

## ORIGINAL ARTICLE

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# ROLE OF PRE-ECLAMPTIC TOXAEMIA OR ECLAMPSIA IN HYPERTENSIVE WOMEN ATTENDING CARDIAC CLINIC OF AHMADU BELLO UNIVERSITY TEACHING HOSPITAL ZARIA, NIGERIA

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### Abstract

**Background:** Patients with pre-eclampsia and eclampsia constitute a special high risk group for future hypertension. They require a long term follow up to be able to detect and treat emerging hypertension early enough to prevent complications. Unfortunately, this is not so. This study was undertaken to find out the incidence of history of pre-eclamptic toxemia (PET) in our female hypertensive patients attending cardiac clinic and to also determine the incidence of complications of hypertension in those with previous history of PET.

**Methods:** Fifty consecutive female hypertensive patients seen in cardiac clinic were recruited. Detailed history including full obstetric and family history was taken. A full clinical examination was done including blood pressure and a search for complications of hypertension. Findings were then analyzed and various frequencies determined.

**Results:** Forty-nine patients were studied. The mean age was  $47.29 \pm 11.46$  years. The mean SBP, DBP and MAP were  $143.18 \pm 25.05$ ,  $90.49 \pm 14.19$  and  $108.12 \pm 16.71$ mmHg respectively. Between the last child birth and the time of established hypertension in those who had PET ranged from 3-25 years. Sixteen, (32.7%) of the 49 patients had history of PET and 7(43.75%) of these 16 patients had complications of hypertension.

**Conclusion:** The incidence of history of PET in our female hypertensive patients attending cardiac clinic is significant (32.7%). Also the 43.8% incidence of complications of hypertension seen in those patients with history of PET in this study is high. PET patients, therefore, constitute a special risk group for future hypertension. Therefore collaboration between the Obstetricians and the Cardiologists is important for patients with PET and eclampsia.

**Key words:** Pre-eclampsia, incidence, hypertension, complications

### Résumé

**Contexte:** Les patientes ayant une toxémie gravidique ou une éclampsie sont un groupe à haut risque d'hypertension ultérieure. Elles nécessitent un suivi à long terme afin de détecter et traiter une hypertension émergente suffisamment tôt afin de prévenir les complications. Cela ne se passe malheureusement pas ainsi. Cette étude a été initiée afin de déterminer l'incidence des antécédents de toxémie gravidique chez nos patientes hypertendues consultant à la clinique de cardiologie. Il s'agissait

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également de déterminer l'incidence des complications hypertensive chez celles présentant un antécédent de toxémie gravidique.

**Méthode:** Nous avons recruté de manière consécutive cinquante patientes hypertendues reçues à la clinique de cardiologie. L'histoire de la maladie a été détaillée en insistant sur les antécédents obstétricaux et familiaux. Un examen clinique complet a été effectué incluant la mesure de la pression artérielle et la recherche de complications de l'hypertension. Les données recueillies ont été ensuite analysées et les différentes fréquences déterminées.

**Résultats:** Quarante neuf patientes ont été étudiées. L'âge moyen était de  $47,29 \pm 11,46$  ans. Les moyennes de pression artérielle systolique, diastolique et moyenne étaient respectivement de  $143,18 \pm 25,05$  ;  $90,49 \pm 14,19$  and  $108,12 \pm 16,71$  mmHg. Le délai entre le dernier accouchement et le diagnostic d'hypertension chez celles qui avaient un antécédent de toxémie gravidique s'étendait de 3 à 25 ans. Seize (32,7%) des 49 patientes avaient un antécédent de toxémie gravidique et 7 (43,75%) ; parmi eux 16 ont eu des complications hypertensives.

**Conclusion:** L'incidence des antécédents de toxémie gravidique chez nos patientes hypertendues consultant à la clinique de cardiologie est significative (32,7%). L'incidence de complications hypertensive (43,8%) observée dans le groupe de patientes ayant un antécédent de toxémie gravidique dans cette étude est élevée. Les patientes présentant une toxémie gravidique constituent de ce fait un groupe particulier à risque pouvant développer une hypertension artérielle. La collaboration entre obstétriciens et cardiologues est de ce fait importante pour les patients ayant une toxémie gravidique et une éclampsie.

