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INCIDENCE AND MANAGEMENT OF PREECLAMPSIA AND ECLAMPSIA IN PREGNANT WOMEN IN A TERTIARY HEALTH CARE FACILITY

Odili VU, Mazai RO, Usifoh SF

[1]Department of Clinical Pharmacy and Pharmacy Practice, Faculty of Pharmacy, University of Benin
[2]Pharmacy Department, Federal Medical Centre, Keffi, Nasarawa

ABSTRACT

Hypertension is a common complication of pregnancy which contributes considerably to maternal and perinatal morbidity and mortality. The aim of this study was to determine the incidence and treatment interventions of preeclampsia and eclampsia in FMC Keffi. The study was a retrospective descriptive study conducted using patients' case files from Federal Medical Centre Keffi, Nasarawa State. A data collection form was designed to collect demographic data, laboratory results, medication and clinical outcome. A total of 78 cases (38 preeclampsia and 40 eclampsia) were identified out of 2472 deliveries in 2013. The incidence of preeclampsia and eclampsia in the facility which was highest among primigravidae was 1 in 67 (1.5%) and 1 in 63 (1.6%) respectively. The most common symptoms exhibited were convulsion, headache and oedema. The laboratory results yielded proteinuria, hematuria, and glucosuria. There was a statistically significant positive association between age and both systolic and diastolic blood pressure of the subjects. Pearson correlation (r) = 0.3295, (95% CI: 0.2070 to 0.4417 and 0.2074 (95% CI: 0.07811 to 0.3298). p< 0.01 respectively. Magnesium sulphate was administered to most patients either prophylactically or to control fits. Majority 45 (57.7%) of the women had a Caesarean delivery. Out of eighty-three babies, 47 (56.6%) had a birth weight less than 2.5kg. 5 (6.02%) of the babies had neonatal asphyxia while 12 (14.46%) died. The maternal case fatality was 5%. Preeclampsia and eclampsia still remain a major cause of maternal and perinatal morbidity and mortality in Federal Medical Centre Keffi. Interventions must focus on strategies that prevent the occurrence and facilitates timely management when it occurs.

KEYWORDS: *Eclampsia, Incidence, Management, Preeclampsia*

INTRODUCTION

Hypertension is a common medical complication of pregnancy it is a sign of an underlying pathology and it may be pre–existing or can appear for the first time during pregnancy. It contributes significantly to maternal and perinatal morbidity and mortality, hence proper identification and subsequent management play a significant role in the outcome for both mother and child. Complications of hypertension were found to be the third leading cause of pregnancy-related death after hemorrhage and embolism. [1].

Overall, 10 – 15% of maternal deaths are associated directly with preeclampsia and eclampsia in low and middle-income countries. Eclampsia is also associated with about 50,000 maternal deaths worldwide each year. The incidence is higher in developing countries than in developed countries [2].

In the setting where this study was undertaken, most pregnancies are unbooked with the women receiving no antenatal care whatsoever and often turning up at the hospital when they are in a bad state. This is because they ignore important signs and symptoms which indicate complications of pregnancy. There is no data on the incidence of

Corresponding author: vuodili@yahoo.com; +2348023432237

preeclampsia and eclampsia in the studied facility despite anecdotal reports that the incidence is high. This study is aimed at assessing the incidence of eclampsia per total deliveries, determining the peculiar factors that may lead to eclampsia in the study area and assess the current management strategies.

MATERIALS AND METHODS

DESIGN

The study was a retrospective descriptive study conducted using patients' case files from the Central Library and Obstetrics and Gynaecology Library of the Health Information Management Unit and the nursing records of the Post Natal Ward of Federal Medical Centre Keffi, Nasarawa State.

SETTING

Federal Medical Centre Keffi is a federal government owned tertiary health care institution with about 200 beds. It attained its status as a Federal Medical Centre in 2001 and offers tertiary health care services to residents of Nasarawa State and the surrounding areas.
Preeclampsia and eclampsia patients are admitted directly either through the antenatal clinic and patients who come to the Obstetric unit of the hospital either on referral from other hospitals or on their own and managed in the Labour and Postnatal wards.

POPULATION/SAMPLE

All available folder records of eclamptic patients, who were admitted in the Obstetric Unit from January 1, 2013, to December 30, 2013, were retrieved; relevant data were collected and analyzed. The data that could be ascertained from the nursing records were also collected for patients whose folders could not be accessed.

