

MATERNAL AND PERINATAL OUTCOME IN ECLAMPSIA AT A TEACHING HOSPITAL OF EASTERN NEPAL

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ARTICLE INFO

Received : 17 March, 2020

Accepted : 22 November, 2020

Published : 22 December, 2020

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ORA 204

DOI: <https://doi.org/10.3126/bjhs.v5i3.33692>

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Citation

Mishra SK, Pradhan R, Pokharel HP, Parajuli SP. Maternal and Perinatal Outcome in Eclampsia at A Teaching Hospital of Eastern Nepal. BJHS 2020;5(3)13. 1186-1190.

ABSTRACT

Introduction

Eclampsia is a multisystem disorder with potential life-threatening complications that can result in significant maternal and fetal morbidity and mortality. The case fatality rate of eclampsia is 1.8% in developed countries, 17.7% in India and 13% in Nepal. The incidence of pre-eclampsia and eclampsia is high in developing countries due to hypoproteinemia, malnutrition and poor obstetric facilities.

Objective

To assess the maternal and perinatal outcome in patients of eclampsia

Methodology

This was a hospital based cross-sectional study where all the patients presenting with eclampsia from June 2019 to November 2020 in the Department of Obstetrics & Gynecology, Birat Medical College and Teaching Hospital were enrolled for the study. Data analyzed included various maternal parameters and fetal parameters along with the mode of delivery, outcome of baby, postpartum maternal condition and maternal mortality.

Result

Among 6631 deliveries, 50 patients had eclampsia with the incidence of 7.54/1000 deliveries. Thirty four (68%) patients were of 20-30 years of age, 37 (74%) were primigravidas, 36 (72%) from rural areas, 34 (68%) were illiterate, 49 (98%) were poor to average socioeconomic status, 41 (82%) were unbooked and 33 (66%) patients had antepartum eclampsia.

Eleven (22%) women developed eclampsia related complications. There were 02 (4%) maternal deaths and the common causes were HELLP Syndrome and pulmonary oedema. Neonatal outcome consisted of live births in 39 (78%) newborns, 03 (6%) were still births, 08 (16%) were birth asphyxia and 15 (30%) were low birth weight.

Conclusion

Majority of the patients were young, illiterate, unbooked primigravidas with poor to average socioeconomic status from rural areas. Majority of the eclamptic women nearly 39 (78%) cases delivered via caesarean section for better neonatal outcome. Two (4%) eclamptic women died as a result of eclamptic complications and three (6%) newborns had neonatal deaths because of low birth weight and prematurity. Adequate antenatal screening, early detection of hypertension, timely referral, early initiation of treatment and termination of eclamptic patients can help to improve the maternal and perinatal outcomes.

KEYWORDS

Eclampsia, fetal outcome, maternal outcome



INTRODUCTION

Hypertensive disorders in pregnancy are one of the most important causes of maternal and perinatal mortality and morbidity in developing and developed countries.¹ Nearly 10% of all the maternal deaths are associated with hypertensive disorders of pregnancy in developing countries. Similarly, perinatal mortality is reported to be 5% to 11% in developed countries and 40% in developing countries.² The incidence of pre-eclampsia and eclampsia is high in developing countries due to hypoproteinemia, malnutrition and poor facilities and underutilization of antenatal care services.¹

Hypertension is considered as the hallmark for the diagnosis of eclampsia. However, in 16% cases with eclampsia, hypertension may be absent.³ Eclampsia is defined as the development of convulsion and unexplained coma during antepartum/intrapartum/postpartum period in patients with symptoms and signs of pre-eclampsia.⁴ Eclampsia may infrequently be seen in the next 48 hours to 1 month postpartum period (late postpartum eclampsia). Such patients may present with eclamptic fits without ever having manifested signs and symptoms of preeclampsia.⁵

A systemic analysis showed that the incidence of eclampsia ranges from 0 to 0.1% in Europe, 4% in Nigeria, 0.6% in Brazil.⁶ Majority of the cases of eclampsia are seen in young primigravidas and those with no prior antenatal care.^{4,6} The case fatality rate of eclampsia is 1.8% in developed countries, 17.7% in India and 13% in Nepal.⁷

The common causes of maternal deaths in eclampsia are coagulopathy, cerebrovascular haemorrhage, HELLP syndrome, Acute Renal Failure (ARF), aspiration pneumonia, pulmonary oedema, AntePartum Haemorrhage (APH), Postpartum haemorrhage (PPH) whereas perinatal mortality is due to preterm delivery, low birth weight, birth asphyxia and intrauterine growth restriction.^{2,8} HELLP syndrome is a serious complication in pregnancy which is characterized by triad of hemolysis, elevated liver enzymes and low platelet count and occurs in 10-20% of cases of severe preeclampsia.⁹

