Original Article

DOI: 10.7860/JCDR/2016/21078.8499

The Feto-Maternal Outcome of Preeclampsia with Severe Features and Eclampsia in Abakaliki, South-East Nigeria

Obstetrics and Gynaecology Section

LEONARD OGBONNA AJAH[1], NELSON CHUKWUDI OZONU[2], PAUL OLISAEMEKA EZEONU[3], LUCKY OSAHENI LAWANI[4], JOHNSON AKUMA OBUNA[5], EMEKA OGAH ONWE[6]

ABSTRACT

Introduction: Preeclampsia with severe features and eclampsia has remained a serious challenge in tropical obstetric practice. It is a major cause of maternal and perinatal morbidity and mortality in Nigeria.

Aim: This study was aimed at determining the prevalence, the risk factors and feto-maternal outcome of preeclampsia with severe features and eclampsia in Abakaliki.

Materials and Methods: This was a 5-year retrospective case-control study of preeclampsia with severe features and eclampsia at the Federal Teaching Hospital, Abakaliki. Case notes of preeclampsia with severe features and eclampsia between January 2008 and December, 2012 were retrieved. Similarly, the case file of next parturient that did not have any medical disease was included in the study. The cases and controls were selected at the ratio of 1:1. The data assessed were information on maternal age, parity, booking status, diagnosis, mode of delivery, complications, maternal and perinatal outcomes.

Results: A total of 13,750 deliveries were recorded within the study period. The prevalence of preeclampsia with severe features and eclampsia were 136(0.99%) and 104(0.76%) respectively. Preeclampsia with severe features and eclampsia was more common among adolescents, rural dwellers, poorly educated, unemployed, unbooked and nulliparous women. It was more associated with preterm delivery, caesarean section, low birth weight babies, maternal and perinatal mortality.

Conclusion: Preeclampsia with severe features and eclampsia is common among the adolescents, unbooked, rural, and low socio-economic group of women in this study. It has also contributed to high maternal and perinatal morbidity and mortality. There is need for policy makers to formulate policies toward female education, women empowerment and provision of social amenities in rural areas. These policies may reverse the current ugly trend in this environment.

Keywords: Hypertension, Obstetric practice, Proteinuria

INTRODUCTION

Preeclampsia is a multi systemic disorder characterized by hypertension and new-onset proteinuria which develops after the 20th week of pregnancy [1,2]. However, even when there is no proteinuria which meets or exceeds the diagnostic threshold, any of the following conditions can be diagnostic: new-onset thrombocytopenia, impaired liver function, renal insufficiency, pulmonary oedema, or visual or cerebral disturbances [2].

Preeclampsia with severe features can occur in any of the following conditions: the systolic blood pressure of at least 160 mm Hg, or diastolic blood pressure of at least 110 mmHg when measured on two occasions at least 4 hours apart while the patient is on bed rest. The other conditions comprise thrombocytopenia (platelet count less than 100,000/microliter), impaired liver function indicated by abnormally elevated blood concentrations of liver enzymes, severe persistent epigastric or right upper quadrant pain that is not responsive to medication and not accounted for by alternative diagnoses, or both, progressive renal insufficiency (serum creatinine concentration greater than 1.1mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease), pulmonary oedema and new-onset cerebral or visual disturbances [2].

Eclampsia is one of the serious obstetric emergencies seen in our sub-region and it is defined as new onset of grand mal seizure activity and/or unexplained coma during pregnancy or postpartum in a woman with signs or symptoms of preeclampsia [2-4]. It often presents with few warning signs and might occur in a patient with previously mild disease and therefore predicting its occurrence is as difficult as predicting the timing [5]. The incidence of preeclampsia/eclampsia varies from one part of the world to another. The incidence is low in the western countries where there is excellent antenatal care [5,6]. The incidence however remains high in the developing countries like Nigeria, because of poor antenatal care attendance especially in the rural areas [5]. The incidences of 0.42%, 1.32% and 1.66% were reported in Zaria, Benin and Lagos, respectively [5,7,8]. Studies carried out in Ibadan and Zaria showed that the incidence was higher among primigravidae and young women less than 25 years of age [5,9]. It has also been reported as a leading cause of maternal mortality in Kano, Sokoto, Jos and other Nigerian cities [10-12]. The fetal complications of preeclampsia with severe features and eclampsia comprise placental abruption, intrauterine growth restriction, premature delivery and intrauterine fetal death [13]. Moreso, the maternal complications of preeclampsia with severe features and eclampsia consist of Haemolysis, Elevated Liver enzymes, Low platelet count (HELLP) syndrome, Disseminated Intravascular Coagulation (DIC), acute kidney injury, cerebrovascular hemorrhage, cortical blindness, focal motor deficit and adult respiratory distress syndrome [13-15].

