

A prospective study of pregnancy outcome in eclampsia

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Abstract

Background: Eclampsia remains one of the major causes of maternal morbidity and mortality especially in developing countries.

Objective: The purpose of this study is to determine the frequency of eclampsia, some epidemiological factors associated with it, its complications and the maternal and perinatal outcome in eclamptic patients.

Material and Method: A prospective observational study was performed on all women with eclampsia admitted to a tertiary care teaching hospital for a period of one year.

Results: There were 12,949 deliveries during the study period, out of which 84 had eclampsia, giving an incidence of 0.64%. Majority of the patients (90.47%) were unbooked. The incidence of antepartum eclampsia (89.28%) was more than intrapartum (1.19%) and postpartum (9.52%) eclampsia. Eclampsia was commonest amongst the age group of 21-25 years (57.14%). 73.8% of the cases were primigravida. 45.23% of patients had gestational age at delivery between 36-40 weeks. 57 patients (67.85%) had severe hypertension on admission (diastolic BP>110 mmHg). 39 patients (46.42%) were delivered through caesarean section. Maternal complications include sepsis and hematoma (7.14%), pulmonary edema (4.76%), renal failure (4.76%), HELLP syndrome (4.76%). There were 3 maternal deaths giving a maternal mortality of 3.57%. Out of the 87 babies delivered, 46 babies (52.87%) had birth weight less than 2000 grams. There was one intrauterine death (1.14%), 14 stillbirths (16.09%) and 12 neonatal deaths (13.79%) giving a perinatal mortality rate of 31.03%. Conclusion: Improvement in hygiene, socioeconomic factors, prenatal care and medical care appear to play an important role in the prevention of eclampsia.

Keywords: Eclampsia, Maternal morbidity, Maternal mortality, Perinatal morbidity, Perinatal mortality

Introduction

Eclampsia is the occurrence of one or more generalised convulsions and /or coma not caused by any co-incident neurological diseases (such as epilepsy) in a pregnant woman whose condition also meets the criteria of pre-eclampsia (sustained proteinuric hypertension with edema from 20 weeks' gestation to the puerperium).⁽¹⁾ Pre-eclampsia and eclampsia remain the second most common cause of maternal death in the United States and United Kingdom after thromboembolic disease. Eclampsia accounts for 50,000 maternal deaths per year worldwide.⁽¹⁾ The incidence of eclampsia is relatively stable in 4 to 5 cases/10,000 livebirths in developed countries and 6 to 100 cases /10,000 livebirths in developing countries.⁽¹⁾ Pathogenesis remains unknown, possibly due to cerebral vasospasm with local ischaemia, hypertensive encephalopathy, vasogenic edema and endothelial damage.⁽¹⁾ The incidence of eclampsia in U.K is 0.49 per 1000 deliveries whereas in Nigeria, the incidence varies from 3 to 17 per 1000 deliveries.⁽²⁾ The maternal mortality rate due to eclampsia varies worldwide from 18% in U.K upto 43.1% in Nigeria. Morbidity from eclampsia is associated with acute renal failure, pulmonary edema, cardiopulmonary arrest and aspiration. Perinatal morbidity from eclampsia ranges from 5%-11.8% in developed countries to 40% in developing countries.⁽²⁾ The causes of perinatal death are chronic placental insufficiency, preterm delivery and placental abruption. The high incidence of maternal

morbidity and mortality in developing countries has been ascribed to late referral to tertiary care hospital, delay in hospitalisation, lack of transport, unbooked status of patients, high parity, the state of unconsciousness and multiple seizures prior to admission.⁽²⁾

The aetiology of eclampsia has not yet been established and there are controversies surrounding the definition of atypical presentation of eclampsia. In most cases, the onset of pre-eclampsia is insidious and the pathological changes occur a week before the clinically detectable hypertension and proteinuria. 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 purpose of this study is to determine the frequency, epidemiological factors, complications, maternal and perinatal outcome in eclampsia.

Materials and Methods

This study was a prospective observational study for one year in a tertiary care teaching hospital. The study population included all eclamptic patients admitted and delivered in labour rooms during the study period i.e., patients with seizures in association with pre-eclampsia. Women who were known epileptics or with history of seizures due to neurological pathology were excluded from the study. This study was conducted after obtaining clearance from the institutional ethical committee.

