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Delayed Postpartum Hemolysis, Elevated Liver Enzymes, and Low Platelets Syndrome Successfully Treated with Dexamethasone

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The treatment of choice for preeclampsia is delivery. However, delivery is not always the end of preeclampsia. We present a case of preeclampsia complicated by postpartum hemolysis, elevated liver enzymes, and low platelets syndrome 30 hours after delivery and treated by high dose steroid. A 34-year-old pregnant woman with severe preeclampsia at 35 weeks of gestation was admitted for close observation. All antenatal laboratory studies performed showed no abnormality. Due to uncontrolled blood pressure and severe headache, induction of labor was decided and successful vaginal delivery was accomplished. On the second day of postpartum period, upper abdominal pain developed and laboratory studies including liver enzymes and platelets suddenly became abnormal. On the next day, liver enzymes and platelet count were far more aggravated. To stop progression, intravenous dexamethasone (10 mg) was administered at 46 hours postpartum. Liver enzymes and platelet counts recovered immediately after administration of steroid.

Key Words: Dexamethasone, HELLP syndrome, Postpartum period, Pre-eclampsia

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Introduction

Sibai et al. reported that 30% of hemolysis, elevated liver enzymes, and low platelets (HELLP) syndrome developed in postpartum period.[1,2] The range of onset in postpartum period has been reported from a few hours to 7 days, with the majority developing within 48 hours after delivery.[3] The course of HELLP syndrome is not always predictable and is associated with increased morbidity and mortality. HELLP syndrome has been known as the most frequent cause of pulmonary edema with acute renal failure in pregnancy.[4,5] Hypertensive disorders during pregnancy including HELLP syndrome are known to be resolved ultimately by delivery,[6] nevertheless in postpartum period, there is no consensus for treatment modalities on aggravation. There are some reports suggesting improvement of laboratory values involved in HELLP syndrome with the use of high dose steroid in postpartum period.[4,7]

We are presenting a case of HELLP syndrome, which was developed on the second day of postpartum period with abrupt aggravation and resolved immediately after use of dexamethasone.

Case

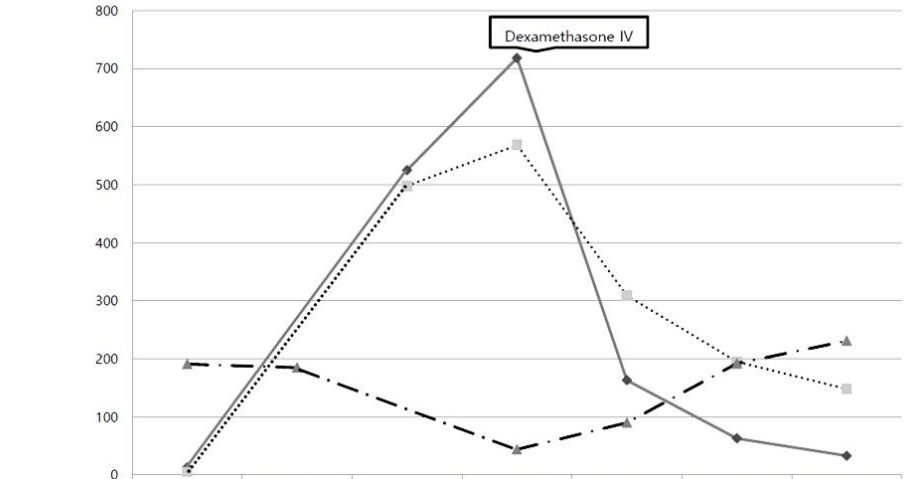
A 34-year-old multiparous pregnant woman with 35 weeks of gestation was admitted

for evaluation of preeclampsia and fetal surveillance to Bundang Seoul National University Hospital. In the previous pregnancy, the infant weighing 3,500 g was born through vaginal delivery at 40 weeks of gestation when the pregnant woman was 32 years old and she had no pregnancy-related complications including hypertensive disorders of pregnancy. She presented with elevated blood pressure (BP) (over 160/110 mm Hg) and intermittent headache. Upon admission, all laboratory results including complete blood cell count, liver enzymes, renal function tests, and coagulation profile were all within normal ranges. The amount of proteinuria collected for 24 hours was found to be 14,678 mg. Chest X-ray showed no evidence of pulmonary edema or other active lung lesions. Fetal surveillance was performed through a non-stress test and biophysical profile.

Two days after admission, the patient's highest BP recorded was 178/110 mm Hg and was not controlled by antihypertensive medication such as hydralazine. Headache increased in severity. Due to the persistent severe symptoms of preeclampsia, prompt delivery was decided. Induction of labor was planned. A female infant weighing 2,435 g was born through vaginal delivery without any complication such as postpartum hemorrhage. Apgar scores were 9 and 10 after 1 minute and 5 minutes, respectively. The BP remained in the range of 160-170/90-100 mm Hg during labor and immediately after birth.