Abakaliki is the capital of Ebonyi State, South-East Nigeria. This state has a preponderance of poor rural women who are subjected to early marriage, teenage pregnancy, ignorance, poor health-seeking behaviour and high parity. These low socio-economic risk factors have been shown to be common among preeclamptics with severe features and eclamptics [16,17]. Similarly, these low socio-economic risk factors are associated with the high maternal mortality ratio previously reported in this environment [18].

Therefore, the finding from this study may help policy makers in formulating programmes aimed at reversing this ugly trend. It was based on this that the study on the incidence and feto-maternal outcome of preeclampsia with severe features and eclampsia in Abakaliki, South-East Nigeria, was embarked upon. This study was aimed at determining the prevalence, the risk factors and feto-maternal outcome of preeclampsia with severe features and eclampsia in this environment.

MATERIALS AND METHODS

A 5-year retrospective case-control study of preeclampsia with severe features and eclampsia at the Federal Teaching Hospital, Abakaliki, from 1st January 2008 to 31st December 2012, was undertaken. Labour ward and Emergency unit records were used to extract file numbers of patients with preeclampsia with severe features and eclampsia and their case notes were retrieved from the medical records department of the hospital. Similarly, the file number and case note of the next obstetric patient after each preeclampsia with severe features and/ or eclampsia was consecutively retrieved and used as control. A proforma was used to collect information on maternal age, parity, booking status, diagnosis, mode of delivery, complications, maternal and perinatal outcomes. All the case files of preeclampsia with severe features and eclampsia were included in the study. Similarly, the case file of next parturient that did not have any medical disease was included in the study. The cases and controls were selected at the ratio of 1:1. The case files of the controls excluded were those of parturients who suffered from medical diseases like anaemia, haemoglobinopathy, diabetes mellitus, hypertensive disorders, mental illness and renal disease.

STATISTICAL ANALYSIS

The statistical analysis was done using the Statistical Package for Social Sciences version 17.0 software (SPSS Inc., Chicago IL, USA). The chi-square test and t-test were used for the discrete and continuous variables respectively. p-value ≤ 0.05 was considered to be statistically significant.

Ethical clearance for the study was obtained from the Ethics Committee of the Federal Teaching Hospital, Abakaliki.

RESULTS

A total of 13,750 deliveries were recorded within the study period, among which 240 patients were found to have preeclampsia with severe features and eclampsia. There were 136 and 104 preeclampsia with severe features and eclampsia cases respectively. So, the prevalence of preeclampsia with severe features and eclampsia recorded in this study were 0.99% and 0.76% respectively. Out of the 240 case notes of the preeclampsia with severe features and eclampsia, only 207 case notes were retrieved giving the retrieval rate of 86.3%. These 207 case notes comprised 118 and 89 preeclampsia with severe features and eclampsia, respectively. The analysis was therefore solely based on the number of the retrieved case files.

[Table/Fig-1] shows the socio-demographic variables of the patients. Preeclampsia with severe features and eclampsia was significantly commoner among adolescents, rural dwellers, poorly educated, unemployed, unbooked and nulliparous women when compared with controls. The maternal and perinatal characteristics and complications are summarized in [Table/Fig-2]. Preeclampsia with severe features and eclampsia was significantly common among parturients with preterm delivery, caesarean section, low birth weight, maternal and perinatal mortality. [Table/Fig-3] contains the various types of eclampsia. It showed that antepartum eclampsia was the most common type recorded within the study period.

Sociodemographic data	Cases(%). N=207	Controls(%). N=207	p-value
Age (years)			
<20	102(49.3)	15(7.2)	<0.0001*
≥20	105(50.7)	192(92.8)	
Residential address			
Rural	181(87.4)	45(21.7)	<0.0001*
Urban	26(12.6)	162(78.3)	
Educational Qualification			
≤ Primary Education	145(70.0)	54(26.1)	<0.0001*
≥Secondary Education	62(30.0)	153(73.9)	
Booking status			
Booked	35(16.9)	175(84.5)	<0.0001*
Unbooked	172(83.1)	32(15.6)	
Parity			
0	123(59.4)	26(12.6)	<0.0001*
≥1	84(40.6)	181(87.4)	
Occupation			
Unemployed	126	39	<0.0001*
Employed	81	168	
Form of marriage			
Monogamy	192	199	0.20
Polygamy	15	8	

[Table/Fig-1]: The sociodemographic variables of the patients.
*=Statistically significant

