



Successful Outcome of HELLP Syndrome in a 23-Year-Old Pregnant Woman: A Case Report

Masoumeh Mirteimouri,¹ Seyedeh Azam Pourhoseini,^{1*} and Fahimeh Ghaneie Motlagh²

¹Department of Obstetrics and Gynecology, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

²Department of Obstetrics and Gynecology, 9 Day Hospital, Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran

*Corresponding author: Seyedeh Azam Pourhoseini, Department of Obstetrics and Gynecology, Emamreza Hospital, Mashhad, Iran. Tel: +98-51380222608, E-mail: pourhoseinia@mums.ac.ir

Received 2017 April 15; Accepted 2017 September 11.

Abstract

Introduction: HELLP syndrome is a life-threatening complication of preeclampsia. We report a young pregnant woman with HELLP syndrome who was diagnosed, managed, and delivered in a timely manner.

Case Presentation: A 23-year-old second gravida twin pregnant woman was referred to our clinic due to high blood pressure. After delivery, she experienced a hemolytic condition with elevated liver enzymes and thrombocytopenia, defined as HELLP syndrome. After confirmation of HELLP syndrome by laboratory tests, the patient underwent hemodialysis and plasmapheresis. 10 days later, she was discharged under good general condition.

Conclusions: Women with a history of HELLP syndrome are considered to have an increased risk of death. Therefore, this life-threatening condition should be closely monitored and treated in a timely manner.

Keywords: HELLP Syndrome, Pregnancy, Preeclampsia

1. Introduction

HELLP syndrome is an acronym for hemolysis, elevated liver enzymes, and low platelets' count. The condition is an uncommon complication of preeclamptic toxemia of pregnancy. Its occurrence is rare, around 0.5% - 0.9% of all pregnancies (1, 2).

About 70% of such cases develop before delivery, the majority between 27th and 37th gestational weeks, and the rest within 48 hours after delivery (3).

Herein, we report a young pregnant woman with HELLP syndrome who was diagnosed, managed, and delivered in a timely manner.

2. Case Presentation

A 23-year-old twin pregnant woman, second gravid, was referred to the Department of Obstetrics and Gynecology due to increased blood pressure (BP = 170/110 mmHg) and the possible need for delivery. On admission, she was in a stable condition and as for vital signs, the heart rate had a normal sinus rhythm along with tachycardia (102 beats per minute) and the respiratory rate was 25 breath/min and she was afebrile. Her O₂ saturation at rest

and under room conditions with a pulse oximeter placed on her index finger was 95% - 96%.

In primary physical examination, we found evidence of 2+ edema in her lower limbs. Obstetric ultrasound study showed that the bi-parietal diameter [BPD] was 37 weeks and 4 days whereas according to femur length [FL], she was 36 weeks pregnant; the amniotic fluid index [AFI] was normal. Moreover, a uterus with twin live fetuses in longitudinal lie in cephalic/cephalic presentation was also revealed. Placenta location was in the fundal position with anterior extension. No evidence of fetal growth restriction was observed and cervical dilatation was 60% (6 cm) at initial examination.

Laboratory findings showed that hemoglobin (Hgb = 15.7 g/dL) and hematocrit (Hct = 40%) levels were in the normal range. Other laboratory tests including liver function tests revealed an aspartate amino transferase (AST) and the alanine amino transferase (ALT) of 350 IU/L and 200 IU/L, respectively. Coagulation tests such as Prothrombin Time (13 seconds), Partial Prothrombin Time (18 seconds), and INR (1) were in the normal range. Creatinine level was 0.5 mg/dL.

Magnesium sulfate therapy was immediately initiated according to the standard protocol; it was combined with

hydralazine for hypertensive condition control.

The patient underwent normal vaginal delivery in which one of the twins was born with a normal APGAR score. However, due to frequent failure in fetal heart rate (FHR) and a compound presentation, cesarean section under general anesthesia was performed for the other fetus. With respect to an atonic uterus and excessive bleeding, B-Lynch suture and uterus massage was performed. Misoprostol and Methergine were not prescribed because the liver function tests were elevated and the platelet count was critically low. This action continued until the consistency of the uterus was achieved and after a few minutes, bleeding was controlled.

