

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20231059>

Original Research Article

A study on fetomaternal outcome in eclampsia in a tertiary care institute

Sushma V. Dev*, Mythreyi Kadambi, Meghana Devakki Nagaraj

Department of Obstetrics and Gynecology, Mysore Medical College and Research Institute, Mysore, Karnataka, India

Received: 01 April 2023

Accepted: 10 April 2023

***Correspondence:**

Dr. Sushma V. Dev,

E-mail: mythreyi95@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Eclampsia is a life threatening emergency that continues to be a major cause of maternal and perinatal mortality. The present study was undertaken to analyse the maternal and fetal outcome in patients of eclampsia and to evaluate various factors influencing this outcome.

Methods: A retrospective observational epidemiological study was undertaken in the Department of Obstetrics and Gynecology, Mysore Medical College and Research Institute, Mysore, for a period of three years from January 2020 to December 2022. All women who presented as eclampsia or developed eclampsia during hospital stay were included in the study. Data analysed included various maternal parameters, fetal parameters, and the outcome of pregnancy.

Results: The incidence of eclampsia was 7.14% which is relatively high, attributing to the fact that being tertiary care centre many cases are referred. Higher incidence seen in primigravida (72.4%) and low maternal age (48%). Caesarean section was indicated in 50% deliveries indicating immediate action was necessary for better fetomaternal outcome. 58.6% had an uneventful maternal outcome. There was 7.65% maternal mortality most common cause of death was intracranial hemorrhage. 53% were preterm deliveries and 29.4% stillbirths, respiratory distress in the newborn was seen as the major complication (41.9%).

Conclusions: In our study, maternal complications were recorded in 41.3% of the patients with a case fatality rate of 7.65%. Respiratory distress, prematurity, growth restriction and low birth weight are the neonatal complications to be anticipated. We infer from our study that better antenatal care, early recognition of disease, timely referral, early initiation of treatment and termination of pregnancy in eclamptic women could improve maternal and fetal outcome.

Keywords: Eclampsia, Maternal outcome, Perinatal outcome

INTRODUCTION

Hypertensive disorders in pregnancy is the leading cause of perinatal and maternal mortality and morbidity globally. Hypertension, along with hemorrhage and infection form a deadly triad accounting for a major share of maternal morbidity and mortality.¹

Eclampsia is defined as the onset of convulsions or coma during pregnancy or post-partum in a patient who has signs and symptoms of preeclampsia.¹ The development of eclampsia appreciably raises risk to mother and fetus. The World Health Organisation (WHO) estimates that at least

16% of maternal deaths in developing countries result from preeclampsia and eclampsia.² Approximately 63,000 pregnant women die every year because of these conditions. Preeclampsia/eclampsia ranks second only to haemorrhage as a specific, direct cause of death.

In an earlier report, Matter and Sibai described outcomes in 399 consecutive women with eclampsia. Major maternal complications included placental abruption 10%, neurological deficits- 7 percent, aspiration pneumonia-7 percent, pulmonary edema- 5 percent, cardiopulmonary arrest- 4 percent, acute kidney injury- 4 percent. Moreover, 1 percent of these women died.³ Perinatal morbidities in

eclampsia ranges from 5-11.8% in developed countries to 40% in developing countries. In the fetus preterm delivery, asphyxia and intrauterine growth restrictions commonly associated with the disease increase the perinatal mortality.⁴

Maternal mortality from pre-eclampsia/eclampsia is highest in low and middle income countries (LMIC), and worldwide accounts for at least 63 000 maternal deaths per annum.⁵ The high incidence of maternal morbidity and mortality in developing countries has been ascribed to late referral to tertiary care hospital, delay in hospitalization, lack of transport, unbooked status of patients, high parity, the state of unconsciousness and multiple seizures prior to admission.

Other than early detection of preeclampsia, there are no reliable tests or symptoms for predicting the development of eclampsia. Hypertension is considered the hallmark for the diagnosis of eclampsia. But in many of the cases onset of preeclampsia is often insidious and pathological changes start early in the course of the disease and symptoms usually occurs late. In 16% of the cases, hypertension may be absent.⁶ In addition, the symptoms occur only at the end stage of the disease, just before the eclamptic episode. Hence proper antenatal care with regular measurement of blood pressure, screening for proteinuria, enhanced community awareness of danger signs, early recognition of risk factors and better management of prodromal symptoms of eclampsia can reduce the morbidity due to eclampsia.

