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Review of Management, Maternal and Fetal Outcomes in Women with Eclampsia in Kogi Eastern Hospitals, North Central Nigeria

Simon Peterside Onuche Akogu
Obstetrics and gynecology Department,
Kogi State University/Kogi State University Teaching Hospital, Anyigba

Musa Abdulkarim Omoniyi
Department of Obstetrics and Gynaecology,
Federal Teaching Hospital, Lokoja, Kogi State

Christian Ekpe
Department of Physiology/Obstetrics and Gynecology,
Prince Abubakar Audu University/prince Abubakar
Audu University Teaching Hospital Anyigba

Timothy Idachaba
Nursing Services Division,
Prince Abubakar Audu University Teaching Hospital, Anyigba

Funmilola Alakpo
Nursing Services Division,
Prince Abubakar Audu University Teaching Hospital, Anyigba

ABSTRACT

Introduction: Eclampsia is defined as the occurrence of convulsion with the syndrome of preeclampsia. Pre-eclampsia is a multi-systemic disease typified by raised blood pressure and proteinuria [1, 2, 3, 20]. This study reviewed Eclampsia management protocols including patients care instructions, oxygen administration, use of antihypertensive, anticonvulsant, maternal outcome and neonatal outcome. This type of enquiry will generate information that will stimulate systems wide appraisals for improvement in the management of Eclampsia. Material and Methods: This is a retrospective case series study. Case files of consecutive cases of eclampsia managed between January 2018 and December 2022 in the 5 hospitals in Kogi East, North central Nigeria were extracted. Using a structured questionnaire, information on bio data, relevant obstetrics characteristics, case management and outcome were obtained and analyzed. Results: Majority of parturient are in the age range of 20 – 34 years (43.7%). There were 3321 deliveries. 135 of the women had eclampsia while 11 women died from complications of eclampsia. The maternal mortality ratio due to eclampsia is 332 per 100,000 live births. The case fatality rate for eclampsia in this study is 8.2%, the incidence of eclampsia is 41 case per 1000 live births. This review of the management of Eclampsia showed sub optimal practices. Conclusion: The incidence of eclampsia, the case fatality rate and maternal mortality due to eclampsia are unacceptably high compare to the

developed societies [1, 2]. We need to improve on maternity services for antenatal care, positive pregnancy experience and early intervention.

Keywords: Eclampsia, maternal outcomes, fetal outcomes, obstetric management, pregnancy complications.

BACKGROUND

Pregnancy can be complicated by hypertensive diseases. These could be either chronic hypertension with pre-eclampsia superimposed, gestational hypertension, pre-eclampsia or eclampsia.

Eclampsia is defined as the occurrence of convulsion with the syndrome of preeclampsia. Pre-eclampsia is a multi-systemic disease typified by raised blood pressure and proteinuria [1, 2, 3].

Pre-eclampsia is a new onset of hypertension of systolic blood pressure that is more than 140mmHg and diastolic blood pressure that is more than 90mmHg occurring after the 20^{th} week of pregnancy that is associated with proteinuria [3,4,20]

Eclampsia complicates 1 in 200 deliveries in developing countries, 18% of which occur intrapartum, 45% post natal and 38% antepartum [5].

Eclampsia which is a complication of pre-eclampsia is believed to be due to cerebral vasospasm leading to ischemia and disruption of the blood-brain barrier that causes edema. This change elicits neurological complications that cause convulsion [5, 6].

Eclampsia presents a significant challenge in pregnancy and endangers the wellbeing of the mother and fetus. This is heightened in resource limited settings like Kogi State, North Central Nigeria.

The way and manner Eclampsia are managed is a determinant of maternal and fetal outcome for afflicted parturients.

This study focuses on assessing the management protocols including but not limited to basic patients care instructions, oxygen administration, antihypertensive administration, use of anticonvulsant specifically magnesium sulphate, maternal outcome, neonatal resuscitation and fetal outcome in women with Eclampsia treated at five Eastern hospitals in Kogi State. It is believed that such enquiry will generate information that will stimulate systems wide appraisals for improvement in the management of Eclampsia.

The management of Eclampsia is a multifaceted approach that is aimed at controlling seizures, stabilizing blood pressure, preventing complications and ensuring good outcome for the mother and the fetus. Each of this step is crucial and optimizes the overall outcome for women with eclampsia.

The hypertension in eclampsia if it exists at presentation is controlled in order to prevent further complications such as cerebrovascular accident (CVA), abruption of placenta and end organ damage and myocardial infarction [1, 2].

