BMH MEDICAL JOURNAL

BMH Med. J. 2021;8(3):123-127. **Case Report**

Status Eclampticus in a Primigravida at 25 Weeks Gestation

Rabiyabi V, Susmitha Babu, Anoop Kumar AS, Rajesh MC

Baby Memorial Hospital, Kozhikode, Kerala, India

Address for Correspondence: Dr. Susmitha Babu, Senior Consultant Visiting - OB & G, Baby Memorial Hospital, Kozhikode, Kerala, India. Email: drsusmithababu@gmail.com

Abstract

A young female, primigravida was brought to the Emergency Department on ventilator. She was managed by the multidisciplinary team in the Intensive Care Unit. She had multiple episodes of tonic clonic seizures in the emergency department and the blood pressure was 180/110 millimeters of mercury. The abdomen was soft. Uterus corresponded to 24 weeks gestation and the foetal heart was present. Emergency hysterotomy was done as the labor induction failed. The patient had a quick recovery in the post-operative period. She could be extubated on the next post-operative day and was discharged on fifth post-operative day in good condition.

Keywords: status eclampticus, primigravida

Background

Hypertensive disorders of pregnancy (HDP) account for nearly 18% of all maternal deaths worldwide, with an estimated 62,000-77,000 deaths per year. HDP fall into four categories: chronic (pre-existing) hypertension, gestational hypertension or pregnancy-induced hypertension (PIH), pre-eclampsia/eclampsia and pre-eclampsia superimposed on chronic hypertension. Eclampsia defined as the occurrence of convulsions and/or coma unrelated to other cerebral conditions in women with signs and symptoms of pre-eclampsia. Seizures are of grand mal type and may first appear before labour, during labour or up to 48 hours postpartum. Rarely convulsions are recurrent and unabated (status eclampticus) and require deep sedation and even general anaesthesia.

History of Eclampsia

There are references to convulsive disorders of pregnancy in ancient Egyptian and Greek writing and later in writings by authors from Rome. However, because of its similarity to epilepsy, many practitioners did not recognize it as an obstetric complication. This remains the case today, with some cultures still regarding the disorder as one that is caused by 'evil spirits'. Over the years, many treatments have been advocated by different practitioners, including some that were life-threatening in themselves, such as craniotomy, excision of the renal capsule and mastectomy.

Nicolas Puzos, in his Truites des Accouchements of 1759, advocated bleeding the patient. In the 17th century, Mauriceau recognized that the mortal danger to the mother and fetus was greater when the mother did not recover consciousness between convulsions. He also noticed that primigravidae were at greater risk of convulsions and that antepartum convulsions were more dangerous than those beginning after delivery. In the 18th century, Puzos observed that the most serious convulsions were those that lasted longer and recurred more frequently. Some of these observations have been supported by later series by Madame Le Boursier du Coudray, Chief Midwife in Paris in the second half of the 18th century, who wrote extensively on eclampsia and, although she advocated bleeding as a first treatment, she noted that the only way the woman could be saved would be to deliver the baby. If the head was not down she recommended internal version to hasten the delivery. Lever, of Guy's Hospital in London, published a paper on a series of cases of puerperal convulsions and he describe the finding of albumin in the urine of patients who looked as if they were going to develop eclampsia. He also observed swelling of the ankles and puffiness around the eyelids. Lever's work led to the belief that eclampsia was a renal disease, a form of nephritis. Blood pressure measurements began in 1910, which is when pre-eclampsia became distinguished from eclampsia.

In 1925, Lazard described how his intern, Dr Bogen, first suggested the use of magnesium sulphate in the treatment eclampsia. He went on to report a much larger series of successfully treated patients.

The observation that benzodiazepines were useful in eclampsia led to their widespread use in many other parts of the world, although chlormethiazole and phenytoin also had their advocates. It was not until the Collaborative Eclampsia Trial had been undertaken that good comparative evidence for the relative efficacy of the three most popular treatments (magnesium sulphate, phenytoin and diazepam) became available. Magnesium sulphate was found to be the most effective agent in relation to a number of measures maternal and perinatal morbidity (MAGPIE Trial). Women treated with magnesium had a 52% lower risk of recurrent convulsions than those treated with diazepam and a 67% lower risk than those treated with phenytoin.

Case presentation

The patient was found unconscious in the bathroom by her mother. Frothing from the mouth was noted. She was taken to the nearby hospital on the way to which she developed multiple episodes of tonic clonic seizures. On reaching the hospital, she remained unconscious and her blood pressure was found to be 180/110 millimeters of mercury. She was initially managed with magnesium sulphate infusion and antiepileptics but she continued to have seizures. Then she was ventilated and referred to our hospital for further management.

