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Original Research Article

Fetomaternal outcome in eclampsia

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ABSTRACT

Background: Eclampsia is the third most common cause of maternal mortality, after haemorrhage and infection in the developing countries. Majority of cases of eclampsia are young primigravidas. The reduction in both maternal and perinatal morbidity and mortality remains the yard stick of success in the management of eclampsia.

Methods: A hospital based analytical cross-sectional study was conducted among the pregnant women with eclampsia admitted in the department of Obstetrics and Gynecology in Regional Institute of Medical Sciences, Imphal. The study was conducted for a period of one and half years from September 2018 to March 2020.

Results: Fifty-five (55) patients in the age group between 21 and 25 years constitute the maximum percentage of eclampsia (67.3%). Forty-five (81.8%) cases were antepartum eclampsia, 2 (3.6%) were intrapartum eclampsia and 8 (14.5%) cases were postpartum eclampsia. Majority (78.2%) of the cases were primigravidae, which is comparable to other studies. As much as 23 (41.8%) of the cases presented at 32-37 weeks period of gestation. There were two maternal deaths (3.6%) due to eclampsia related complications. There were 13 (21.7%) perinatal deaths in this study, out of which 10 (16.7%) were still births and 3(5%) were early neonatal deaths.

Conclusions: Eclampsia is still an important obstetric emergency in the community contributing to significant maternal and perinatal morbidity and mortality. Eclampsia may not develop de novo and as such, it is not always a preventable condition. Early detection and prompt intervention of complications is vital to ensure a healthy outcome for both mother and baby.

Keywords: Cross sectional study, Eclampsia, Pre-eclampsia

INTRODUCTION

Eclampsia, derived from the Greek word meaning “flash out” is a recognized pathology, since the time of Hippocrates and ancient Greek and dates back to seventeenth century.¹ It is perceived as the end of linear spectrum that stretches from the pregnancy through mild gestational hypertension, pre-eclampsia and finally eclampsia.

Eclampsia is the development of seizures that cannot be attributed to other causes, in a woman with pregnancy induced hypertension (PIH). Though the incidence is more common in the third trimester, its frequency increases as term approaches.²

Hypertensive disorders complicate 5 to 10 percent of all pregnancies.³ Headache, visual disturbance such as scotoma and epigastric pain are premonitory symptoms of eclampsia. Epigastric or right upper quadrant pain frequently accompanies ischaemia, edema and haematomas of liver that stretches Glisson’s capsule.³

Although, pre-eclampsia is not preventable, eclampsia is largely preventable. Pre-eclampsia is one of the major causes of poor pregnancy outcome, including maternal and fetal mortality and severe obstetric morbidity.⁴ In spite of the global and regional interventions and initiatives from the government, its outcome in terms of maternal and perinatal mortality continues to be worse. The incidence of eclampsia in developed countries range

from 1 in 2000 to 1 in 3448 pregnancies which is much lower than in developing countries. The incidence of eclampsia in India has been quoted as 1.56%.^{5,6}

Majority of cases of eclampsia are young primigravidas and those without any prior antenatal care.⁶ Though not all cases of eclampsia can be prevented, majority of cases can be prevented by early detection and effective treatment of preeclampsia, for which good antenatal services are needed.⁶ Eclampsia is the third most common cause of maternal mortality, after haemorrhage and infection in the developing countries.⁷ Maternal outcome includes mortality, rates of severe hypertension, increased preeclampsia, eclampsia and severe morbidities (such as pulmonary oedema, renal failure, coagulopathy, cardiac failure, HELLP syndrome, liver failure, stroke), placental abruption caesarean section etc.

About 5% of women with HELLP syndrome are expected to develop this condition in subsequent pregnancies. The chance of recurrence of eclampsia is only about 1-25%.⁸

Fetal outcome includes mortality, intrauterine growth restriction, prematurity and severe morbidity (such as intraventricular haemorrhage, respiratory distress syndrome, or asphyxia). About 20-25% of women with preeclampsia will develop this condition in future pregnancies.⁸ The onset of eclamptic convulsions can be antepartum (38-53%), intrapartum (18-36%), or postpartum (11-44%).⁹

The only definitive treatment for eclampsia is delivery of the baby. According to WHO report 2008, eclampsia accounts for 12% of all maternal deaths in developing countries.¹⁰ Eclamptic convulsions leading to maternal and perinatal morbidity and mortality could be prevented by appropriate antenatal care and timely institution of therapy for preeclamptic features. The reduction in both maternal and perinatal mortality remains the yard stick of success in the management of eclampsia. Better health care facilities, improvement of socio economic and educational status of the people, recognition of the seriousness of problem and availing the health care facility by the people themselves, adequate antenatal supervision followed by early treatment and timely interventions will greatly reduce the morbidity and mortality associated with eclampsia.

