



www.ajbrui.org

Afr. J. Biomed. Res. Vol. 23 (January, 2020); 45- 49

Research Article

A Ten- Year Review of Eclampsia at a Teaching Hospital in North Central Nigeria

Omonua K.I.¹, *Ayogu M.E.^{1,2} and Ayogu M.C.³

¹*Department of Obstetrics and Gynaecology, University of Abuja Teaching Hospital, Abuja, Nigeria*

²*Department of Obstetrics and Gynaecology, College of Health Sciences, University of Abuja . Abuja, Nigeria.*

³*African Cohort Studies (AFRICOS), Defence headquarters Medical Center, Asokoro, Abuja, Nigeria*

ABSTRACT

Worldwide, eclampsia remains one of the major causes of maternal and perinatal morbidity and mortality. Pre-eclampsia/eclampsia is a multisystem disease and despite extensive research, no definitive etiology has been identified. This disease therefore continues to pose a challenge in obstetric practice, especially in developing countries like ours. This study therefore set out to determine the prevalence, associated factors, and outcome of eclampsia at the University of Abuja Teaching Hospital, Abuja, Nigeria. It was a descriptive retrospective review of cases of eclampsia managed at the University of Abuja Teaching Hospital, Abuja over a 10-year period. The case notes of these women were retrieved and relevant data obtained included age, parity, booking status, type of eclampsia, gestational age at presentation, mode of delivery, maternal and perinatal outcome variables. Data was analysed using the statistical package for social sciences (SPSS Inc, Chicago) version 20 and outcome variables represented in simple percentages. Of the 22,945 deliveries conducted during that period, 257 cases of eclampsia were managed, putting the prevalence of eclampsia at 1.12%. Of these, 90.5% were unbooked, 67.6% were primigravidae and 88.2% were below 30years of age. Antepartum eclampsia was the commonest form, occurring in 67.6% of the patients. Caesarean section was the mode of delivery in 82.2% of cases. Maternal and perinatal mortality were 4.6% and 11.1% respectively. In conclusion, eclampsia is a major cause of maternal and perinatal morbidity and mortality. Interventions suggested include widespread health education on the need for patients to have antenatal care.

Keywords: *Eclampsia, Maternal and perinatal outcome, Abuja, Nigeria*

*Author for correspondence: *E-mail: kateodogwu@yahoo.com; Tel. +2347034665935*

Received: January 2019; Accepted: December, 2019

Abstracted by:

Bioline International, African Journals online (AJOL), Index Copernicus, African Index Medicus (WHO), Excerpta medica (EMBASE), CAB Abstracts, SCOPUS, Global Health Abstracts, Asian Science Index, Index Veterinarius

INTRODUCTION

The International Society for the Study of Hypertension in Pregnancy (ISSHP) defines eclampsia as ‘the occurrence of new-onset, generalized, tonic-clonic convulsions or coma in a woman with preeclampsia during pregnancy, labour or within 7 days of delivery and not caused by epilepsy or other convulsive disorders’ (Oshiomoghe *et al* 2005). It is termed atypical eclampsia when convulsion occur after seven days of delivery or in absence of hypertension(Oshiomoghe *et al* 2005 and Pallab *et al* 2011).

It remains one of the leading causes of maternal and perinatal morbidity and mortality throughout the world, especially in developing countries (Oshiomoghe *et al* 2005, Fugate *et al* 2007, Ola *et al* 2004, Duley 2009, Elhassan *et al* 2009, Nwagha *et al* 2010, Onah *et al* 2005 and Ugwu *et al*

2011). Worldwide, studies show that maternal mortality from eclampsia varies from 1.8% in the UK to 6.1% in developing countries. The prevalence of stillbirths and neonatal deaths in mothers who suffered eclampsia was 22.2/1000 and 34.1/1000 respectively in the UK with a higher incidence in developing countries(Pallab *et al* 2011) . The prevalence of eclampsia in our environment varies. A prevalence rate of 1.66% was reported in Lagos (Akinola *et al* 2008) and in Enugu prevalence of 0.44% was reported (Okafor *et al* 2011). In developed countries, its prevalence ranges from 0.02 to 0.08% (Chidi *et al* 2017).