Following cesarean section, some laboratory tests increased in nature including liver function tests (AST = 4332 IU/L and ALT = 914 IU/L) and Lactate dehydrogenase, which was 16684 unit per liter in our patient. Nevertheless, the platelet count severely dropped to 32,000 and hematocrit decreased to 21%. Loss of consciousness was diagnosed and her urinary output revealed oliguria. All laboratory findings are presented in [Table 1](#).

Regarding the above-mentioned findings, two units of Fresh Frozen Plasma (FFP) and packed cells were transfused to the patient and after 2 days, plasmapheresis was initiated.

Based on nephrology consultation, hemodialysis was performed and ADAMTS13 (a disintegrin and metalloproteinase with thrombospondin type 1 motif, member 13) was requested. In parallel, according to neurologic consultation, CT scan and MRI were requested. The CT scan showed signs of ischemia in the occipital area, but MRI findings were normal and there was no need for further studies in this respect.

After 10 consecutive days of hemodialysis and plasmapheresis, the level of laboratory findings went into remission and finally due to a normal ADAMTS13, plasmapheresis was interrupted.

Before discharge, the patient was consulted regarding the need for further follow-up and blood pressure screening, especially in case of another pregnancy. The patient was then discharged under good general condition.

3. Discussion

HELLP syndrome is a life-threatening complication of preeclampsia. The severity of HELLP syndrome is measured and divided into three categories according to the blood platelets' count of the mother (4). According to this classification, our patient was in the 1st class of HELLP syndrome which describes the severe condition of this disease. Mississippi classification of HELLP syndrome is displayed in [Table 2](#) (5).

Hemolysis was early recognized in the urine and as mentioned in earlier observations, the increase in the AST and ALT levels preceded the decrease in platelets' count (1). In our patient based on laboratory findings, the pathogenesis of this condition was confirmed as microangiopathic hemolytic anemia. Elevation of liver enzymes reflects the hemolytic process as well as liver involvement. Hemolysis contributes substantially to the elevated level of LDH, whereas enhanced AST and ALT levels are mostly due to liver injury (6, 7).

Thrombocytopenia (platelets < 150,000/ μ L) in pregnancy may be caused by gestational thrombocytopenia (59%), immune thrombocytopenic purpura (ITP) (11%), preeclampsia (10%), and the HELLP syndrome (12%) (6). Decreased platelet count in HELLP syndrome is due to their increased consumption. Platelets are activated and adhered to damaged vascular endothelial cells, resulting in increased platelet turnover with a shorter lifespan (8-11).

The main aspect of our case was the immediate management of the patient with hemodialysis and plasmapheresis, resulting in rapid return of the laboratory tests to their normal range. This approach can lead to better outcomes. Cho et al. reported a similar case resulting in successful management of HELLP syndrome in a pregnant woman, treated by the same protocol (12).

Life-threatening neurological complications of HELLP syndrome are rare, but incorporate large cerebral or brain stem hemorrhage, thrombosis, and infarctions or cerebral edema complicated by brain herniation (13, 14). There are several case reports on cerebral bleeding associated with HELLP syndrome (15-17). In another report (18) on the outcome of pregnancies complicated by HELLP syndrome, cerebral bleeding was not mentioned as a complication. In contrast, Osmanagaoglu et al. showed that in a highly selected group of 37 women with HELLP syndrome transferred to an obstetric intensive care unit in Turkey, 15 women (40%) had cerebral haemorrhage (19). In our patient, CT scan and MRI studies were also performed after caesarean section, which revealed normal results.

In conclusion, there is a lack of screening test(s) for predicting HELLP syndrome before its occurrence while the current tests only confirm its diagnosis. On the other hand, women with a history of HELLP syndrome are considered to have an increased risk of complications in future pregnancies, highlighting the need for standard antenatal follow-up protocols.

Acknowledgments

We would like to thank Dr. Atiyeh Mohammadzadeh Vatanchi for her kind assistance in reporting this case and her invaluable role in the management of the patient.