Also, careful monitoring of patients with early detected preeclampsia undergoing conservative management can diminish serious maternal complications, prolong the pregnancy and improve the neonatal outcome. The present study was undertaken to analyse the incidence of eclampsia, to assess the maternal and fetal outcome in patients of eclampsia and to evaluate various factors influencing this outcome.

METHODS

This retrospective observational study was conducted in the Department of Obstetrics and Gynecology, Mysore Medical College and Research, Mysore, Karnataka, India for a period of three years from January 2020 to December 2022.

Inclusion criteria

All patients who presented with eclampsia or developed eclampsia during the hospital stay during the study period were included.

Exclusion criteria

Women whose gestational age was less than 20 weeks, and those who were known epileptics or with history of for

seizures due to neurological pathology were excluded from the study.

This study was conducted after obtaining clearance from the institutional ethical committee.

Data was collected using pre-designed proforma on medical and obstetric characteristics such as name, age, address, education, socio-economic status and details regarding her booking status. Her parity and gestational age at presentation were included. Also the presenting signs and symptoms and the blood pressure at the time of admission were taken into account. Data regarding the maternal and fetal outcome in the form of mode of delivery whether vaginal or caesarean section, the indication for the latter, complications during hospital stay, maternal death. Neonatal outcome in terms of birth weight, indication for NICU admission, stillbirth and perinatal mortality were studied.

All the data collected were entered into a Microsoft excel worksheet and analyzed using the statistical software statistical package for the social sciences (SPSS) 20.0.

RESULTS

A total number of 27414 women delivered during the defined time period. Out of them 3474 women were diagnosed to have hypertensive disorders of pregnancy, of which 196 women were diagnosed as cases of eclampsia making an incidence of eclampsia to be 7.14% per 1000 deliveries.

Most of the patients 48% were under 20 years of age. Only 4% (n=8) of the patients were above the age of 30 years. Eclampsia was more in primigravidae (72.4%) and in unbooked cases (63.26%) shown in Table 1.

Table 1: Maternal age distribution, parity status and booking status among the study subjects.

Variables	Frequency (percentage)
Age group (years)	
18-20	94 (48)
21-25	56 (29)
26-30	38 (19)
31-35	8 (4)
Gravida	
Primigravida	142 (72.4)
Multigravida	54 (27.6)
Booking status	
Booked	72 (36.73)
Unbooked	124 (63.26)

Blood pressure being the hallmark of hypertensive disorders of pregnancy, in our study majority (62.2%) of them presented with a blood pressure of above 160/110 mmHg shown in Table 2.

Majority if the cases presented as antepartum eclampsia (62.2%).

Table 2: Blood pressure and type of eclampsia on admission.

Variables	Frequency (Percentage)
Blood pressure (mmHg)	
<160/110	74 (37.8)
>160/110	122 (62.2)
Types of eclampsia	
Antepartum	122 (62.2)
Intrapartum	29 (15.3)
Postpartum	44 (22.4)

Eclampsia has occurred in all gestational age groups, majorly between 28 to 37 weeks (53.3%). The definitive treatment of eclampsia is delivery. Eclampsia itself is not an indication for cesarean section, and mode of delivery had no significant effect on the outcome of the eclamptic as per Ibrahim et al. In our study 50% (n=98) had a vaginal delivery and the other 59% had an emergency LSCS show in Table 3, the indications being, eclampsia with unfavorable cervix (28.5%), failed induction (26.5%), eclampsia with deteriorating maternal condition (20.4%), eclampsia with previous cesarean section (12.2%), fetal distress (8.1%), breech presentation and non-progression 2% each.

In our study, 58.68% (n=115) of study subjects had an uneventful outcome and remaining 41.32% (n=81) as follows.

Table 3: Gestational age at the onset of eclampsia (antepartum and intrapartum) a d mode of delivery.