Magnesium sulfate is the drug of choice for treatment of eclamptic fits. WHO has declared magnesium sulphate as the most effective and low cost medication for eclampsia.¹⁰ Most of the times, maternal magnesium toxicity is clinically monitored by assessing the deep tendon reflexes, respirations and urine output.¹¹

The proportion of women surviving severe maternal complications (are also called near-miss cases) has been taken as a useful guide for the evaluation of the quality of maternal health care and its determinants with the potential to complement the information obtained from the reviews of maternal death.^{9,12} However, maternal mortality from eclampsia is decreasing because of early recognition of preeclampsia, specific warning signs and symptoms and termination of at-risk pregnancies in timely fashion.⁵

Eclampsia is one of the dreadful events among the pregnancies complicated with hypertension. Its incidence

in the developed and western world has been in decreasing pattern due to improved antenatal care. However, it's still higher in poor and developing countries where adequate antenatal care, early detection of hypertensive disorders and timely referral to a tertiary centre is still lagging. Therefore, it's very important to provide the best possible and the most needed obstetric care and management for improvement of such health conditions in developing countries like ours. Hereby, our study focused on evaluating the maternal and perinatal outcome in cases of eclampsia. This study is needed in our context because no prior similar study on eclampsia is carried out till now which shows that eclampsia is more common among unbooked primi gravidas, from rural area with poor socioeconomic status.

METHODOLOGY

This was a hospital based cross-sectional study of all eclampsia cases between June 2019- November 2020, conducted at the department of Obstetrics & Gynecology, Birat Medical College and Teaching Hospital. A total of 50 eclamptic patients were enrolled for the study by total enumeration technique. The objective of the present study was to analyze maternal and perinatal outcome in cases of eclampsia.

All the obstetric cases who developed eclampsia during hospital stay or who were referred with eclampsia and all the newborns delivered to eclamptic mothers or admitted after delivery in cases of postpartum eclampsia were included in the study. Patients with convulsion due to epilepsy, cerebral cause, malaria or any other metabolic cause and those cases of postpartum eclampsia who had delivered outside were excluded from the study.

The study was done after approval by the institutional review committee of Birat Medical College and Teaching hospital (BMCTH). Case records were reviewed from the record section and information were collected and tabulated with respect to the following variables: age, residence, socioeconomic status, education, parity, gestational age, booking status, antenatal blood pressure, antenatal proteinuria, occurrence of fits, number of seizure, mode of delivery, perinatal outcome, maternal complications and mortality, need of maternal ICU and NICU along with postpartum maternal condition till discharge.

Injection magnesium sulphate is the drug of choice and it was used to control convulsions as per the Pritchard regimen along with the stabilization of vitals. In Pritchard regimen, injection magnesium sulphate is given as loading dose of 4 gm IV over 3-5 min followed by 10 gm deep IM (5 gm in each buttock) and maintenance dose of 5 gm IM 4 hourly in alternate buttock till next 24 hours since last fits. Data was entered in MS excel and analysis was done using IBM SPSS 11. Frequency and percentage were calculated.

RESULTS

In one and half year duration of study with total number of 6631 deliveries, 50 patients had eclampsia, making an incidence of 7.54/1000 deliveries. Thirty four (68%) patients



belonged to 20-30 years of age group, 10 (20%) patients were below 20 years and only six (12%) patients were more than 30 years age. Thirty six (72%) patients belonged to rural area and 34 (68%) were illiterate. Forty nine (98%) of the cases were from poor to average socioeconomic status and 41 (82%) were unbooked cases. Thirty seven (74%) patients were primigravidas and 46 (92%) patients presented with term pregnancy.

On evaluation of the background characteristics, antenatal blood pressure of 35 (70%) cases were not known, 14 (28%) cases were normotensive and one (2%) case was a known case of hypertension. Antenatal proteinuria was unknown in majority (76%) of the patients and two (4%) cases had antenatal proteinuria. Blood pressure during admission was >140/90 mmHg in 40 (80%) patients whereas 10 (20%) patients had BP <140/90 mmHg. Occurrence of fits during antepartum, intrapartum and postpartum period was observed in 33 (66%), four (8%) and 13 (26%) patients respectively. Single episodes of fits were observed in 39 (78%) patients whereas 11 (22%) patients had more than 1

