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Original Research Article

Fetomaternal outcomes in eclamptic primigravida in a tertiary care centre

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ABSTRACT

Background: As a tertiary care facility, our institute sees a high volume of complex pregnancy cases. The purpose of this study is to examine the foetal and maternal outcomes in primigravida cases with eclampsia, as they represent a high-risk but not uncommon patient subset in obstetric practice.
Methods: This study was a prospective observational study of 80 primigravida patients admitted to the department of obstetrics and gynaecology, FAAMCH, Barpeta during the period of 4th September 2021 to 3rd September 2022. Maternal outcomes were studied in the mother and fetus, including pulmonary oooedema, placental abruption, HELLP syndrome, PPH, cerebral infarction, ICU admission, MODS, and stillbirth.
Results: Pulmonary oedoema was the most common problem among the 80 subjects, with AKI, aspiration Pneumonitis, CVA, MODS, placental abruption, PPH, and HELLP syndrome. Only 14 subjects had to be admitted to the ICU, and 54 (67.50%) had no problems while they were still in the womb.
Conclusions: This study found that most primigravida patients with eclampsia eventually underwent spontaneous vaginal delivery, with pulmonary oooedema being the most common maternal complication. Early intervention, such as blood pressure monitoring, and urine dipsticks, can influence the path of illness care for a patient. To reduce maternal and perinatal morbidity and mortality, good antenatal care is essential.

Keywords: fetomaternal outcomes, Eclamptic primigravida, Tertiary care centre, Eclampsia

INTRODUCTION

Eclampsia is described as the occurrence of convulsions or coma during pregnancy or the post-partum period in a patient who has preeclampsia signs and symptoms. Eclampsia is a life-threatening emergency that is still a major cause of serious maternal morbidity and the top cause of maternal mortality globally.

Most maternal deaths are caused by complicated or mishandled situations, which are mainly related to multi-organ involvement.[1] They are responsible for over a third of a million deaths in low- and middle-income countries and more than six million perinatal deaths.[2] it is a common obstetric emergency.

The majority of eclampsia cases are caused by patients who did not obtain enough medical care throughout their antenatal period. Eclampsia is typically characterised by hypertension, proteinuria, with or without odema, and seizures during pregnancy, labour/within 10 days of birth.

Eclampsia is more common in the last trimester of pregnancy and becomes more common near term. It can happen during the antepartum period (35-45%), the intrapartum era (15-20%), or the postpartum period (35-45%). Seizures or postictal state, headache, frontal headache, generalised oedema, visual disturbance such as blurred vision and photophobia, right upper quadrant stomach pain with nausea, amnesia, and other mental status abnormalities are all clinical characteristics of

eclampsia.[3] Eclampsia accounted for 43.35% of total maternal deaths in Eastern India, with 4.96% case fatality rate. The most common cause of death in eclampsia is pulmonary oedema. Death from eclampsia is most likely in women between ages of 19 and 24, in primigravida.

Eclampsia-related deaths predominantly seen in illiterate and unbooked people. Maternal deaths also particularly common in lower socioeconomic level groups.[4]

Maternal consequences of eclampsia include placental abruption, hepatic problems, low PLT count, coagulopathy, renal insufficiency, visual abnormalities, need for transfusion, HELLP syndrome and respiratory failure.[5]

Preeclampsia-related neonatal complications include intrauterine growth retardation, intrauterine deaths, complications associated with preterm deliveries, intracranial haemorrhage, respiratory distress syndrome, surfactant deficiency induced hyaline membrane disease, neonatal sepsis, bronchopulmonary dysplasia and the need for NICU admission. Babies with poor APGAR scores are more likely to suffer problems such as periventricular leukomalacia leading to germinal matrix haemorrhage, respiratory distress syndrome, hypoglycemia and hypocalcaemia.[6] A primigravida (PG) is a woman who conceives for the first time. When compared to multigravidas, PGs have a much higher risk of protracted first and second stages of labour, increased likelihood of foetal distress during labour and the requirement for extensive monitoring. PGs are also at a much higher risk of surgical vaginal birth and emergency caesarean section.[7]

The majority of research have consistently shown that primiparous women had a higher risk of pre-eclampsia than multiparous women. According to the current consensus, immunological maladaptation may add to the risk of primiparity-associated preeclampsia.[8]

As a tertiary care facility, our institute sees a high volume of complex pregnancy cases. The purpose of this study is to examine the foetal and maternal outcomes in primigravida cases with eclampsia, as they represent a high-risk but not uncommon patient subset in obstetric practice. The findings are expected to shed insight on whether our institute's patterns parallel those of the regional and national landscape, as well as identify areas for improvement.