**Mots clés:** *Toxémie gravidique, incidence, hypertension, complications*

## Introduction

Hypertension remains the commonest non-communicable disease in Nigeria.<sup>1</sup> If untreated, it can lead to complications such as congestive heart failure, cerebrovascular accident, renal disease, retinopathy, ischemic heart disease etc. However, effective treatment of hypertension has been associated with over 50% reduction in heart failure, 35%-45% reduction in stroke and 20%-25% reduction in myocardial infarction.<sup>2-4</sup>

It has been reported that as many as 10% of first pregnancies in previously normotensive women, hypertension appears after 20 weeks i.e., gestational hypertension, and may progress to pre-eclampsia when the hypertension is complicated by proteinuria, edema, or hematological or hepatic abnormalities or progress to eclampsia with cerebral symptoms leading to convulsions.<sup>5</sup> Women with hypertension predating pregnancy have an even higher incidence of preclampsia.<sup>6</sup>

The long term prognosis of women with gestational hypertension is said to be excellent.<sup>7</sup> Nonetheless, when compared with women who were normotensive, the overall prognosis for women who had hypertension during pregnancy is not as good, probably because of causes other than pre-eclampsia, including unrecognized chronic primary hypertension.<sup>8</sup> After delivery, transient or persistent hypertension may develop in the mother. In many, early primary hypertension may have been masked by the early hemodynamic changes of pregnancy. In a

setting where adequate follow up of these patients, even long after stopping delivery is non-existent, the risk of developing complications of hypertension is high.

The aim of this study is to find out the incidence of history of PET in our female hypertensives attending cardiac clinic and also the incidence of complications of hypertension in these patients with past history of PET. It will help to fashion out a better follow up strategy that will lead to early detection and intervention of any emerging hypertension.

## Patients and Methods

Fifty consecutive adult female hypertensive patients seen at the Cardiac Clinic of Ahmadu Bello University Teaching Hospital (ABUTH), Zaria, Nigeria were recruited into the study after due clearance from the Ethical Committee of Ahmadu Bello University Hospital and Informed Consent obtained from the patients. The demographic and clinical characteristics of these patients were taken from history and physical examination. Details in the history included age, parity, last childbirth, (LCB), tribe, whether pre-menopausal or post-menopausal, number of pregnancies associated with PET or its symptoms, evidence of prepregnancy hypertension and hypertension in pregnancy. Others include history of diabetes mellitus, antenatal care, peripartum cardiac failure, number of years post-stopping delivery patient became hypertensive. Family history of

hypertension, stroke, congestive cardiac failure (CCF), sudden death, overweight or obesity, diabetes mellitus were also asked. History of PET was accepted if in addition to history of body swelling and raised blood pressure in pregnancy there was a documented evidence of PET in the antenatal records.

All the patients were physically examined with particular attention paid to the weight, height, current blood pressure (BP), pulse and the presence of complications of hypertension such as congestive cardiac failure (CCF), Hypertensive heart disease (HHD), cerebrovascular accident (CVA) etc. Urinalysis was done on these patients to detect if there was proteinuria or glycosuria.

All information gathered was entered into a proforma from where it was prepared for data analysis.

### Data analysis

Data analysis was done using SPSS 11.5 Statistical package. All values were reported as means  $\pm$  standard deviation where applicable and percentages to non-quantitative data. Student *t* test was used to determine statistical significance where necessary. A *p* value of 0.05 or less was considered significant.

### Results

Forty nine (49) patients out of the initial fifty recruited were studied. One patient was excluded because of data mix-up and could not be recalled for fresh assessment.

Table 1 shows the demographic and clinical characteristics of the patients. At the time of study,

majority of the patients were in their middle age brackets and blood pressure still in the hypertensive range despite treatment.

Table 2 shows family history profile of the subjects in the entire group. It took 0.25-38 years (mean,  $11.4 \pm 8.79$  years) after stopping delivery to develop hypertension in the entire group. Those who had PET in their pregnancy took 3-25 years (mean,  $8.42 \pm 7.69$  years) to develop hypertension while those without PET had a mean of  $12.76 \pm 8.90$  years to develop hypertension. There was no statistically significant difference between those with PET and those without.

Thirty five (35) of the patients had records of their tribal origin. Of this number, 27 (77.1%) were Hausas and 8(22.9%) were from other tribes in the country. The preponderance of Hausa patients is due to the location of our center in Hausa dominated region.

A total of 34 patients had antenatal care (ANC) in all their pregnancies, 9 in some of their pregnancies and 6 in none of their pregnancies. All the 16 patients (Table 3) who had PET in their pregnancies had ANC in the hospital.

At the time of this study, 27 patients were in the pre-menopausal period and 22 in the postmenopausal period. Thirteen (48.1%) of those in the pre-menopausal period had PET while 3(13.6%) of those in the postmenopausal period had PET.

Table 3 shows the incidence of history of PET in the 49 consecutive hypertensive female subjects seen at the Cardiac Clinic of ABUTH, Zaria. This incidence of 32.7% is significant.

Table 4 shows the incidence of complications of hypertension in the studied subjects. In those who had history of PET the complication rate was 43.8% which is significant.