Variables		Frequency (%)
Age group (years)	<20	10 (20.0)
	20-30	34 (68.0)
	>30	06(12.0)
Residence	Rural	36 (72.0)
	Urban	14 (28.0)
Socioeconomic status	Poor	28 (56.0)
	Average	21(42.0)
	High	01 (2.0)
Education	Literate	16 (32.0)
	Illiterate	34(68.0)
Booking status	Booked	09 (18.0)
	Unbooked	41 (82.0)
Parity	Primi	37 (74.0)
	Multipara	13(26.0)
Gestational age	Preterm	04 (8.0)
	Term	46 (92.0)
Antenatal blood pressure	Normotensive	14 (28.0)
	Hypertensive	01 (2.0)
	Not known	35 (70.0)
Antenatal proteinuria	Present	02 (4.0)
	Absent	10 (20.0)
	Not known	38 (76.0)
BP on admission (mm of Hg)	<140/90	10 (20.0)
	>140/90	40 (80.0)
Occurrence of fits	Antepartum	33(66.0)
	Intrapartum	04 (8.0)
	Postpartum	13 (26.0)
Episodes of seizure	Single	39(78.0)
	> Once	11 (22.0)

Majority of the patients i.e, thirty nine (78%) delivered via emergency lower segment caesarean section for unfavourable cervix and few with fetal distress, nine (18%) patients delivered spontaneous vaginal delivery and two

(4%) patients delivered by vacuum assisted vaginal delivery. Regarding maternal complications: four (8%) patients developed HELLP syndrome, four (8%) patients had PPH, one (2%) patient developed acute renal failure, one (2%) patient had abruptio placenta, one (2%) patient had pulmonary oedema and 39 (78%) patients had none of the complications. About 43 (86%) patients needed ICU admission for further management and the rest of the patients were managed at the obstetrics ward. The health condition of the majority of 48 (96%) patients was improved before discharge and maternal mortality was observed in two (4%) patients. Similarly, blood pressure came back to normal in 46 (92%) patients and two (4%) patients had abnormal blood pressure during discharge. (Table. 2)

Table 2: Demographic profile (n=50)

	Maternal outcome	Frequency (%)
Mode of delivery	SVD	09 (18.0)
	LSCS	39 (78.0)
	Instrumental delivery	02 (4.0)
Maternal complication	Acute Renal Failure	01 (2.0)
	HELLP syndrome	04 (8.0)
	Abruptio placenta	01 (2.0)
	PPH	04 (8.0)
	Pulmonary oedema	01 (2.0)
	None	39 (78.0)
ICU admission	Yes	43 (86.0)
	No	07 (14.0)
Condition at discharge	Improved	48 (96.0)
	Mortality	02 (4.0)
BP at discharge	Normal	46 (92.0)
	Abnormal	02 (4.0)

*SVD = Spontaneous vaginal delivery

*LSCS = Lower segment caesarean section

*PPH = Post partum haemorrhage

*ICU = Intensive Care Unit

Among all the newborn babies, live birth was observed in 39 (78%) babies, three (6%) babies were stillborn and eight (16%) had birth asphyxia. Majority of the babies which comprised of 35 (70%) newborns had normal birth weight appropriate for gestational age and 15 (30%) newborns had low birth weight (<2.5kg) which was more common in preterms. Thirty eight (76%) babies required NICU admission.

Table 3: Perinatal outcome (n=50)

	Perinatal Outcome	Frequency (%)
Birth status	Live birth	39 (78.0)
	Still birth	03 (6.0)
	Birth Asphyxia	08 (16.0)
Baby weight	AGA	35 (70.0)
	LBW	15 (30.0)
NICU admission	Yes	38 (76.0)
	No	12 (24.0)

* AGA= Appropriate for gestational age

* LBW= Low birth weights

* NICU= Neonatal Intensive Care Unit



DISCUSSION

The incidence of eclampsia was 7.54/1000 deliveries in our setting which was similar to those in other settings.^{1,13}

In the present study, majority of the patients belonged to 20-30 years of age group which was similar to other studies by Aabidha et al.¹, Kannar et al.⁴ and Shakya et al.¹⁴ Out of 50 patients, majority of the patients comprising of 37 (74%) were primigravidas in the present study which was similar to various other studies.¹⁴⁻¹⁶ Similarly, a hospital based retrospective study had shown eclampsia in 84.60% primigravidas.⁷ Eclampsia was most commonly seen in pregnant females from the rural area which was similar to a descriptive study at Vellore, India.¹ Eclampsia was more common among females with poor socioeconomic status in our study which was similar to the study conducted by Silva et al.¹⁷

Eclampsia was commonest in term pregnancy 46 (92%) in this study which was similar to the other study findings conducted at a tertiary hospital at Nepal and another study from the UK.^{7,18}

The present study showed eclampsia in 34 (68%) illiterate females. This data was in correspondence to another study conducted by Mahran et al.¹⁹ where 66.6% patients didn't receive any education. The incidence of eclamptic convulsions was higher in unbooked cases and this was supported by various other study findings.^{4,14,15}

