Original Article

Eclampsia: A Five-year Retrospective Review in Sagamu, South-West Nigeria

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Abstract

Context: Eclampsia is one of the leading causes of maternal and perinatal morbidity and mortality in developing countries. This is the result of poor health-seeking behavior of pregnant women and inadequate comprehensive emergency obstetric services. This study reviewed the presentation and management of eclampsia in Sagamu over a 5-year period. **Aims:** This study aims to determine the prevalence, pattern of clinical presentation and fetomaternal outcomes of eclampsia. **Settings and Design:** This was a retrospective study conducted in Olabisi Onabanjo University Teaching Hospital Sagamu, Ogun state. **Subjects and Methods:** Relevant information was retrieved from case notes of all patients who presented with eclampsia from January 2014 to December 2018. Data were analyzed using SPSS version 21. **Results:** Out of the 4656 deliveries, there were 45 cases of eclampsia giving a prevalence of 0.97%. The modal age was 20–24 years. Majority were unbooked 41 (91.1%) and 29 (64.4%) of the women were nulliparas. Antepartum eclampsia was commonest occurring in 36 women (80%). The most common premonitory symptom was headache occurring in as high as 37 women (82.2%). Most of the patients 37 (84.4%) had an abdominal delivery. There were two maternal mortalities (4.4%) and four perinatal deaths (8.9%). There was no statistically significant association between factors such as booking status, type of eclampsia, mode of delivery and parity, and the fetal outcome (APGAR score at 1 min). **Conclusions:** Eclampsia is still one of the preventable causes of maternal and perinatal mortality in our environment. The prevalence of eclampsia in sagamu was 0.97%. Improved health-seeking behavior, antenatal care monitoring, and prompt diagnosis and management of preeclampsia will invariably reduce the prevalence of eclampsia.

Keywords: Eclampsia, maternal, morbidity, mortality, perinatal

Introduction

Eclampsia is one of the spectra and clinical manifestation of hypertensive disorder of pregnancy.[1] It continues to be one of the leading causes of maternal and perinatal morbidity and mortality accounting for 11% of the total maternal deaths in Nigeria.[1,2] This constitutes a significant reproductive health issue and indicates the poor performance status of the health-care system.[2]

Eclampsia is the occurrence of tonic–clonic convulsions in a patient with preeclampsia in the absence of an underlying neurological disease.[3] It is estimated that the prevalence of eclampsia is 0.3% worldwide.[4] The incidence in developed countries has been relatively stable at 1.6–10 cases per 10,000 deliveries (0.0016%–0.001%),[5,6] while the incidence of eclampsia varies across the geographical location in developing countries with reported values of 0.16%–0.7%.[7] This variation reflects the differences in health-seeking behaviors, quality of obstetric care, and the proportion of pregnancies attended to by skilled birth attendants. Furthermore, the high incidence of eclampsia in the developing countries when compared with developed countries are attributable to delay in seeking health care, inadequate antenatal care, and challenges in detection and prevention of preeclampsia.[8] In Nigeria, institutional-based studies reported an overall incidence of between 0.9% and 2.1% of eclampsia.[9-11]

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The etiology of eclampsia still remains unclear as the mechanism responsible for preeclampsia and eclampsia is still unknown. The underlying basic pathology is widespread endothelial dysfunction and intense vasospasm. Immunologic dysfunction, genetic predisposition, defective trophoblastic invasion of the spiral arteries of the endometrium, coagulation defects, imbalance in prostanoid production and vascular endothelial damage, and increased plasma antiphospholipid are some of the etiopathogenic mechanisms that have been implicated in the development of eclampsia.[3,6]

Ninety percent of eclampsia cases occur after 28 weeks' gestation.[12] The cause of the irritation leading to the seizure is quite unclear, but eclampsia had been shown to cause central nervous system abnormality such as cerebral over perfusion due to loss of autoregulation, cerebral edema, and cerebral hemorrhage. Eclampsia and its precursor severe preeclampsia affect multiple organ systems leading to complications such as, hepatic rupture, hemolysis, elevated liver enzymes low platelet, acute kidney injury, pulmonary edema, cerebrovascular accident, retinal detachment, cortical blindness, disseminated intravascular coagulopathy, and eventual maternal death.[13] Placental perfusion is reduced in this disease and this may result in intrauterine growth restriction and oligohydramnios. Other complications include placental abruption, preterm delivery, intrauterine asphyxia, and perinatal death. The principles of management are initial basic resuscitation, control of blood pressure, control and prevent further convulsion. A cervical examination is done to determine the favorability of the cervix and delivery by the fastest means is instituted after adequate stabilization.