Variables	Frequency (percentage)
Gestational age at the onset of eclampsia (weeks)	
<28	
28-34	54 (36)
34-37	26 (17.3)
>37	48 (32)
Total	151 (100)
Mode of delivery	
LSCS	98 (50)
FTVD	40 (20.4)
PTVD	58 (29.59)

HELLP syndrome being the commonest complication seen in 18 (9.1%) patients. Acute kidney injury was seen in 12 (6.12%) of the patients of which 4 (2%) patients also had a preceding AKI. Postpartum hemorrhage was seen in 12 (5.1%) patients. Placental abruption was seen in 8 (4.08%) patients of which 4 (2.04%) patients had an associated DIC. Blindness was seen in 6 (3.06%) of the patients. Cerebrovascular accident was seen in 5 (2.5%) of the patients, 4 (2.04%) patients had isolated DIC. Pulmonary edema was seen in 3 (1.53%) patients (Table 4).

Maternal death occurred in 15 (7.65%) patients, the most common cause of death was intracranial haemorrhage.

Table 4: Maternal outcome in the study subjects.

Maternal outcome	Frequency (Percentage)
HELLP syndrome	18 (9.1)
AKI	12 (6.12)
PPH	10 (5.1)
Placental abruption	8 (4.08)
Blindness	6 (3.06)
CVA	5 (2.55)
DIC	4 (2.04)
Pulmonary edema	3 (1.53)

Fetal outcome

32 (16.32%) newborns were shifted to mother side. 142 (72.44%) newborns were shifted to NICU for various indications. 22 (11.22%) were stillborn (Table 5).

There were 18 (9.18%) neonatal deaths.

Table 5: Fetal outcome and fetal birth weight and indication for NICU admission.

Variables	Frequency (percentage)
Neonatal status	
NICU	142 (72.44)
Stillborn	22 (11.22)
Birth weight (kilograms)	
<1.5	92 (46.93)
1.5- 2.5	68 (34.69)
>2.5	36 (18.36)
Indication	
RDS	58 (46.77)
Prematurity	26 (20.96)
IUGR	24 (19.35)
Birth asphyxia	8 (6.45)
MAS	8 (6.45)

124 (63.26%) of the newborns cried at birth, 104 (53%) of the newborns did not cry at birth and required some form of neonatal resuscitation.

92 (46.9%) were term neonates, 104 (53%) were preterm neonates of which 48 (24.48%) were very early preterm, 28 (10.2%) were early preterm and 28 (10.2%) were late preterm.

DISCUSSION

Eclampsia is a leading cause of maternal and fetal morbidity and mortality worldwide, and its pathogenesis remains elusive.

Despite significant improvement in medical care and the upsurge of prenatal diagnosis in recent years, the

worldwide incidence and mortality of eclampsia still remain high, seriously threatening maternal and fetal lives.

The global incidence of hypertension in pregnancy is 5-10%. The global occurrence of eclampsia is 1 in 2000 pregnancies. In India, reported incidence of eclampsia varies from 0.179 to 3.7%.⁷ In our study the incidence of eclampsia was 7.14 per 1000 deliveries which is relatively high compared to both global and Indian incidences. Our incidence is comparable to a similar study in Rajasthan by Aggarwal et al.⁸

As most of the population in our study group is from a rural background and a low socioeconomic status, the age at marriage is early compared to the urban population. Hence age at first conception is also early. Mean age in our study population was 22.57. 48% of women between the age group of 18-20 years. This result correlates with the Ugran et al where mean age was 23.89 years.⁹ A similar study conducted by Sinha et al showed majority of women 55.3% belonged to age group below 21 years which was comparable with our study where 47% of the patients were less than 21 years of age.¹⁰ A similar study by Kokila et al reported the mean maternal age as 23.89 years (range 18-30 years).¹¹

In a multicentric study done by Long et al, 26,209 patients of preeclampsia were studied and he observed that the incident of preeclampsia is significantly higher in primigravidae compared to multigravidae with a p value less than 0.001. Most of the patients in our study were primigravida 72.4% which is comparable to a similar study by Banu et al and Jindal et al.^{12,13}

Majority (63.26%) of patients were unbooked. Lack of antenatal care is one of the important risk factors for the development of eclampsia. In a study by Pannu et al in North India 56.6% of women had received no antenatal care before the onset of convulsions.¹⁴ And in the study conducted by Nobis et al 93.4% percent cases had no antenatal visits.⁷ This indicates the importance of antenatal care as the single intervention which could influence the

occurrence of this serious complication. In unbooked cases the signs and symptoms of preeclampsia remain unrecognized until severe complications such as eclampsia occur.