Pre-eclampsia is a multisystem disease and despite extensive research, no definitive etiology has been identified(Fugate *et al* 2007, Ugwu *et al* 2011 and Onuh *et al* 2004). The pathogenesis of eclamptic seizure is also poorly understood (Akinkgbe *et al* 1978 and Odum 1999). Possible

causes of seizures include platelets thrombi, hypoxia due to localized vasoconstriction and foci of haemorrhage in the cortex (Oshiomoghe *et al* 2005). There are also suggestions that it could be attributed to acute rise in blood pressure leading to loss of cerebral blood flow autoregulation and hyperperfusion of the brain, leading to vasogenic edema formation and subsequent seizure (Johnson 2015). There is a poor correlation between occurrence of seizures and severity of hypertension, making it hard to predict which pre-eclamptic woman may go on to convulse. Seizure may therefore occur in patients with only mild hypertension (Oshiomoghe *et al* 2005).

The present management of eclampsia aims to stop the convulsions and prevent recurrence, control the blood pressure, correct fluid and electrolyte imbalance and deliver the baby in the most expeditious route (Ola *et al* 2004 and Chidi *et al* 2017). The anticonvulsants and antihypertensive therapy should protect the woman and the fetus from deleterious effects of convulsion and should not expose either to additional risks from the therapy. Currently, Magnesium Sulphate is the recommended drug of choice for the prevention and control of eclamptic fits (Nwagha *et al* 2010, Ekele 2009, Duley *et al* 2003 and Eclampsia Trial Collaborative group 1995).

The aim of this study was to determine the prevalence, associated factors, and outcome of eclampsia at the University of Abuja Teaching Hospital, with a view to making recommendations aimed at reducing the occurrence and improving the management outcome of this preventable killer disease.

MATERIALS AND METHODS

Study location

The University of Abuja Teaching Hospital is one of the tertiary hospitals located within the Federal Capital Territory (FCT) Abuja and receives patients from within the FCT and the surrounding States of Kogi, Nassarawa, Niger and Kaduna States.

Study design

The case files of all the patients managed for eclampsia at the University of Abuja Teaching Hospital from January 1, 2008 to December 31, 2017 were reviewed. There were 22,945 deliveries during the period and 257 cases of eclampsia were seen. However, two hundred and thirty-eight (238) cases were available for analysis giving a retrieval rate of 92.6%.

Methods

With the aid of a structured proformas, data obtained included age, parity, booking status, type of eclampsia, gestational age at presentation, mode of delivery, drug therapy and maternal and perinatal. The diagnosis of eclampsia was made based on the occurrence of generalized convulsions associated with a diagnosis of pre-eclampsia during pregnancy, labour or within 7 days of delivery after excluding other causes of convulsion. Management of cases were by the hospital protocol.

The term 'unbooked patient' refers to patients who either did not register for antenatal care or were registered with other primary or secondary healthcare facilities but subsequently

transferred to our hospital after they had convulsed. Social class was determined based on the woman's educational status and her husband's occupation. Occupational social class was classified as: I (Professionals (e.g. doctors, lawyers, senior business executives), II (Other professionals (e.g. lecturers, nurses, teachers), III (Skilled non-manual workers (e.g. Secretarial and clerical staff, skilled technicians), IV (Semi-skilled workers (e.g. machine operators, farm workers) and V (Unskilled workers (e.g. labourers, cleaners, domestic workers, petty traders).

Data was analyzed using the statistical package for social sciences (SPSS Inc, Chicago) version 20 and outcome variables represented in simple proportions.

RESULTS

There were 22,945 deliveries during the period and 257 cases of eclampsia were managed. This put the prevalence of eclampsia at 1.12%. Table 1 shows the clinical characteristics of the patients. The age of the patients ranged from 15 to 41 years with a mean age of 23.7 years. Eclampsia was more common in the younger age group with 88.2% of the cases occurring below the age of 30 years. The highest frequency of occurrence 79(33.2%), was in the 25-29 year age group and 67.6% of all the cases were primigravidae. Most of the patients (90.5%) involved were unbooked while 78.2% of the patients were of a low social class.

