PREGNANCY FOLLOWING ECLAMPSIA: A LONGITUDINAL STUDY AT KORLE- BU TEACHING HOSPITAL

[*]S.A. OBED and PATIENCE ANITEYE[1]

Department of Obstetrics and Gynaecology, University of Ghana Medical School, P. O. Box 4236, Accra and [1]School of Nursing, College of Health Sciences, University of Ghana, Accra

SUMMARY

Objective: To find out the reproductive performance of patients in the immediate pregnancy following an eclampsia.

Design: Longitudinal survey.

Setting: Obstetrics Unit of Department of Obstetrics and Gynaecology in a teaching hospital.

Subjects and Methods: Three hundred and ninety seven women whose previous pregnancies were complicated by eclampsia were followed up based on a schedule of antenatal care from 14-16 weeks gestation till delivery. The occurrence of hypertensive complications, timing of delivery, fetal outcome and birth weight were noted.

Results: There were no cases of recurrent eclampsia and no maternal death. Pregnancy-induced hypertension and pre-eclampia recurred in 15.8% of the women. These recurrencies were more significant among those who had changed their male partners ($p = 0.0005$). The caesarean section rate was 65.9%. The mean ponderal indices in those who developed hypertensive complications were significantly lower than the normotensives ($P<0.03$ However, the overall perinatal mortality rate of 23.3 per 1000 deliveries was lower than the 62.8 per 1000 in the general obstetric population.

Conclusion: Previous episode of eclampsia does not necessarily affect perinatal and maternal outcome adversely in subsequent pregnancy, provided adequate antenatal surveillance and timely delivery are offered to the patients.

Keywords: Eclampsia, Antenatal care, Male Partner, Maternal Mortality, Perinatal Mortality

INTRODUCTION

Eclampsia is a serious condition in pregnancy which causes considerable maternal and perinatal morbidity and mortality[1,2,3,4]. It has been established that good antenatal care prevents the occurrence of eclampsia[5,6] though not in all cases[7,8].

Pre-eclampsia, is a disease of unknown aetiology and therefore no successful preventive strategies have been established. The use of low dose aspirin[9,10,11,12] and calcium[13] have shown no benefits.

The long term effects of eclampsia have been examined by several workers[14,15,16]. One study[17] has shown a series of factors that can influence mortality in the long term.

Yet information regarding the influence of this complication of pregnancy on the most immediate subsequent reproductive performance of these women is scanty especially in the West African Sub-region.

The eclamptic episode involves such an emotional upset on the part of the patient and her relatives that they become rather apprehensive about subsequent pregnancies, most especially the ones immediately following the episode[7]. The tendency, therefore, is for the patients to be immensely motivated in terms of preventive antenatal supervision of her next pregnancy[18].

The objective of this longitudinal study was to find out the reproductive performance of patients in the immediate pregnancy following an eclampsia . Thus, it is hoped that the findings would prepare health care providers and patients for the care of pregnancy following an eclampsia.

MATERIALS AND METHODS

Three hundred and ninety-seven women whose previous pregnancies were complicated by eclampsia were followed up for antenatal care and delivery at the Korle Bu Teaching Hospital (KBTH) during their immediate next pregnancies between 1st January 1995 and 31st December 2004.

A research nurse stationed at the booking clinic recruited the patients who had had eclampsia in the immediate past pregnancy. These patients were given the option of agreeing to be seen by one team throughout the pregnancy till delivery. The patients who did not accept this arrangement or

[*] *Author for correspondence*
obedamenyi@yahoo.com

had to deliver in other health institutions were excluded from the study.

Patients who booked before 16 weeks in the immediate next pregnancy, after a previous one complicated by eclampsia, were included in this study. All the patients in this study were managed under the care of one obstetrician. The patients were seen fortnightly at the antenatal clinic till 34 weeks then weekly till delivery.

At each visit, among other clinical assessment, the blood pressure was checked by a doctor and urine sample tested for protein by a nurse using the dipstick strip. A baseline blood urea, creatinine, electrolytes and uric acid was done at booking and repeated at 32 and 36 weeks if the initial result were normal. These tests were however done when the systolic blood pressure rose by 30mmHg or more diastolic blood pressure by 15mmHg or more over the first visit recordings, occurrence of symptoms like headache, nausea, vomiting, epigastric pain, blurred vision and reduced urine output; urine protein of +1 or more or significant oligohydramnios and intrauterine growth restriction by ultrasound scan evaluation.