Data collection: All eclamptic patients admitted and delivered in emergency labour rooms were included in the study. Data was collected using pre-designed proforma. A structured interviewing schedule was used to collect data 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. Routine obstetric history was taken. General, systemic and obstetric examination was carried out. Patients were investigated in terms of haemoglobin, proteinuria, bleeding time, clotting time, platelet count, coagulation profile, liver and kidney function tests, fundoscopy, 24 hours urine protein, renal scan and antenatal ultrasound and Doppler. The information regarding the treatment modality was also collected. Data regarding the maternal and fetal outcome in the form of mode of delivery whether spontaneous or induced, the reason for the latter, complications during hospital stay, maternal death, neonatal weight, neonatal complications, fetal and neonatal death were taken into consideration.

Maternal outcome was measured in terms of

1. Gestational age at admission and delivery
2. Mode of delivery
3. Maternal morbidity such as acute renal failure, HELLP syndrome, disseminated intravascular coagulation (DIC), abruptio placenta, pulmonary edema, aspiration pneumonia, postpartum hemorrhage
4. Maternal mortality

Perinatal outcome was measured in terms of

1. Gestational age – abortion, preterm, fullterm
2. Livebirth or stillbirth or intrauterine demise
3. Birth weight
4. IUGR
5. Apgar score
6. Admission to NICU
7. Early neonatal death- death of liveborn infant during first 7 days of life

Statistical Analysis: The collected demographic information, maternal and neonatal outcome measures were entered in Microsoft excel sheet and the variables were summarised using number and percentages.

Result

This study was carried out in the department of Obstetrics and Gynaecology at a tertiary care teaching hospital over a period of one year. Total number of deliveries was 12,949 and the number of eclamptic patients during the same period was 84 giving an incidence of 0.64%. Out of the 84 cases, 76 cases (90.47%) were referred to our hospital and 8 cases (9.52%) were booked in our hospital. 75 patients (89.28%) had antepartum eclampsia, one (1.19%) had intrapartum and 8 patients (9.52%) had postpartum eclampsia showing antepartum eclampsia to be the commonest. Majority of the patients (57.14%) were in the age group of 21-25 years. About 20 patients (23.80%) were in the teenage group.

Majority of eclamptic patients (73.80%) were primigravida. 45.23% of patients had gestational age at delivery between 36-40 weeks of gestation. Early onset eclampsia (<30 weeks) was found in 20.23% patients. 66.66% patients had systolic blood pressure above 160 mm of Hg and 67.85% patients had diastolic BP>110 mmHg. Only 50% patients had both systolic and diastolic BP>160/110 mmHg. The maternal complications were abruption (2.38%), HELLP syndrome (4.76%), DIC (2.38%), renal failure (4.76%), pulmonary edema (4.76%), sepsis (7.14%) and cerebral hemorrhage (1.19%). There were 3 maternal deaths (3.57%) during the period of study. All belonged to antepartum eclampsia group. All three patients developed acute renal failure with DIC leading to death by cardiorespiratory arrest.

Out of the 84 patients, 59 patients (70.23%) underwent labour induction. 19 cases (22.61%) were admitted with spontaneous labour pains and only 6 patients (7.14%) had caesarean section directly without induction. This proportionately higher rate of induction of labour shows that labour was induced in these patients for early delivery irrespective of period of gestation to decrease the incidence of complications. 53.57% patients had normal vaginal delivery and 46.42% patients underwent caesarean section. There was no instrumental delivery in our study. There were 81 singleton pregnancies with 3 sets of twin pregnancies giving a total of 87 babies. 52.87% babies had birth weight less than 2000 grams. The neonatal complications were low birth weight (54.76%), prematurity (49.42%), respiratory distress syndrome (8.04%), sepsis (1.14%), congenital anomalies (2.29%) and milk aspiration (3.44%). There were 1(1.14%) intrauterine death, 14 stillbirths (16.09%) and 12 (13.79%) neonatal deaths. The perinatal mortality rate was 31.03%.

Discussion

This study was carried out to analyse the clinical manifestations in patients with eclampsia, to assess the risk factors related to the severity of maternal and perinatal morbidity and mortality.

