



Intensive Management of Post Caesarean Section with Eclampsia: A Case Report

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ABSTRACT

Introduction: Eclampsia, a severe form of pre-eclampsia characterized by high blood pressure and seizures, poses a significant threat to both maternal and fetal health. With a global incidence of 2-8% among pregnancies affected by pre-eclampsia, eclampsia remains a leading cause of maternal mortality, particularly in low-resource settings. Given the potential for serious complications associated with postpartum eclampsia, it is crucial for anesthesia teams to possess a comprehensive understanding of the condition's management and the specific considerations required in the postpartum setting. **Case presentation:** We report a 19 years old woman post caesarean section with eclampsia. The patient had a recurrent seizure on the first day at the ICU. After had an intensive therapy at the ICU the patient showed a clinically improvement and extubated on the second day. The case highlights the importance of a holistic and comprehensive approach to postpartum care in eclampsia patients. By addressing not only the immediate symptoms but also the underlying physiological and neurological derangements, the ICU team was able to effectively manage the patient's condition and facilitate her recovery. **Conclusion:** Postpartum care in the intensive care unit needs to be hollistic and comprehensive with the aim of not aggravating the patient's condition and worsening the patient's prognosis.

1. Introduction

Preeclampsia is a hypertensive disorder of pregnancy that occurs in two to eight percent of pregnancy complications worldwide. The incidence of preeclampsia ranges from 2% to 10% of all pregnancies globally, with higher rates in developing countries than in developed countries. Preeclampsia causes a maternal mortality rate of 9% to 26% in low-income countries and 16% in high-income countries. The top three causes of maternal mortality worldwide are bleeding (30%), preeclampsia (25%) and infection (12%). As one of the top three leading causes of maternal and fetal morbidity and mortality, the incidence of preeclampsia in Indonesia is reported to be 12,273 per year or about 5.3%, and has not shown any significant reduction in the last two decades.¹

Eclampsia is a complication that can arise from preeclampsia, characterized by seizures until there is a decrease in consciousness and leads to maternal and fetal mortality. A study from January 2014 to December 2015 showed a prevalence of severe preeclampsia of 14.54% and eclampsia of 3.28%. Eclampsia is a complication of preeclampsia that can occur pre-birth or post-birth.² The high incidence of preeclampsia and eclampsia in the world, as well as the morbidity and mortality effects on the mother and fetus, make it necessary to understand more about the management of the cases.

2. Case Presentation

A 19-year-old woman after cesarean section for indications of eclampsia. From the preoperative data

obtained the first pregnancy with complaints of headaches. In the emergency room, the patient had seizures 3 times, tonic-clonic seizures, and obtained a conscious phase between seizures, approximately 3 minutes. There was no history of previous seizures. History of fever, cough, runny nose, and head trauma was denied. From the physical examination, the patient appeared moderately ill GCS E4V5M6 with blood pressure 165/113 mmHg, heart rate 110 times per minute, respiratory rate 22 times per minute, SpO₂ 97% with NRM 10 lpm supine position. Body weight 50 kg and height 156 cm. The head-to-toe examination did not get anemic conjunctiva, open mouth 3 fingers with Mallampati 2. There was no neck movement abnormality, pulmonary examination obtained symmetrical right and left chest development, vesicular base sound in both lung fields, obtained rales on both basals of the lung. In the abdominal region, a convex abdomen was found according to gestational age. In the extremities, there was no edema, strong pulse lift, and warm acral with a capillary refill time of less than 2 seconds. Laboratory examination showed leukocytosis 22×10^3 /uL and proteinuria +3, other laboratory results were within tolerance limits.

The patient was planned for general anesthesia with ASA III E physical status. The patient received inject therapy MgSO₄ 20% 4 g, followed by syringe pump MgSO₄ 20% 1 g / h for 24 hours, and nifedipine 10 mg per 8 hours. During surgery, the patient was monitored every 15 minutes including blood pressure, pulse, respiratory rate, and peripheral oxygen saturation. The induction drugs used were fentanyl 100 mcg, propofol 100 mg, rocuronium 30 mg, and lidocaine 80 mg with a rapid sequence induction technique. During the procedure, paracetamol 1 g, ondansetron 4 mg, dexamethasone 5 mg, and oxytocin 10 IU were added. Fluid management was also performed with a 400 cc lactated ringer. Urine output was 100 cc, bleeding 200 cc. The operation lasted 90 minutes with an anesthesia duration of 100 minutes with postoperative fluid balance + 75 cc.