Table 1:

Clinical characteristics of Patients with Eclampsia at UATH Abuja (n=238).

Characteristic	Frequency(n)	Percentage (%)
Age range		
15-19	57	23.9
20-24	74	31.1
25-29	79	33.2
30-34	24	10.1
35-39	3	1.3
≥ 40	1	0.4
Parity		
0	161	67.6
1	44	18.5
2	12	5.0
3	8	3.4
4	6	2.5
≥ 5	7	2.9
Booking status		
Booked	23	9.5
Unbooked	215	90.5
Social Class		
I	6	2.5
II	14	5.9
III	32	13.4
IV	72	30.3
V	114	47.9

Table 2 shows the time of occurrence of fits in relation to pregnancy. It reveals that antepartum eclampsia was the commonest form, occurring in 67.6% of patients. Eight percent of the cases of had postpartum eclampsia.

Table 2:
Types of Eclampsia managed at UATH, Abuja (n=238).

Type	Frequency(n)	Percentage (%)
Antepartum	161	67.6
Intrapartum	58	24.4
Postpartum	19	8.0

Table 3:
Interval between first convulsion and arrival in hospital of women with eclampsia at UATH, Abuja (n =238)

Interval (Hours)	Frequency(n)	Percentage (%)
<6 hours	121	50.8
7 – 12	81	34.0
13 – 24	23	9.7
>24	13	5.5

Table 3 shows Interval between first convulsion and arrival in hospital. It reveals that about half (50.8%) of the patients presented within 6 hours of having their first convulsion while 5.5% presented beyond 24 hours.

Table 4:
The mode of delivery of women with eclampsia at UATH, Abuja (n=219)

Mode of delivery	Frequency(n)	Percentage (%)
Caesarean section	180	82.2
Spontaneous vaginal delivery	28	12.8
Vacuum	6	2.7
Forceps	4	1.8
Undelivered	1	0.5

One hundred and eighty (82.2%) of the patients had emergency caesarean section mainly due to unfavourable cervix at presentation, 28 (12.8%) of the patients had spontaneous vaginal delivery, while only 10(4.5%) of them had second stage of labour assisted with either forceps or vacuum delivery. One patient died undelivered. Management of 71(29.8%) of the patients was in the ICU while others were managed in the high dependency unit of the labour ward.

Table 5:
Maternal complications of eclamptic managed at UATH, Abuja

Maternal Complication	Frequency(n)	Percentage (%)
Acute renal failure	18	7.6
Puerperal sepsis	12	5.0
Aspiration pneumonitis	5	2.1
Pulmonary oedema	7	2.9
Cerebrovascular accident	8	2.4
Congestive cardiac failure	5	2.1
DIC	5	2.1
Maternal mortality	11	4.6

DIC-Disseminated intravascular coagulopathy

The maternal complications associated with eclampsia are shown in table 5. Acute renal failure was the most frequently occurring complication seen in 18(7.6%) of cases. This was followed by puerperal sepsis in 12(5%) of cases and death in 11(4.6%) of cases. The case fatality rate was 4.6%. Cause of death was Acute Renal Failure in five (45.5%) cases, puerperal sepsis in 2(18.2%) cases, cerebro-vascular accident

in another 2(18.2%) cases and DIC in 1(9.1%) patient. Antepartum eclampsia was responsible for the 8 cases of the death and the remaining 3 were due to intrapartum eclampsia. None with postpartum eclampsia died.

Table 6:
Fetal complications of eclamptics managed at UATH, Abuja

Fetal complication	Frequency(n)	Percentage(%)
Prematurity	60	24.0
Birth asphyxia	31	12.3
Neonatal Sepsis	15	6.0
Stillbirth	14	5.6
Early neonatal death	14	5.6

A total number of 252 babies including 10 sets of twins and 2 sets of triplets were delivered within the period. Prematurity was the commonest fetal complication and it occurred in 60(24.0%) cases. This was followed by birth asphyxia and neonatal sepsis in 31(12.3%) and 15(6%) of cases. Twenty-eight babies died within the perinatal period. Ten of these occurred due to prematurity following deliveries before 34 weeks of gestation (Table 6).