Characteristics	Cases(%). N=207	Controls(%). N=207	p-value
Mean gestational age of delivery (weeks)	34±2	38±1	<0.0001*
Mode of delivery			
Vaginal delivery	100(48.3)	185(89.4)	<0.0001*
Caesarean section	107(51.7)	22(10.6)	
Birth weight (kg)			
<2.5	93(44.9)	2(1.0)	<0.0001*
≥2.5	114(55.1)	205(99.0)	
Maternal mortality rate			
Yes	25(12.1)	2(1)	<0.0001*
No	182(87.9)	205(99.0)	
Causes of maternal mortality			
Aspiration pneumonitis /respiratory distress	12(5.8)	0(0)	<0.0001*
Acute renal failure	5(2.4)	0(0)	
Abruptio placentae	1(0.5)	0(0)	
Disseminated Intravascular Coagulopathy (DIC)	5(2.4)	1(0.5)	
Postpartum Haemorrage	0(0)	1(0.5)	
None	2(1)	0(0)	
	182(87.9)	205(99.0)	
Perinatal outcome			
Alive	160(77.3)	199(96.1)	<0.0001*
Death	47(22.7)	8(3.9)	

[Table/Fig-2]: Maternal and perinatal characteristics and complications.
*=Statistically significant

Types of Eclampsia	N=89	%
Antepartum	41	46.1
Intrapartum	28	31.5
Postpartum	20	22.5

[Table/Fig-3]: Types of eclampsia.

DISCUSSION

The prevalence of eclampsia of 0.76% recorded in this study was found to be higher than 0.42% and 0.44% previously reported in Kaduna and Enugu, respectively [5,19]. However, it was lower than 1.66%, 2.52% and 4.4% reported in Lagos, Benin and Sokoto respectively [7,8,11]. This study showed that low maternal socio-economic status was more common among patients with preeclampsia with severe features and eclampsia and it was similar to previous reports in other centres [17,20]. This may be due to the social deprivation of this group of women thereby increasing their risk of ignorance and poor-health seeking behaviour. This poor health–seeking behaviour may have been responsible for 83.1% of the patients being unbooked. The high unbooked status of these preeclamptics with severe features and eclamptics recorded in this study is similar to the previous reports in Irrua, Ibadan and Enugu, Nigeria [4,7,8].

More so, preeclampsia with severe features and eclampsia significantly found among adolescents in this study was similar to the report in Irrua [7]. However, this is contrary to the report in the developed world where severe preeclampsia with severe features and eclampsia is significantly commoner among women older than 40 years [1]. The reason may be because of higher rate of early marriage and teenage pregnancy in our environment when compared with the developed countries. This may further be explained by preeclampsia and eclampsia being more common among the blacks than the Caucasians [21]. Nulliparity strongly associated with preeclampsia with severe features and eclampsia in this study is supported by previous reports in other centres [7,8,22]. Although the proportion of women involved in polygamous marriage in this study was small, the absence of any strong association between preeclampsia with severe features and eclampsia and polygamy was similar to the report in Northern Nigeria [23].

The higher risk of preterm delivery among the preeclamptics with severe features and eclamptics may have been due to the interventional care and early delivery usually given to these patients after stabilization in the study centre. The significantly higher proportion of preeclamptics with severe features and eclamptics being delivered through caesarean section when compared with the control may have been due to the emergency delivery approach usually required to avert further maternal and perinatal complications from this disease especially when the cervix is unfavourable. More so, the 51.69% of cases who were delivered through caesarean section was similar to the findings in Ibadan and Ethiopia [9,24]. The 44.9% low birth weight reported in this study is lower than 58.54% and 71.43% reported in Tanzania and India respectively [25,26]. The strong association between preeclampsia with severe features and eclampsia and low birth weight in this study may have been due to the interventional delivery being carried out, irrespective of the gestational age, especially on eclamptics to forestall further maternal and perinatal morbidity and mortality. It may also be due to intrauterine growth restriction commoner among the preeclamptics with severe features and eclamptics. Antepartum eclampsia accounting for 46.1% in this study is higher than 36.8% reported in Lagos but lower than 61.6%, 84% and 85% reported in Ethiopia, Enugu and Ibadan respectively [4,8,9,24].

The maternal mortality rate of 12.1% reported in this study was higher than 7.9%, 8% and 9% reported from Tanzania, India and Ibadan, Nigeria respectively [9,25,26]. It is however lower than 15.6% and 23% reported from Enugu and Irrua [4,7]. The causes of maternal mortality rate among the preeclamptics with severe features and eclamptics in this study were similar to the reports in Ibadan, Lagos and Sokoto [8,9,11]. The high maternal mortality in this study may not only be due to the complications from preeclampsia with severe features and eclampsia but the high caesarean section rate among the women with its consequences.