DATA COLLECTION INSTRUMENT

A data collection form was designed to collect data in line with the objectives of the study. These include patient's data such as age, sex, pregnancy and marital status, antenatal status, comorbidity, index (First-time visit) and last visit blood pressure. Other data collected include the level of education, occupation, complications, laboratory results, medication and clinical (maternal and neonatal) outcome.
Administrative approval was obtained from the management of the hospital and standard ethical procedure was adhered to with regards to confidentiality of patients' records.

Data analysis

Data gathered was entered into Microsoft Excel spreadsheet, thereafter it was exported into the Statistical Package for Social Sciences (SPSS version 14 Chicago IL. US) and analysed. Descriptive statistics of variables were reported as either frequency (percentages), or mean ± (standard deviation). Pearson correlation was done to assess the association between the age of the respondents with systolic and diastolic blood pressures. P values less than 0.05 were considered significant.

RESULTS

During the period of review, a total of 78 cases (38 preeclampsia and 40 eclampsia) were reported out of 2472 deliveries in 2013. Out of the 78 cases, only 67 had the complete information sought.

The incidence of preeclampsia and eclampsia in the facility was 1 in 67 (1.5%) and 1 in 63 (1.6%) respectively. The mean age of the pregnant women was 26.01 ± 5.9 (15-40 years), while the modal age range was 20-24 years with a frequency of 25 (32.1%), other age distributions are as shown in table 1. The mean duration of the index and last pregnancy for multiparous women was 2.44 ± 0.78 (1- 4years). The mean age of pregnancy at which preeclampsia or eclampsia occurred was 35.29 ± 3.47 weeks (26-42 weeks) and, the mean number of days after delivery that postpartum eclampsia occurred was 5.54 ± 7.14 days (0.21- 16 days). The incidence of preeclampsia /eclampsia was highest among the primigravidae followed by those on their second pregnancies (Table1). The women in this study were all married with 51 in monogamous marriages while 16 were in a polygamous setting. Most of the women were housewives while two of them were students.

Majority 56 (71.8%) of the respondents did not have any form of antenatal care, were eclamptic 40 (51.3%), of which 24 (60%) had antepartum eclampsia. Other feto-maternal variables are as depicted in Table 2.
Four women were known hypertensive patients, while five others had various comorbidities. The most common symptom exhibited was convulsion for those with eclampsia followed very closely by headache and then oedema in eclampsia and preeclampsia patients (Table 3).

Table 1: Socio- demographic variables

Variables	Frequency	Percentages
AGE n = 78		
≤ 19	8	10.26
20 – 24	25	32.05
25 – 29	23	29.49
30 – 34	12	15.38
≥ 35	10	12.82
PARITY n = 78		
Primip	39	50.0
G2	18	23.1
G3	4	5.1
G4	2	2.6
G5	3	3.8
G6	3	3.8
G7	1	1.3
G8	4	5.1
G9	3	3.8
G10	1	1.3
OCCUPATION n = 78		
Business	5	6.4
Civil Servant	2	2.6
Farmer	1	1.3
Hair Dresser	2	2.6
Housewife	50	64.1
Student	2	2.6
Tailor	2	2.6
Trader	3	3.8
Did not indicate	11	14.1

Table 2: Feto-maternal variables

Variable	Frequency	percentage
Antenatal status n= 78		
Booked	16	20.5
Unbooked	56	71.8
Booked elsewhere	3	3.8
Did not indicate	3	3.8
CLINICAL CONDITION n = 78		
Preeclampsia	38	48.7
Eclampsia	40	51.3
TYPE OF ECLAMPSIA n = 40		
Imminent Eclampsia	2	5.0
Antepartum Eclampsia	24	60.0
Intrapartum Eclampsia	9	22.5
Postpartum Eclampsia	5	12.5

Table 3: Medical history

Variable	Frequency	Percentage
COMORBIDITY n = 67		
Cardiac failure	1	1.5
Diabetes	1	1.5
Epilepsy	1	1.5
Retroviral disease	2	3.0
None	62	92.5
SYMPTOMS n = 67		
Convulsion	31	46.2
Headache	29	43.3
Oedema	25	37.3
Asymptomatic	16	23.9
Dizziness	13	19.4
Epigastric pain	4	5.9
Blurred vision	3	4.5
Vomiting	2	

The laboratory results yielded proteinuria in 52 (77.6%) patients, hematuria in 25 (37.3%) patients and glucosuria in 7 (10.4%) patients (Table 4).