Aims and objectives

Aim of the study was to study the maternal and fetal outcomes of primigravida eclampsia patients.

Objectives

Objectives were to study the demographics of primigravida patients with eclampsia, to study the maternal outcomes of these cases-pulmonary edema, placental abruption, HELLP syndrome, PPH, cerebral infarction, ICU admission, MODS, to study the fetal outcomes of these cases-stillbirth, fetal death within 12 hours, birth asphyxia, NICU admission and to correlate the above outcomes with age, mode of delivery and time to delivery.

METHODS

Study type

Prospective observational study used in study.

Sample size

In the study by Nobis et al the overall prevalence of eclampsia during pregnancy in Assam was 1.8%.[9]

The sample size is calculated using the following formula:

$n = (z)^2p(1-p)/d^2$

Where,

n=sample size, z=level of confidence according to the standard normal distribution (for a level of confidence of 95%, z=1.96), p=estimated proportion of the population that presents the characteristic (p=0.018), d=precision (0.05), n=1.962×0.018×(1-0.018)/0.052=75.4

Based on the sample size calculation, 80 subjects were enrolled for the study.

Duration of study

Study conducted for one year (4th September 2021 to 3rd September 2022).

Source of data

Patients attending to the department of obstetrics and gynaecology, FAAMCH, Barpeta during the period of 4th September 2021 to 3rd September 2022 were enrolled for the study, considering the inclusion and exclusion criteria and with prior informed written consent in the patient's own language.

Inclusion criteria

All primigravida patients admitted to department of OBG, FAAMCH with a diagnosis of eclampsia were included in the study.

Exclusion criteria

Patients with previous history of seizure disorder, patients with hypertension before pregnancy, patients below 18

years and above 35 years and patients with a significant co morbidity that affects fetomaternal outcome: IUGR, antepartum haemorrhage, diabetes, asthma, known birth defects were excluded.

Collection of data

Data was collected from subjects' clinical history, physical examination and appropriate investigations. Apart from routine clinical examination the following aspects were studied in the mother and fetus.

Maternal outcomes: Pulmonary edema, placental abruption, HELLP syndrome, PPH, cerebral infarction, ICU admission, MODS were noted.

Fetal outcomes: Stillbirth, fetal death within 12 hours, birth asphyxia, NICU admission were recorded.

Ethical clearance was obtained from the institutional ethics committee (H) of FAAMCH prior to the conduction of the study. Written informed consent was taken from each and every participant of the study.

Statistical analysis

Data from the case record proforma was entered into Microsoft excel spreadsheet version 2021 and analyzed using IBM-SPSS version 26. Normality of the data was determined using Kolmogorov-Smirnov test. Categorical data was expressed as frequency and proportion (percentages). Numerical data was represented with mean and standard deviation for parametric data, or median and IQR in case on non-parametric data.

RESULTS

Data was obtained from 80 patients, including clinical history, physical examination, and necessary investigations. The fetomaternal outcomes in eclamptic primigravida were examined using the tables and figures below.

The majority of individuals (46, or 57.50%) were between the ages of 20 and 24, followed by those between the ages of 25 and 29 (23.75%), 15 to 19 (10%), and 30 to 35 (30%) (8.75%). The majority of the patients were from rural locations, with only 9 (11.3% of the respondents) from urban areas. Muslims made up 85% of the population, followed by Hindus (13.8%) and Christians (1.3%).

Out of 80 subjects, 37 (46.30%) were from the upper lower class, 24 (30%) were from the lower middle class, and 13 were from the Upper Middle class (16.30%). 45 of the respondents, or 56.30 percent, were recruited from health care facilities (Table 1).

The majority of the individuals experienced two or three seizures. 24 (30%) of them had two seizures, while 23 had three (28.8%). When they were admitted, 37 (or 46.30%) of the people in the study were in labour. The vast majority of the individuals, 57, gave birth spontaneously through the birth canal (71.30%). LSCS was performed on 19 (23.80%) of the cases, while assisted vaginal delivery was performed on 4 (5%). 41 (51.30%) of the babies born were girls, while 39 (48.80%) were boys (Table 2).

Table 1: Demographic characteristics.