The American College of Obstetrics and Gynecology (ACOG) recommends that when the systolic blood pressure is greater than 160mmHg or the diastolic blood pressure is greater than 110mmHg or more on two occasions at 4 hours interval (if antihypertensive have not been initiated), it should be started. The drugs of choice are labetalol 20mg IV escalatable to 80mg over at 10 minutes interval not exceeding a cumulative dose of 300mg) or hydralazine given as 5mg IV repeated every 20 minutes up to a maximum cumulative dose of 20mg. This can also be given as an infusion in IV fluid to titrate with the diastolic blood (threshold of 110mmHg or higher) pressure to avoid precipitation of hypertension and fetal distress [1,2,7,8,9,10,11,1213,14,15,20].

Nifedipine can also be used as an alternative if possible, but care and should be taken to monitor the patient to prevent exacerbation of hypotension should magnesium sulfate be concomitantly used [1,13].

Anticonvulsant in preventing and treating seizures is a crucial management step in combating Eclampsia. The preferred drug is the neuroprotective agent called magnesium sulphate [20]. It controls seizures and prevent recurrence. It is given in a loading dose 4 grams intravenously over 15 – 20 minutes. This is concomitant with 5g given intramuscular into each buttock. This constitute the loading dose of magnesium sulphate. A seizure control dose of 2g/hour is maintained till 24 hours after the last seizure or delivery of the fetus. This is the maintenance dose of magnesium sulphate. Recurrent seizures should be treated with a further 2g IV bolus [1, 2]. Slight modification of regiment exists [1, 2, 4, 7, 15].

The collaborative Eclampsia trial revealed that women treated with magnesium sulphate have significant reduction in occurrence of seizures compared to other agents like diazepam and Phenytoin [1, 2]. It is also believed that use of magnesium sulphate reduces maternal mortality, use of respiratory support and intensive care unit admissions [2]. It is believed to be a vasodilator and membrane stabilizer making it a better and gold standard option in the control of eclamptic fits [1, 2].

In our resource limited settings where availability of equipment and capacity for utilization are ever present challenges, these multiple advantages of magnesium sulphate in seizure control is crucial to management for improved maternal outcome.

Repented seizures despite magnesium sulphate administration may be due to inadequate blood pressure control hence the need for concomitant antihypertensive therapy with magnesium sulphate administration.[1]

Therapy with magnesium sulphate require close monitoring to avoid toxicity.

Hourly monitoring of particular reflex (knee Jerk) and respiratory rate are good standards to monitor magnesium sulphate therapy in the eclamptic woman. If toxicity is observed, further

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doses should be withheld and an antidote, calcium gluconate in a dose of 1g should be given intravenously over 10 minutes [1, B26].

The delivery of the fetus is the definitive treatment for Eclampsia ultimately. Factors that affect the route and timing of the delivery are maternal conditions and the gestational age [1].
Vaginal delivery is contemplated in patient that are already in labor or with very favorable cervix in the absence of no other maternal or fetal complications. Caesarean section is safer for patient with unfavorable cervix or not close to term [1, 2, 7].

SUBJECTS AND METHODS

Study Area and Population

The study is a retrospective study to review the Management, Maternal and fetal outcomes in Women with Eclampsia in hospitals in Kogi East of Kogi state, North central Nigeria.

This study was conducted 5 hospitals located in 4 of the 9 local governments in Kogi East 2 of which are zonal referral hospitals and 3 other hospitals determined by patient volume for maternal care in the previous years. The population of the 9 local councils is Kogi east based on projection from the 2006 census is 1,996,700. The female to male population ratio in the entire Kogi population is 49.5:50.5 therefore the population of females in Kogi East is 988,366. Women of reproductive age constitute a significant fraction of this.

Study Sites

The facilities are the Prince Abubakar Audu University Teaching Hospital Anyigba, The grimard Catholic hospital Anyigba, the Holley Memorial Hospital Ochadamu, the Zonal Hospital Ankpa, and the Zonal Hospital Idah. These hospitals have higher volumes of parturients and also receive referrals from primary health care facilities, cottage and general hospitals in Kogi East.

Study Design

This is a retrospective case series study. Case files of consecutive cases of eclampsia managed between January 2018 and December 2022 in the 5 hospitals named above were extracted. Using a structured questionnaire, data were extracted from the files, information on bio data of the parturients, relevant obstetrics characteristics, case management and outcome were obtained. These were inputted and statistical analysis was done by descriptive statistics using the statistical package for social sciences SPSS (SPSS Inc.: 2001) for windows version 20.

Ethical Issues

This study does not involve any invasive procedure; however, ethical clearance was obtained from the Research ethics committee of the Kogi state Ministry of Health.