DISCUSSION

The prevalence of eclampsia in our study was 1.0%. The figures for eclampsia from various parts of the country vary as similar figures were reported in some parts of the North (Jido 2012), while other parts reported figures as high as 4.29-9.42% (Kullima *et al* 2009, Tukur *et al* 2007 and Ekele *et al* 2007). A previous study in our center reported a rate of 1.3% (Agida *et al* 2010) while in the eastern part of Nigeria, a prevalence rate of 1.57% was recorded (Eke *et al* 2011). Overall however, these figures are higher than figures from the developed world where there is higher attendance of antenatal clinics and where special management protocols have been employed (Duley 2009 and Liu *et al* 2011). The lack of ANC attendance in developing countries like ours is clearly reflected in this study where 92.5% of patients were unbooked.

The age and parity distribution of the cases were similar to reports from (Tukur *et al* 2007, Ekele *et al* 2007, El-Nafaty *et al* 2004, Dhananjay *et al* 2009, Okafor *et al* 2008 and Adetoro 1990). The peak incidence was found in primigravidae and this is similar to what was reported in other studies (Dhananjay *et al* 2009, Okafor *et al* 2008 and Adetoro 1990). Also, 78.2% of patients who had eclampsia were either from low socio-economic group or of low educational status. This is similar to the work done in Lagos, Western Nigeria (Akinola *et al* 2008) and further adds to the evidence that these factors are risk factors for eclampsia.

Various reasons have been proffered for the late arrival of unbooked emergencies. These ranged from telecommunication barriers, transportation, social, cultural, financial and illiteracy (Agida *et al* 2010). This draws special attention to the need for women education so that they recognize the importance of antenatal care and safety of hospital delivery, thus reducing the incidence and severity of this problem and associated maternal and perinatal morbidity and mortality.

This study shows that about 67.6% of the cases were antepartum eclampsia followed by intrapartum eclampsia. This is in agreement with reports from other centers including earlier findings in this centre (Kullima *et al* 2009, Agida *et al* 2010 and Eke *et al* 2011). However, it differs from findings in developed countries where postpartum eclampsia tends to be more common (Chidi *et al* 2017). This has been ascribed to improvement in prenatal care, earlier detection of pre-eclampsia and prophylactic use of magnesium sulphate in advanced countries (Agida *et al* 2010). About 72.2% of maternal morbidity and mortality and over 70% of perinatal morbidity and mortality were associated with antepartum eclampsia. This agrees with other reports that eclampsia which occurs antenatally carries more complications than when the condition develops in the intrapartum or postpartum period (Akinola *et al* 2008 and Dhananjay *et al* 2009). This could be attributed to relatively longer duration or possibly repeated episodes of convulsion from the onset of the first fit that often increased the risk of mortality.

The fact that 85% of postpartum eclampsia occurred within 12 hours of delivery underscores need for vigilance and close monitoring of patients in the immediate postpartum period, especially in those with features of pre-eclampsia (Abha *et al* 2017). The deliveries of all the patients with postpartum eclampsia were either at home or maternity home.

This review showed that 82.2% of the patients were delivered by an emergency caesarean section. This finding is in contrast to the report by Ola *et al* which recorded more vaginal deliveries than caesarean section (Ola *et al* 2004). The relatively high rate of caesarean section may be due to the high number of antepartum presentations, many of whom at presentation would have an unfavourable cervix and other confounding obstetric variables (Chidi *et al* 2017 and Johnson 2015). With a favourable cervix, vaginal delivery is the favoured mode of delivery unless there are obstetric contraindications to vaginal delivery in which caesarean section is recommended. If the patient is planned for vaginal delivery, the second stage of labour should be assisted in order to avoid the rise in maternal blood pressure with each uterine contraction and bearing down effort (Akinola *et al* 2008).