To the best of our knowledge, studies exploring the fetomaternal outcome of eclampsia is limited particularly in this part of the country. Hence, this present study was conducted to evaluate the maternal and fetal morbidity/mortality associated with eclampsia.

METHODS

Study design

A hospital based analytical cross-sectional study was conducted among the pregnant women with eclampsia

admitted in the department of Obstetrics and Gynaecology in Regional Institute of Medical Sciences, Imphal.

Study duration

The study was conducted for a period of one and half years from September 2018 to March 2020.

Study population

This study was conducted on all the cases of eclampsia admitted in Department of Obstetrics and Gynecology, RIMS, Imphal during that one and half years period.

Inclusion criteria

Patients of antepartum, intrapartum and post-partum eclampsia admitted to above mentioned hospital during one and half year duration.

Procedure of study

Complete clinical history including age, parity, the chief complaints, gestational age, history of raised blood pressure, swelling of feet, headache, upper abdominal pain, visual disturbances, convulsion, vomiting, urinary problems, sleep disturbances or bleeding per vagina, history of past illness, menstrual history, obstetric history, family and personal history was taken from husband or close relatives of patient. Informed consent was taken.

Height was measured at the first antenatal visit using a calibrated wall mounted stadiometer with arms at the side and leveled shoulder and back of the heels, buttock and shoulders touching the wall. The arrow point was leveled at the same level as the investigators eye and height was recorded to the nearest 0.1 cm.

Weight was measured at every antenatal visit. The respondent was instructed to remove shoes and heavy clothing, e.g. sweater, jackets, and made to stand at the centre of the weighing scale. Weight was recorded to the nearest decimal fraction.

Blood pressure was measured at every antenatal visit. The respondents were made to either sit comfortably in a chair with her back and arm supported and legs uncrossed. The middle of the blood pressure cuff on the upper arm was kept at the level of the heart. The blood pressure was recorded to the nearest 2 mmHg.

General physical and systemic examination including Blood pressure, pulse, temperature, BMI, respiratory rate, oedema, pallor, jaundice, dehydration, knee jerk was checked.

Obstetric examination includes abdominal examination for gestational age, presentation of fetus, fetal heart rate and pelvic examination was done to assess Bishops score.

Antihypertensive was given to control raised BP and MgSO₄ was given to control convulsion. Decision regarding mode of delivery (vaginal/caesarean) for termination of pregnancy was taken.

Systemic examination of respiratory, cardiovascular, central nervous system was done.

All the routine investigations including complete haemogram, urine routine examination, liver and kidney function test, ABO grouping and Rh typing, blood sugar estimation, along with necessary investigations like trans abdominal ultrasonography for fetal well-being, placental localization, amniotic fluid index and other investigations like serum lactate dehydrogenase, uric acid, coagulation profile, funduscopy, MRI (if neurological damage suspected) was done.

For neonate, details of labour, mode of delivery, birth weight, Apgar score, intra uterine death, prematurity, need for NICU admission were recorded. The particulars, history, investigations, examination details etc., were recorded at relevant time.

Working definitions

Gestational hypertension: BP more than or equal to 140/90 for the first time in pregnancy after 20 weeks of gestation, without proteinuria.¹⁷

Pre-eclampsia: Gestational hypertension with proteinuria.¹⁷

Chronic Hypertension: Known hypertension before pregnancy or hypertension diagnosed first time before 20 weeks of pregnancy.¹⁷

Eclampsia: Preeclampsia with convulsions.¹⁷

Perinatal period: Perinatal period commences at 28 completed weeks of gestation & ends seven completed days after birth.¹⁸

Preterm: Infants born before 37 completed weeks.¹⁸

Stillborn: Baby born with no sign of life at or after 28 weeks of gestation or weighing >500 gm at birth.¹⁸

IUGR: Infants born with birth weight less than 10th percentile of the average birth weight.¹⁸

Early neonatal death: Death of new born within first 7 days of birth.¹⁸

RESULTS

A total of 55 pregnant women with eclampsia were included in the study. The mean age of the pregnant women was 25.3 years with a minimum of 19 years and a maximum of 41 years. More than 4/5th i.e. 45 out of 55

(81.8%) of the cases, had antepartum eclampsia. Intrapartum eclampsia was present only in two (2) patients. Thirty eight out of 55 cases (69.1%), were unbooked. Thirty six out of 55 cases (65.5%), were referred cases.

