. An immediate trans-abdominal ultrasound was performed, which showed bilateral hematomas measuring 8x8 cm and 8x6 cm. A CBC revealed an 8 mg/dL hemoglobin level. The patient was given 2 units of packed RBCs. A computed tomography (CT) scan was then performed to confirm the location and nature of the hematomas. The results of the CT scan showed that the patient had bilateral rectus hematomas, the left one was measuring 8.7 x 6.1 cm while the right one was 8 x 6.7 cm (figure 1).

Conservative treatment was provided to the patient during her hospital stay. The doctors started administering intravenous antibiotics, specifically cephazolin and metronidazole, every eight hours for three days. The patient's labs were monitored every day. The patient was discharged 11 days after CS. The patient attended our clinic weekly. This continued for the first month after her discharge until the hematoma was fully organized. During each visit, a clinical assessment and an abdominal ultrasound were performed to follow the size of each hematoma. By the fourth month post-surgery, the patient's swelling had subsided, and the hematoma had fully resolved.



Sagittal | **Coronal** | **Axial**

Figure 1: Pelvis-abdominal CT scan of patients shows bilateral rectus sheath hematoma.

Discussion:

HELLP syndrome is characterized by the hemolysis, elevated liver enzymes, and thrombocytopenia. It is estimated that approximately 68% of cases occur during pregnancy or within two days after delivery [5-6].

The incidence of Partial HELLP syndrome (PHS) is 21% to 24% of pregnant women with severe PET while the incidence of complete HELLP syndrome is between 2% to 12%. [7-8].

The classification system used in Mississippi for HELLP syndrome is based on the platelet count of the mother, with Class I being assigned when the count is less than 50,000/µl, Class II when the count is between 50,000 and 100,000/µl, and Class III when it is between 100,000 and 140,000/µl [9]. Tennessee's classification system, on the other hand, categorizes HELLP syndrome based on the extent of its development. Complete HELLP is identified by a serum LDH level exceeding 600 IU/L, a platelet counts of less than 100,000/µl, and a serum AST level of over 70 IU/L. Partial HELLP, on the other hand, exhibits only one or two of these features, such as low platelet count, high LDH levels, or raised liver enzymes [10-11].

The underlying mechanism of the condition involves multiple factors that contribute to the disease progression. It starts with the injury to the endothelial cells, which are the cells that line the blood vessels. The injury triggers a response in the body that leads to the narrowing of the blood vessels, known as vasospasm. Additionally, platelets, which are cells that help in the formation of blood clots, get activated and further contribute to the disease progression [12].

The placenta, which is an organ that develops during pregnancy, releases certain substances, such as inflammatory cytokines and syncytiotrophoblasts particles, that trigger an inflammatory response in the mother's body. This response leads to the activation of the coagulation system, which is the body's mechanism to form blood clots to prevent excessive bleeding. However, in

this condition, the coagulation system gets overactivated, leading to the formation of blood clots in the blood vessels [13].

This inflammatory response also causes an increase in the number of leukocytes, which are white blood cells that help in fighting infections. It also leads to an increase in the concentration of interleukins, which are signaling molecules that coordinate the immune response. The complement system, which is a part of the immune system that helps in killing bacteria, also gets activated. The placental components also interact with the mother's immune system and endothelial cells, leading to an even more exacerbated inflammatory response. Overall, the condition involves a complex interplay between various factors, and a thorough understanding of these mechanisms is crucial to developing effective treatment strategies [14].

HELLP syndrome symptoms usually occur in the third trimester of pregnancy but can also develop during the second trimester or after giving birth. Epigastric pain, nausea, or vomiting is a significant risk factor for maternal morbidity. Hypertension and proteinuria are present in 85% of cases, but they may not be present in severe cases [15]. In order to diagnose HELLP syndrome in a woman who is suspected to have preeclampsia, doctors will look for the presence of microangiopathic hemolytic anemia, thrombocytopenia, and increased liver enzymes. A damaged red blood cell count can be seen in a peripheral blood smear, which will show burr cells, schizocytes, and helmet cells. Lactate dehydrogenase (LDH) levels will also increase (10). Thrombocytopenia is a low platelet count in blood, present in all HELLP patients. FDPs and antithrombin III activity tests can identify DIC. Liver dysfunction is detected with high levels of ALT, AST and LDH. Elevated LDH levels of more than 1,400 IU/L, ALT levels of more than 100 IU/L, AST levels of more than 150 IU/L, and a uric acid concentration of more than 7.8 mg/dl indicate severe maternal morbidity. [16-17].

In pregnant women, if right upper quadrant pain and nausea accompany preeclampsia, HELLP syndrome should be ruled out. In severe cases, hypertension is controlled, and the baby is delivered immediately through an emergency C-section [18-19].

This report concludes that Partial HELLP may develop after surgery, causing severe complications such as bilateral rectus sheath hematoma. If identified, it should be treated conservatively.

Rectus sheath hematoma (RSH) is usually manifests with abdominal pain, fever, nausea, and vomiting. Diagnosis of RSH can be challenging due to the non-specific nature of these symptoms and the low incidence of the complication. RSH is commonly caused by injury to the inferior epigastric arteries and hypertensive disorder with pregnancy. [5]. Diagnosis of chronic rectus sheath hematoma can be done using ultrasonography, CT scan, or MRI. CT scan may not always provide specific findings [6]. In 2015, Joshi and Upadhyaya conducted a study that examined the occurrence of rectus sheath hematomas in patients who had undergone a C-section. The study revealed that three patients developed this condition, which manifested as abdominal pain and swelling. To confirm the diagnosis, the patients underwent ultrasound and MRI imaging, which showed the presence of hematomas in the rectus sheath. The patients had a re-exploration and hematoma evacuation, which involved making an incision in the abdominal wall and removing the blood clots [7].

Rectus sheath hematoma was manifested in a case report described by Ansar et al. A 25-year-old patient pregnant at 32 weeks had undergone CS after the diagnosis of HELLP syndrome and eclampsia. After surgery, the patient experienced low blood pressure and reduced urine output. An ultrasound revealed rectus sheath hematoma, subcapsular liver, and Intraperitoneal hemorrhage. An exploratory laparotomy was performed 12 hours later, which showed a 6cm rectus sheath hematoma and liver surface bleeding. During surgery, the patient was given six FFPs units and four packed RBCs units. It's important to note that this case report is more severe than the current one, as it involved a liver capsular hematoma that ruptured and caused the patient's death [2].

As far as we know, it is uncommon to have a bilateral RSH caused by Partial HELLP, which develops post-CS within 5 days, except for surgical trauma. Another strong point is that conservative management was used after the discovery of the hematoma, with no rush for surgical evacuation. Furthermore, regular follow-up was done after the discharge.

Conclusion:

Partial HELLP can manifest itself in the postpartum period and may be a risk factor for developing bilateral rectus sheath hematoma postoperatively.

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