

Prevalence of Hypertension at Antenatal Booking and Delivery in Ibadan

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Abstract

Context: Hypertension is the second commonest medical condition in pregnancy and it occurs in up to 10% of all pregnancies. It is responsible for several cardiovascular events and accounts for about 12% of all maternal deaths, which is about 1500 per 100,000 livebirths in Nigeria.

Objectives: We assessed the prevalence of hypertension at antenatal booking and delivery among pregnant patients at the University College Hospital, Ibadan, Nigeria in order to evolve a special management plan for the control of this disease among them.

Methods: Pregnant subjects attending the antenatal clinic of the University College Hospital, Ibadan were recruited consecutively into the study. They had repeated blood pressure measurements and were followed up from antenatal clinic registration till delivery.

Results: Four hundred and nine pregnant subjects were examined and recruited into the study at booking, but only 187 of them completed the study and delivered at UCH. The frequency of hypertension at booking was 9.8%, rising to 26.2% at delivery, a statistically significant difference ($\chi^2 = 27.25$; $p < 0.001$). The mean SBP (127.1 ± 19.9 mmHg) and DBP (80.5 ± 13.0 mmHg) after delivery among the subjects were significantly higher than at booking (SBP, 114.2 ± 2.1 mmHg & DBP, 73.4 ± 24 mmHg; $p < 0.001$)

Conclusion: Prevalence of hypertension as well as the mean SBP and DBP were significantly higher post partum than at booking among the subjects. Previous personal and family history of hypertension were strong determinants of hypertension in pregnancy in them. There was no correlation between parity and level of blood pressure.

Key Words: Blood Pressure, Hypertension, Pregnancy, Antenatal [Trop J Obstet Gynaecol, 2003, 20: 49-51]

Introduction

Hypertension is a common public health problem especially in the developing countries. In Nigeria, the general prevalence of hypertension is about 11% in adults over 15 years of age¹. It is a significant cause of morbidity and mortality in the fetus and mother in both developing and developed countries. It is the second commonest medical condition in pregnancy and it occurs in up to 10% of all pregnancies². In some places, prevalence of chronic hypertension among subjects who have had hypertension in pregnancy ranges from 0 and 78%². Apart from being responsible for several cardiovascular events such as cerebro-vascular disease, heart failure, myocardial infarction etc, hypertension accounts for about 12% of all maternal deaths which is about 1500/100,000 live birth in Nigeria³. Although, distinction between essential hypertension and pre-eclampsia may be difficult to make especially in patients who book late, it is well known that women with hypertension in pregnancy run an increased risk of chronic hypertension later in life and pre-eclampsia may also superimpose on chronic hypertension^{4,5}. The detection and clinical

management of hypertension in pregnant women are complicated by concern for fetal development and survival while seeking for the health of the mother.

The purpose of this study, therefore, was to assess the prevalence of hypertension in pregnancy among pregnant patients attending the antenatal clinic of the University College Hospital, Ibadan. This will afford us the opportunity to evolve a special management plan for this disease among pregnant patients.

Subjects and Methods

Pregnant subjects attending the booking antenatal clinic of the University College Hospital, Ibadan were recruited consecutively into the study from 7th February to 31st October 2001. They were followed up till delivery. Ethical approval was obtained from the Joint Ethical

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Committee of the College of Medicine, University of Ibadan and the University College Hospital, Ibadan. Informed consent was obtained from all the patients.

Demographic data were obtained through history taking, and a complete physical examination was performed at booking. Obstetric examination was performed at each subsequent clinic visit. Hypertension was defined as blood pressure of $\geq 140/90$ mmHg and/or history of being on treatment for hypertension. Blood pressure was measured in a sitting position at each clinic visit after at least 5 minutes of rest, using a standard mercury Sphygmomanometer with the cuff placed at heart level. Blood pressure was also measured 24 hours after delivery to avoid the transient rise in blood pressure during labour/delivery.

The cuff was rapidly inflated to determine the estimated systolic pressure (SBP) and then deflated and re-inflated more than 30 mmHg above the estimated SBP and subsequently gradually deflated. Systolic blood pressure (SBP) was taken as Korotkoff sound phase 1 while diastolic blood pressure (DBP) corresponds to phase V. Blood pressure was recorded to the nearest 2 mmHg to minimise intra/inter observer variations. Two readings were taken at two-minutes interval and the average was used for analysis.

Statistical Analysis

The data are presented as means \pm SD. The frequency of hypertension among pregnant women at booking and at delivery was determined. The chi-squared and paired *t* tests were used to assess the difference between groups. The level of significance was set at $p < 0.05$.

Results

Four hundred and nine pregnant subjects were examined and recruited into the study at booking, but only 187 of them completed the study and were delivered at UCH. This was because of the incessant industrial action by different cadres of health care workers during the period of data collection. A positive family history of hypertension was found in 83 (20.3%) of the patients, while 6 (1.5%) patients had a personal history of hypertension in previous pregnancies. Based on their history of hypertension, 5 of the 6 subjects with personal history of hypertension developed hypertension, while only 32 (7.9%) of the 403 who had no personal history of hypertension developed hypertension, a statistically significant difference ($p < 0.0001$). Also, 24 (29%) of the 83 who had a family history of hypertension developed hypertension compared to 35 (10.7%) of

the 326 who had no positive family history developed hypertension in pregnancy ($p < 0.00026$) respectively. Thus, both factors were strong determinants of hypertension in pregnancy among our patients.

