

ANESTHESIA FOR PATIENTS WITH ECLAMPSIA IN DR SOETOMO HOSPITAL SURABAYA

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ABSTRACT

A retrospective analysis of medical records in year 2002 revealed 10 patients with eclampsia underwent C-section under general anesthesia out of 110 patients diagnosed with pre-eclampsia/eclampsia. Seven cases (70%) were patients with first pregnancy and 3 patients with repeated pregnancies. The babies' first minute evaluation found that 40% were vigorous, 20% were in mild asphyxia, and 40% were in severe asphyxia. After 5 minutes resuscitative efforts, the evaluation showed improvement that only 20% were still in mild asphyxia. All parturients survived without sequelae. Six were discharged within 7 days, three before 14 days and only one stayed longer to day 20.

Keywords: anesthesia, eclampsia, caesarean section

INTRODUCTION

Pre-eclampsia is classically defined as the occurrence of the triad of hypertension, proteinuria and edema after the 20th week of gestation. It may extend the period to early post-partum. Eclampsia is defined as the occurrence of grand mal seizures in a pre-eclamptic pregnant woman unattributable to other known causes. All pregnant women with seizure should be regarded as having eclampsia until proven otherwise. Eclampsia is relatively a rare occurrence (1:2000) in European and

developed countries (Douglas KA and Redman CWG, 1994), but it has higher incidence in developing countries (1:100 – 1: 1,700) (Mushambi MC et al, 1996). The higher incidence in poor countries may be due to the low antenatal care, late diagnosis and late referral to a properly equipped hospital. Eclampsia leads to a maternal mortality rate of 1-2% and fetal mortality rate of 10%. (Beall M, 2002). Incidence of severe pre-eclampsia/eclampsia in Dr Soetomo Hospital continues to rise in the last 5 years (Figure 1).

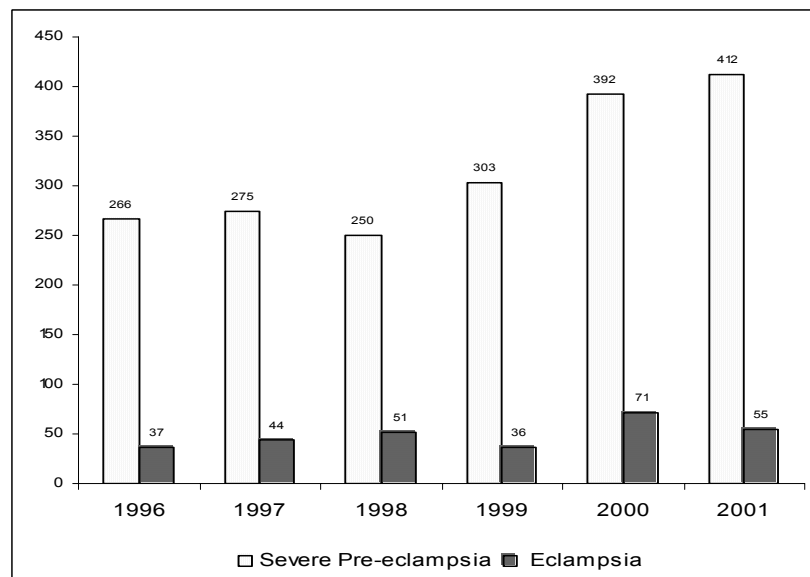


Figure 1. Incidence of severe preeclampsia/eclampsia from 1996-2001 in Dr Soetomo Hospital Surabaya (Gumilar E, Dr Soetomo Hospital Surabaya)

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MATERIAL AND METHODS

A retrospective study was taken to all C Section patients with eclampsia in 2002 at Dr Soetomo Hospital Surabaya. Patient's Medical Record was reviewed. Notes were taken on the management of eclampsia in pre, during and post operative.

Preparation of the patients included seizure control with MgSO₄ 4 g intravenous bolus in 3 minutes, plus 10g intramuscularly. Maintenance MgSO₄ therapy was continued intramuscularly every 6 hours until 12 hours after delivery or 12 hours after the cessation of convulsions (Saifudin AB et al, 2000). Hypertension was controlled with nifedipine 5-10 mg up to 3 times and/or ACE inhibitor 12.5 mg up to 2 times (Saifudin AB et al, 2000).