RESULTS

Table 1 (i) shows the Age distribution of the studied patients. Majority of parturient are in the age range of 20 – 34 years (43.7%).

Table 1 (ii) shows that 55 (40.7%) of the patients had no formal education, the remaining 59.3% had either primary, secondary or tertiary education.

Table 1 (iii) shows that 64 (47.4%) of the patients are multiparae, 56 (41.4%) are primiparae and 15 (11.2%) are grand multiparae. Table 1(vi) shows that majority (54.8%) of the eclamptics did not book for antenatal care.

Table 1a: Socio Demographic Characteristics of The Patients

Variable	Number (n)	Percent (%)
i) Age of respondents		
Less than 20	11	8.1
20 – 34	59	43.7
35 – 44	56	41.5
More than 45	9	6.7
Total	135	100
iii) Educational Status		
Non-formal	55	40.7
Primary	35	25.9
Secondary	40	29.6
Tertiary Graduate	5	3.7
Total	135	100
v) Parity		
Primiparae	56	41.4
Multiparae	64	47.4
Grand multiparae	15	11.2
Total	135	100
V) Booking status		
Booked	61	45.2
Unbooked	74	54.8
Total	135	100

Table 1 (B): Delivery Record 2018 – 2022 In Studied Facilities

Variable: Facility Code	Number of deliveries (n)	Eclamptic patients	Death due to Eclampsia
1	1331	18	1
2	408	51	5
3	411	9	0
4	665	26	3
5	506	31	2
Total	3321	135	11

Table 1(B) shows the delivery records across the studied facilities over a 5-year period. There were 3321 deliveries. 135 of the women had eclampsia while 11 women died from complications of eclampsia. The maternal mortality ratio due to eclampsia is 332 per 100,000 live births. The case fatality rate for eclampsia in this study is 8.2%, the incidence of eclampsia is 41 case per 1000 live births.

Table 2 (i) shows that 117 (86.7%) of the women who had Eclampsia were brought from home, only 18 (13.3%) were within/inter facility transfers.

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Table 2 (ii) shows that 3 of the women (2.2%) presented with Eclampsia between 20 and 28 weeks of gestation. 76 (56.3%) between 29 – 37 weeks of gestation and 56 (41.5%) presented between 38 and 41 + 3 days of gestation.

Table 2 (iii) shows that the common presenting symptoms are blurred vision (15.6%), headache (8.1%), epigastric pain (8.1%), unconsciousness (6.7%), and convulsion (100%). 78% of the patients had lower limb swelling which is not a specific symptom of pregnancy induced hypertension.

Table 2(iv) shows that only 15% of the patients had blood pressure less than 140/90mmHg, the rest had blood pressure that exceeded 140/90mmHg

Table 2(v) shows that all the patients had varying degrees of proteinuria.

Table 2 (VI & vii) show that labour onset was spontaneous in 5 women (3.7%), induced in 18 (13.3%) and 112 (83%) women had emergency lower segment caesarean section (CS).

Table 2: Clinical Features of The Patients

Variable	Number (n)	Percent (%)
i) Mode of admission		
From (referred)Home	117	86.7
Transferred	18	13.3
Total	135	100
ii) Gestational Age at Presentation		
20 – 28 weeks	3	2.2
29 – 37 weeks	76	56.3
38 – 41 +^{3}	56	41.5
Total	135	100
iii)) Presenting symptoms		
Epigastric pain	11	8.1
Unconscious (coma)	9	6.7
Lower limb swelling	51	37.8
Head ache	11	8.1
Blurred vision	21	15.6
Convulsion	135	100
iv)Blood Pressure at Presentation		
More than 140/90mmHg	133	98.5
Less/equal 140/90mmHg	2	1.5
Total	135	100
v)Presence/Degree of Proteinuria		
1+	4	3.0
2+	1	0.7
3+	130	96.3
Total	135	100
vi)Labour onset		
Spontaneous	5	3.7
Non-spontaneous (induction)	18	13.3

Non-spontaneous (Caesarean section)	112	83.0
Total	135	100
vii)Route of Delivery		
Vaginal Delivery	23	17.0
Caesarean Section	112	83.0
Total	135	100

The management of Eclampsia as shown in table 3(i) revealed that history of previous hypertensive disease was sought and obtained in only 48 (35.6%) of the patients. Oxygen was administered to on 40 (29.6%) of the patients.

58 (43%) of the patient did not receive antihypertensive correctly. 33 (24%) of the patient did not receive the loading dose of magnesium sulphate correctly and 120 (88.9%) did not receive the maintenance dose of magnesium sulphate correctly.

Diazepam was used in the management of Eclamptic convulsion in 58 (43%) of the patients.