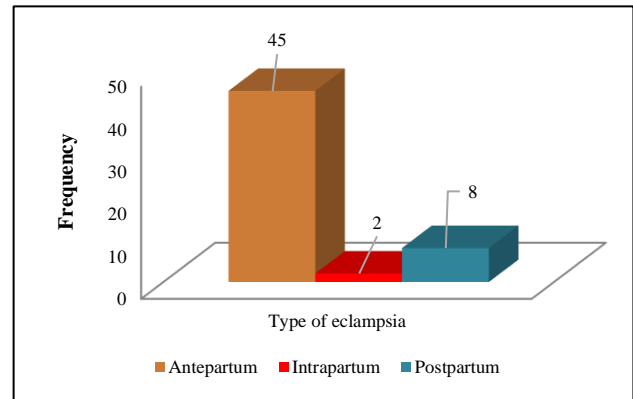


Figure 1: Distribution of patients by type of eclampsia (N=55).

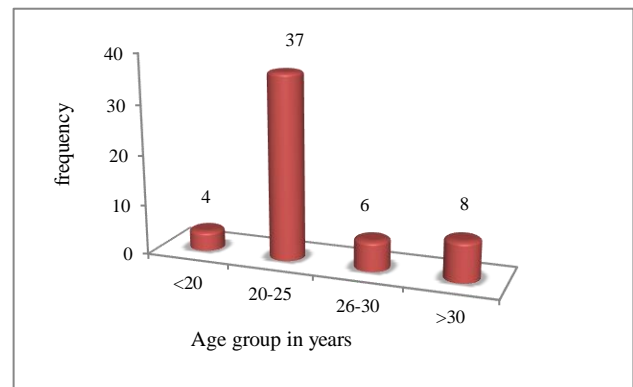


Figure 2: Distribution of patients by age groups (N=55).

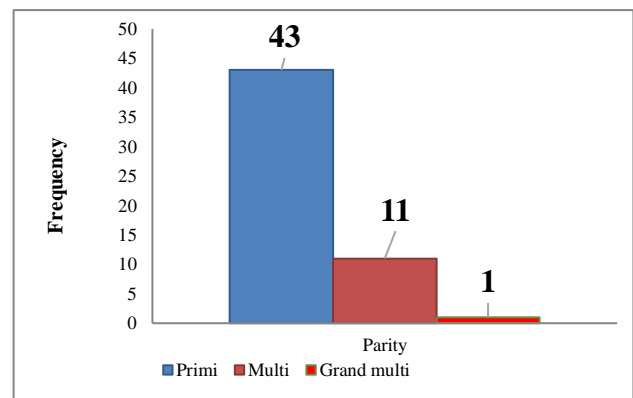


Figure 3: Distribution of patients by their parity status (N=55).

It showed that more than 3/4th of the patients, 43 out of 55 cases (78.2%), were primigravida. One (1) pregnant woman presented as a grand multi para. Twenty-three (41.8%) out of the 55 cases, of the pregnant women

presented at 32-37 weeks of gestation. Gestational age of 32 weeks or lesser was noted in 12 cases (21.8%) of the pregnant women of which 2 cases (3.6%) presented with 28 weeks or lesser.

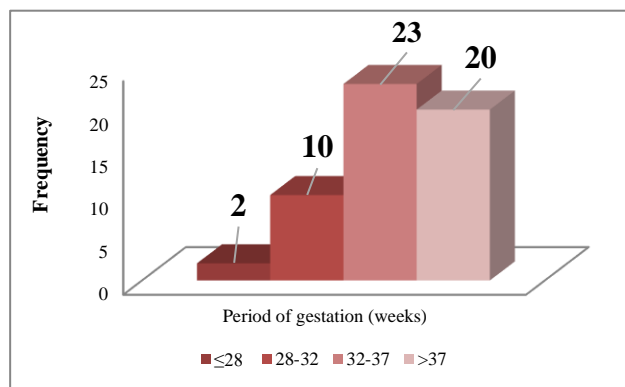


Figure 4: Distribution of patients by gestational age (N=55).

