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Original Article

Effect of eclampsia on maternal and fetal outcome

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Abstract
Introduction: *The spectrum of hypertensive disorders in pregnancy includes gestational hypertension, pre-eclampsia and eclampsia syndrome, chronic hypertension and pre-eclampsia superimposed on chronic hypertension. This study was aimed to describe the maternal and fetal outcomes in eclampsia in women admitted at out centre.*
Methodology: *All women who were admitted with eclampsia or developed eclampsia during stay at our hospital from May 2017 till February 2018 were included in the study. All babies born to these women were also included in the study. Baseline characteristics of the mother and babies were obtained and in the follow up period, maternal complications and fetal outcomes were noted.*
Results: *During the study period 88 mothers were included in the study. The most common age group was 26 to 30 years and more than half of all mothers were multipara. Most common gestational age at the time of presentation to the hospital was 29 to 32 weeks. Mean duration between pregnancy induced hypertension and eclampsia was 11.4 weeks. No complications were noted among 66% of the mothers, while 17% had HELLP syndrome, 16% had acute renal failure and 13% had pulmonary edema. Among total of 90 fetuses, APGAR score of 4 to 6 was noted in 29% and 0 to 3 in 12% of the foetuses. Furthermore, low birth weight was observed in 31% of the babies and 21% were preterm. There were seven neonatal deaths and four were stillbirths.*
Conclusions: *Early detection and effective management of hypertensive disorders in pregnancy can reduce the incidence of eclampsia. Further studies are required to understand the factors associated with poor maternal and fetal outcomes in eclampsia and ways to prevent them.*
Keywords: *eclampsia; fetal outcome; maternal outcome; pre-eclampsia.*

Introduction

Hypertension in pregnancy is described as systolic blood pressure 140 mmHg or more and/or diastolic blood pressure 90 mmHg or more, recorded on two occasions at least 6 hours apart . The spectrum of hypertensive disorders in pregnancy includes gestational hypertension, pre-eclampsia and eclampsia syndrome, chronic

hypertension and pre-eclampsia superimposed on chronic hypertension. These disorders are a common cause of maternal morbidity and mortality, complicating 3 to 10% of all pregnancies.[1] Eclampsia is a syndrome complex peculiar to a pregnant, parturient or a puerperal woman and is characterized by tonic-clonic convulsions, occurring after 20 weeks of gestation in a patient with hypertension. It is an obstetric emergency requiring prompt management at a tertiary care institution as it is a main cause for maternal morbidity and mortality. In the past, eclampsia was thought to be the end result of preeclampsia, however, it is now clear that seizures should be considered merely one of several clinical manifestations of severe preeclampsia, rather than a separate disease. Despite advances in detection and management, preeclampsia/eclampsia remains a common cause of maternal death. This study was aimed to describe the maternal and fetal outcomes in eclampsia in women admitted at out centre.

Methodology

Study design and sampling

The present study was conducted prospectively in the Department of Obstetrics and Gynaecology, Bharati Vidyapeeth (Deemed to be) University Medical College and Hospital, Sangli. All women who were admitted with eclampsia or developed eclampsia during stay at our hospital from May 2017 till February 2018 were included in the study. Women who had convulsions due to causes other than eclampsia like epilepsy, meningitis, cerebrovascular accident and encephalitis were excluded from the study. All babies born to these women were also included in the study. All women and her family were explained the purpose of the study and those agreeing to participate gave their written consent. Refusing to consent for the study did not affect the treatment plan. Approval of the institutional ethics committee was sought before enrolling the patients in the study.

Data Collection and Data Analysis

Baseline maternal characteristics were obtained including maternal age, parity, gestational age at the time of presentation, mode of delivery, duration between pregnancy induced hypertension and eclampsia. Follow up was done for 6 weeks every 15 days with regular blood pressure charting and symptoms, were noted and dosage of anti-hypertensive drugs were adjusted accordingly. Maternal complications like antepartum haemorrhage (APH) , post-partum haemorrhage (PPH), HELLP syndrome, acute renal failure (ARF), pulmonary oedema, septicaemia, requirement of ventilation, brain haemorrhage and death were noted for all women. Fetal outcomes were noted in terms of the number of still birth, neonatal deaths and the incidence of low birth weight. Still birth was defined as newborn weighing 500 gm or higher at birth without any sign of life. Low birth weight was defined as birth weight less than 2500 gm. Data were compiled and analyzed to describe the frequency distribution of eclampsia according to age, parity, maternal complications and fetal outcome in eclampsia.

Results

During the study period 88 mothers were included in the study. The most common age group was 26 to 30 years (32%), followed by 21 t 25 years (Table 1). More than half of all mothers were multipara and most common gestational age at the time of presentation to the hospital was 29 to 32 weeks. Mean duration between pregnancy induced hypertension and eclampsia was 11.4 weeks, most commonly between 0 to 7 weeks. Majority of the mothers had a lower section caesarean (59%). No complications were noted among 66% of the mothers, 17% had HELLP syndrome, 16% had acute renal failure and 13% had pulmonary edema. Less commonly observed complications in the mothers were septicaemia, post and ante-partum haemorrhage, disseminated intravascular coagulation (DIC). Four died in the post-partum period (Table 2). There were 86 singleton

pregnancies and two were multiple pregnancies, resulting in a total of 90 fetuses. APGAR score of 7 to 10 was observed in 59% of the foetuses, 4 to 6 in 29% and 0 to 3 in 12% of the foetuses. Furthermore, low birth weight was observed in 31% of the babies and 21% were preterm. There were seven neonatal deaths and four were stillbirths.