As most patients were unbooked with no ANC visits antenatal blood pressure was not known for most of them. Similar findings were reported by Pannu et al. where blood pressure was unknown in majority of the pregnant women.²

The majority of the cases were antepartum eclampsia as observed in 33 (66%) patients in our series. Similarly, antepartum eclampsia was much common in other studies too; 51.2%¹⁵, 73%⁴, 81.8%¹⁶ In contrast to these, a study in the UK had supported the predominance of postpartum eclampsia (44%) over antepartum eclampsia.¹⁸ Intrapartum eclampsia was predominant over antepartum eclampsia in a study by Rayamajhi et al.²⁰ Lower incidence of antepartum eclampsia in the developed country may be as a result of better antenatal surveillance and early detection of the disease which lags in poor developing countries like ours.

Majority of the patients accounting for 39 (78%) patients in the present study delivered via emergency lower segment caesarean section, nine (18%) patients by spontaneous vaginal delivery and two (4%) patients delivered by vaginal assisted instrumental delivery. This was similar to a tertiary hospital study findings at Nepal as reported by Pradhan et al.⁶ In contrast to the present study, Pal et al. in their study had reported majority of the cases delivered vaginally 58.32% over caesarean section 22.25%.¹⁵ Similarly, Murthy et al. had reported a lower incidence (30.3%) of caesarean section.¹⁶ Various reported data showed that many centres liberalised caesarean section for better maternal and fetal outcome.

Maternal complications were observed in 11 (22%) patients in the present study. The most common maternal complications were postpartum haemorrhage in four (8%) patients, HELLP syndrome in four (8%), acute renal failure in

one (2%), abruptio placenta in one (2%) and pulmonary oedema in one (2%) patient. These findings were in contrast to a study by Jido et al. who had reported various maternal complications as HELLP syndrome 4.2%, acute renal failure 5%, abruptio placenta 2.5% and pulmonary oedema 5%.⁸ Another study had reported various maternal complications as: pulmonary oedema 5.9% and acute renal failure 8.1% patients.¹⁶

Maternal mortality rate in the present study was seen in two (4%) patients. Similar incidence was reported by various other studies: 5.35%¹³, 8.4%.¹⁶ In contrast to these, another study had reported relatively higher incidence of maternal mortality 14%.⁴ The leading causes of maternal deaths were HELLP syndrome and pulmonary oedema in our study. Different types of complications contribute to the challenge of managing these eclamptic patients with the involvement of different sub-specialities in order to improve their outcome. Those patients who were timely referred to our hospital had early recognition of eclampsia, thereby, helping in reducing the incidence of various maternal complications, morbidity and mortality.

Regarding perinatal outcome, incidence of live births was 39 (78%), eight (16%) newborns had birth asphyxia and three (6%) newborns were stillborn. Perinatal mortality rate varied in different other studies as 20%⁷, 21%²⁰ and 27%.¹³ In our study, low birth weight was observed in 15 (30%) newborns which was similar to other studies: 25.4 %, 48.2%.² Low birth weight was most commonly seen in preterm newborns. Risk of severe neonatal birth asphyxia due to late arrival of patients after onset of eclamptic fits were reduced by early referral to our centre with facilities of neonatal intensive care units.

Hypertensive disorders account for the majority of the cases of preterm births, perinatal deaths and intrauterine growth retardation. Higher centers with good neonatal care facilities had comparatively lower incidence of perinatal mortalities.

CONCLUSION

Majority of the patients were young, illiterate, unbooked primigravida with poor to average socioeconomic status from rural areas. Majority of the eclamptic women accounted for 39 (78%) cases delivered via caesarean section for better neonatal outcome. Two (4%) eclamptic women died as a result of eclamptic complications (HELLP syndrome and pulmonary oedema) and three (6%) newborns had neonatal deaths because of low birth weight and prematurity.

Adequate antenatal visits, early recognition of the disease, timely referral to higher centers with sub-specialities, early initiation of treatment and termination of eclamptic patients can improve maternal and perinatal morbidity and mortality.

RECOMMENDATIONS

Eclampsia is a major cause of preventable maternal and perinatal mortality specially in developing countries. Thus, promoting medical education at community level and



overcoming inconveniences faced during utilization of health care facilities can improve maternal and perinatal outcomes.

LIMITATION OF THE STUDY

Sample size was small. The lack of proper follow up after hospital discharge limits the analysis of maternal and neonatal outcome for the rest of the puerperium.

ACKNOWLEDGMENT

I would like to acknowledge my gratitude to all those who helped me in completing this study especially all patients, technical staffs, medical record department, head of the

department of obstetrics and gynecology Birat Medical College and Teaching Hospital.

CONFLICT OF INTEREST

We declare no conflict of interest.

FINANCIAL DISCLOSURE

None

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