It showed that the main presenting symptom was headache, 41 out of 55 cases (74.5%), followed by blurring of vision in 17 out of 55 cases (30.9%). Almost all but three patients, 52 out of 55 cases (94.5%), had proteinuria and loss of consciousness was present in 8 out of 55 cases (14.5%), of the patients. more than half of the cases had systolic blood pressure (SBP) >160 mmHg while only 10 (18.2%) of the cases had systolic blood pressure less than 140 mmHg. Also diastolic BP more than 100 mmHg was found in more than half (58.2%) of the cases. Majority, 50 out of 55 cases (90.9%), of the pregnant women presented in the hospital after one episode of fit. Thirty three out of 55 patients (60%), of the cases delivered by caesarean section. Hysterotomy was done for one patient.

Table 1: Fetal complications and outcomes (N=60).

Complications	Frequency
Intra uterine growth restriction (IUGR)	14
Respiratory distress syndrome (RDS)	7
Septicaemia	2
Birth asphyxia	1
Meconium aspiration syndrome (MAS)	1
Still birth	10
Admission to NICU	11
Early neonatal death	3

38.2% (95% CI: 25.7-52.3%) of the mothers who were admitted with eclampsia had maternal complications. The most common maternal complication found to be pulmonary edema followed by HELLP syndrome, PPH and PRES etc. Six (10.9%) of the cases had to undergo ICU admission and there were 2 (3.6%) maternal deaths in this study. It shows that almost three-fourth of the newborns had low birth weight. The most common fetal complication to be IUGR (23.3%), followed by RDS (11.7%) and septicaemia (3.3%). There were 10 (16.7%)

still births and 11 (18.3%) of the babies had to undergo admission to NICU of which three (5%) early neonatal deaths occurred.

Table 2: Maternal complications and outcome (N=55).

Complications	Frequency
Pulmonary edema	7
HELLP syndrome	6
Post-partum hemorrhage (PPH)	5
Posterior reversible encephalopathy syndrome (PRES)	5
Pleural effusion	2
Acute renal failure	2
Acute respiratory distress syndrome	2
Antepartum hemorrhage	2
Congestive cardiac failure	2
Cerebro vascular accident	1
Septicaemia	1
ICU admission	6
Maternal death	2

DISCUSSION

Eclampsia is known to mankind since ancient times. Even centuries before the term “eclampsia” was coined in the Varandaeus treatise on gynecology, it was recognized as a type of epilepsy associated with pregnancy. It is one of the major causes of maternal and fetal morbidity and mortality.¹⁹ The cardinal features of pre-eclampsia are hypertension and proteinuria. It is observed more in developing and under developed countries due to lack of awareness and insufficient healthcare facilities.²⁰ While the incidence of eclampsia is lower in developed countries due to better compliance with antenatal clinic attendances and easier access to specialist care.

In the present study of 55 patients of eclampsia in the age group between 21 and 25 years constitute the maximum percentage of eclampsia (67.3%) similar to other studies by Sarma et al and Singh et al.^{11,13} In our study, 45 (81.8%) cases were antepartum eclampsia, 2 (3.6%) were intrapartum eclampsia and 8 (14.5%) cases were postpartum eclampsia which is comparable to study done by Raji et al.³³ This finding suggests importance of adequate antenatal care.

Majority (69.1%) of the eclamptic cases were unbooked. Raji et al, Sarma et al, Prabhakar et al, Pradeep et al and Choudhury et al also reported similar results.^{11,21-23,33} Lack of antenatal care is a serious concern and appropriate steps are to be taken by the respective government to tackle the menace of eclampsia. Routine screening methods during antenatal checkup helps to identify potential eclamptic women but eclampsia may not always be predictable and preventable.

On the other hand, in 1994 Douglas and Redman reported that women with less frequent antenatal visits were not

significantly different from those with standard antenatal care in terms of the type of first seizure, where it occurred, or the gestational age at which it occurred and also that 85% women had been seen by a doctor or midwife in the week before their first convulsion.¹⁰

Majority (78.2%) of the cases were primigravidae, which is comparable to other studies.^{11,21,33} It indicates that primigravidae who are exposed to placental tissue for the first time are main victim for eclampsia and indicates the need for regular and compulsory screening of young pregnant woman especially primigravida for preeclampsia/eclampsia. As much as 23 (41.8%) of the cases presented at 32-37 weeks period of gestation. Extreme pre-term presentation before 28 weeks of gestation was noted in two (3.6%) of the cases. Similar observations were made by other studies.^{14,21,23}