The incidence of Eclampsia in our study was 0.64%. Most studies have reported an incidence between 1-2%.^(2,4-6) Adamu et al reported a higher incidence of 4.4% and HA Sharara reported a lower incidence of 0.031%.^(3,1) In the present study majority of the patients (90.47%) were unbooked. Most studies have reported the same.^(2,3,6-17) The present study shows that antepartum eclampsia is the commonest (89.28%). Almost all the studies reported the same except for Adamu et al who reported the highest incidence of eclampsia in intrapartum period (62.6%).^(1-5,8-11,13-15,18-22) The present study showed that majority of patients (57.14%) were in the age group of 21-25 years. This is comparable with other studies.^(1,2,13,17) The present study shows that 73.80% patients were primigravida. Similarly, majority of the studies have reported that eclampsia is more common in nulliparous patients.^(1-4,7-9,12-17,19-22) The present study shows that 67.85% patients had diastolic BP>110 mm Hg. Similarly, Agida et al, Aali et al and Akinola et al showed that 69.6%, 48.5% and 89.7% had diastolic BP>110 mm Hg in their respective studies.^(2,6,16)

The present study shows that majority (45.23%) of the eclamptic patients had gestational age at delivery between 36 -40 weeks. Ndaboine et al showed that 35.5% patients had gestational age at delivery >37 weeks.⁽⁴⁾ HA Sharara showed that 45.7% patients presented with a gestational age of >37 weeks.⁽¹⁾ In the present study, 70.23% underwent labour induction. In the study conducted by Aali et al, 36.3% were subjected to labour induction but HA Sharara reported only 4.2% in his study.^(6,1) The high percentage of induction was because most of the patients had antepartum eclampsia on admission and labour induction was necessary regardless of gestational age and parity to minimise complications. Most of the studies showed an increased incidence of caesarean section in eclamptic patients.^(1,2,4,5,7,14,16,19) In the present study, though majority of patients had vaginal delivery (53.6%), the caesarean section rate was higher (46.4%) in comparison to the average caesarean delivery rate. The present study showed that 81.6% of babies were of low birth weight. It is comparatively higher than in other studies.^(1,2,4-6) The present study shows a maternal complication rate of 28.57%. The results were comparable with other studies.^(1,23) The major maternal complications in the present study were sepsis (7.14%), HELLP syndrome (4.76%), renal failure (4.76%) and pulmonary edema (4.76%). Similar findings were reported in other studies also.^(1,2,3,5,23)

Table 1: Comparison of Maternal Mortality rate with other studies^(1,7,16)

Study	Percentage
Present study	3.57%
HA Sharara	0.14%
Miguil et al	6.7%

Akinola et al	6.7%
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In the present study, the maternal mortality rate was 3.57%. Table 1 shows the maternal mortality rate in various studies.^(1,7,16) Miguil et al and Akinola et al reported a higher maternal mortality rate of 6.7% whereas HA Sharara reported the lowest maternal mortality rate of 0.14%.^(1,7,16) The major causes for maternal mortality were multi-system organ failure, pulmonary edema, Acute renal failure, stroke, DIC precipitated by abruption.^(1,7,16)

The present study showed that the major neonatal complications are low birth weight (54.76%) and prematurity (49.42%). This is comparable with other studies.^{1,2,5,6,19,21,23} The incidence of birth asphyxia (8.04%) was comparatively lower in the present study. The low incidence of birth asphyxia reflects the good intrapartum management but the incidence of low birth weight and prematurity could not be reduced further because termination of pregnancy was necessary in these patients regardless of gestational age and fetal lung maturity.

Table 2: Comparison of Perinatal mortality rate with other studies^(3,4,5)

	Present Study	Ndaboine et al.	Adekanle et al.	Adamu et al.
IUD	1.14%	-	-	-
Still born	16.09%	12.2%	-	81.1%
Neonatal Mortality	13.79%	8.5%	24.1%	18.9%
Perinatal Mortality	31.03%	20.7%	24.1%	40.6%

Table 2 shows the comparison of stillbirth rate, neonatal mortality rate and perinatal mortality rate in our study with various studies. In the present study, perinatal mortality was 31.03%. Adamu et al and Shaheen et al reported a higher incidence of perinatal mortality of 40.6% and 41.6% respectively.^(3,17) Chen et al and Ikechibelu et al reported a lower incidence of perinatal mortality of 9.52% and 16.3% respectively.^(8,19) The high incidence of perinatal mortality in our present study might be because most of the patients who had perinatal death had severe complications at presentation and hence the cause of it may be due to effect of eclampsia on the fetoplacental unit or due to early termination of pregnancy to prevent further complications.

Conclusion

Eclampsia still remains the major cause of maternal and fetal morbidity, mortality. This is because it is frequently associated with multiple complications involving almost all organs of the body. Adverse pregnancy outcome was mainly attributed to low educational status, poverty, low socioeconomic status, physical inaccessibility to health care centres, inadequate or inappropriate medical care and late

referral. Hence improvements in hygiene, socioeconomic factors, prenatal care and utilisation of medical care appear to play an important role in the prevention of eclampsia.

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