The baby was born with a low birth weight of 900 gr, body length of 40 cm, with an Apgar score of 3-4-5-6. Postoperatively the patient was not extubated and was treated in the ICU room at Dr. Moewardi Regional

General Hospital. In the ICU the patient's vital signs are stable blood pressure 158/76 mmHg, pulse rate 100 x per minute, SpO₂ 98% on mechanical ventilation SIMV mode PC PS 10 PI 10 PEEP 5 FiO₂ 50%. The patient received antibiotic therapy ampicillin sulbactam 1.5 gr/8 hours, analgetic paracetamol 1 gr/8 hours and syringe pump fentanyl 0.5 mcg/kgbb/hour, prevention of stress ulcers with omeprazole 40 mg/12 hours, diuretic furosemide 20mg/8 hours and eclampsia syringe pump MgSO₄ 20% 1 mg/hour. Ringerfundin 60 cc/hour was administered.

After the patient had been transported to the ICU, the patient had a seizure one time, with tonic-clonic seizure type, a duration of approximately 3 minutes. Then the patient received single preventive therapy with bolus midazolam 3 mg and a continued syringe pump of midazolam 3 mg/hour. The results of the thorax on the bed showed signs of pulmonary oedema. Therefore furosemide 20 mg/8 hours was added. On the first day of treatment, the patient was still on mechanical ventilation but showed clinical improvement, characterized by the absence of seizures and adequate breathing. The patient's consciousness was still under the effect of medication with midazolam 3 mg/hour. The patient was given additional therapy of mecobalamin 500 mcg per 12 hours. Due to the high blood pressure, the patient was given a syringe pump of nifedipin 5 mg per hour with a systolic target below 160. First-day fluid balance in 9 hours was obtained - 76 cc with urine output 55cc/hour. The patient was given a sonde diet through a nasogastric tube. On the second day of treatment, the patient's consciousness began to improve after midazolam seizure prophylaxis was stopped. Considering that the patient was already conscious, breathing was adequate, and the patient was seizure-free, the patient was extubated. Second day 24-hour fluid balance was obtained - 260 cc with urine output of 54 cc/hour. The patient was then transferred to the high-care unit of Dr. Moewardi Regional General Hospital for further treatment.

3. Discussion

Eclampsia is the new onset of seizures or acute impairment of consciousness in a patient during pregnancy or the postpartum period with signs and

symptoms of previous preeclampsia and no other comorbid neurological disorders. Eclampsia can occur during the puerperium, with seizures most common during the intrapartum and 48-hour postpartum periods. Most eclampsia patients have severe preeclampsia comorbidities, but in 10% to 15% of eclampsia patients there is no hypertension or minimal hypertension and proteinuria is not detected. Risk factors for eclampsia include young gestational age, nulliparity, multiple gravida, molar pregnancy, hypertension, renal or cardiac disease, previous history of preeclampsia or eclampsia, non-immune hydrops fetalis, and systemic lupus erythematosus. Eclampsia is associated with maternal complications including pulmonary aspiration, pulmonary edema, cardiovascular disorders, cardiopulmonary arrest, venous thromboembolism, acute renal failure, and death.³ The patient has several risk factors for eclampsia as previously described, the patient is a woman with a fairly young age of 19 years, and with the first pregnancy. In addition, the patient's blood pressure at the initial time in the emergency room was high at 165/113 mmHg. Signs of impending eclampsia such as headache and nausea which are signs of increased intracranial pressure have also appeared in the patient since the emergency room. With the signs of increased intracranial pressure, the safe option for anesthetizing patients is general anesthesia with respiration control.⁴