In recent time, prevention is being advocated through identification of people at risk and early detection of pre-eclampsia.[12] A previous review of the presentation and management outcome of eclampsia in Olabisi Onabanjo University Teaching Hospital (OOUTH) was done during a period when the recommendations from the Magpie collaborative trial had not been fully implemented in the hospital.[13,14]

Hence, this study was designed to determine the prevalence of eclampsia, review pattern of presentation, and feto-maternal outcome of patients with eclampsia in OOUTH, Sagamu, Ogun State, Nigeria.

Subjects and Methods

The study was conducted in OOUTH, Sagamu Ogun State, South-west Nigeria. The hospital serves as a referral center for obstetrics and gynecological services from neighboring towns and villages in Ogun state and Lagos state. This was a retrospective study involving the review of patients diagnosed as having eclampsia between January 1, 2014 and December 31, 2018.

The case notes of all patients diagnosed with eclampsia were retrieved from the central medical record and labor ward. Information obtained was documented in the data capture sheet. The information includes age of patient, parity, booking status occupation, educational status, referral facility, blood pressure at presentation, level of proteinuria, premonitory symptoms, and episodes of convulsion. Other details retrieved were estimated gestational age at delivery, mode of delivery, birth outcome, Apgar scores, and maternal complications. Babies that had APGAR scores <3 at 1 min were classified as having severe birth asphyxia.

Ethical approval for the study was obtained from the Health Research Ethics Committee of OOUTH, Sagamu.

The research was conducted in accordance with the World Medical Association Declaration of Helsinki.

The data were entered into IBM-SPSS version 21 (IBM Corp, Armonk, NY, USA). Categorical variables were summarized using frequencies and percentages while means and standard deviations were used for continuous variables. Chi-square test was used to determine the relationship between categorical variables. $P < 0.05$ was taken as statistically significant.

Results

During the period under review, there were 4656 deliveries and 45 cases of eclampsia, thus giving a prevalence of 9.67 per 1000 deliveries (0.97%).

Table 1 shows the sociodemograpghic statistics. The mean age was 24.4 ± 8.9 years with an age range of 19–42 years. Majority of the women affected were within the age group of 20–24 years (46.7%). The mean parity for the study was 1.24 ± 0.87. The median parity is 0. The parity ranges from 0 to 5. Nulliparity accounted for 64.4% of the studied group. The majority 41 (91.1%) of the pregnant women were unbooked. Most of the women had at least a secondary education. Among the study group, 13 (31.4%) cases were referred from private hospitals, 8 (17.8%) cases were not referred, 7 (15.6%) cases were referred from government general hospital, 6 (13.3%) cases were referred from primary health centers, 5 (11.1%) cases had visited traditional birth attendant prior to presentation, and 2 (4.4%) cases came from church.

Table 2 shows that the mean systolic and diastolic blood pressures were 180.44 ± 23.82 mmHg and 113.89 ± 16.47 mmHg, respectively. All the women had an elevated level of blood pressure at presentation. Forty women (88.9%) presented with severe systolic blood pressure while 5 (11.1%) had mild systolic pressure. The diastolic pressure also showed that 31 (68.9%) had severe diastolic pressure and 14 (31.1%) cases had mild diastolic pressure.

Three (6.7%) of the cases reviewed had proteinuria of 1+, 23 (51.1%) had 2+ of proteinuria, 17 (37.8%) of the cases had 3 + proteinuria and one woman each (2.2%) had 4 + proteinuria and negative proteinuria.

Antepartum eclampsia was the most common clinical type occurring in 36 (80%) of cases, 5 cases (11.1%) were

intrapartum eclampsia and 4 (8.9%) were postpartum eclampsia. Twenty-two (48.9%) cases had one convulsion prior to presentation in OOUTH, 8 (17.8%) had two and 15 (33.3%) had three or more convulsions. The mean number of convulsions was 2.3 ± 1.7.

Table 1: Sociodemographic data

Variable	Frequency (%)
Age	
15-20	3 (6.7)
20-24	21 (46.7)
25-29	10 (22.2)
30-34	2 (4.4)
35-39	4 (8.9)
≥40	5 (11.1)
Parity	
0	29 (64.4)
1-2	11 (24.5)
3-4	3 (6.7)
>4	2 (4.4)
Booking status	
Unbooked	41 (91.1)
Booked	4 (8.9)
Occupation	
Unemployed	9 (20.0)
Artisan	12 (26.7)
Trader	10 (22.2)
Civil servant	8 (17.8)
Professional	6 (13.3)
Educational status	
No formal education	13 (28.9
Primary	2 (4.4)
Secondary	21 (46.7)
Tertiary	9 (20.0)

Table 2: Distribution of classical case definition of eclampsia (blood pressure, degree of proteinuria, and number of convulsion) (*n*=45)