Table 4: Laboratory results

Variable n = 67	Frequency
Protein	52
Glucose	7
Ketone	8
Blood	25
Bilirubin	3

Magnesium sulphate was administered to most patients 48 (71.6%) either prophylactically or to control fits. Hydralazine was also largely used 36 (53.7%) for acute control of blood pressure (Table 5)

Table 5: Medication profile

Variable	**Frequency**
DRUGS n = 67	
Magnesium sulphate	40
Diazepam	3
Magnesium sulphate + diazepam	8
Hydralazine	36
Labetolol	2
Nifedipine	53
Methyldopa	54
Moduretic	1

The majority 45 (57.7%) of the patients had a Caesarean delivery. One (1.28%) patient had acute renal failure and the total maternal deaths which occurred in the eclampsia group was two (case fatality rate of 5%). Five (6.02%) of the babies had neonatal asphyxia while 12 (14.46%) of the babies died (Table 5). The mean length of stay in the hospital was 6.94 ± 3.6 days, with a range (1 - 21days).

Two of the women did not have their baby at the study centre. The rest had 69 singleton deliveries and 7 twin deliveries giving a total of 83 babies, out of which 47 (56.6%) had a birth weight less than 2.5kg while 36 (43.4%) had a birth weight greater than 2.5kg.

There was statistically significant positive association between age and systolic and diastolic blood pressure of the subjects. Pearson correlation (r) = 0.3295, (95% CI: 0.2070 to 0.4417) and 0.2074, (95% CI: 0.07811 to 0.3298) P<0.01 respectively.

DISCUSSION

Preeclampsia and eclampsia are among the major causes of maternal and perinatal morbidity and mortality in sub-Saharan Africa and are said to be responsible for approximately 50,000 maternal deaths annually. [3]

The reported incidence of eclampsia varies from one geographic area of Nigeria to another. The incidence of eclampsia in the studied facility was estimated at 1.5%. This is lower than that reported for Shagamu (1.7%) and Oshogbo (2.1%) which are towns located in the south-west geopolitical zone of

Nigeria, (1.3%) but higher than the incidence in Benin City which is in the Middle Eastern part of the country. [4]

Table 6: Feto-maternal complications

Variable	Frequency	percentage
MODE OF DELIVERY n = 78	18	23.1
Spontaneous vaginal	4	5.1
delivery	45	57.7
Spontaneous vaginal	2	2.6
delivery at home	9	11.5
Caesarean section		
No delivery		
Did not indicate		
MATERNAL COMPLICATIONS n	1	1.5
= 67	1	1.5
Acute kidney	65	97.0
injury/death		
Death		
No complications		
FETAL OUTCOME n		
= 83	5	6.0
Neonatal asphyxia	12	14.5
Neonatal death	66	79.5
Alive and well		

The age and parity distribution in the study confirmed observations from previous studies that eclampsia is still a disease for the young gravid patient. [5] The highest age group indices of 20 – 24 years in this study is higher than that reported in Shagamu (15-19 years), same as reported in the University Teaching Hospital, Gwagwalada, but less than that reported in Aba (25-29years), and much less than 31-35 years reported in the National Hospital in Abuja. It was observed in this study, that the older patients had higher systolic and diastolic blood pressure as shown by the statistically significant positive association between age and both systolic and diastolic blood pressure of the subjects.

The proportion of nulliparity reported in this study was higher than that reported in Oshogbo (45.8%) but lower than reports from the Northern region (60.9%) and the Middle Eastern region (52.4%) of Nigeria. [4] Specialist hospital Gombe reported 73.5%.[6] Even though it is common to see first deliveries occurring in teenage or ages below 20 years in the North, in this study there were quite a number of elderly primigravidae and this can be as a result of the fact that Nasarawa State is highly multi- cultural.

The quality of care a woman receives in prenatal care has a significant impact on the outcome of the pregnancy. As seen from other studies, unbooked emergencies constitute the main high-risk group for maternal mortality in Nigeria and they arrive in the hospital for the first time when their lives are already endangered by the resulting complications. The majority of the patients in this study were unbooked. About 3.8% claimed to have booked in other hospitals but could not provide evidence to back up their claim. This finding is similar but lower than the antenatal booking rate reported in other studies (89.1% in Gwagwalada, 94.6% in Irrua,). A study in Tanzania showed that most (96%) patients had antenatal care [7] but the case fatality recorded there was still higher than that recorded in most of the other studies already cited.