Neonatal resuscitation was available in all the facilities and was offered to 42 (31.1%) of the babies delivered.

Table 3(ii) shows that 10 (7.4%) of the Eclamptic women had post-partum hemorrhage. 124 (91.9%) recovered from the disease while 11 (8.11%) of the patient died as a result of the Eclampsia.

Table 3(iii) that 103 (77.8%) of the babies delivered to the women were alive while 30 (22.3%) had neonatal death.

Table 3: Management and Outcomes

	Score		
Variable	**Yes**	**No**	**Total**
i) FETO-Maternal Management Processes			
(a) Obtained history of previous hypertension obtained	48 (35.6)	52 (64,4)	135 (100)
(b) Instruction on lying position	56 (41.5)	79(58.5)	135 (100)
(c) Oxygen administered to patient	40(29.6)	95(70.4)	135 (100)
(d) Antihypertensive given correctly	77(57.0)	58(43.0)	135 (100)
(e) Magnesium sulphate loading dose given correctly	102 (75.6)	33(24.4)	135 (100)
(f) Magnesium sulphate maintenance dose given correctly	15 (11.1)	120 (88.9)	135 (100)
(g) Diazepam or sedatives used in management of eclampsia/convulsion	58 (43.0)	77(57.0)	135 (100)
(h) Neonatal resuscitation available	135(100)	0(0)	135 (100)
(i) Neonatal resuscitation offered	42(31.1)	93(68.9)	135 (100)
			135 (100)
ii) Maternal Complications/Outcome			135 (100)
(a) Post-partum Hemorrhage	10 (7.4)	125(92.6)	135 (100)
(b) Recovery from Disease	124 (91.9)	11(8.1)	135 (100)
(c) Maternal Death	11(8.1)	124(91.9)	135 (100)
			135 (100)

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iii) Neonatal Complications/Outcome			135 (100)
(a) Neonatal death	30(22.2)	103 (77.8)	135 (100)

DISCUSSION

Majority of the patients fall within the actively reproductive ages of 20 – 34 years (43.7%) followed by the age group 35 – 44 years. This agrees with documented demographics [1, 2]

The findings in this study of the gestational age at presentation; 2.2% between 20 and 28 weeks, 56.3% between 29 – 37 weeks and 4.5% between 38 and 41 weeks agrees with documented knowledge about the gestation age of presentation and that preeclampsia/eclampsia only presents after the gestational age of 20 weeks [1,2,17,18,19]. However, the incidence of eclampsia, the case fatality rate and maternal mortality due to eclampsia are unacceptably high compare to the developed societies [1, 2]. This is an indictment of our maternity services especially the large number of unbooked parturients who eventually missed the opportunities for antenatal care, positive pregnancy experience and early intervention.

A review of the management of Eclampsia showed sub optimal practices. There were no specific instructions on the lying position of seizing patients in as much as 58.5% of the reviewed cases. All patients fitting is supposed to be laid in the left lateral position, prevent airway obstruction. Similarly, only 29.6% of the patient receive oxygen therapy. The use of oxygen, an "essential medicine" optimizes care in fitting patients in the management of pre-Eclampsia [1, 2, 8, 16, 17, 18]. In 43% of the patient's antihypertensive prescriptions were not given correctly. In most cases, the correct antihypertensive was used but with incorrect dosing, frequency and duration [11, 12].

Majority of the care providers (75.6%) knew and give the loading doses of magnesium sulphate correctly however, they were unable to administer the maintenance dose correctly leading to sub optimal results [17, 18, 19]. In some cases, this led to poor seizure control and unfavorable outcome for the mother and fetus.

Although diazepam is a known anticonvulsant, it is not the desired drug in the management of Eclampsia. It was worrisomely observed that it was still the first-choice drug for some care providers in 57% of the cases managed [17].

Neonatal resuscitation was available in all the studied facilities. It was used for resuscitation in 31% of the cases studied.

Postpartum hemorrhage complicated the delivery in 7.4% of the cases but was not recorded as the cause of death in any case.

Maternal death occurred in 8.1 % (11) of the cases and neonatal death in 22.2 % (30) of the cases.

CONCLUSION

This study revealed that the management of Eclampsia and by extension hypertensive diseases of pregnancy require further critical appraisal and improvement to forestall complications that lead to maternal and neonatal mortality. That many women developed eclampsia should

necessitate further review of protocols for care of preeclamptics, review of antepartum care and strengthening of system wide preventive health education for uptake of antenatal care. There is need for further capacity building of our skilled birth attendants on knowledge and skills for safe delivery for women with pregnancies complicated by Eclampsia. This can be achieved by building capacity for comprehensive emergency obstetrics care.

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