Variable	Frequency (%)
Blood pressure	
Mild systolic pressure	5 (11.1)
Severe systolic pressure	40 (88.9)
Mild diastolic pressure	14 (31.1)
Severe diastolic pressure	31 (68.9)
Degree of proteinuria	
Negative	1 (2.2)
1	3 (6.7)
2	23 (51.1)
3	17 (37.8)
4	1 (2.2)
Number of convulsion before therapy in OOUTH	
1	22 (48.9)
2	8 (17.8)
≥3	15 (33.3)

OOUTH: Olabisi Onabanjo University Teaching Hospital

Table 3 shows the distribution of prodromal symptoms associated with Eclampsia. Thirty-seven (82.2%) women presented with headache, 18 (40%) presented with blurring of vision and 18 (40.0%) had altered sensorium at presentation. Only three (6.7%) had spontaneous vaginal delivery, 4 (8.9%) had instrumental delivery and 38 (84.4%) had cesarean section. The mean gestational age was 36.5 ± 5.4 weeks. However, 26 women (57.8%) were delivered at estimated gestational age of 37 weeks and above while 19 (42.2%) of the eclamptic patients were delivered at estimated gestational age below 37 weeks. All cases of eclampsia occurred in the third trimester.

Table 4 depicts the maternal complication following eclampsia. Seven (15.56%) had HELLP syndrome, 6 (13.3%) had acute kidney injury, 4 (8.89%) had acute pulmonary edema, and 2 (4.44%) had cerebrovascular disease. There were 2 (4.44%) maternal deaths.

Table 5 shows fetal complications. Twenty-nine women (64.4%) delivered babies that had perinatal asphyxia, and 23 of the neonates required neonatal ward admission. Fourteen women (31.1%) had no complications. The mean Apgar score at 1 min was 4.9 ± 2.9. There were 2 (4.4%) stillbirths and 4 (8.9%) perinatal deaths.

Severe birth asphyxia (APGAR score ≤3) was more common among unbooked patients, patients with intrapartum eclampsia, babies delivered through cesarean section and nulliparous patients. There was no statistically significant association between booking status, types of eclampsia, mode of delivery and parity, and the occurrence of severe birth asphyxia (APGAR score at 1 min ≤3) ($P = 0.644$, $P = 0.455$, $P = 0.674$, $P = 0.654$, respectively) [Table 6].

Table 3: Prodromal symptoms associated with eclampsia

Clinical presentation	Frequency (%)
Headaches	37 (82.2)
Blurring of vision	18 (40.0)
Vomiting	4 (8.9)
Epigastric	3 (6.7)
Dizziness	1 (2.2)
Altered sensorium	18 (40.0)

Table 4: Maternal complications of eclampsia

Complications	Frequency (%)
Acute renal failure	6 (13.3)
Papilledema	16 (35.6)
Cerebrovascular disease	2 (4.44)
Anemia	2 (14.29)
Tongue laceration	1 (2.22)
Fracture mandible	1 (2.22)
Acute pulmonary edema	4 (8.89)
Maternal mortality	2 (4.44)
HELLP syndrome	7 (15.56)

HELLP: Heamolysis elevated low platelet

Table 5: Neonatal complication

Variables	Frequency (%)
Stillbirth	2 (4.4)
Birth asphyxia (Apgar<7)	29 (64.4)
Early neonatal death	2 (2.2)
Prematurity	19 (42.2)
Neonatal admission	23 (51.1)
Nil	14 (31.1)

Table 6: The association between booking status, type of eclampsia, mode of delivery, parity, and Apgar scores at 1 min of delivery

Variable	Apgar score ≤3, *n* (%)	Apgar score >3, *n* (%)	χ^2	*P*
Booking status				
Booked	1 (25.0)	3 (75.0)	0.2135	0.644053
Unbooked	15 (48.4)	16 (51.6)		
Type of eclampsia				
Antepartum	13 (36.1)	23 (63.8)	1.576	0.45476
Intrapartum	3 (60.0)	2 (40.0)		
Postpartum	0 (0.0)	4 (100.0)		
Mode of delivery				
Vaginal delivery	2 (28.6)	5 (71.4)	0.1765	0.674429
Cesarean section	14 (36.8)	24 (63.2)		
Parity				
Nulliparity	11 (37.9)	18 (62.1)	0.2009	0.654025
Primi/multiparity	5 (31.3)	11 (68.7)		

Discussion

Eclampsia remains one of the leading causes of maternal and perinatal mortality and morbidity in the developing world.[2,3] This study was designed to assess the prevalence, clinical presentation and the management outcome of eclampsia in Sagamu.

