



Case Report

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Anesthesia management of pregnant with HELLP Syndrome with fetal intrauterine exitus

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Abstract

HELLP syndrome is a serious cause of mortality for pregnant women and requires careful anesthesia management. In this case, anesthesia management and intensive care clinic of a pregnant woman with intrauterine exitus due to preeclampsia and HELLP syndrome is presented.

Keywords: preeclampsia, anesthesia management, HELLP syndrome, intrauterine exitus

1. Introduction

HELLP syndrome is a serious complication of pre-eclampsia characterized by hemolysis, elevated liver enzymes and low platelet count. It can cause serious fetal and maternal morbidity and mortality. In treatment, it is important to give birth as soon as possible (1). Patients with HELLP syndrome are also at risk for multiple organ dysfunction such as pulmonary edema, ablatio placenta, intracerebral hemorrhage, eclamptic convulsions, disseminated intravascular coagulation, and acute renal failure. Perinatal mortality is high. Anesthesia technique is of critical importance in these patients who have a high risk of uncontrollable hypertension, bleeding and multi-organ failure (2, 3). General anesthesia is generally preferred for cesarean delivery in these pregnant women.

In this case, the clinical course of a pregnant woman with intrauterine exitus due to preeclampsia and HELLP syndrome in anesthesia and intensive care is presented.

2. Case Report

A 38-year-old (G4P3) patient at 22 weeks of gestation, with a history of gestational hypertension, was admitted to the emergency department of our hospital with the complaints of nose bleeding and epigastric pain.

In the emergency room, the patient's non-invasive blood pressure (NIBP) was 170/110 mmHg, heart rate (HR) was 97 beats/min, respiratory rate was 20/min, peripheral oxygen saturation (SpO₂) was 98%, and fever was 37C. The patient's admission and postoperative laboratory findings are given in Table 1. Hysterotomy was planned for the patient who did not have fetal heart beat in transvaginal ultrasonography (TVUSG). He was admitted to the intensive care unit for close

follow-up with the diagnosis of HELLP syndrome. The patient, whose blood pressure continued to increase despite IV 4 g MgSO₄ loading for blood pressure control, 2 g/s infusion and antihypertensive treatment was started in the follow-up, was operated. Since the platelet count was 75 000/mm³, it was decided to apply general anesthesia. Routine monitoring (NIBP, EKG, SpO₂) was performed on the patient who was taken to the operating room, and the input values were measured as NIBP: 222/142 mmHg, HR: 116 beats/min, SpO₂: 100%. 1mg midazolam was administered for premedication. 1mcg/kg/min remifentanyl infusion was started, 2mg/kg propofol and 1mg/kg rocuronium were administered to the patient who underwent preoxygenation before induction. Because of the patient's high blood pressure, IV 20 mg of esmolol was administered before intubation and the NIBP was measured as 170/122 mmHg. Cricoid compression was applied and the patient was intubated with a 7.0 cuffed endotracheal tube. Anesthesia was maintained with 50% O₂/air and a minimum alveolar concentration (MAC) of 1 with sevoflurane and 0.4-0.1 mcg/kg/min remifentanyl infusion. During the surgery, NIBP was 168/122- 133/93 mmHg, and HR was 95-83 beats/min. The operation took 40 minutes. No intraoperative complications occurred. The patient did not have any bleeding that required transfusion. The patient was extubated, reoxygenated with sugammadex and transferred to the intensive care unit. The patient was followed up in the intensive care unit for 24 hours postoperatively, and IV 2g/s maintenance MgSO₄ infusion was continued. The patient, whose vital signs were stable during the follow-ups in the intensive care unit, had an average urine output of 100 ml/h and did not have a new

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hypertensive attack, was discharged on the 4th postoperative day with good recovery.