Most of the patients, who had eclampsia, had it in the antepartum and intrapartum period, rather than postpartum. This is similar to findings of other studies done in other parts of the country and beyond. [5,8-10] It differs though from what is obtainable in developed countries where postpartum eclampsia tends to be more common and it is attributed to improvement in antenatal care, early detection of preeclampsia and prophylactic use of magnesium sulphate. [3]

The signs and symptoms which occurred frequently (convulsions, headaches, and oedema) in most of the patients are similar to those found in other studies and as such there is need for public awareness campaigns through lectures during antenatal visit, education of the general public through print and electronic media on the common signs of abnormalities during pregnancy, the need and benefit of getting such cases to the hospital as soon as it starts and the dangers associated with delays.

The success of any method of management of eclampsia is usually judged by the reduction of maternal and perinatal mortality rates. [5] As the real course of eclampsia is still unknown, its treatment is empirical. The mainstay is immediate control of fits, reduction of blood pressure if hypertension is severe and delivery as soon as possible followed by measures to prevent the recurrence of fits postpartum. [5,8]

Diazepam is still used in most parts of Nigeria because it is readily available, cheap and efficient in the control of fits. It has oversedation, respiratory depression of mother, hypotonia, and apnoea of baby at birth as complications of its use, even though they are rare if diazepam is used optimally. [5] .

Magnesium sulphate remains the drug of choice for prevention and control of convulsions in preeclampsia and eclampsia respectively [2,11] However, its high cost and occasional unavailability make recourse to the use of diazepam inevitable. In this study, the majority of the women were treated with magnesium sulphate while a few had diazepam, some other women had both magnesium sulphate and diazepam administered. These drugs are given to eclamptic patients to control seizures or prophylactically to patients with severe preeclampsia to prevent progression to eclampsia.
Hydralazine was the most widely used drug for acute control of severe hypertension, in this study. Labetolol was also used and as a matter of policy, Federal Medical Centre Keffi is in the process of adopting the use of labetolol in place of hydralazine. Oral methyldopa and nifedipine were also used in the majority of the patients but in most cases discontinued at the point of discharge from the hospital as blood pressure of such patients were under control and back to normal.

Once a patient is stabilized, the method of delivery should depend in part on factors like the gestational age, foetal presentation and condition, presence or absence of obstetric indication for caesarean section and the findings on cervical examination. [3] Delivery of the foetus should be by the most appropriate and expeditious route. [9] Similar to the findings of other studies in Nigeria (Gwagwalada, Shagamu, and Enugu) most of the patients in this study were delivered through Caesarean section. In the study in Gombe, more patients delivered by spontaneous vaginal delivery. [6] One of the two (2) patients who did not deliver in the hospital was as a result of her refusal to accept that a Caesarean section was her best option. She signed against medical advice and left the hospital, we, therefore, have no information about her prognosis.

The only maternal complication recorded was an acute renal failure which occurred in only one patient who eventually died. The perinatal mortality rate of was considerably lower than that reported in Tanzania (20.73%), the Federal Capital Territory (17.4%), Oshogbo (24.1%) and 34.6% in other Northern parts of Nigeria. Birth asphyxia and prematurity have been identified as major contributors to perinatal deaths. [7] Some of the babies in this study had birth asphyxia but they survived and a good number of the babies had low birth weight.

High maternal case fatality, when compared to developed countries, can be attributed to the fact that most patients are usually un-booked as such have received no antenatal care and they arrive in the hospital in very bad condition. The intensive care facilities for the management of preeclampsia and eclampsia cases are also not readily available. [5, 12] Case fatality in this study was lower than that reported in Oshogbo (8.3%), Benin (10.7%), Gombe (11.6%), Federal Capital Territory (8.5%) and in Tanzania (7.8%). This may be attributed to the use of magnesium sulphate for prophylaxis in severe preeclampsia and control of fits in eclampsia as a standard protocol. Diazepam use in Federal Medical Centre is mostly in instances where magnesium sulphate is not available or not affordable. However, the case fatality is much higher than the maximum recommended (1%) by the United Nations. [3,4] This is an indication that a lot more has to be done to save more women from dying from preeclampsia and eclampsia especially considering that a lot of women do not present to the hospitals even when experiencing abnormal signs and symptoms during pregnancy.