The 22.7% perinatal mortality rate in this study is higher than 10% reported from Ibadan, but lower than 29% and 40.9% reported from Ethiopia and Kaduna, Nigeria respectively [5,9,27]. The high perinatal mortality in this study may also be adduced to the high incidence of low birth weight among the preeclamptics with severe features and eclamptics in this study. The positive association between low birth weight and perinatal mortality has previously been reported in Bangladesh [28]. Furthermore, the significant association between preeclampsia with severe features and eclampsia and maternal/ perinatal mortality rates when compared with the controls in this study may be due to not only the disease and its complications but the capability of the hospital to manage some of these complications.

LIMITATION

The limitation of this study was the retrospective design in which all the confounding variables were not taken care of between the cases and the controls.

CONCLUSION

Preeclampsia with severe features and eclampsia was common among the adolescents, unbooked, rural, and low socio-economic group of women in this study. It has contributed to high maternal and perinatal morbidity and mortality in Nigeria. Therefore, there is need for policy makers to formulate policies toward female education, women empowerment and provision of social amenities especially in Nigerian rural areas. The healthcare centers have to be provided and equipped so that they will have the capacity to manage the complications due to preeclampsia with severe features and eclampsia. These salvage measures may reduce early marriage, teenage pregnancy, poverty, poor health-seeking behaviour among the patients and maternal and/or perinatal mortality from this disease.

REFERENCES

[1] Duley L. Pre-eclampsia and the hypertensive disorders of pregnancy. *Br Med Bull*. 2003;67:161-76.

[2] American College of Obstetricians and Gynecologists, Task Force on Hypertension in Pregnancy. Hypertension in pregnancy. Report of the American College of Obstetricians and Gynecologists' Task Force on Hypertension in Pregnancy. *Obstet Gynecol*. 2013;122:1122.

[3] Mattar F, Sibai BM. Eclampsia. VIII. Risk Factors for maternal morbidity. *Am J Obstet Gynecol*. 1990;163:1049-55.

[4] Ozumbia BC, Ibe AI. Eclampsia in Enugu, eastern Nigeria. *Acta Obstet Gynecol Scand*. 1993;72(3):189-92.

[5] Onwuhafua PI, Onwuhafua A, Adze J, Mairami Z. Eclampsia in Kaduna state of Nigeria. A proposal for better outcome. *Niger J Med*. 2001;10(2):81-84.

[6] Aidemir M, Bac B, Tacyildiz I, Yagmur Y, Keles C. Spontaneous Liver Haematoma and a Hepatic Rupture In HELLP Syndrome; a report of 2 cases. *Surg Today*. 2002;32(5):450-53.

[7] Okogbenin SA, Eigbefoh JO, Omorogbe F, Okogbo F, Okonta PI, Ohihoin AG. Eclampsia in Irrua specialist teaching hospital: a five-year review. *Niger J Clin Pract*. 2010;13(2):149-53.

[8] Akinola OI, Fabanwa AO, Gbagesin A, Ottun TA and Kusemiju OA. Improving the clinical outcome in cases of eclampsia: the experience at lagos state university teaching hospital, ikeja. *The Internet Journal of Third World Medicine*. 2008;6(2):2.

[9] Oladokun A, Okewole AI, Adewole IF, Babarinsa IA. Evaluation of cases of eclampsia in university college Hospital Ibadan over a 10 year period. *West Afr J Med*. 2000;19(3):92-94.

[10] Tukur J. The use of magnesium sulphate for the treatment of severe pre-eclampsia and eclampsia. *Ann Afr Med*. 2008;8:76-80.

[11] Airede LR, Ekele BA. Adolescent maternal mortality in Sokoto, Nigeria. *J Obstet Gynaecol*. 2003;23(2):163-65.

[12] Ujah IA, Asien OA, Aisien OA, Mutihir JT, Vanderjagt DJ, Glew RH, et al. Maternal mortality among adolescent women in Jos, North-Central, Nigeria. *J Obstet Gynaecol*. 2005;25(1):3-6.

[13] Chattopadhyay S, Das A, Pahari S. Fetomaternal Outcome in Severe Preeclamptic Women Undergoing Emergency Cesarean Section under Either General Or Spinal Anesthesia. *J Pregnancy*. 2014;2014:325098.

[14] Skjaerven R, Wilcox AJ, Klungsøyr K, Irgens LM, Vikse BE, Vatten LJ, et al. Cardiovascular mortality after pre-eclampsia in one child mothers: prospective, population based cohort study. *BM* 2012;345:e7677.