The case fatality rate of eclampsia also varies across the country and reasons for this is not very clear but may be connected to the differences in socio demographic profile of patients studied. Consequently the findings in our study was comparable to findings from studies carried out in Western and Eastern Nigeria (Akinola *et al* 2008 and Eke *et al* 2011) but less than reports from Northern Nigeria (Tukur *et al* 2007 and El-Nafaty *et al* 2004). All the deaths were recorded in unbooked patients and 8(72.2%) amongst primigravidae. This was not surprising because the reported incidences of eclampsia is much higher in this group of patients. Eclampsia is usually part of a multisystem disorder and the risk of maternal complications increases with repeated fits before presentation.⁴

Prematurity was the commonest neonatal complication, occurring in 24.0% of cases. Other complications which are similar to those of other series (Adetoro *et al* 1990) include birth asphyxia, which occurred in 12.3% of cases and neonatal sepsis (6.0%). There were 28 perinatal deaths in this study with 14 fetal deaths occurring at the time of admission of the

patients including the baby of a woman that died undelivered and 14 early neonatal deaths. This is similar to the reports from the Lagos study (Akinola *et al* 2008). The poor fetal outcome in eclampsia is sequel to late presentation to the health facility. All 7 (2.9%) of the patients that presented after 24 hours of onset of convulsion had still birth. This is suggested to be due to poor placental perfusion with reduced availability of oxygen to the fetus and abruption placentae (Chidi *et al* 2017).

This study confirms that eclampsia is still a major cause of maternal and perinatal mortality in our environment especially among unbooked patients. Economic empowerment of women, public awareness on the need for early antenatal booking and adequate training of health care providers on how to recognize high risk patients are suggested intervention measures. Also, use of magnesium sulphate as an anticonvulsant, use of antihypertensives and early referrals will go a long way in reducing the incidence of eclampsia.

Acknowledgments

We thank the staff of the Departments of Medical Health Information and Obstetrics and Gynaecology of the University of Abuja Teaching Hospital, Abuja for their support during the process of folder retrieval, data extraction and data analysis.

REFERENCES

- Adetoro OO (1990):** The pattern of eclampsia at the University of Ilorin Teaching Hospital, Ilorin, Nigeria. *Int. J. Gynaecol. Obstet*; 31: 221–6.
- Agida ET, Adeka BI, Jibril KA (2010):** Pregnancy outcome in eclamptics at the University of Abuja Teaching Hospital, Gwagwalada, Abuja: A 3-year review. *Niger J Clin Pract*; 13:394-8.
- Akinkugbe A, Coker OO (1978):** Mortality in eclampsia in relation to treatment modalities, a 10 year review. In: *Pregnancy hypertension. Proceedings of the first congress of International Society for the study of hypertension in Pregnancy. Dublin 27 – 29th September.*
- Akinola O, Fabamiwo A, Gbadegesun A, et al (2008):** Improving the clinical outcome in cases of eclampsia. The experience at Lagos State University Teaching Hospital Ikeja. *The internet journal of third world medicine*; 6 (2):1-29.
- Chidi OUE, Ukaegbe IC, Okechukwu BA, et al (2017):** Eclampsia in Rural Nigeria: The Unmitigating Catastrophe. *Ann Afr Med*; 16(4): 175-80
- Dhananjay BS, Dayanada G, Sendikumar D et al (2009):** Study of factors affecting perinatal mortality in Eclampsia. *JPBS*; 22(2): 2-5.
- Duley L (2009):** The global impact of pre-eclampsia and eclampsia. *Semin Perinatol*; 33:130-7.
- Duley L, Gülmezoglu AM, Henderson-Smart DJ (2003):** ‘Magnesium sulphate and other anticonvulsants for women with pre-eclampsia’, *Cochrane Database of Systematic Reviews, Issue 2. Art. 2003a ,No.: CD000025*
- Eclampsia Trial Collaborative Group (1995):** Which anticonvulsant for women with eclampsia? Evidence from the Collaborative Eclampsia Trial. *Lancet*; 345:1455-63.
- Eke AC, Ezebialulu Okafor (2011):** Presentation and outcome of Eclampsia at a Tertiary Centre in South East Nigeria: a 6-year review. *Hypertens Pregnancy*;30(2):125.
- Ekele BA (2009):** Use of Magnesium Sulphate to manage Pre-eclampsia and Eclampsia in Nigeria: Overcoming the odds. *Annals of African Medicine*; 8(2): 73-5.
- Ekele BA, Bello SO, Adamu AN (2007):** Clusters of eclampsia in a Nigerian Teaching Hospital. *Int. J Gynaecol Obstet*;96: 62-6