Anesthesia preparation included appropriate aspiration prophylaxis using nasogastric suction and antacids. Patients were tilted during preoxygenation to the left lateral tilt position, followed by control maternal blood pressure checks. If the maternal blood pressure had decreased adequately, rapid sequence induction of general anesthesia was started using lidocain 1.5 mg/kg, thiopental 4 mg/kg and succinyl choline 1 mg/kg. Oxytocin infusion was administered immediately following delivery of the babies to counteract the tocolytic effects of magnesium.

RESULTS

Patient Characteristics

Clinical demographic characteristics of the patients were listed on Table 1.

Table 1. Clinical demographic patients

Patient	Age	No. of pregnancy	Fetal Condition	Mother condition	
				Complications	BP on admission
1	35	IV	Distress	Pulmonary edema	170 / 110
2	19	I		Cardiac arrhythmia (ventricular extrasystole)	170 / 110
3	21	I		Pulmonary edema	180 / 110
4	20	I		Cerebral edema	150 / 110
5	24	I			130 / 90
6	20	III		Prolonged second stage	150 / 100
7	21	I	Distress		150 / 110
8	20	I	Distress		207 / 133
9	18	I		Retinal detachment	170 / 110
10	27	IV	Distress		188 / 100

Ten patients with eclampsia underwent C-section under general anesthesia. Seven cases were first pregnancies and 3 patients were repeated pregnancies. Five patients were less than 20 years old, while one was over 35 years old.

Preoperative problems

Two patients, number 1 and 3, were in respiratory distress due to pulmonary edema. They were treated with artificial ventilation using 100% oxygen, diuretics

and digitalis. Sibai (1987) found 2.9% patients in his series developed pulmonary edema with 70% occurred up to 71 hours after delivery. For these two patients artificial ventilation were continued post-operatively in the ICU.

Anesthesia problems

One patient showed excessive hypertension, with blood pressure of 200/120 mmHg, on which fentanyl was added in the induction. For the three patients with fetal

distress, anesthesia maintenance were done with 100% oxygen and 1.0-1.5% isoflurane. Nitrous oxide, morphine and additional relaxant were administered after the babies were born. Monitoring of fluid balance extend to the third post-operative day. Of the four

patients which had decreased urine at day 1, three patients were given furosemide. Diuresis should commence in 24 hours, during which furosemide intravenously may assist in mobilizing the interstitial edema fluid for excretion.

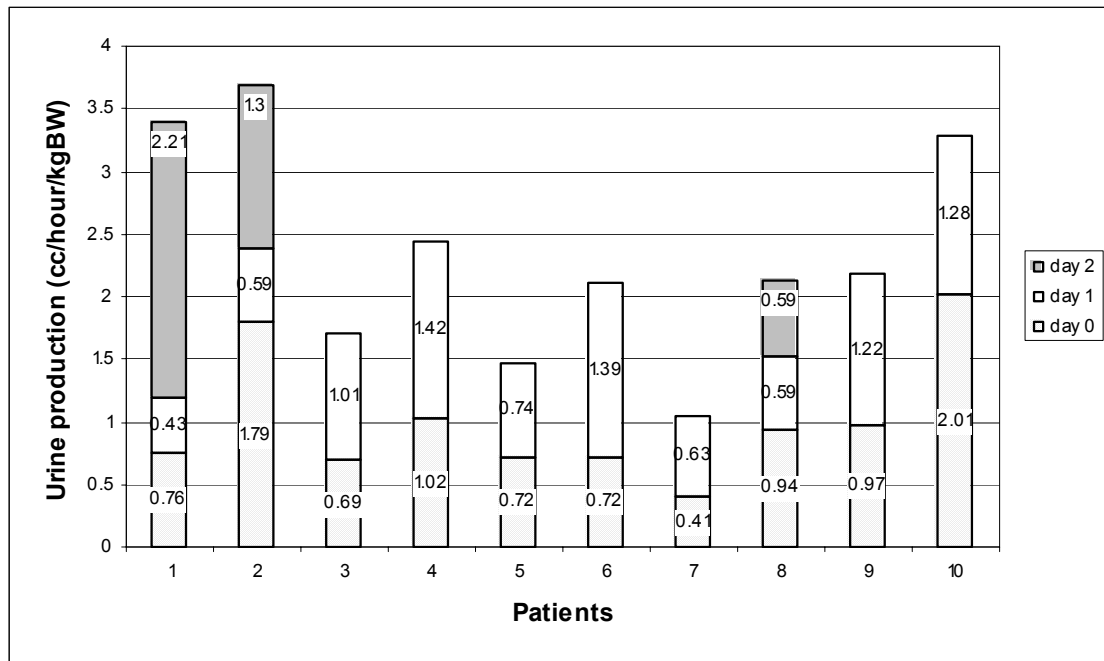


Figure 2. Urine production after C section patients with eclampsia

Problems of the Neonates

First minute evaluation showed that only 40% were vigorous while the other 40% were in severe asphyxia and 20% in mild asphyxia. However, with resuscitation, evaluation at five minutes showed improvement that only 20% of the babies still remained in mild asphyxia.