The main presenting symptom was headache (74.5%), followed by blurring of vision (30.9%). Out of 55 cases, 45 (81.8%) had high blood pressure, 52 (94.5%) had proteinuria and 24 (43.6%) had edema.^{21,23,33} Eight (14.5%) cases were unconscious at the time of admission. Eclampsia is an obstetric emergency with significant maternal and fetal morbidity and mortality. In the present study, we observed that 12.7% of the cases developed pulmonary edema, 10.9% HELLP syndrome and 9.1% post-partum haemorrhage. Posterior reversible encephalopathy syndrome (PRES), pleural effusion and acute renal failure were some other complications observed among the cases. Singh et al in their study observed that among all HELLP syndrome was the most common maternal complication observed in 37.5% of patients, whereas DIC (disseminated intravascular coagulation) and pulmonary edema was seen in 3.6% cases of each.¹³ Maternal mortality rate was 1.8% in their study. Another study from Nigeria also observed important maternal complications to be pulmonary oedema, HELLP syndrome, acute renal failure, transient blindness, abruptio placenta, coagulopathy and cerebrovascular accident.

There were two maternal deaths (3.6%) due to eclampsia related complications. Similar findings were observed by Rayamajhi et al where there were 2 maternal deaths out of 56 eclamptic patients during their study period.¹² In centers with good health care facilities maternal deaths are rare in eclampsia patients. Katz et al had no maternal deaths and no permanent morbidities among 53 eclampsia patients in their study from USA.²⁴

The definitive treatment of eclampsia is delivery, irrespective of gestational age. Therefore, the patient must be delivered within 24 hours in case of severe pre-eclampsia, and within 12 hours in a patient with eclampsia.² Lower segment caesarean section was the commonest mode of delivery in our study 33 (60%). Similar observation was also made by Raji et al.³³ There were 13 (21.7%) perinatal deaths in this study, out of which 10 (16.7%) were still births and 3(5%) were early

neonatal deaths. Pannu et al observed similar findings where they observed perinatal mortality in their study to be 21.9%.¹⁶ Similar findings were observed from Tanzania, Benin and Eastern India.²⁵⁻²⁷ The high rate of perinatal mortality could be explained by factors like delays in referral, increased onset of fit to delivery interval and presence of multiple complications etc.

In our study, 14 (23.3%) of the cases had intra-uterine growth restriction and 7 (11.7%) of the newborns had respiratory distress syndrome. Septicaemia, birth asphyxia and meconium aspiration syndrome were some of the complications observed. In a study by Okoror et al prematurity accounted for the highest neonatal complication and was also found to be the major cause of neonatal death.³⁴ Other complications observed were jaundice, birth asphyxia, small for gestational age and respiratory distress syndrome.

In this study, we observed 44 (73.3%) of the newborns to have low birth weight. The rate of preterm infants and small for gestational age infants is higher in women with eclampsia.^{28,29} The significant number of low birth weight in the study could be due to higher incidence of prematurity in patients of eclampsia. Many studies have suggested that there is higher risk of preterm delivery and low birth weight in eclampsia along with increased rate of fetal death.^{23,30-32}

From the study it can be concluded that eclampsia is still an important obstetric emergency in the community contributing to significant maternal and perinatal morbidity and mortality. Risk factors such as young age, primiparity and not having adequate antenatal care as per LAQSHYA guideline maybe the cause of high incidence of eclampsia. Thus, it is recommended that measures be put in place to institute preventive interventions wherever available, by increasing patient awareness about warning symptoms, the importance of antenatal care and early diagnosis of pre-eclampsia cases. Eclampsia may not develop de novo and as such, it is not always a preventable condition. Early detection and prompt intervention of complications is vital to ensure a healthy outcome to both mother and baby.

CONCLUSION

From the present study, it can be concluded that eclampsia is still an important obstetric emergency in the community contributing to significant maternal and perinatal morbidity and mortality. Risk factors such as young age, primiparity and lack of adequate antenatal care maybe the cause of increased incidence of eclampsia. Early detection and prompt management at an appropriate tertiary level of care can ensure delivery of a healthy baby without compromising the health of mother. Primary prophylactic MgSO₄ (magnesium sulphate) for eligible cases even in health care centres of periphery can reduce incidence of eclampsia where maternal and foetal outcomes are compromised to a great extent.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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