



Anesthesia Management in Caesarean Section with Preeclampsia and Partial HELLP Syndrome

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ABSTRACT

Introduction. Pre-eclampsia is a significant cause of maternal and fetal mortality and morbidity. Pre-eclampsia is characterized by hypertension (blood pressure $\geq 140/90$ mmHg), oedema and amount of protein in urine 300 mg in the 24-hour, which appears after 20 weeks of gestation. Pre-eclampsia can cause complications, one of which is HELLP syndrome. This case report discusses the use of anaesthesia in a patient who underwent a cesarean section with indications for pre-eclampsia and partial HELLP syndrome.

Case Presentation. A woman, 41 years old, G4P3A0 34 weeks pregnant with pre-eclampsia + syndrome HELLP will undergo emergency cesarean section with ASA IIE physical status. Labour or pain management was carried out using regional spinal anaesthesia technique, using bupivacaine 0.5% hyperbaric agent 12.5 mg. The operation lasted for 1 hour 30 minutes, with 300 ml bleeding, hemodynamically stable.

Conclusion. Difficult intubation in emergency cases can be avoided by choosing of neuraxial anaesthesia technique is recommended. It will lead to better uteroplacental perfusion, good analgesia/anaesthesia quality, reducing surgical stress, reducing drugs that enter the uteroplacental circulation, and maternal psychological to be able to see the baby at birth.

Keywords: Pre-eclampsia, HELLP syndrome, Placental circulation, Bupivacaine, Pain management.

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Introduction

Pre-eclampsia is a significant cause of maternal and fetal mortality and morbidity. According to WHO in 2010, the global maternal mortality rate was 287,000, WHO estimates that there are 500,000 maternal deaths worldwide each year, the most significant contributor to this figure in developing countries, namely 99%. Women die from complications during and after pregnancy and childbirth. Most of these complications develop during pregnancy. The main difficulty that accounts for 80% of maternal deaths are bleeding (mostly postpartum haemorrhage), infections (usually after childbirth), high blood pressure during pregnancy (pre-eclampsia and eclampsia) and unsafe abortion. The remainder is caused by malaria and AIDS during pregnancy.¹

Pre-eclampsia is a symptom that occurs in pregnancy, childbirth and postpartum women consisting of hypertension with blood pressure $\geq 140/90$ mmHg, oedema and proteinuria (300 mg protein in 24-hour urine) but shows no signs of vascular abnormalities or previous hypertension, while symptoms usually appear after a pregnancy of 20 weeks or more.²

Several conditions are thought to be the cause of eclampsia and pre-eclampsia. One of them is an increase in the synthesis of vasoconstrictor materials (angiotensin and thromboxane A₂) and decreased combination of vasodilators (prostacyclin), which results in extensive endothelial damage. The manifestations are arteriolar vasospasm, Na and water retention, and coagulation changes. Reduced cerebral vascular resistance, coupled with endothelial damage, results in cerebral oedema. Although it is said that seizures caused by eclampsia will not cause permanent brain damage, intracranial haemorrhage can occur.^{1,3,4}

Improper handling will be fatal, which can lead to maternal and fetal complications. Maternal complications can include sudden death along with seizures or immediately after that as a result of severe cerebral haemorrhage, acute pulmonary oedema due to heart failure due to uncontrolled hypertension, renal failure and also continuing HELLP syndrome which is characterized by haematological disorders, liver function and coagulation.^{1,2}

Proper management is essential when getting a case of pre-eclampsia. There are four points of intervention that must be done, namely seizure control, blood pressure regulation, fluid management and pregnancy termination.⁵



Case Presentation

The female 41-year-old patient was admitted to General hospital Dr Mohammad Hoesin Palembang with the principal diagnosis G₄P₃A₀ 34 weeks pregnant, not yet imparted with pre-eclampsia + HELLP pro-SCTP-E syndrome with ASA IIE physical status.

The anamnesis showed that the patient complained of heartburn about to give birth since 5 hours before admission to the hospital. There were no severe headaches, blurred vision, indigestion, shortness of breath, nausea and vomiting. Fetal movement is still felt. History of systemic diseases, allergies and previous history of surgery was refuted.

On physical examination, the patient's general condition appeared to be moderately ill and conscious. Blood pressure at 160/100 mmHg, Pulse 110 times per minute, Breath Rate 20 times per minute, Temperature 36.7°C. Normal head. Both conjunctivae are not anaemic; the sclera is not icteric. The neck does not feel enlarged lymph nodes. Normochest chest shape left and right symmetrical on static and dynamic examination, and from auscultation of bronchovesicular breath sounds, there was no rhonchi or wheezing in both lung fields. Cast within normal limits, no noise was heard on auscultation. The abdomen appears distended, corresponding to 35 weeks of gestation, the uterine fundus is palpable three fingers below the processus xyphoideus, nothing his—fetal heart rate 130-140 beats per minute. The liver and spleen are not evident; bowel sounds are positive with regular frequency. Examination of the limbs showed pretibial oedema, warmth and good perfusion. On review of genitalia, vulva/urethra is calm; vaginal bleeding is nothing.

Laboratory tests showed Hb 14.6 Hct 42 Leukocytes 16410 Platelets 101,000 Count type 0/0/84/9/7 PT 15 (13.6) INR 1.01 APTT 33.5 (35.1) SGOT 609 SPGT 273 LDH 1699 Ureum 28 Creatinine 0.79 Sodium 139 Potassium 34 Magnesium 2.0 Chloride 112 BSS 77 and from electrocardiography examination found sinus tachycardia, HR 107 times / minute.