The patient has received severe preeclampsia therapy with MgSO₄ 20% 4 g and continued syringe pump MgSO₄ 20% 1 g/h for 24 hours and also nifedipine 10 mg per 8 hours. The use of MgSO₄ can reduce mortality by > 50%. Although the mechanism of action of MgSO₄ is still unknown, MgSO₄ is thought to reduce cerebral edema, and increase the seizure threshold. In addition, MgSO₄ is thought to improve blood flow from mother to fetus.⁵ The principle of management of eclampsia patients in the intensive care unit is to prevent recurrent seizures. Recurrent seizures in cases of eclampsia will affect the prognosis of the patient, one of which can cause complications from eclampsia, such as intracerebral hemorrhage. The patient had one recurrent seizure at the time of transfer to the ICU room, this may be due to several

things, the first is the severe eclampsia condition in the patient, plus during the operation procedure the patient was still experiencing hypertension, other causes can be due to pain that is not well controlled postoperatively, as well as temporary discontinuation of seizure prophylaxis drugs. Patients get a sedation agent midazolam syringe pump at a dose of 0.05 mg/kg/hour, the selection of this benzodiazepine sedation agent is an agent that works directly on GABA, so it can also be a seizure prophylaxis agent. Sedation in eclampsia patients as an alternative can be used dexmedetomidine with a loading dose of 1mcg/kgbb in 10 minutes and then continued syringe pump at 0.5 mcg/kgbb/hour, dexmedetomidine is proven to have the same effectiveness as midazolam when assessed by RAMSAY score.⁶

We must ensure that the airway is patent and there is no risk of obstruction, so in patients the endotracheal tube is still maintained until it is confirmed that the patient is well conscious, hemodynamically stable and adequate breathing. Disorders of the central nervous system that can occur as a result of seizure complications can cause disturbances in the patient's consciousness and more severely can cause the patient to be unable to maintain the airway if the ischemic area is the area of the cranial nerve that is responsible for maintaining airway patency.^{7,8,15-17} Respiratory distress may result from complications of eclampsia, namely pulmonary edema, or other complications, namely aspiration pneumonia. The patient was found to have wet rales in the basal lungs of both lung fields, indicating that complications had begun to occur in the patient. So in the ICU room, the patient received furosemide therapy of 20 mg injection every 8 hours. Preeclampsia or eclampsia conditions are usually followed by hypervolemic conditions due to vascular endothelial disorders, so preoperative and perioperative fluid management is fluid restriction. Fluid adequacy targets are always monitored with a target urine output of 0.5 cc/kgb/h, and stable hemodynamics.⁷

Overload or hypervolemia conditions that often occur in eclampsia patients will certainly have an

effect on the patient's circulatory system. In patients with hypertension and hypervolume, there will be an increase in hydrostatic pressure contained in the intravascular, and cause fluid that is in the intravascular to come out to the extravascular. This condition is exacerbated by endothelial damage that occurs in patients, so that fluids are easier to leak. Leakage conditions in patients can burden the patient's pulmo, which if not treated properly will burden the patient's heart.^{3,9-14} Another thing that needs to be considered in patients is daily nutrition during ICU care. Patients should receive enteral nutrition less than 48 hours in the ICU if they are still attached to a ventilator, and if they are extubated, they should be changed to oral nutrition immediately.¹⁷⁻²⁰ After evaluation of the patient within 24 hours of seizure-free, the patient was extubated and on the second day of treatment, the patient could be transferred to the ward. Comprehensive and thorough management can affect the patient's hospitalization time in the ICU.

4. Conclusion

Pregnancy and post-pregnancy with eclampsia have a poor prognosis, as well as morbidity and mortality that can threaten the mother and fetus. For anesthesiologists and intensivists, the diagnosis of eclampsia must be made immediately, so that the planning of anesthesia and intensive care can be done properly. Anesthesiologists should consider the condition of the mother and fetus so that the best anesthetic management is chosen for them Both. Postpartum care in the intensive care unit needs to be holistic and comprehensive with the aim of not aggravating the patient's condition and worsening the patient's prognosis. Multidisciplinary patient care is needed to cover all aspects that can prevent worsening of the patient's condition.

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