Table 1 Baseline characteristics of the mothers (n=88) included in the study

Variable	N
Age distribution (in years)	
18 to 20	19 (22%)
21 to 25	24 (27%)
26 to 30	28 (32%)
More than 30	17 (19%)
Parity	
Primipara	41 (46%)
Multipara	47 (54%)
Gestational age at presentation (in weeks)	
20 to 24	15 (17%)
25 to 28	12 (14%)
29 to 32	29 (33%)
33 to 36	18 (20%)
More than 36	14 (16%)
Duration between pregnancy induced hypertension and eclampsia	
0 to 7	28 (32%)
8 to 15	24 (27%)
16 to 30	17 (19%)
More than 30	19 (22%)
Mode of delivery	
Normal vaginal	36 (41%)
Lower section cesarean section	52 (59%)

Table 2 Maternal and fetal outcome

Variable	N
Maternal outcome (n=88)	
None	58 (66%)
HELLP syndrome	15 (17%)
Acute renal failure	14 (16%)
Pulmonary edema	11 (13%)
Septicaemia	8 (9%)
Post-partum hemorrhage	8 (9%)
Disseminated intravascular coagulation	7 (8%)
Ante-partum hemorrhage	5 (6%)
Death	4 (5%)
Fetal outcome (n=90)	
APGAR score	
0 to 3	11 (12%)
4 to 6	25 (29%)
7 to 10	52 (59%)
Clinical outcome	
Low birth weight (<2.5 kg)	28 (31%)
Preterm	19 (21%)
Neonatal death	7 (8%)
Still birth	4 (5%)

Discussion

An eclamptic seizure occurs in 2 to 3% of severely preeclamptic women not receiving anti-seizure prophylaxis.[2] The incidence of eclampsia has been reproted at 1.6 to 10 cases per 10,000 deliveries in developed countries[3], while in developing countries the incidence varies from 6 to 157 cases per 10,000 deliveries.[4] Eclampsia prior to 20 weeks of gestation is rare and should raise the possibility of an underlying molar pregnancy or antiphospholipid syndrome. It has been reported that approximately 50% of all cases of eclampsia occur preterm, with more than 20% occurring before 31 weeks of gestation.[5] Approximately one-third of cases occur at term, developing intrapartum or within 48 hours of delivery. Eclamptic seizures developing greater than 48 hours after delivery but less than four weeks postpartum accounts for about 13 to 16% and represents as many as 25% of all postpartum cases. [6]

Maternal complications occur in more than two-thirds of women with eclampsia. Most common complications include abruption placentae, disseminated intravascular coagulopathy, acute renal failure, hepatocellular injury, liver rupture, intracerebral hemorrhage, transient blindness, cardiorespiratory arrest, aspiration pneumonitis, acute pulmonary edema, and postpartum hemorrhage.[7] Some abnormalities resolve in the post-partum period like renal dysfunction, coagulopathy, neurologic abnormalities, hepatocellular damage and hypertension. However, brain damage from haemorrhage may result in permanent neurologic damage and has been reported as the most common cause of death in eclamptic women.[8] Further HELLP syndrome (Hemolysis, Elevated Liver enzymes, Low Platelets) develops in approximately 10 to 20% of women with preeclampsia/eclampsia. We observed a maternal death rate of 5% in our population. Maternal mortality rates of 0 to 14% have been reported in the previously published studies.[9] Maternal mortality due to eclampsia has been shown to correlate with the level of prenatal,

intrapartum, and neonatal care. The highest rates are in developing countries where care is compromised by limited resources.[10] A population-based cohort study from Canada including 1481 eclamptic women reported a case mortality rate of 0.34%.[11] Severe morbidity in the studied population was due to acute renal failure, need for assisted ventilation, embolism, shock, and adult respiratory distress syndrome. While a retrospective analysis of 990 cases of eclampsia in Mexico reported a case mortality rate of 13.9%.[12]

Eclampsia affects the health of the fetus as well. Fetal bradycardia lasting at least three to five minutes is a common finding during and immediately after an eclamptic seizure, though it does not necessitate an emergent cesarean delivery. By administering anticonvulsant drugs, oxygen and treating severe hypertension can stabilize the mother and help the fetus recover from the effects of maternal hypoxia, hypercarbia, and uterine tachysystole. Furthermore, resolution of maternal seizure activity is associated with compensatory fetal tachycardia and loss of variability, sometimes associated with transient fetal heart rate decelerations.[13] If the fetal heart rate tracing remains non-reassuring for more than 10 to 15 minutes with no improvement despite maternal and fetal resuscitative interventions, then the possibility of occult abruption and emergent delivery should be considered.[2]

Premature delivery, abruptio placenta, and intrauterine asphyxia are the primary causes of perinatal death in eclamptic pregnancies. Perinatal mortality ranges from 2 to 23% and is closely related to gestational age. The rate of preterm infants and low birth weight babies is higher among women with eclampsia[14], which has been reported in 31% and 21% of the babies in our study respectively. The high rates of perinatal mortality could also be explained by the referral delay, increased onset of seizure to delivery interval and presence of co-morbidities. Our study report that majority of perinatal mortality are due to low birth weight and preterm.

Conclusion

Eclampsia is an important direct obstetric cause of maternal mortality. The incidence of eclampsia is related to the level of antenatal, intranatal and postnatal care provided. Perinatal morbidity and mortality is high in cases of eclampsia with occurrence of complications like stillbirths, preterm birth, small for gestational age and neonatal deaths. Early detection and effective management of hypertensive disorders in pregnancy can reduce the incidence of eclampsia. Therefore, peripheral health professionals should be more vigilant about early identification and treatment of women with hypertension. Further studies are required to understand the factors associated with poor maternal and fetal outcomes in eclampsia and ways to prevent them.

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