On the next day, postpartum hematological parameters were unremarkable; hemoglobin level was 12.4 g/dL and platelet count was 185×10^3/μL. Calcium channel blocker was administered to control high BP persisted after delivery. On the second day of postpartum period, the patient complained sudden onset of upper abdominal pain. A trans-abdominal ultrasonography showed a moderate amount of paracolic gutter fluid collection, which had not been found before and immediately after delivery. Pleural effusion was also newly evident in a chest x-ray. Laboratory analyses, including liver function tests, were performed. Aspartate transaminase (AST) and alanine transaminase (ALT) were 525 IU/L and 498 IU/L, respectively (Fig. 1). Because high BP persisted and delayed postpartum HELLP syndrome was suspected, she was transferred to the intensive care unit for close observation.

On postpartum day 3, the liver enzymes were far more elevated (718 IU/L and 568 IU/L for AST and ALT, respectively) and platelet count decreased to 44,000/μL. During the antepartum and immediate postpartum periods, the platelet count had been found to be in the normal range. Since laboratory values became remarkably worsened and termination of pregnancy, which is the treatment of choice to stop progression of both preeclampsia and HELLP syndrome, has been finished already, few options were left in obstetric practice. Treatment with in-



	Antepartum	Postpartum Day 1	Postpartum Day 2	Postpartum Day 3	Postpartum Day 4	Postpartum Day 5	Postpartum Day 6
AST (IU/L)	13		525	718	163	63	33
ALT(IU/L)	5		498	568	309	195	148
Plt (x1000μℓ)	191	185		44	90	192	231

Fig. 1. Changes in laboratory results over time. AST, aspartate transaminase; ALT, alanine transaminase; Plt, platelets.

travenous dexamethasone (10 mg) was started at 46 hours postpartum to control the aggravation of laboratory studies.

After administration of dexamethasone (72 hours after delivery), the platelet count increased to 90,000/mm^3 and the values for AST/ALT reduced to 163/309 IU/L, respectively. After 96 hours, the platelet count had recovered to 192,000/mm^3 and values for AST/ALT decreased to 63/195 IU/L, respectively. The patient was discharged with symptoms improved and stable BP. She visited the outpatient clinic 4 days after discharge and her AST/ALT values decreased further to 43/61 IU/L, respectively. She had no symptoms and her BP was below 130/80 mm Hg.

Discussion

Since the progression of HELLP syndrome usually stops after delivery, postpartum onset of HELLP syndrome with rapid aggravation is a menacing event for an obstetrician. Numerous guidelines recommend that pregnancy induced hypertensive disorders including preeclampsia need to be closely observed even after safe delivery is accomplished.[8,9] The presenting case showed newly developed upper abdominal pain with laboratory abnormalities corresponding to HELLP syndrome on day 2 after successful delivery in a patient diagnosed as preeclampsia. Also before making a diagnosis as HELLP syndrome, it is important to consider other conditions such as acute hepatitis or acute fatty liver in the differential diagnosis.

High dose corticosteroid therapy has been studied in HELLP syndrome for recovery of maternal conditions. Some reports suggested that use of high dose steroid in postpartum period improves laboratory values associated with HELLP syndrome.[4,7] However, the efficacy and pathophysiological mechanisms are still unclear.[10,11] According to meta-analysis of Mao and Chen[12], there were no significant differences in maternal mortality and morbidity between patients treated with steroid and those. However, laboratory values including platelet count and ALT levels significantly improved and mean duration of hospital stay decreased in patients with steroid treatment. Those studies mostly include cases of HELLP syndrome diagnosed in antenatal period. Few clinical trials have been published on the efficacy of steroid in HELLP syndrome in postpartum period. Katz et al.[13] reported randomized controlled study about routine steroid treatment in puerperium for patients diagnosed as HELLP syndrome and concluded the results did not demonstrate benefits on recovery of maternal conditions that had been aggravated in antenatal period.

According to our experience, dexamethasone treatment might be an effective treatment to stop progression of maternal morbidity when HELLP syndrome develops in postpartum period since other obstetric management options are not available. Numerous studies showed that laboratory abnormalities developed in antepartum and immediate postpartum period usually resolve within several weeks, however it is not an easy condition for an obstetrician to keep observation only. A high dose steroid therapy could have played a role in resolving the platelet count and liver enzymes.[7] Future clinical trials need to be followed to demonstrate the efficacy and effects of steroid for aggravation of newly appeared postpartum HELLP syndrome and other pregnancy induced hypertensive diseases.

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