In our study, 62.2% patients presented with blood pressure >160/110 mmHg indicating that hypertension is the diagnostic and prognostic cornerstone in eclampsia. In a study by Sunita et al, 68% of eclamptic women had severe hypertension. In the study conducted by Sibai et al 45% patients had severe hypertension.^{15,16}

Antepartum eclampsia (62.2%) was more than intrapartum (15.9%) and postpartum (22.4%) combined. A similar study conducted by Pannu et al had a comparable result with 73% presenting as antepartum eclampsia, 13.4% as postpartum and 3.6% as intrapartum eclampsia.¹⁴

Prudent and prompt selection of cases for either vaginal delivery or cesarean section has positive impact on the maternal and perinatal outcome. The shorter the convulsion - delivery interval, the better is the prognosis.

In our study LSCS rates were 50% which is similar to reported by Onuh et al (58.4%) but much lower than reported by Agida et al (84.8%).^{4,17}

The most common indication of caesarean section in this study was eclampsia with unfavorable cervix (28.5%), eclampsia with deteriorating maternal condition (20.4%), failed induction (26.5%), similarly in the study conducted by Efetie et al the most common indication of caesarean section was unfavourable cervix in 78.2% patients followed by failed induction in 6.5% patients, fetal distress in 2.2% patients and cephalopelvic disproportion in 2.2% patients.¹⁸

There were 9 cases of HELLP syndrome in our study, most common complication, similar finding were seen in Sunita T H et al study and Ndaboine et al study as shown in the table 12 where the incidence of HELLP syndrome was 7% and 38.1% respectively.^{16,19}

Table 6: Comparison of maternal outcome with similar studies.

Parameters	Our study	Sunita et al ¹⁶	Ndaboine et al ¹⁹	Pannu et al ¹⁴
AKI	6.12 (12)	2 (2)	7.8 (6)	12 (10)
PPH	5.10 (10)	6 (6)	0	9.6 (8)
HELLP syndrome	9.18 (18)	7 (7)	38.1 (29)	13.2 (11)
Placental abruption	4.09 (8)	2 (2)	11.8 (9)	-
Pulmonary edema	2.04 (4)	-	-	14.5 (12)
DIC	2.04 (4)	3 (3)	2.6 (2)	2.4 (2)
Blindness	3.06 (6)	-	-	3.3 (3)
CVA	3.06 (6)	2 (2)	6.5	2.4 (2)

Maternal mortality in present study was (7.65%). Our results are comparable to a study conducted by Agarwal et al where maternal mortality was 6.8%, whereas in study conducted by Sibai et al it was significantly low 0.4%.^{8,15}

Perinatal mortalities was 20.40% in current study, which was contributed by 11.22% of stillbirths and 9.18% neonatal deaths, In the study by Ndaboine et al perinatal mortality was 20.7% (stillbirths 12.2% and neonatal death

8.5%), in the study by Mahramet al, it was 38.6% (stillbirths 2.7% and neonatal death 9.5%)^{19,20}

There were 72.44% NICU admissions in our study and in the study conducted by Lee et al there were 59% NICU admissions while in the study conducted by Mahran et al 18.8%.

Prematurity and intrauterine growth restriction were the major cause for neonatal deaths and NICU admissions in this study. As this is an established fact that early deliveries reduce maternal mortality and morbidity however expose the babies to the risks of prematurity.

CONCLUSION

Eclampsia still remains the leading cause of maternal and perinatal morbidity and mortality, despite advancements in medical management. In our study, maternal complications were recorded in 41.3% of the patients with a case fatality rate of 7.65%. Respiratory distress, prematurity, growth restriction and low birth weight are the neonatal complications to be anticipated. We infer from our study that better antenatal care, early recognition of disease, timely referral, early initiation of treatment and termination of pregnancy in eclamptic women could improve maternal and fetal outcome.

