Case Report

Progression of pre-eclampsia to eclampsia under spinal anaesthesia

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Abstract

Eclampsia remains a problem in the developing countries despite improvements in antenatal care and emergency obstetric facilities. It is an important cause of maternal morbidity and mortality in Nigeria. A 26-year-old primipara, residing in an urban city in Nigeria with antenatal care facilities, booked for antenatal care at 36 weeks of gestation and was then diagnosed with severe pre-eclampsia. She initially refused therapy and was later booked for an emergency cesarean section. She had eclamptic fits during cesarean section under spinal anesthesia, and the seizure was aborted with intravenous diazepam. The postoperative period was uneventful. Progression of pre-eclampsia to eclampsia during cesarean section under spinal anesthesia is rare, but it can occur. Early booking for antenatal care to enable an early diagnosis and treatment are necessary to prevent the progression of pre-eclampsia to eclampsia. There is need to educate the populace on the importance of ante natal care so as to improve its utilization.

Key Words: Antenatal care, cesarean section, eclampsia, spinal anesthesia

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INTRODUCTION

Pre-eclampsia and eclampsia are hypertensive disorders of pregnancy that cause significant morbidity and mortality in the fetus and mother. Globally, pre-eclampsia and eclampsia account for 10-15% of maternal deaths.[1] Pre-eclampsia is a multi-organ group of related disease processes that occur in up to 5-8% of pregnancies after 20 weeks of gestation. The presentation is variable, but generally includes the combination of maternal hypertension and proteinuria.[2] Severe pre-eclampsia is defined as any of the following: (i) severe hypertension (systolic blood pressure >160 mmHg or diastolic blood pressure >110 mmHg); (ii) proteinuria 5 g per 24 h; (iii) oliguria <400 ml urine per 24 h; (iv) cerebral irritability or visual disturbances; (v) epigastric or right upper quadrant pain (liver capsule distension); or pulmonary edema.[3] Eclampsia is the new onset of grandmal seizures occurring during and after pregnancy that do not have another identifiable cause.[2] The development of eclampsia is associated with increased risk of adverse outcome for both mother and fetus.[1,4] In Nigeria, eclampsia is the 3rd commonest cause of maternal mortality.[5] Eclampsia could be prevented in majority of the cases if there was early booking for antenatal care services, permitting early identification of pre-eclampsia and institution of appropriate therapy.[6] The high maternal morbidity and mortality due to eclampsia in the developing countries has been ascribed to late referral, delay in

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hospitalization, late transportation, unbooked status of patients, and multiple seizures prior to admission.[5] Progression of pre-eclampsia to eclampsia may occur during pregnancy, labor or in the postpartum period.[4] Reviewing the published literature, the authors of this report were unable to find any record of eclamptic seizures occurring during cesarean section under spinal anesthesia. We, therefore, report the case of a primigravida who presented with severe pre-eclampsia, which progressed to eclampsia during cesarean section under spinal anesthesia and was successfully managed.

CASE REPORT

A 26-year-old primipara booked for antenatal care at 36 weeks gestation at the University of Port Harcourt Teaching Hospital. On presentation, she was found to have 2++ of protein in urine and blood pressure was 190/120 mmHg. A diagnosis of severe pre-eclampsia was made, and the patient was subsequently admitted to be managed on diazepam, hydrallazine, and magnesium sulfate. The patient decided to go home to inform her relatives and get her personal belongings. She came back at night and refused medications.

She was subsequently booked for emergency cesarean section on the next day 'due to fetal bradycardia and unfavorable cervix.' She was counseled for surgery and spinal anesthesia, which she then accepted. 'She still refused the administration of magnesium sulfate.' 'The platelet count was 130 × 10^9/liter.' Spinal anesthesia was established at L4, L5 interspace with 1.8 ml of 'preservative-free' 0.5% plain bupivacaine after preloading her with 1 liter of normal saline and oxygen was administered at a flow rate of 6 liters per minute by face mask. The level of block was T8 and surgery commenced. The blood pressure fell from a pre-induction value of 190/110 mmHg to 182/105 mmHg, and the patient had generalized tonic-clonic seizures twice while under spinal anesthesia. 'The first seizure occurred just after delivery of the baby, but before administration of 5 i.u. of bolus intravenous oxytocin.' 'This was about 9 minutes after intrathecal injection of bupivacaine and 5 minutes after commencement of surgery.' 5 mg of intravenous diazepam was administered, and it stopped after 10 seconds. A second fit occurred 5 minutes later, and 10 mg intravenous diazepam was administered. It stopped after about 50 seconds and did not recur.

