

Cholecystitis Associated with HELLP Syndrome in Previously Preeclampsia Patient



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Abstract

In this article, we report a pregnant woman with HELLP syndrome (hemolysis findings, elevated liver enzymes, and low platelets) and acute cholecystitis. She was first admitted due to epigastric pain, nausea, and vomiting, which was managed and discharged after three days. She was admitted due to severe right upper quadrant pain, which sonography showed cholecystitis; however, the levels of lactate dehydrogenase level, ALT, AST, and platelet suspects to HELLP syndrome, and after two days of current admission, these parameters became 2148 IU/L, 199 U/L, 230 U/L, and 43000 respectively, which led us to a definitive diagnosis of HELLP syndrome patient underwent cesarean section surgery, which led to significant improvement in laboratory findings. Afterward, on day 3, the patient went on laparoscopic cholecystectomy surgery. Finally, on the seventh day of admission, all parameters were normal, and the patient was discharged without complications.

Keywords: Cholecystitis; HELLP syndrome; Preeclampsia

Introduction

HELLP is a unique and serious syndrome characterized by increased hemolysis, elevated liver enzymes, and low platelets. The incidence of HELLP is less than 1% of all pregnancies [1] and 10–20% of cases with severe preeclampsia [2]. The diagnostic criteria of the classification system for HELLP are hemolysis with increased LDH (> 600 U/L), AST (≥ 70 U/L), and platelets less than $100\text{--}109/L$ [3]. Biliary tract disease is an uncommon disease in pregnancy. In particular, acute cholecystitis can be challenging to diagnose in pregnancy. However, the management plan includes conservative treatment, antibiotics, and surgery depending on the gestational age at the diagnosis [4].

HELLP syndrome may be misdiagnosed as viral hepatitis, cholangitis, and other less common conditions such as ITP, acute fatty liver of pregnancy (AFLP), hemolytic uremic syndrome (HUS), thrombotic thrombocytopenic purpura (TTP), and systemic lupus erythematosus (SLE). They are associated with high maternal mortality [5,6]. A case of HELLP syndrome has been reported that initially, there was much doubt about the diagnosis of cholecystitis. Because HELLP syndrome, preeclampsia, and cholecystitis may occur in both the second and third trimesters, that should be considered when evaluating a pregnant patient with upper quadrant abdominal pain due to the overlap of these diagnoses in the early stages, which is very challenging.

Case Description

A 29-year-old second gravid woman at 27 weeks of gestation was referred to our hospital's Emergency Department due to epigastric pain and vomiting. She was hospitalized four days before the current admission date due to epigastric pain, nausea, and non-bloody and non-bilious vomiting for three episodes and elevated blood pressure, and lower extremity edema (3+) for two days. She had a hypertension crisis (160/110 mmHg), which was managed with hydralazine. She also received magnesium sulfate and two doses of betamethasone; then her vital signs were examined, and her blood pressure was 135/75 mmHg, heart rate 76 per minute, and temperature 36.8 C. On examination, there was no vaginal bleeding or discharge, headache, blurred vision, and dyspnea. With regard to her stable state, it was decided that there was no need for pregnancy termination except in the case of another elevation of blood pressure and symptoms of preeclampsia.

After three days after her last admission, the patient was admitted due to severe right upper quadrant pain, and acute cholecystitis was diagnosed with ultrasound findings. Sonography showed edematous and increased gallbladder wall thickness, no stones, and sludges, consistent with acute cholecystitis. Laboratory findings on the first day of admission showed leukocytosis,

elevated lactate dehydrogenase, calcium, aspartate transaminase, and alanine transaminase levels. Urinalysis showed 3+ urine protein and random urine protein of 185 mg/dL. Table 1 shows that the patient's paraclinical laboratory test trend was increasing.

On the second day of admission, the lactate dehydrogenase level, ALT, AST, and platelet count became 2148 IU/L, 199 U/L, 230 U/L, and 43000, respectively, which were not following the features of cholecystitis and led to the final diagnosis to HELLP syndrome.

Table 1: Shows that the patient's paraclinical laboratory test trend was increasing.