The prevalence of 0.97% found in this study is higher than 0.91% and 0.65% reported in Ile-Ife and Nnewi.[10,11] This rate is however much lower than 1.3%, 2.7%, 2.1%, and 9.42% reported in, Abuja, Imo, Osogbo and Jigawa, respectively.[8,9,15,16] All of these were tertiary hospital-based studies. Furthermore, the prevalence of 0.97% is lower than 1.7% reported by Olatunji and Sule-Odu[13] in this health facility 15 years ago. This can be attributed to early referral of preeclamptic cases for expert management (before progression to eclampsia) by caregivers in nearby primary and secondary health facilities.

Majority were within the age group of 20–24 years, similar to findings in Gwagwalada, Abuja.[9] This is the age range during which many women are carrying their first pregnancies and nulliparity is a recognized risk factor for preeclampsia. It is worthy of note that the modal age group for eclampsia in a previous study done in Sagamu was 15–19 years of age group.[13] This may suggest that the various campaigns against early marriage and advocating for girl child education and empowerment by various nongovernmental organization have started yielding fruits. Almost two-thirds of the women with eclampsia in this study were nulliparous; similar findings were also reported in other studies.[8,13,15,16] This study shows that nulliparous women in their early twenties were the most vulnerable group. It is imperative to provide adequate health education about the condition of this group of women to enhance their health-seeking behavior.

Majority (91.1%) of the patients were unbooked, similar to studies from different parts of the country.[13,14,17] Only a few of the women with eclampsia were booked patients. This could be as a result of strict and effective monitoring of pregnant women during antenatal clinic, early detection and management of cases of preeclampsia and prophylactic use of magnesium sulfate among women with severe preeclampsia.

The most common clinical type of eclampsia encountered in this review was antepartum eclampsia accounting for 80%. This is not surprising for a developing country like Nigeria, where health-seeking behavior is poor, and antenatal care and delivery in health facilities have been reported to be low. This finding that four-fifth of the patients had antepartum eclampsia was consistent with several studies in this country[11-13,15] but differs from findings in developed countries where postpartum eclampsia tends to be more common.[8] This has been ascribed to improvement in prenatal care, screening and early detection of preeclampsia and prophylactic use of magnesium sulfate in the management of severe preeclampsia in developed countries.[8]

The most common clinical presentations encountered in this review include elevated blood pressure, headache, blurring of vision, and altered sensorium. These are the most commonly reported symptoms of imminent eclampsia occurring before the onset of convulsion. This suggests that closely monitoring patients with these symptoms may provide an early warning for eclampsia. Proteinuria was also not found in one of the patients. This suggests that eclampsia can occur in patients with gestational hypertension (nonproteinuric hypertension). Mustafa *et al*.[18] reported that approximately 30% of eclamptic patients had no ominous proteinuria. This finding could inform the use of prophylactic magnesium sulfate in patients with severe gestational hypertension. In this study, all women had elevated blood pressure ranging from mild to severe systolic or diastolic blood pressure. However, previous studies had shown that approximately 16% and 38% of eclamptic patients were normotensive in the United Kingdom and the United States, respectively.[19,20]

In this present study, majority were delivered through emergency cesarean section. This was consistent with findings from other studies.[6,7,11] This was not surprising as eclamptic patients are expected to be delivered in a timely fashion. It is therefore important that health policy makers should support the provision of more comprehensive emergency obstetrics care centers where eclampsia could be adequately managed so as to prevent mortality and morbidity associated with the

condition. The maternal mortality was 4.4%, mainly from cerebral hemorrhages and renal failure. This rate was lower than 5.3% reported in Abuja.[9] A possible reason for the lower death rate in this study is the fact that all eclamptics in this study were managed with magnesium sulfate according to the Pritchard regimen whereas diazepam was the main anticonvulsant available during the study in Abuja. The relatively low perinatal mortality could also be due to prompt delivery of the fetus and use of magnesium sulfate.

This study revealed no significant association between booking status, type of eclampsia, mode of delivery, parity, and the occurrence of severe birth asphyxia (APGAR score at 1 min ≤3). This underscores the importance of ensuring a multidisciplinary approach in the management of all cases of eclampsia. Women with eclampsia should be managed by a team of senior obstetricians, anesthetics, hematologists and neonatologists. This is important for both maternal and neonatal survival and avoidance of any chronic or debilitating sequelae.

Conclusions

The prevalence of eclampsia in sagamu was 0.97%. Headache and visual disturbance were the commonest prodromal symptoms. Eclampsia remains a preventable cause of maternal and perinatal mortality in our environment. It is important to create public awareness, encourage pregnant women to assess antenatal care facilities and to improve comprehensive emergency obstetrics services across the secondary health facilities. Furthermore, a multidisciplinary approach in the management of cases will ensure improve obstetrics outcomes.

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Conflicts of interest

There are no conflicts of interest.

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