- Elhassan EM, Mirghani OA, Adam I (2009): High maternal mortality and stillbirth in the Wad Medani Hospital, Central Sudan, 2003-2007. *Trop Doct*; 39:238-9.
- El- Nafaty AU, Melah GS, Massa AA et al (2004):** The analysis of Eclamptics morbidity and mortality in the Specialist Hospital Gombe, Nigeria. *J Obstet Gynaecol*; 24:142-7
- Fugate S.R, Chow G.E(2005):** Eclampsia. Available online.http://www.emedicine.com/med/topic_63.htm. Accessed 10th November 2018
- Ikechebelu JI, Okoli CC (2002):** Review of eclampsia at the Nnamdi Azikiwe University Teaching Hospital, Nnewi. *J Obstet Gynaecol*; 22: 287-90.
- Jido TA (2012):** [Ecalmpsia: maternal and fetal outcome](#). *Afr Health Sci*;12(2):148-52
- Johnson AC (2015):** "Mechanism of Seizure during Pregnancy and Preeclampsia". Graduate College Dissertation and Theses; Paper 336.
- Kullima AA, Kawuwa MB, Audu BM et al (2009):** A 5-year review of maternal mortality associated with eclampsia in a Tertiary Institution in Northern Nigeria. *Ann Afr Med*; 8:81-4.
- Liu S, Joseph KS, Liston RM *et al* (2011): Maternal Health Study Group of Canadian Perinatal Surveillance System. *Obstet Gynaecol*.2011; 118 (5):987.
- Nwagha UI, Nwachukwu D, Dim C et al (2010):** Maternal mortality trend in South East Nigeria: less than a decade to the millennium developmental goals. *J Womens Health (Larchmt)*; 19:323-7.
- Odum CV (1999):** Eclampsia: An analysis of 845 cases treated in the Lagos University Teaching Hospital, Nigeria over a 20-year period. *J. Obstet. Gynaecol. East central Africa*; 9: 16-9.
- Okafor UV, Efezie RE (2008): Critical Care Management of of Eclamptics: Challenges in African Setting *Tropical doct*; 38 (1):11-3.
- Okafor UV, Ezugwu HU (2011):** Caesarean delivery in pre-eclampsia and eclampsia and seasonal variation in a tropical rain forest belt. *J postgrad Med*; 56:21-3.
- Ola RE, Odeneye OT, Abudu OO (2004):** Eclampsia: A randomized double blind trial of magnesium sulphate and Diazepam in Lagos. Nigeria *Tropic J Obstet Gynaecol*; 21(2): 142 – 7.
- Onah HE, Okaro JM, Umeh U et al (2005):** Maternal mortality in health institutions emergency obstetric care facilities in Enugu State, Nigeria. *J Obstet Gynaecol*; 25:569-74
- Onuh SO, Aisien AO (2004):** Maternal and fetal outcome in eclamptic patients in Benin City, Nigeria. *J Obstet Gynaecol*; 24:765-68.
- Oshiomoghe KO, Munir-deen AI, Peter AA et al (2005):** Eclampsia : a global problem. *Sexual Health Matters*; 26(2): 1-49,
- Pallab R. Sonela B, Dilip PS et al (2011):** Recent Advances in Management of Pre-elampsia. *BJMP*; 4(3): a433.
- Tukur J, Umar BA, Rabi'u A (2007): Pattern of eclampsia in a tertiary health facility situated in a semi-rural town in Northern Nigeria. *Ann Afr Med*; 6:164-7.
- Ugwu E, Dim CC, Okonkwo CD et al (2011):** Maternal and perinatal outcome of severe pre-eclampsia in Enugu, Nigeria after introduction of Magnesium sulfate. *Niger J Clin Pract*;14: 418-21.