Table 1. Laboratory values of the patient

	Preoperative	Postoperative day 1	Postoperative day 2
Hemoglobin (gr/dl)	12.7	10.2	9
Hematocrit (%)	36	29.5	26.6
Platelets (mm ³)	75.000	79.000	120.000
Prothrombin time	11.6	-	-
Activated partial thromboplastin time	33.2	-	-
INR	0.8	-	-
Alkaline Phosphatase (U/L)	284	227	203
Alanine Amino transferase (U/L)	49	42	30
Aspartate Amino transferase (U/L)	85	69	36
Lactate Dehydrogenase (U/L)	526	464	320
Total Bilirubin (mg/dl)	0.68	0.34	0.31
Direct Bilirubin (mg/dl)	0.38	0.14	0.18
Proteinuria	+1	-	-

3. Discussion

HELLP syndrome is characterized by hemolysis (abnormal peripheral smear or total bilirubin > 20.5 µmol/l), elevated liver enzymes (aspartate amino transferase > 70 IU/l or glutamyl transferase > 70 IU/l), and low platelet count (< 100 000/mm³) and it is a severe form of pre-eclampsia (4, 5).

Although the exact cause of HELLP is unknown, the main underlying cause is the general activation of the coagulation cascade. This leads to microangiopathic hemolytic anemia and platelet depletion. Exposure of liver cells to ischemia explains the elevation in liver enzymes (6). Patients with HELLP syndrome have an increased risk of placental abruption, pulmonary edema, ARDS, ruptured liver hematoma, acute renal failure, cerebrovascular accident, and multiple organ failure (3, 7, 8).

Maternal and neonatal mortality rates are reported as 2-24% and 3-39%, respectively (9, 10). In our case, it was observed that the fetus was intrauterine exitus in the transvaginal ultrasonography (tvUSG) performed in the emergency department. There is a risk of serious maternal mortality if treatment is delayed.

The key point in the anesthesia management of such patients is to control hypertension and eclampsia, and to consider liver and kidney dysfunction and the increase in bleeding tendency (2, 3, 11). The presence of multiple organ dysfunction and coagulopathy in HELLP syndrome may make general anesthesia a safer method than neuraxial anesthesia as long as successful airway management is provided in cesarean sections (12, 13). Presence of thrombocytopenia and coagulopathy may increase the risk of epidural hematoma in neuraxial anesthesia. Although there is no statistical data on the

complications of neuraxial blockade in patients with HELLP syndrome in the literature and the platelet count is below the stated value, guidelines recommend a platelet count greater than 100,000 mm³ to minimize this risk (12). Since our patient had a platelet count of 75,000 mm³, we preferred general anesthesia because of the possible risk of epidural hematoma.

General anesthesia is accepted as the preferred method in these patients (2, 3). In general anesthesia, rapid serial intubation technique is used because of the possible risk of difficult airway and aspiration. However, in these patients who already have high blood pressure, harmful hemodynamic changes may occur due to the increased sympathetic response caused by endotracheal intubation. Complications can be minimized at this stage of general anesthesia by administering drugs and procedures that control the hemodynamic response (12). Remifentanyl is frequently used to supplement short-term analgesia with cardiovascular stability in high-risk patients (14). In addition, since its metabolism is carried out by plasma cholinesterase, it can be used safely in HELLP cases with liver and kidney dysfunction (15). In our case, remifentanyl was used for the induction and maintenance of anesthesia for analgesia. However, since the patient's pre-induction NIBP was very high, such as 222/142 mmHg, esmolol was also used together with remifentanyl to reduce the sympathetic response during the intubation phase.

There is no clear consensus on the best approach for anesthesia management in cesarean section cases with HELLP syndrome. There is no official recommendation on when neuraxial anesthesia is safe to administer in these pregnant women with low platelet counts, accompanied by coagulopathies. However, considering the possible complications, the general anesthesia technique in which the airway is secured by intubation with rapid serial induction seems to be a good choice. However, regardless of the preferred anesthesia technique, it should be kept in mind that complications such as eclampsia, pulmonary edema, heart failure and disseminated intravascular coagulation are still possible in the postpartum period, and most maternal deaths occur within the first postpartum week (16). Therefore, these patients should be followed up in the intensive care unit after surgery.

Conflict of interest

The authors declared no conflict of interest.

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