[15] Hypertension in pregnancy; NICE Clinical Guideline. August 2010.
[16] Urquia M, Glazier R, Gagnon A, Mortensen L, Nybo Andersen AM, Janevic T, et al. Disparities in preeclampsia and eclampsia among immigrant women giving birth in six industrialised countries. *BJOG*. 2014;121(12):1492-500.
[17] Silva LM, Coolman M, Steegers EA, Jaddoe VW, Moll HA, Hofman A, et al. Low socioeconomic status is a risk factor for preeclampsia: the Generation R Study. *J Hypertens*. 2008;26(6):1200-08.
[18] Ezegwui HU, Onoh RC, Ikeako LC, Onyebuchi AK, Umeora OU, Ezeonu PO, et al. Investigating maternal mortality in a public teaching hospital, abakaliki, ebonyi state, nigeria. *Annals of Medical and Health Sciences Research*. 2013;3(1):75–80.
[19] Okafor UV, Ezegwui HU. Cesarean delivery in preeclampsia and seasonal variation in a tropical rainforest belt. *J Postgrad Med*. 2010;56:21-3.
[20] Guerrier G, Oluyide B, Keramarou M, Grais R. Factors associated with severe preeclampsia and eclampsia in Jahun, Nigeria. *International Journal of Women's Health*. 2013;5:509–13.
[21] Breathett K, Muhlestein D, Foraker R, Gulati M. Differences in preeclampsia rates between african american and caucasian women: trends from the national hospital discharge survey. *J Womens Health* (Larchmt). 2014;23(11):886-93.
[22] Simon E, Caille A, Perrotin F, Giraudeau B. Mixing nulliparous and multiparous women in randomised controlled trials of preeclampsia prevention is debatable: evidence from a systematic review. *PLoS ONE*. 2013;8(6):e66677.
[23] Attahir A, Dikko AA, Sufiyan MB, Salihu A, Rabiu AM. Association between maternal socio-economic status, polygamy and risk of preeclampsia in rural areas of Northern Nigeria. *Journal of Family and Reproductive Health*. 2010;4(1):47-52.
[24] Abate MM, Lakew Z. Eclampsia. A 5 year retrospective review of 216 cases managed in 2 teaching hospitals in addis ababa. *Ethiop Med J*. 2006;44(1):27-31.
[25] Ndaboine EM, Kihunrwa A, Rumanyika R, Im HB, Massinde AN. Maternal and perinatal outcomes among eclamptic patients admitted to bugando medical centre, mwanza, tanzania. *Afr J Reprod Health*. 2012;16(1):35-41.
[26] Singhal SR, Deepika, Anshu, Nanda S. Maternal and perinatal outcome in severe pre-eclampsia and eclampsia. *Journal of South Asian Federation of Obstetrics and Gynecology*. 2009;1(3):25-28.
[27] Endeshaw G, Berhan Y. Perinatal outcome in women with hypertensive disorders of pregnancy: a retrospective cohort study. *International Scholarly Research Notices*. 2015;2015:1-8.
[28] Yasmin S, Osrin D, Paul E, Costello A. Neonatal mortality of low-birth weight infants in Bangladesh. *Bulletin of the World Health Organization*. 2001;79:608–14.

PARTICULARS OF CONTRIBUTORS:
1. Lecturer, Department of Obstetrics, Faculty of Medical Sciences, University of Nigeria, Enugu Campus.
2. Senior Registrar, Department of Obstetrics and Gynaecology, Federal Teaching Hospital, Abakaliki.
3. Associate Professor, Department of Obstetrics and Gynaecology, Ebonyi State University /Federal Teaching Hospital, Abakaliki.
4. Lecturer, Department of Obstetrics and Gynaecology, Ebonyi State University/ Federal Teaching Hospital, Abakaliki.
5. Senior Lecturer, Department of Obstetrics and Gynaecology, Ebonyi State University/Federal Teaching Hospital, Abakaliki.
6. Lecturer, Department of Paediatrics, Ebonyi State University/Federal TeachingHospital, Abakaliki.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Leonard Ogbonna Ajah,
Lecturer, Department of Obstetrics and Gynaecology, University of Nigeria, Enugu Campus.
E-mail: leookpanku@yahoo.com.

FINANCIAL OR OTHER COMPETING INTERESTS: None.

Date of Submission: **May 02, 2016**
Date of Peer Review: **Jun 20, 2016**
Date of Acceptance: **Aug 01, 2016**
Date of Publishing: **Sep 01, 2016**