The patients were admitted when the blood pressure was elevated to 140/90mmHg or more, or a rise of 30mmHg systolic and 15mmHg diastolic over the first visit recordings and/or proteinuria of +1 or more on dipstick test. Patients were also admitted for any other obstetric indication whenever identified. The admitted patients were managed as in-patients till delivery.

Those who were admitted with hypertension during the index pregnancy were managed with oral nifedipine 20mg- 60mg in divided doses and / or alpha methyldopa 750mg–3000mg in divided doses per day. When the blood pressure rose to or above 160/110 mmHg, sublingual nifedipine 10mg half hourly was administered till the blood pressure fell to or below 150 / 100mm Hg.

The data collected in the index pregnancy included maternal age, formal educational attainment , blood pressure and proteinuria monitoring, occurrence of pregnancy-induced hypertension, pre-eclampsia and eclampsia, timing and mode of delivery, fetal outcome and birth weight.

Hypertension in pregnancy in this study is defined a blood pressure greater than or equal to 140/90mmHg or a rise of 30mmHg or more in the systolic blood pressure or 15mmHg or more in the diastolic blood pressure. over the first visit recordings Proteinuria is defined as the finding of +1 or more after a dipstick testing of urine sample.

Pregnancy-induced hypertension (PIH) is defined as an elevation of the blood pressure after 20 weeks of pregnancy in a normotenive woman. Pre-eclampsia (PE) is defined as PIH with proteinuria. Superimposed pre-eclampsia is the occurrence of PE in a patient who is known to be hypertensive before 20 weeks gestation.

Eclampsia is the occurrence of grand mal seizure in a woman known to have PIH or PE or superimposed pre-eclampsia.

The Ponderal index is 100x [(weight in g)/(length in cm^3)]. The data was entered and analysed using Epi Info version 6[19]. Statistical analysis was done using chi-square for categorical variables and the z-score for two group means. A p value less than 0.05 was interpreted as significant.

RESULTS

Of the 397 women who had eclampsia in the previous pregnancy 16 (4.0%) aborted before the 28^{th} week of gestation in the immediate next pregnancy. Analysis was done for the 381 women who delivered after 28 weeks of gestation.

The mean maternal age of the 381 women was 24.3 $\pm$ 1.8 years (range 19-36 years). Among the 381 women, 89 (23.4%) has had no formal education, 176 (46.2%) up to 9 years, 84 (22.1%) 9-12 years and 32 (8.4%) more than 12 years of formal education.

Ninety-five (24.9%) of the women had changed their male partners before the pregnancy following the one complicated by eclampsia. At booking before the 16^{th} week of gestation, 67 (17.6%) women were found to be hypertensive, but none of them had proteinuria.

Sixty (15.8%) of the women developed PIH, PE or superimposed preeclampsia in the index pregnancy. Forty-eight (50.5%) of the 95 women who had changed their male partners were affected by this complication while the remaining 12 (6.5%) were from the 186 women had not changed their partners. The difference was statistically significant (P = 0.0005). Table 1 shows the types of hypertensive complication in pregnancy and change of male partner. There was no case of eclampsia in the index pregnancy.

Table 1 Hypertensive complication in pregnancy

Hypertensive disease in pregnancy	Total no.	Changed partner yes	no
Nil	166	43	124
Chronic hypertension	55	4	51
Superimposed pre-eclampsia	12	8	4
Pregnancy – induced hypertension	31	26	5
Pre-eclampsia	17	14	3
Total	**381**	**95**	**186**

All the women were delivered on or before the 40th week of gestation. Those who were delivered preterm (before 37 weeks) were on account of uncontrollable hypertension, persistent proteinuria of +3 or more and intra uterine growth restriction by serial ultra sound scan examination. There was no maternal death.