Variables	Category	N	Percentage (%)
Age (Years)	15-19	8	10
	20-24	46	57.50
	25-29	19	23.75
	30-35	7	8.75
Rural/urban	Rural	71	88.80
	Urban	9	11.30
Religion	Christian	1	1.30
	Hindu	11	13.80
	Muslim	68	85
Socio-economic status	Lower	4	5
	Lower middle	24	30
	Upper	2	2.50
	Upper lower	37	46.30
	Upper middle	13	16.30
Referral	No	35	43.80
	Yes	45	56.30

Table 2: Clinical characteristics.

Variables	Category	N	Percentage (%)
Episodes of convulsion	1	8	10
	2	24	30
	3	23	28.80
	4	14	17.50
	5	9	11.30
	6	1	1.30
	7	1	1.30
If in labor at the toa	No	43	53.80
	Yes	37	46.30
SVD/CS/ instrumental VD	CS	19	23.80
	INST VD	4	5
	SVD	57	71.30
Sex of baby	Female	41	51.30
	Male	39	48.80

The 72.5% (58) of the 80 individuals had no difficulty delivering delivery. The most prevalent condition with the remaining 9 individuals was pulmonary edoema (11.25%). AKI was seen in 2 (2.50%) of the subjects, aspiration Pneumonitis in 1 (1.25%) of the subjects, CVA in 3 (3.75%) of the subjects, MODS in 1 (1.25%) of the subjects, Placental Abruption in 3 (3.75%) of the subjects, PPH in 2 (2.50%) of the subjects, and HELLP syndrome in 1 (1.25%) of the subjects. Only 14 (17.50%)

of the 80 individuals required ICU admission. During the trial, 4 (5%) of the 80 subjects died (Table 3).

Table 3: Maternal outcome.

Variables		N	Percentage (%)
Maternal outcomes	AKI	2	2.50
	Aspiration pneumonitis	1	1.25
	CVA	3	3.75
	MODS	1	1.25
	Placental abruption	3	3.75
	PPH	2	2.50
	PUL oedema	9	11.25
	HELLP syndrome	1	1.25
	Uneventful	58	72.50
ICU requirement	No	66	82.50
	Yes	14	17.50
Maternal death	No	76	95
	Yes	4	5

Table 4: Fetal outcome.

Variables		N	Percentage (%)
Fetal outcome	Birth asphyxia	10	12.50
	Stillbirth	8	10
	Death within 12 hours	5	6.25
	IUD	4	5
	Uneventful	54	67.50
NICU	No	28	41.18
	Yes	40	58.82
Birth weight	Normal	30	38
	LBW	28	34.50
	VLBW	16	19.50
	ELBW	6	8

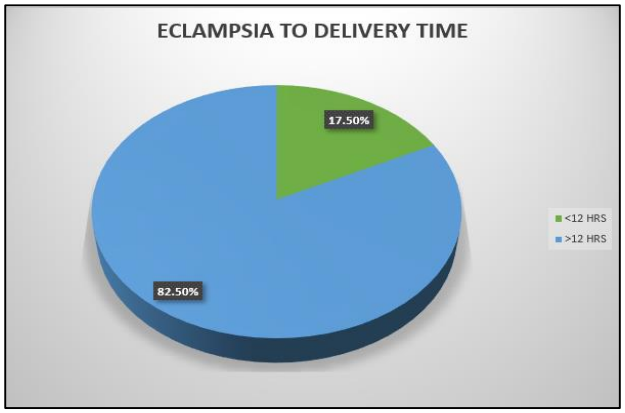

Figure 1: Eclampsia to delivery time.

Out of 80 newborns, 54 (67.50%) had no difficulties while still in the womb. The 10 (12.5%) had birth asphyxia, 8 (10%) were stillbirths, 5 (6.25%) died within the first 12 hours, and 4% were IUDs. Eight of the 80 kids were stillborn, four had IUDs, and 68 were born alive. Forty (58.82%) of the 68 babies delivered alive needed to be admitted to the NICU. 30 (38%) of the 80 individuals were normal weight, 28 (34.5%) were LBW, 16 (19.5%) were very low birth weight, and 6 (8% were extremely low birth weight) (Table 4).

It took fewer than 12 hours in 14 (17.50%) cases and longer than 12 hours in 66 (82.50%) (Figure 1).

DISCUSSION

Eclampsia is a very serious complication of pregnancy responsible for high maternal and perinatal mortality and morbidity. It may be antepartum, intrapartum and post partum.