Among the subjects, 54, 263, and 92 of the patients booked for ANC in the 1st, 2nd and 3rd trimesters respectively. Thus, more subjects tend to book in the second trimester of gestation. The overall frequency of hypertension at booking was 9.8%, which rose to 26.2% at delivery, a statistically significant difference: $\chi^2 = 27.25$; $p < 0.001$. When the subjects were divided into sub-groups using trimester of booking, the frequency of hypertension was higher in the 1st trimester (14.8%) and lowest in the 2nd trimester (8.4%). The frequency of hypertension in the 3rd trimester was 10.9%. The mean SBP (127.1 ± 19.9 mmHg) and DBP (80.5 ± 13.0 mmHg) after delivery were significantly higher than the corresponding values at booking (SBP: 114.2 ± 2.1 mmHg; DBP: 73.4 ± 2.4 mmHg). The differences were statistically significant at a level of $p < 0.001$ for both values (paired *t*-test).

Table 1 shows blood pressure distribution according to age at booking. Both the systolic and diastolic blood pressure values increased with age except for SBP in the youngest age group, although this trend was not statistically significant ($p > 0.05$).

Table 1

Blood Pressure Measurements at Booking According to Age Groups

Age Group	Number of Patients (%)	SBP mmHg	DBP mmHg
≤ 19	5 (1.2)	116.0 \pm 5.4	66.0 \pm 5.4
20-25	42 (10.3)	112.5 \pm 11.9	69.7 \pm 12.3
26-30	180 (44.0)	113.6 \pm 11.6	70.0 \pm 11.2
31-35	127 (31.0)	114.9 \pm 13.3	71.8 \pm 11.6
>35	55 (13.5)	117.0 \pm 14.7	72.0 \pm 11.9

* SBP: Systolic Blood Pressure (Mean \pm SD)
DBP: Diastolic Blood Pressure (Mean \pm SD)

Table 2 shows the distribution of blood pressure according to parity. There was no correlation between parity and level of blood pressure ($p > 0.05$).

Discussion

This study has been undertaken to better characterize the pattern and frequency of hypertension among our patients at the University College Hospital, Ibadan.

Table 2**Blood Pressure Measurements at Booking According to Age Groups**

Parity	Number of Patients (%)	SBP mmHg	DBP mmHg
0	136 (33.3)	114.2 ± 11.3	70.8 ± 12.9
1	118 (28.9)	113.9 ± 12.4	68.9 ± 9.6
2	80 (19.6)	115.2 ± 14.7	72.9 ± 11.0
3	40 (9.7)	113.2 ± 11.9	67.9 ± 8.7
4	20 (4.9)	117.1 ± 14.5	75.3 ± 10.7
5	10 (2.4)	112.9 ± 9.5	68.6 ± 8.9
6	5 (1.2)	130.0 ± 14.	85.0 ± 7.0

* SBP: Systolic Blood Pressure (Mean ± SD)

DBP: Diastolic Blood Pressure (Mean ± SD)

It has shown that the prevalence of hypertension at booking was 9.8%. Although this is not directly comparable, the figure is close to the prevalence of about 11% in the Nigerian population². However, the increased prevalence at delivery of 26.2% will suggest that the prevalence of hypertension is higher in the postpartum period. In some other studies, the incidence of hypertension among previously normotensive pregnant subjects was 15%⁵. It is claimed in some quarters that women with hypertensive disorders during pregnancy run an increased risk of chronic hypertension later in life⁶. The increase in the prevalence of hypertension among our patients from 9.8% at booking to 26.2% at delivery will suggest that a substantial proportion of Nigerian women may be at an increased risk of developing hypertension later in life. According to previous reports, prevalence of hypertension among those people who may have developed hypertension during pregnancy averages 35%⁶. The blood pressure measurement on our subjects during the postpartum period was done 24 hours after delivery

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to avoid the period of the transient rise in blood pressure that is known to occur in labour and the immediate postpartum period⁷. When the subjects were analysed according to trimester of pregnancy, prevalence of hypertension was lowest among those who registered in the 2nd trimester, confirming the well-known fact that blood pressure often drops in this trimester.

In the general population, blood pressure is known to increase with age except in some pockets of population around the world⁸. We assessed this relationship in our patients; both diastolic and systolic blood pressures appeared to have increased with age except for systolic blood pressure in the youngest age group, the reason for this was not clear. Personal and family history of hypertension was also found as strong determinants of future hypertension in pregnancy among our patients.

Parity had been considered in the past as a determinant of hypertension after delivery, seen during long-term follow-up but the various reports have been inconsistent and highly variable⁶. We assessed the effect of parity on the development of hypertension in pregnancy and there was no obvious relationship between level of blood pressure and parity among our patients.

In conclusion, the prevalence of hypertension and the mean SBP/DBP among our patients were higher postpartum than at the time of booking. Personal and family history of hypertension were strong determinants of gestational hypertension, while parity did not have any effect on the level of blood pressure during pregnancy.

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