Limitations

Typical of retrospective studies some patients' case notes could not be assessed and as such relevant variables were omitted in the analysis.

Future research

- Prospective screening of all antenatal patients in a tertiary health institution for preeclampsia, evaluation of the efficacy of management strategies and outcomes.

- Prospective comparison of postpartum control of blood pressure in patients administered labetalol and other antihypertensive agents.

CONCLUSION AND RECOMMENDATION

Preeclampsia and eclampsia still remain a major cause of maternal and perinatal morbidity and mortality in Nigeria.

The incidence of preeclampsia and eclampsia in Federal Medical Centre Keffi is 1.6% for eclampsia and 1.5% for preeclampsia. Magnesium Sulphate injection was the most commonly used drug treatment for treatment and prophylaxis of eclampsia.

We recommend the following measures that can be put in place to reduce morbidity and mortality:

- Widespread campaign/education of the community on the need for antenatal care and delivery in the hospital.

- Education of patients and the community on the danger signs in preeclampsia/eclampsia, the need and benefit of getting patients to hospital on time and the dangers associated with delays.

- Training of midwives and traditional birth attendants on the signs and symptoms as well as the need for timely referral to hospital.

- The government should be committed to providing emergency obstetric care facilities in the hospitals for effective management of preeclampsia and eclampsia. The cost of Magnesium sulphate should be subsidized or made free if possible to make it readily available during the time of need.

- Early screening and diagnosis, appropriate treatment with proven drugs and reasonable vigilance for women under treatment should be adopted as global policy and practiced.

DECLARATION OF CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

1. Mackay AP, Berg CJ, Atrash HK. Pregnancy-related mortality from preeclampsia and eclampsia. *Obstet Gynecol* 2001; 97(4): 533- 8.
2. Soni BL. Alternative magnesium sulphate regimens for women with preeclampsia and eclampsia: RHL commentary (last revised: 1 March 2011). The WHO Reproductive Health Library; Geneva: World Health Organization.
3. Agida ET, Adeka BI, Jibril KA. Pregnancy outcomes in eclamptic at the University of Abuja Teaching Hospital, Gwagwalada, Abuja: a 3-year review. *Niger J Clin Pract*. 2010; 13(4):394-8.

4. Adekanle DA and Akinbile TO. Eclampsia and pregnancy outcome at Lautech Teaching Hospital, Oshogbo, South West, Nigeria. *Clinics in Mother and Child Health.* 2012;9 doi:10.4303/cmch/C120301.
5.Onuh SO and Aisien AO. Maternal and fetal outcome in eclamptic patients in Benin City, Nigeria. *J Obstet Gynaecol* 2004;24(7):765-8.
6. El-Nafaty AU, Melah GS, Massa AA, Audu BM, Nelda M (2004). The analysis of eclamptic morbidity and mortality in the Specialist Hospital Gombe, Nigeria. *J Obstet Gynaecol* 2004;24(2):142-7
7. Ndaboine EM, Kihunrwa A, Rumanyika R, Im HB, Massinde AN. Maternal and perinatal outcomes among eclamptic patients admitted to Bungando Medical Centre, Mwanza Tanzania. *Afr J Reprod health* 2012; 16(1):35-41.
8. Al-Mulhim A, Al-Najashi S, Rahman J, Rahman MS. Management of eclampsia: a review of 50 cases. *Journal of Obstetrics and Gynaecology*. 1994; 14: 405-9.
9. Dare FO, Eniola OA, Banweni AC. Eclampsia revisited. *Nigerian Medical Journal.* 1998;7: 168-71
10. Robson SC. Hypertension and renal disease in pregnancy. In: Edmonds DIC (Dewhurst's textbook of Obstetrics and Gynaecology for postgraduates. Sixth Ed. Blackwell Science Ltd London. 1999;166-85.
11. Tukur J. The use of magnesium sulphate for the treatment of severe preeclampsia and eclampsia. *Annals of African Medicine* 2009;8(2):76-80.
12. Douglas KA and Redman CWG. Eclampsia in the United Kingdom. *Obstetrics and Gynaecological Survey*. 199;50(7):499-500.