The patient had regular antenatal checkups. She had been married for 1 year. Her pregnancy was so far uneventful except for pedal edema which developed 1 month prior to the seizures. She was promptly investigated and her blood pressure, urine protein, renal function test and liver function test was found to be normal at that time.

Hours prior to the onset of the seizures she had complained of head ache and visual disturbances. The patient was brought on ventilator our hospital.

The examination findings were: blood pressure 180/110 mm Hg, heart rate 105/min, cardiovascular system and respiratory system were within normal limits. Her abdomen was soft with the uterus corresponding to 24 weeks gestation, fetal heart present.

Investigations

Hemoglobin:13 g/dl, platelet count: 2.22 x 105/mm^3, urine protein:+++, serum bilirubin:1mg/dl, AST:53 IU (mildly elevated), ALT:32 IU, blood urea :32.1mg/dl, serum creatinine:1mg/dl

Ultrasound scan (Obstetric):

Single live fetus of gestational age 24 weeks 4 days (corresponding to the last menstrual period). Fundal placenta, adequate liquor, normal cardiac activity.

Computed tomography scan of brain:

Left parietal contusion (non hemorrhagic)

Diagnosis

The patient was diagnosed with status eclampticus as she had recurrent episodes of seizure at 25 weeks gestation with high blood pressure and proteinuria.

Treatment

The blood pressure was controlled by labetalol infusion. Intra venous magnesium sulphate was given to achieve seizure control. Intravenous magnesium sulphate was given as a 4 g bolus over 5 minutes followed by a maintenance infusion of 1-2 g/h. Intravenous midazolam and fentanyl was added on. As the definitive treatment of eclampsia is termination of pregnancy, it was decided to induce the labor. Though the cervix was unfavorable, induction of labor was attempted with vaginal misoprostol. The patient did not respond to induction hence hysterotomy was done. A still born male baby of weight 510 grams was delivered. Ascitic fluid was noted per operatively.

Outcome and follow up

The patient made a quick recovery post operatively. Her blood pressure was controlled by 24 hours and she did not have any more seizures. She was extubated on the next day. She made steady progress and was discharged in good condition on the fifth post-operative day.

Discussion

Almost invariably preeclampsia precedes eclampsia. Preeclampsia is defined as a pregnancy specific syndrome that can affect every organ system. Although preeclampsia is much more than a gestational hypertension with proteinuria, appearance of proteinuria remains an important objective diagnostic criterion. Similarly abnormal laboratory findings in tests of renal, hepatic and hematological function increase the certainty of preeclampsia. Persistent premonitory symptoms of eclampsia such as headache and epigastric pain increase the certainty. That said some women may have atypical eclampsia with all aspects of the syndrome, but without hypertension or proteinuria or both.

In eclampsia the tonic clonic seizures may be so violent that the women throws herself out of the bed, so protection is important. After a seizure the woman is in postictal state. If the seizures are infrequent some degree of consciousness is regained. In some cases the woman is comatose in between the contractions and ultimately death may result. In rare instances a single seizure

may result in coma from which the woman might never emerge.

High fever is considered to be an ominous sign as it indicates cerebrovascular hemorrhage. Pulmonary edema may follow eclamptic convulsions and the usual cause is aspiration pneumonitis. In some women pulmonary edema could be caused by left ventricular failure from increased afterload due to severe hypertension and vigorous intravenous fluid administration. Occasionally massive intracranial hemorrhage may occur which can result in death. Sublethal hemorrhage may lead to hemiplegia. Cerebral hemorrhages are more frequent in older women with underlying chronic hypertension. In approximately 10% of women some degree of blindness will follow a seizure. Two causes of blindness are retinal detachment and occipital lobe ischemia and edema. In both cases the prognosis is good and patients regain their vision within one week postpartum.

Rarely eclampsia is followed by psychosis. This might last for several days to a few weeks. The prognosis is good provided there is no history of prior mental illness.

Eclampsia is a form of posterior reversible encephalopathy. Occurring during the second half of pregnancy or the puerperium, eclampsia presents with proteinuria and clinical and imaging manifestations identical to hypertensive encephalopathy. Hypertension may not be severe, so additional effects on brain endothelial cell permeability are probably important. There is evidence of generalized endothelial cell dysfunction with abnormal vascular reactivity. An underlying inflammatory response may be causative, but other potential etiologies have also been hypothesized. Major maternal complications included placental abruption - 10%, neurologic deficits - 7 %, aspiration pneumonia - 7%, pulmonary oedema - 5%, cardio pulmonary arrest - 4% and acute renal failure -4%.