Postoperative problems

Six patients went smoothly and were discharged before day 7. Three patients experienced cardiac and pulmonary complications were discharged in the second week. The one who was discharged in the third week experienced retinal detachment.

DISCUSSION

Classical management of eclampsia consists of control of seizures, control of severe hypertension and assisted delivery. We found other necessary steps are required to

achieve better results which include airway support, oxygen therapy by mask, left uterine displacement and cricoids pressure during tracheal intubation. Early tracheal intubations may be life saving if seizures are prolonged, regurgitation is likely to occur, or when ventilation are compromised.

Magnesium sulfate is the treatment of choice for the prevention of seizures. A dose of 4 g intravenous bolus of magnesium sulfate (8 g in 50ml of 0.9% NaCl) is to be given at rate lower than 1g/min. Monitoring of the patients should include tendon reflexes for hyporeflexia, respiratory rate and urine productions.

Antihypertensive therapy aims to prevent cerebral hemorrhage, pulmonary edema, and other complications of acute hypertension in the mother, while preserving or improving placental circulation. The target blood pressure for lowering maternal blood pressure should be no more than 30% from baseline. In this study, 9 patients responded to the treatment, while 1 patient showed excessive hypertension (200/120 mm Hg).

Fetus with uteroplacental insufficiency is very sensitive monitor to decreased placental perfusion which occurred during the lowering of maternal blood pressure. Fetal heart rate decelerations may limit the degree of blood pressure reduction. The anesthesiologist should be aware of the safety and potential harmful effects of the drugs used to control blood pressure. Two patients on admission were in respiratory distress due to pulmonary edema. They were treated with artificial ventilation, diuretics and digitalis. Sibai (1987) found the incidence pulmonary edema of 2.9% in patient with preeclampsia /eclampsia. In 70% of the cases, pulmonary edema developed 71 hours after delivery.

It is important that preoperative or predelivery treatment be carried properly regarding neurological evaluation, stabilization, and monitoring to avoid unnecessary maternal obstetric and anesthetic risks. General anesthesia may be the better choice for emergency cesarean delivery because regional block may find difficulties with presumed significant coagulopathy. The generalized edema seen in pre-eclampsia may produce glottic edema, which makes endotracheal intubations extremely difficult. One should be aware of potential airway problem if there is facial edema or the patient complains of hoarseness, difficulty in swallowing, and respiratory distress. One patient showed excessive hypertension (200/120 mmHg), fentanyl was added in the induction sequence. Three cases with fetal distress were given anesthesia with 100% oxygen and 1.0-1.5% isoflurane. Nitrous oxide, incremental doses of morphine and additional muscle relaxant were administered only after the babies were delivered. Any significant hypotension was treated with vasopressor agent and additional fluids as guided by hemodynamic monitors. Vasodilator will probably be needed during emergence to control hypertension until the patient is fully awake and ready to be extubated. Two patients with pulmonary edema were given artificial ventilation extending to post-operative period in the ICU. Monitoring should be continued for at least 24 hours post partum or until diuresis begins, because normally

mobilization of fluid begins in 24 hours. Should spontaneous diuresis does not occur, filling pressure may rise and the elevated filling pressures may put the patient at risk for pulmonary edema. If invasive monitoring is available, follow CVP or PCWP carefully. If those values begin to rise without diuresis occurring, small doses of diuretics and/or dopamine may help.

CONCLUSION

Eclampsia was a multisystemic disease with multiple complications. Preparation of patients with blood pressure stabilization, monitoring, and proper choice of anesthesia was very important in C- section to minimize mortality and morbidity. Concerning these multiple difficulties, joint management among the cardiologists, neurologists, ophthalmologist besides the obstetrician and anesthesiologist is strongly recommended.

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