Table 3 Neonatal mean ponderal index

Hypertensive disease in pregnancy	No.	Mean ponderal index	p value
Nil	166	3.34	
Chronic hypertension	55	2.97	0.03
Super imposed preeclampsia	12	2.32	0.02
Pregnancy induced hypertension	31	2.61	0.02
Pre-eclampsia	17	2.46	0.02

The perinatal mortality rate for the general obstetric population was 62.8 per 1000 deliveries.

The mean ponderal indices of the babies delivered from the women who had hypertensive complication were significantly lower than those from the normotensive mothers (Table 3).

Table 2 Gestational age and mode of delivery

Gestational age (weeks)	Total No.	Mode of delivery: SVD	Induced labour	Elective C/S	Emergency C/S	Vacuum delivery
<34	27	1	2	24	-	-
34 – 37	46	7	4	30	3	2
37 – 40	308	88	37	169	25	7
Total	**381**	**96**	**43**	**223**	**28**	**9**

SVD = Spontaneous Vaginal Deliveries
C/S = Caesarean Section

Caesarean section was done in 251 cases (65.9%). Table 2 illustrates the gestational age and mode of delivery. There were 5 sets of twins and 9 perinatal deaths. The perinatal mortality rate was 23.3 per 1000 births. Five of the perinatal deaths were delivered before 34 weeks gestation and died from prematurity. There were two set of twins and a singleton among the five. Three of the perinatal deaths were delivered between 34–37 weeks, one complicated by abruptio placentae, 2 died in-utero from unknown cause.

The other two babies that were delivered between 37 and 40 weeks, one died from severe congenital malformation and the cause of death of the other baby was not known.

DISCUSSION

Eclampsia has been reported to re-occur in about 9.2% - 15.6% in subsequent pregnancies after a previous episode[7,8,9]. Recurrence of eclampsia in subsequent pregnancy has been reported to be more likely if the previous pregnancy complication occurred before the 35th week of pregnancy[8,21].

In this study, there was no recurrence of eclampsia in the subsequent pregnancies. Eclampsia is a preventable condition in pregnancy by instituting good antenatal care[5,6,22, 23]. This study has confirmed eclampsia could be prevented even in patients at very high risk of the condition by adhering to good antenatal care and timely delivery.

The aetiology of PIH and PE still remain unknown and therefore preventive strategies have so far been elusive. The use of low dose aspirin[9,10,11,12] and calcium[13] have shown no benefit. The hypertensive complications of PIH and PE have been estimated to occur in 6-8% of general obstetric population and 15-25% of patients with pre-existing chronic hypertension[24,25]. In this study, the recurrence rate of PIH and PE after a previous pregnancy complicated by eclampsia was 15.8% and for those who were found to have chronic hypertension at booking before the sixteenth week of pregnancy, the rate was 17.9%.

The recurrence rate of PIH and PE among the women who had changed their male partners was more significant than those who had not. This gives credence to the immunological theory and the new paternal contribution to the aetiology of the disease[8,26].

The caesarean section rate of 65.9% in this study seems to be very high, but 54.2% of the study population had had caesarean delivery in the previous pregnancy. Of the 251 caesarean deliveries, 223 were elective cases mainly as a result of unfavourable cervix for induction of labour. Induction of labour in such situation could result in prolonged labour which is a predisposing factor for the occurrence of eclampsia[5,27]. Thus the high caesarean section rate in this study could be a major contributing factor for the absence of eclampsia.

Considering the fact that these patients were at great reproductive risk, it is noteworthy that the perinatal mortality rate in this study was 23.3 per 1000. This compares favourably with a rates of 60.6-74.2 per 1000 in the general obstetric population in the same hospital[28,29]. Indeed it is important to highlight that five of the nine perinatal deaths were from prematurity whose birth weight were between 650g to 910g. There was also a term baby who died from gross congenital malformation. More vigilance could have salvaged the three other babies who were delivered after 34 weeks.

There was no maternal death in this high risk group of patient. This is against the background of the maternal mortality ratio of between 694 to 734.4 per 100,000 deliveries in the hospital[4,30].

It thus appears that a previous episode of eclampsia does not necessarily affect perinatal and maternal outcome adversely in the subsequent pregnancy, provided adequate antenatal surveillance and timely delivery are offered to the patients.

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