Variable	On Admission	Day 1		Day 2	Day 3	Day 7	Reference Range
		First Half	Second Half				
White blood cells	16.4	14.1	14.1	26	20	11.4	4-10 × 10 ⁹ /L
lymphocytes	17.6	17.3	16.8	7.6	11.3	22.4	20-50%
neutrophils	76.1	76.5	73.7	88.9	84.8	69	35-70%
Red blood cells	4.21	4.41	4.44	4.21	3.58	3.21	4.2-5.4 x 10 ¹² /L
Hemoglobin	12.3	12.8	12.9	12.7	10.4	9	
Hematocrit	37	38.2	38.7	35.6	30.5	28.5	35-47%
Platelets	153	137	100	43	61	192	150-450
LDH	1160	2215	2103	2148	1169	600	<530IU/L
ALT	65	178	226	199	111	36	<35U/L
AST	94	269	306	230	130	22	<35U/L
ALP	224	235	248	194	167	280	60-300U/L
ESR	33	39	40	11	-	-	0-20mm/hr
Calcium	10.7	8.8	8.2	7.3	7.5	8.3	8.2 - 10.2mg/dL
Blood urea nitrogen	19	23	22	27	19	12	13-43 mg/dL
Creatinine	0.6	0.7	0.8	0.9	0.6	0.9	0.6 - 1.3mg/dL
Total bilirubin	0.7	1.6	1.97	1.6	-	0.47	<1.2mg/dL
Direct bilirubin	0.2	0.9	0.68	0.9	-	0.16	<0.3mg/dL

After the second day, the patient went on cesarean section surgery, which led to significant improvement in laboratory findings. Afterward, on day 3, the patient went on laparoscopic cholecystectomy surgery. Finally, on the seventh day of admission, all parameters were normal, and the patient was discharged without complications.

Discussion

The present article indicates that cholecystitis and gallbladder disorders could help diagnose pre-eclampsia and HELLP syndrome and emphasizes paying meticulous attention to evaluating these conditions and prompt actions in surgical decisions. Previous studies have proven that HELLP syndrome can be misdiagnosed as pre-eclampsia, cholecystitis, cholelithiasis, or pancreatitis, and in some cases, even misdiagnoses the physician. Therefore, the differential between these diseases can affect the health of the patient and pregnancy outcome. [7,8]. Very few literatures study the relationship between cholecystitis and HELLP syndrome. A previous case report in 2021 reported a woman with pre-eclampsia findings (hypertension and headache) and elevated liver function tests, and there was no thrombocytopenia and hemolysis. Thus HELLP syndrome was ruled out. However, on

a CT scan, the gallbladder wall was thickened and edematous, indicating that gallbladder wall thickening and cholecystitis could be a sign of pre-eclampsia and possibly HELLP syndrome [9].

The synchronicity of gastrointestinal disorders like pancreatitis and cholecystitis with HELLP syndrome can happen. One previous review presented a case of acute pancreatitis and cholecystitis with HELLP syndrome and pre-eclampsia. It concluded that pre-eclampsia and HELLP syndrome could cause systemic ischemia, which would damage not only the liver but also the pancreas and gallbladder. Although our patient, in this report, did not show any signs of pancreatitis (without elevated amylase and lipase levels and no signs of abdominal pain radiating to the back), cholecystitis was apparent, and the patient underwent cholecystectomy. The definitive therapy for cholecystitis is surgical intervention. Symptomatic cholecystitis during pregnancy is managed similarly to that of non-pregnant cases. Studies recommend surgical treatment as the first step during pregnancy. Laparoscopic cholecystectomy is safe during pregnancy [10]. However, one study concluded that cholecystectomy during the third trimester of pregnancy was associated with multiple adverse outcomes and suggested that cholecystectomy should be delayed until the pregnancy is terminated. [11].

Definite treatment of HELLP syndrome is pregnancy termination as soon as possible, either by cesarean or vaginal delivery. Management of HELLP syndrome requests tertiary medical facilities with intensive care units for the mother and neonate. Previous studies did not differ between the management of pre-eclampsia and HELLP syndrome [12,13]. HELLP syndrome is known to be an atypical form of pre-eclampsia. HELLP syndrome in a patient with pre-eclampsia is associated with a higher risk of neonatal and maternal morbidity and mortality [14]. In summary, our case was first admitted due to epigastric pain, nausea, and vomiting, which was managed and discharged after three days. She was admitted due to severe right upper quadrant pain, which sonography showed cholecystitis; however, the levels of lactate dehydrogenase level, ALT, AST, and platelet suspects to HELLP syndrome, and after two days of current admission, these parameters became 2148 IU/L, 199 U/L, 230 U/L, and 43000 respectively, which make us to do cesarean section surgery, which led to significant improvement in laboratory findings.

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