Table 1. Main Laboratory Findings of Our Patient Confirming the HELLP Syndrome

Laboratory Indices	Trend in Primary 48 Hours			Trend in Continue		
AST	10904	4052	4232	1162	134	35
ALT	654	1231	914	119	15	
Creatinin	1.1	3.4	5	2.4	1.8	
LDH	9843	9715	16684	4970	617	
PLT	42	27	26	50	71	90

Table 2. Mississippi Classification of HELLP Syndrome

	Class 1	Class 2	Class 3
Platelets, μ L	$\leq 50,000$	50,000-100,000	100,000-150,000
AST/ALT, IU/L	≥ 70	≥ 70	≥ 40
LDH, IU/L	≥ 600	≥ 600	≥ 600

Footnotes

Authors' Contribution: All authors contributed to developing the concept and revising the paper. They all confirmed the final draft for submission and they accept any responsibility regarding the content of the paper.

Competing Interests: The authors declare that they have no competing interests.

Financial Support: Nill.

Consent: A written informed consent was obtained from the patient for publication of this case report.

References

- Basama FM, Granger K. Case report: post partum class 1 HELLP syndrome. *Arch Gynecol Obstet.* 2007;**275**(3):187-9. doi: [10.1007/s00404-006-0199-y](https://doi.org/10.1007/s00404-006-0199-y). [PubMed: [16819612](https://pubmed.ncbi.nlm.nih.gov/16819612/)].
- Pop-Trajkovic S, Antic V, Kopitovic V, Popovic J, Trenkic M, Vacic N. Postpartum HELLP syndrome—the case of lost battle. *Ups J Med Sci.* 2013;**118**(1):51-3. doi: [10.3109/03009734.2012.725431](https://doi.org/10.3109/03009734.2012.725431). [PubMed: [23033875](https://pubmed.ncbi.nlm.nih.gov/23033875/)].
- Rath W, Faridi A, Dudenhausen JW. HELLP syndrome. *J Perinat Med.* 2000;**28**(4):249-60. doi: [10.1515/JPM.2000.033](https://doi.org/10.1515/JPM.2000.033). [PubMed: [11031696](https://pubmed.ncbi.nlm.nih.gov/11031696/)].
- Martin JJ, Owens MY, Keiser SD, Parrish MR, Tam Tam KB, Brewer JM, et al. Standardized Mississippi Protocol treatment of 190 patients with HELLP syndrome: slowing disease progression and preventing new major maternal morbidity. *Hypertens Pregnancy.* 2012;**31**(1):79-90. doi: [10.3109/10641955.2010.525277](https://doi.org/10.3109/10641955.2010.525277). [PubMed: [21219123](https://pubmed.ncbi.nlm.nih.gov/21219123/)].
- Sibai BM, Taslimi MM, el-Nazer A, Amon E, Mabie BC, Ryan GM. Maternal-perinatal outcome associated with the syndrome of hemolysis, elevated liver enzymes, and low platelets in severe preeclampsia-eclampsia. *Am J Obstet Gynecol.* 1986;**155**(3):501-9. [PubMed: [3529964](https://pubmed.ncbi.nlm.nih.gov/3529964/)].
- Sibai BM. Diagnosis, controversies, and management of the syndrome of hemolysis, elevated liver enzymes, and low platelet count. *Obstet Gynecol.* 2004;**103**(5 Pt 1):981-91. doi: [10.1097/01.AOG.0000126245.35811.2a](https://doi.org/10.1097/01.AOG.0000126245.35811.2a). [PubMed: [15121574](https://pubmed.ncbi.nlm.nih.gov/15121574/)].
- Baxter JK, Weinstein L. HELLP Syndrome: The State of the Art. *Obstet Gynecol Survey.* 2004;**59**(12):838-45. doi: [10.1097/01.ogx.0000146948.19308.c5](https://doi.org/10.1097/01.ogx.0000146948.19308.c5).
- Haram K, Svendsen E, Abildgaard U. The HELLP syndrome: clinical issues and management. A Review. *BMC Pregnancy Childbirth.* 2009;**9**:8. doi: [10.1186/1471-2393-9-8](https://doi.org/10.1186/1471-2393-9-8). [PubMed: [19245695](https://pubmed.ncbi.nlm.nih.gov/19245695/)].