Funding: No funding sources

Conflict of interest: None declared

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

REFERENCES

- Cunningham FG, Leveno KJ, Bloom SL, Spong CY, Dashe JS, Hoffman BL, et al. Hypertensive disorders, Williams obstetric. 26th edition. 2022;1777-892.
- Health E. Balancing the scales: expanding treatment for pregnant women with life-threatening hypertensive conditions in developing countries. A report on barriers and solutions to treat preeclampsia and eclampsia. Engender Health. 2007.
- Bhanu BT, Amudha S, Sarojini. Clinical study of maternal complications associated with eclampsia. Int J Reprod Contracept Obstet Gynecol. 2017;6:1905-8.
- Agida ET, Adika BI, Jibril KA. Pregnancy outcome in eclamptics: a 3 year review. Nig J Clin Pract. 2010;13(4):394-8.
- Burton G J, Redman C W, Roberts J M, Moffett A. Pre-eclampsia: pathophysiology and clinical implications. BMJ. 2019;366:12381.
- Katz VL, Farmer R, Kuller J. Preeclampsia into eclampsia: toward a new paradigm. Am J Obstet Gynaecol. 2000;182:1389-96.
- Nobis PN, Hajong A. Eclampsia in India through the decades. J Obstet Gynecol India. 2016;66(1):172-6.
- Agarwal M, Gautam A. Study of fetomaternal outcome in eclampsia. Int J Reprod Contracept Obstet Gynecol. 2020;9:4155-9.
- Ugran SM, Kasturi V Donimath Correlation between neuroimaging (CT scan) and neurological presentation in antepartum and postpartum eclampsia Int J Reprod Contracept Obstet Gynecol. 2016;5(2):419-24.
- Sinha M, Sinha SK. Perinatal and Maternal outcomes of Eclampsia in Darbhanga District, Bihar, India. Int J Contemp Med Res. 2018;5(2).
- Kokila MS, Dwivedi AD. Correlation of Clinical and Neuroimaging Findings affecting Management in Postpartum Eclampsia: A Prospective Study. J South Asian Federation Obstet Gynaecol. 2011;3(3):125-30.
- Bhanu BT, Amudha S, Sarojini. Clinical study of maternal complications associated with eclampsia. J Reprod Contracept Obstet Gynecol. 2017;6(5):1905.
- Jindal MA, Gaikwad HS, Hasija BD, Vani K. Comparison of neuroimaging by CT and MRI and correlation with neurological presentation in eclampsia. Int J Reprod Contracept Obstet Gynecol. 2013;2(1):83-7.
- Pannu D, Das B, Hazari P, Shilpa. Maternal and perinatal outcome in eclampsia and factors affecting the outcome: a study in North Indian population. Int J Reprod Contracept Obstet Gynecol. 2014;3(2):347-51.
- Sibai BM, Sarinoglu C, Mercer BM. Eclampsia: VII. Pregnancy outcome after eclampsia and long-term prognosis. Am J Obstet Gynecol. 1992;166(6):1757-63.
- Sunita TH, Desai RM, Hon N, Shinde KJ, Hashmi SI. Eclampsia in a teaching hospital: Incidence, clinical profile and response to magnesium sulfate by Zuspan's regimen. IOSR J Dental Med Sci. 2013;4(2):1-5.
- Onuh SO, Aisien AO. Maternal and fetal outcome in eclamptic patients in Benin City, Nigeria. J Obstet Gynaecol. 2004;24(7):765-8.
- Efetie ER, Okafor UV. Maternal outcome in eclamptic patients in abuja, nigeria a 5 year review. Nigerian J Clin Practice. 2007;10(4):309-13.
- Ndaboine EM, Kihunrwa A, Rumanyika R, Beatrice IM, Massinde AN. Maternal and Perinatal Outcomes among Eclamptic Patients Admitted to Bugando Medical Centre, Mwanza, Tanzania. Afr J Reprod Health. 2012;16(1):35-42.
- Mahran A, Fares H, Elkhateeb R, Ibrahim M, Bahaa H, Sanad A, et al. Risk factors and outcome of patients with eclampsia at a tertiary hospital in Egypt. BMC Pregnancy Childbirth. 2017;17(1):435.

Cite this article as: Dev SV, Kadambi M, Nagaraj MD. A study on fetomaternal outcome in eclampsia in a tertiary care institute. Int J Reprod Contracept Obstet Gynecol 2023;12:1227-31.