Cerebral venous sinus thrombosis is another complication of pregnancy and delivery and can present with findings similar to those seen with eclampsia. Brain imaging is usually adequate to distinguish the two diseases, showing obstructed venous sinuses or ischemia with cytotoxic edema on diffusion-weighted sequences in cerebral venous sinus thrombosis.

Treatment includes delivery of the fetus and intravenous magnesium. Antihypertensive medications and other anticonvulsants can also be used. Prognosis is good if treatment is initiated quickly. Intravenous magnesium sulfate is given as a 4 g bolus over 5 minutes followed by a maintenance infusion of 1-2 g/h for 24-48 hours after delivery. Subsequent seizures can be treated with further bolus injections. In refractory cases, second-line treatment with other anticonvulsants may be required. Rarely, the patient may require pharmacologic paralysis and mechanical ventilation. Labetalol is the antihypertensive of choice.

Delivery after an eclamptic seizure should take place expeditiously but in a controlled, careful manner. There is little value in performing an emergency cesarean section in response to a seizure. Stabilization and optimization of both maternal and fetal status are important prerequisites for delivery procedures.

Learning points

Routine close prenatal care of pregnant women during the antepartum, intrapartum and postpartum period results in early detection of preeclampsia followed by appropriate treatment, timely delivery and prevention of eclamptic seizure in order to avoid very serious maternal and neonatal complications such as preterm placental abruption, thrombocytopenia, disseminated intravascular coagulation (DIC), pulmonary oedema, HELLP syndrome, renal and liver failure, intrauterine fetal death, generalized eclamptic seizures and even maternal death. Eclampsia is always a life threatening condition and management decision concerning patients with preeclampsia must be individualized. Patients with preeclampsia or severe preeclampsia should

be referred to a tertiary perinatal care centre and emergency department. Comprehensive monitoring with assessment of patients is always required to improve obstetric outcomes for mothers and babies. Immediate labour and multidisciplinary team management with aggressive therapy in emergency department by a team approach obstetrician and specialist of intensive careis the only successful treatment for eclampsia and is indicated for all patients diagnosed with severe preeclampsia and uncontrolled hypertension, HELLP syndrome or eclamptic seizures. Around 30% of eclamptic seizures occur before the admission to the hospital, which can be especially dangerous. Eclampsia is reversible if adequate diagnosis is promptly made and emergency intensive treatment is immediately administered. Delay in the treatment is associated with higher risk maternal and foetal mortality. Though eclampsia usually presents in the third trimester rarely it can present in the second trimester as in this patient. Any pregnant patient with seizures should be considered as having eclampsia unless proven otherwise. The patient had headache and visual disturbances a few hours before seizures which was probably overlooked by her. Approximately 37 % of patients had severe head ache and 15% had visual disturbances before having seizures.

This patient got very good primary care from the first center and subsequent standard multidisciplinary care from our hospital.

References

1. American College of Obstetricians and Gynecologists. Task force on hypertension in pregnancy. Hypertension in pregnancy. Report of the American College of Obstetricians and Gynecologists' Task Force on Hypertension in Pregnancy. Obstet Gynecol. 2013;122(5):1122.

2. Arulkumaran N, Lightstone L. Severe pre-eclampsia and hypertensive crises. Best Pract Res Clin Obstet Gynaecol. 2013;27(6):877-84.

3. Cipolla MJ, Kraig RP. Seizures in Women with Preeclampsia: Mechanisms and Management. Fetal Matern Med Rev. 2011;22(2):91-108.

4. Munro PT. Management of eclampsia in the accident and emergency department. J Accid Emerg Med. 2000;17(1):7-11.

5. Mukwenda AM, Mbekenga CK, Pembe AB, Olsson P. Women's experiences of having had, and recovered from, eclampsia at a tertiary hospital in Tanzania. Women Birth. 2017;30(2):114-20.

6. Sibai BM, Publications Committee, Society for Maternal-Fetal Medicine. Evaluation and management of severe preeclampsia before 34 weeks' gestation. Am J Obstet Gynecol. 2011;205(3):191-8.

7. Walker JJ. Pre-eclampsia. Lancet. 2000;356(9237):1260-5.

8. Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Hoffman BL, Casey BM, Sheffield JS. Williams Obstetrics 24th Edition, 2014.