'Oxygen administration by face mask with the patient breathing spontaneously, which was commenced immediately after establishing the subarachnoid anesthesia, was continued throughout the surgical procedure. A size 3 Guedel oropharyngeal airway was inserted and retained from the onset of the first seizure. Arterial oxygen saturation remained essentially normal, and there was no vomiting or obvious regurgitation.' A live female baby was delivered with Apgar scores of 5 and 6 at 1 and 5 minutes, respectively. 'The baby was resuscitated by the neonatology senior registrar in the operating room. He suctioned the oral cavity, initially ventilated with 100% oxygen by a Rendel-Baker-Soucek pediatric facemask and later placed a size 2.5 mm orotracheal tube through which he continued artificial ventilation of the baby. The baby was wrapped in warm clothing and transferred to the special care baby unit.' She regained consciousness 15 minutes after the second seizure, but was drowsy. She was managed in the first 48 hours after surgery in the intensive care unit.

'Magnesium sulfate was not administered to the patient all through,' and she did not have any other seizure. She was discharged home on the 7th post-operative day with an advice to complete her course of antibiotics, analgesics, and hematinics.

DISCUSSION

The diagnosis of eclampsia was made in this case based on the occurrence of 'generalized' seizures against a background of pre-eclampsia.[2] 'Spinal myoclonus associated with subarachnoid anesthesia with bupivacaine has been reported,[7] both in Caucasians[8] and patients of African origin.[9] Whereas, our patient had generalized tonic-clonic seizures, spinal myoclonus associated with subarachnoid anesthesia with bupivacaine affected the lower limbs only.' When this patient with severe pre-eclampsia consented to undergo an emergency cesarean section, she was counseled for spinal anesthesia, which she also accepted.

Neuroaxial block techniques such as spinal anesthesia are considered a safe method of providing anesthesia for the patient with pre-eclampsia and severe pre-eclampsia. This is due to avoidance of the risks associated with general anesthesia such as exacerbated hypertension, failed intubation, and aspiration.[10] Recent studies have shown that spinal and combined spinal-epidural anesthesia can be safely administered without significantly increasing the risk to the mother and fetus, even in severe pre-eclampsia.[11,12] Visalyaputra *et al.*,[11] showed that while there was a brief period of increased hypotension in severely pre-eclamptic patients receiving spinal versus epidural anesthesia, there were no clinical differences in fetal or maternal outcomes. Judicious volume expansion as was done with normal saline in this case may be considered

prior to regional anesthesia, but caution should be used to avoid fluid overload given the increased risk of pulmonary edema.[2] Although eclampsia may occur in the absence of hypertension,[2] the rarity of progression from pre-eclampsia to eclampsia during cesarean sections under spinal anesthesia could be due to the tendency for the blood pressure to be lower when spinal anesthesia is used.

The intra-operative eclamptic fits were successfully controlled with intravenously administered diazepam. However, magnesium sulfate is the anti-convulsant of choice for treating eclampsia. It is more effective than diazepam, phenytoin, or lytic cocktail.[1] Magnesium sulfate should have been used even before the cesarean section if not for the patient's refusal because it has been shown to reduce the incidence both of eclampsia complicating severe pre-eclampsia and further fits in eclamptic patients.[13] Eclampsia could be prevented in majority of cases if there was early booking, early identification of pre-eclampsia, and institution of appropriate therapy.[6] The patient in this case, was residing in Port Harcourt, an urban city, which had two government-owned tertiary health care facilities, and several privately-owned clinics, which offer antenatal care services. She failed to utilize the services available in any of these healthcare facilities. When she presented with severe pre-eclampsia, she initially refused medications, thereby further delaying interventions that could have prevented eclampsia. Eclampsia remains a continuing problem in developing countries despite improvements in antenatal care facilities as seen in this case. Poor utilization of available antenatal care services has been identified in a study as contributing to a high incidence of eclampsia.[6] It has been suggested that more awareness and enabling factors be created for more women to access antenatal care facilities.[5] Also, factors preventing pregnant mothers from utilizing available antenatal care services need to be studied so as to maximize the effectiveness of these services in reducing maternal and perinatal morbidity and mortality.

CONCLUSION

'Progression of pre-eclampsia to eclampsia during caesarean section under spinal anaesthesia is rare,' but it can occur. Although it could be successfully treated with anticonvulsant drugs, it is better to prevent its occurrence' Eclampsia could be prevented in majority of cases by early booking for antenatal care, early identification of pre-eclampsia and prompt institution of appropriate therapy. Factors preventing utilization of available quality antenatal care services by pregnant women should be studied.

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