- Parnas M, Sheiner E, Shoham-Vardi I, Burstein E, Yermiahu T, Levi I, et al. Moderate to severe thrombocytopenia during pregnancy. *Eur J Obstet Gynecol Reprod Biol.* 2006;**128**(1-2):163-8. doi: [10.1016/j.ejogrb.2005.12.031](https://doi.org/10.1016/j.ejogrb.2005.12.031). [PubMed: [16533554](https://pubmed.ncbi.nlm.nih.gov/16533554/)].
- Page LM, Girling JC. A novel cause for abnormal liver function tests in pregnancy and the puerperium: non-alcoholic fatty liver disease. *BJOG.* 2011;**118**(12):1532-5. doi: [10.1111/j.1471-0528.2011.03070.x](https://doi.org/10.1111/j.1471-0528.2011.03070.x). [PubMed: [21880110](https://pubmed.ncbi.nlm.nih.gov/21880110/)].
- Martin JJ, Blake PG, Perry KJ, McCaul JF, Hess LW, Martin RW. The natural history of HELLP syndrome: patterns of disease progression and regression. *Am J Obstet Gynecol.* 1991;**164**(6 Pt 1):1500-9. [PubMed: [2048596](https://pubmed.ncbi.nlm.nih.gov/2048596/)] discussion 1509-13.
- Cho FN, Chen SN, Kan YY, Lee TC, Wang JS. Successful management of a pregnant woman with HELLP syndrome, pulmonary edema, postpartum hemorrhage and acute renal failure, using early hemodialysis, intravenous immunoglobulin and noninvasive monitoring: a case report. *J Reprod Med.* 2007;**52**(7):661-3. [PubMed: [17847769](https://pubmed.ncbi.nlm.nih.gov/17847769/)].
- Audibert F, Friedman SA, Frangieh AY, Sibai BM. Clinical utility of strict diagnostic criteria for the HELLP (hemolysis, elevated liver enzymes, and low platelets) syndrome. *Am J Obstet Gynecol.* 1996;**175**(2):460-4. [PubMed: [8765269](https://pubmed.ncbi.nlm.nih.gov/8765269/)].
- Martin JJ, Rinehart BK, May WL, Magann EF, Terrone DA, Blake PG. The spectrum of severe preeclampsia: comparative analysis by HELLP (hemolysis, elevated liver enzyme levels, and low platelet count) syndrome classification. *Am J Obstet Gynecol.* 1999;**180**(6 Pt 1):1373-84. [PubMed: [10368474](https://pubmed.ncbi.nlm.nih.gov/10368474/)].
- Altamura C, Vasapollo B, Tibuzzi F, Novelli GP, Valensise H, Rossini PM, et al. Postpartum cerebellar infarction and haemolysis, elevated liver enzymes, low platelet (HELLP) syndrome. *Neurol Sci.* 2005;**26**(1):40-2. doi: [10.1007/s10072-005-0380-2](https://doi.org/10.1007/s10072-005-0380-2). [PubMed: [15877186](https://pubmed.ncbi.nlm.nih.gov/15877186/)].
- Soh Y, Yasuhi I, Nakayama D, Ishimaru T. A case of postpartum cerebellar infarction with hemolysis, elevated liver enzymes, low platelets (HELLP) syndrome. *Gynecol Obstet Invest.* 2002;**53**(4):240-2. [PubMed: [12186992](https://pubmed.ncbi.nlm.nih.gov/12186992/)].
- Zeidman LA, Videnovic A, Bernstein LP, Pellar CA. Lethal pontine hemorrhage in postpartum syndrome of hemolysis, elevated liver enzyme levels, and low platelet count. *Arch Neurol.* 2005;**62**(7):1150-3. doi: [10.1001/archneur.62.7.1150](https://doi.org/10.1001/archneur.62.7.1150). [PubMed: [16009775](https://pubmed.ncbi.nlm.nih.gov/16009775/)].
- Sibai BM, Ramadan MK, Usta I, Salama M, Mercer BM, Friedman SA. Maternal morbidity and mortality in 442 pregnancies with hemolysis, elevated liver enzymes, and low platelets (HELLP syndrome). *Am J Obstet Gynecol.* 1993;**169**(4):1000-6. [PubMed: [8238109](https://pubmed.ncbi.nlm.nih.gov/8238109/)].
- Osmanagaoglu MA, Osmanagaoglu S, Ulusoy H, Bozkaya H. Maternal outcome in HELLP syndrome requiring intensive care management in a Turkish hospital. *Sao Paulo Med J.* 2006;**124**(2):85-9. [PubMed: [16878191](https://pubmed.ncbi.nlm.nih.gov/16878191/)].