The incidence of eclampsia found during this study was 1.3%. Sarma et al study quotes incidence of eclampsia in India to be 0.94 to 1.8% of all pregnancies.[10] Eclampsia is more common in young primigravida with low socio economic strata, having irregular antenatal care, similar finding were found in other studies. [12] In our study there were 67.50% women below 24 years and in study by Sunita et al it was 40%.[11]

Majority of women presented less or equal to 5 episodes of convulsion in our study. Similar findings were noted in other study as shown in the below. In our study 71.30% of women underwent spontaneous vaginal delivery. In their study by Gaddi et al there were 80.99% of vaginal deliveries while in their study by Ndaboine et al study there were higher incidence of LSCS i.e., 66.22%. [16,14]

Majority of women delivered normal weight, neonates. In our present study out of 80 subjects, 30 (38%) babies were normal weight; 28 (34.5%) were LBWs; 16(19.5%) were very low birth weight, and 6 (8%) were extremely low birth weight.

Table 5: Comparison of birth weight with other study.

Birth weight	Our study (%)	Rajasri et al[15] (%)
Normal	38	22.4
LBW	34.5	37.75
VLBW	19.5	24.48
ELBW	8	17.34

Eclampsia to delivery time was less than 12 hours in 14 (17.50%) subjects and more than 12 hours in 66 (82.50%) subjects. Contrasting evidence was found in Rajasri et al study, while in Sunita et al study majority of women delivered within 12 hours of eclampsia.[13,15]

Out of 80 babies, 54 (67.50%) did not have any fetal complications. The 10 (12.50%) had birth asphyxia; 8

(10%) had still births; 5 (6.25%) died within 12 Hours, 4 (5%) were IUDs.

Out of 80 babies, there were 8 still births and 4 IUDs and 68 live births. Out of these 68 live birth babies, NICU was required by 40 (58.82%) subjects. The results can be compared with Sunita.[13]

Maternal complications

Out of 80 subjects, 58 (72.5%) did not have any maternal complications. Out of the remaining subjects the most prevalent complication was pulmonary edema, 9 (11.25%). AKI was present in 2 (2.50%) subjects, aspiration pneumonitis in 1(1.25%) subjects, CVA in 3 (3.75%) subjects, MODS was present in 1 (1.25%) subjects, placental abruption was present in 3 (3.75%) subjects, PPH in 2 (2.50%) subjects, and HELLP syndrome was present in 1 (1.25%).

Table 6: Comparison of maternal complications with other study.

Variables	Our study (80) (%)	Sunita et al study (100)[13] (%)	Ndaboine et al (76)[16] (%)
CVA	3.75	2	6.5
HELLP	1.25	7	38.1
Abruption	3.75	2	11.8
DIC	0.7	3	2.6
PPH	2.5	6	0
Aspiration	1.25	1	0
Maternal mortality	5	4	2.6

CONCLUSION

Eclampsia continues to be a major cause of illness and death in pregnant women and their babies. This is because there isn't enough care for pregnant women, the economy is bad, and there aren't enough educational opportunities.

Most of the people in our study were between 20 and 24 years old and from rural areas. Most first-time mothers who had eclampsia and gave birth naturally did so in the end. Even though most of the subjects didn't have any problems, pulmonary edoema was the most common problem seen in the mothers of those who did. Even though most babies were born alive and had normal weights, a lot of babies were born with low weights.

When simple tests like taking a patient's blood pressure and dipping a stick in their urine show strange results, doctors can often change the way a patient is treated.

There are many medications and methods being tested all over the world to help treat eclampsia and its effects. The only way to stop the problems caused by eclampsia is to end the pregnancy and take out the placenta. Because of this, a choice must be made as soon as possible about the safest way to end the pregnancy. We might have the best chance of reducing maternal and perinatal morbidity and death caused by eclampsia if we work to improve the quality of basic prenatal care. Good prenatal care goes a long way toward making sure mothers are safe and reducing the number of cases, illnesses, and deaths caused by eclampsia.

Limitations

The study has several limitations. Firstly, the study is conducted at a single tertiary care facility, which may not be representative of the entire population. Secondly, the sample size is relatively small, which may limit the generalization of the findings. Thirdly, the study only includes primigravida patients with eclampsia, which may not be representative of the broader population of patients with eclampsia. Lastly, the study may be subject to recall bias as the data collected relies on the patients' memory and may not be accurate.

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