**Table 1.** Clinical and demographic characteristics of patients

Parameter	Range	Mean $\pm$ SD
Age (years)	21-80	47.29 $\pm$ 11.6
BMI (Kg/m <sup>2</sup> )	16-38	25.29 $\pm$ 5.35
SBP (mmHg)	100-220	143.18 $\pm$ 25.05
DBP (mmHg)	60-130	90.49 $\pm$ 14.19
MAP (mmHg)	73-160	108.12 $\pm$ 16.71
Pulse pressure (mmHg)	20-94	53.43 $\pm$ 16.92
Parity	0-15	6.19 $\pm$ 3.77
LCB (years)	0-40	12.56 $\pm$ 9.67

BMI = Body mass index, SBP = Systolic blood pressure, DBP = Diastolic blood pressure, MAP = Mean arterial pressure, LCB = Last child birth

**Table 2.** Family history profiles of the 49 subjects studied

Positive family history	No. (%)	No. with PET (%)	No. without PET (%)
Hypertension	25(51)	9(18.3)	16(32.7)
Stroke	6(12.2)	3(6.1)	3(6.1)
CCF	4(8.2)	2(4.1)	2(4.1)
Sudden cardiac death	2(4.1)	1(2.0)	1(2.0)
Obesity	19(38.8)	7(14.3)	12(24.5)
Diabetes Mellitus	6(12.2)	1(2.0)	5(10.2)

CCF = Congestive cardiac failure, PET = Pre-eclamptic toxemia

**Table 3.** Incidence of history of pet in hypertensive female subjects seen in cardiac clinic of ABUTH, Zaria, Nigeria

Subjects	No. (%)
With PET	16 (32.7)
Without PET	33 (67.3)
Total	49 (100)

PET = Pre-eclampsia toxemia

**Table 4.** Incidence of complications of hypertension seen in the study subjects

Subjects (n = 49)	No. (%)
No hypertension complications	27 (55.1)
Hypertension complications	22 (44.9)
PET without hypertension complications	9 (18.4)
PET with hypertension complications	7 (14.3)

Complications seen were hypertensive heart disease 10(20.4%), hypertensive heart failure 7(14.3%), cerebrovascular accident 3(6.1%) and peripartum cardiac failure (PPCF) 2(4.1%), PET = pre-eclamptic toxemia

## Discussion

It is generally agreed that women who have had severe pre-eclampsia or eclampsia are prone to hypertension in later life. Young women who develop pre-eclampsia or eclampsia in their first pregnancy may have normal pregnancies subsequently, until they reach 40 or so, when they often develop hypertension.<sup>9</sup> Older patients on the other hand, who develop pre-eclampsia for the first time after previously normal pregnancies, are likely to have persistent hypertension thereafter.<sup>9</sup> In this study, the majority of the patients including those who had PET were already in the fifth decade of life, a period where hypertension is most prevalent.<sup>10,11</sup> In those patients who had PET in pregnancy, it took a latent period of between 3-25 years (mean, 8.42 ± 7.69 years) to develop hypertension. The fact that it can

take as long as 25 years to become hypertensive emphasizes the need to follow up these patients on a long term basis if early detection of hypertension and hence, prevention of its complications must be achieved.

A significant proportion (32.7%) of our female hypertensive subjects had history of PET (Table 3). This incidence compares with the work of North RA et al who in a study of 50 Samoan women with past pre-eclampsia found that 40% of them were hypertensive at follow-up compared to 2% in the control group.<sup>12</sup>

The high rate (43.8%) of hypertension complications seen in these patients may be due to several factors. First, the time for doctor-patient interaction is usually too short for adequate patient education on this subject. This is as result of the gross disproportion between the number of patients and the number of doctors available.

Second, due to ignorance, patients still shy away from regular clinic follow up even after the need for it has been explained to them by the doctor. They still hold on tenaciously to the wrong notion that only when they have symptoms they go to the hospital. Hypertension is, of course, symptomless unless there are complications. The magnitude of this problem is heightened in a setting like ours where the culture of routine medical checkup is not practiced.

The high level of poverty especially in our area of clinical practice is another consideration. Most of these patients are Hausa-Fulani from the villages scattered around Zaria. They are mostly poor farmers who may not afford the 'luxury' of frequent hospital visits due to cost of transportation, more so, when they don't have symptoms.

In conclusion, the incidence of history of PET among the female hypertensives attending our cardiac clinic is quite significant. The incidence of complications of hypertension in the patients with history of PET is also high. Several factors ranging from patients ignorance, poverty to inadequate patient-doctor interaction may be responsible.

The fact that some of these PET patients are never seen again in the hospital after discharge except when they develop complications of

hypertension calls for better follow up measures including referrals to primary health care centers which may be closer to them for regular BP measurements. A great deal of collaboration between the obstetricians and the cardiologists is required so that PET patients are not lost to follow up only to reappear later with hypertension and its complications. If this is implemented, early detection and treatment of emerging hypertension will be possible in this special group of patients leading to reduction/prevention of hypertension complications.

This is a hospital based study with a small sample size. Further studies on this subject using a larger sample size are therefore recommended.

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