Has been given MgSO₄ 20% 4 grams (initial) and continued MgSO₄ 20% 1g / hour in 24 hours, nifedipine 3x10 mg orally, metyldopa 3x250 mg orally.

Management of labour anaesthesia was performed using regional spinal anaesthesia techniques using bupivacaine 0.5% hyperbaric 12.5 mg. The operation lasted 1 hour 30 minutes, with a bleeding 300 cc, was hemodynamically stable (Figure 1). A baby was born, baby weight 2700 grams, length of baby 49 cm, APGAR Score 8/9.



The patient reached Bromage at 19.45 WIB, compos mentis awareness, blood pressure 148/95 mmHg, pulse 92 times per minute, breath rate 20 times per minute, 98% SpO₂ with 3lpm nasal cannula. The patient was transferred to the General Intensive Care Unit (GICU), treated for three days at the GICU, then admitted to the obstetrics ward.

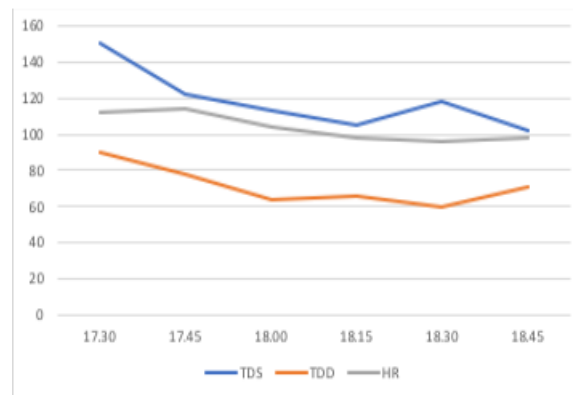


Figure 1. Hemodynamic monitoring

Discussion

Preeclampsia, namely an increase in blood pressure above 20 weeks of pregnancy accompanied by proteinuria. Can be without proteinuria but accompanied by other complaints such as epigastric or right upper quadrant abdominal pain, persistent neurological disorders, stunted fetal growth, thrombocytopenia, elevated liver enzymes. Three diseases of the maternal target system that often co-occur in cases of preeclampsia and eclampsia are laboratory abnormalities in the form of intravascular hemolysis, elevated levels of hepatic enzymes and low platelet counts. There is a term HELLP syndrome which stands for haemolysis (H), elevated liver enzymes (EL), low platelet counts (LP). Patients found signs of preeclampsia and HELLP syndrome (Blood Pressure 160/100 mmHg accompanied by symptoms of impaired hepatic function in the form of elevated transaminase enzymes, namely, SGOT / PT: 609/273 LDH: 1699).

Patients with pre-eclampsia should immediately terminate the pregnancy as this is the only definitive therapy².

Before termination, it must be evaluated that stabilization of both the mother and the fetus must be carried out so that there is no worsening. Stabilization includes evaluation of airways (A), breathing (B), circulation (C), disability (D). Furthermore, seizure prevention with magnesium sulfate was carried out,



control of hypertension with antihypertensives, moderate fluid management and immediate termination of pregnancy⁶. The patient has been given MgSO₄ 20% 4 grams (initial) and continued with MgSO₄ 20% 1g / hour in 24 hours, nifedipine 3x10 mg orally, methyldopa 3x250 mg orally.

In preeclamptic patients, the fluid should be restricted unless there is close monitoring to see the fluid status; the liquid should be limited to 80 ml/hour or 1 ml/kg BW / hour.⁷ Colloids are used to replace intraoperative fluid losses without increasing the burden on the heart. Blood transfusions are given if the bleeding exceeds the allowable blood loss, or the patient's clinical condition shows signs of shock. The transfusion aims to replace the lost oxygen carrier and to restore the circulating volume⁸.

In pre-eclampsia childbirth must be done within 24 hours⁹. The choice of anaesthetic technique in patients with pre-eclampsia depends on various factors, including mode of delivery (vaginal, cesarean section) and the patient's medical status (presence of coagulopathy, respiratory problems). If the delivery is done by caesarean section, then the selection of anaesthetic techniques here includes epidural, spinal, combined spinal-epidural and general anaesthesia. Spinal anaesthesia is preferred as an anaesthetic technique in pre-eclampsia because the patient is aware of and the danger of aspiration is minimal, fetal contact with minimal drugs, better uteroplacental perfusion, faster and more predictable onset when compared to epidural techniques, the risk of local anaesthetic systemic toxicity is lower because smaller dose than an epidural, and psychologically the mother can see the baby at birth.^{7,10}

Some intraoperative considerations that need to be assessed are drug response: spinal anaesthesia can avoid the risk of hypotension which can aggravate uterine hypoperfusion due to induction of anaesthetic agents, and administration of magnesium sulfate can also affect the muscle relaxant action.

Anaesthetic technique: the risk of intracranial bleeding due to laryngoscopy can be avoided with spinal anaesthesia. Giving fluids must be careful because it can aggravate the work of the heart due to systemic vasoconstriction, and if excessive, it can worsen brain oedema. Monitoring: close observation of breathing and hemodynamics is critical in this operation, a five-lead ECG is essential for monitoring cardiac function and a urinary catheter to see urine production that reflects the perfusion to adequate tissue or not.

Conclusions

General principles of pre-eclampsia management include restrictive fluid therapy, knowledge of



plasma volume expansion, control of hypertension, prevention of seizures, and how an anaesthetist decides to terminate a pregnancy. The choice of anaesthesia in patients who have agreed to terminate the pregnancy can be determined based on the clinical condition of the patient with several options, including regional anaesthesia with both spinal anaesthesia and epidural anaesthesia. However, if it is not possible to do this with local anaesthesia choice of general anaesthesia in this case still has a place to decide.

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