Socio-Demographic and Clinical Characteristics of Hypertensive Disorders during Pregnancy

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There are many causes of maternal mortality and morbidity in Bangladesh, among them preeclampsia and eclampsia are the most important. Preeclampsia (PE) is a pregnancy-specific condition and is associated with high maternal mortality and morbidity as well as risk of perinatal death, preterm birth, and intrauterine growth restriction. This was a descriptive cross sectional study, was carried out in department of Gynaecology and Obstetrics, Rangpur Medical College Hospital. Pregnant patients with history of hypertension and/or newly diagnosed hypertension included in this study. In this study, we have studied a total of 100 pregnant patients with hypertension. Mean age was 23.65 years. More than two third patients (70%) were from rural area, 90% were house wife and 96% had education below secondary level. In this study 77% patient was suffering from gestational hypertension. Preeclampsia developed 40.25% (31) of the patients and eclampsia in 55.84% (43) of the patients. Mean systolic blood pressure of the patients at the time of diagnosis were 160.41 mm of Hg and diastolic blood pressure were 108.96 mm of Hg. In both the condition (gestational hypertension and preeclampsia and eclampsia) headache was the principal symptoms either singly or combination with neck pain. 77.92% (60) of the preeclampsia and eclampsia occurred in 1st pregnancy. Proteinuria was present in 80% of the patients. Among the patients with (+++) proteinuria 62.22% (28) developed eclampsia. In this study caesarian section was done in 71% of the cases. After delivery 61% of the baby was normal, 25% was preterm, IUGR was 8%, perinatal asphyxia was occurred in only 1%. Intrauterine death was occurred in 5% of the cases. Headache and neck pain was the main symptom of hypertensive disorders during pregnancy. Degree of proteinuria may be important predictors of development of eclampsia.

[Dinajpur Med Col J 2015 Jan; 8 (1):59-66]

Key words: Socio-demographic, hypertension, pregnancy

Introduction

Approximately 10-15% of maternal deaths in developing countries are associated with preeclampsia leading to eclampsia.[1] There is no concrete data found on incidence of preeclampsia in our country, but calculated from the US Census Bureau, International Data Base, 2004, the extrapolated annual incidence of preeclampsia in Bangladesh is 76,032.[2] According to Bangladesh Demographic and Health Survey 2011, the maternal mortality rate (MMR) is 1.94 per 1000 live births and neonatal mortality rate (NMR) is 32 per 1000 live births.[3] There are many causes of maternal mortality and morbidity in Bangladesh, among them preeclampsia and eclampsia are

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the most important. Preeclampsia is characterized by an elevation in blood pressure, proteinuria and by a reduction in plasma volume, an increase in peripheral resistance and a generalized vasoconstriction. It usually develops after 20 weeks of gestation and resolves after delivery of placenta.[4] Hypertension complicates 5% to 10% of pregnancies and includes several disorders: preeclampsia (proteinuric hypertension), gestational (nonproteinuric) hypertension, and chronic hypertension with or without superimposed preeclampsia.[5] Preeclampsia (PE) is a pregnancy-specific condition and is associated with high maternal mortality and morbidity as well as risk of perinatal death, preterm birth, and intrauterine growth restriction.[6] It occurs in 4 to 7 per cent of pregnant women worldwide.[7] The rate of preeclampsia has increased worldwide especially in developed countries by 40% between 1990 and 1999 due to an increase in number of older mothers and multiple births, conditions known to increase its risk.[8]

Methods

This was a descriptive cross sectional study, was carried out in department of Gynaecology and Obstetrics, Rangpur Medical College Hospital. Pregnant patients with history of hypertension and/or newly diagnosed hypertension included in this study. Purposive sampling method was used to collect sample.

Data Collection

An informed consent was obtained before measuring the blood pressure. Blood pressure was measured by auscultation, using the standardized sphygmomanometer. All the participants were requested to take rest for ten minutes before measuring the blood pressure. The individual was seated in a chair with his back supported and his arms bared and supported at heart level and was refrained from the use of tobacco in any form or ingestion of caffeine during the 30 minutes preceding the measurement. Two separate readings were taken at an interval of minimum three minutes. The average of the two readings was taken. If systolic blood pressure differ >10 mm of Hg and diastolic >5 mm of Hg, then more 2 or 3 readings was taken. Systolic blood pressure measured at the appearance of the Korotkov's sounds (Phase I) and Diastolic BP was taken at the point of disappearance of the sounds (Phase V).

The socio-demographic status, history of hypertension, first detection of hypertension, gestational age, blood group, symptoms, proteinuria, mode of delivery, condition of foetus etc was collected in a pre-designed proforma. Urine strip test was done to detect proteinuria. The participants with history of hypertension and on hypertensive medication were also labeled as hypertensive. Recent JNC VII classification was used for classifying the hypertension.

Statistical Analysis

The relevant variables are processed, edited and analyzed by SPSS windows version 17.0. The sociodemographic data of the study population were expressed as frequencies and their observed difference was tested by one sample ‘t’ test and ‘chi square’ test. P value <0.05 was considered as statistically significant with the 95% confidence interval. The results were presented in tables.

Operational definition

Hypertension - Systolic or diastolic blood pressure or both ≥140/90 mm of Hg or any individual diagnosed as hypertension and currently taking antihypertensive drugs.[9]

Gestational Hypertension - Gestational hypertension is defined as systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg in a previously normotensive pregnant woman who is ≥20

weeks of gestation and has no proteinuria or new signs of end-organ dysfunction.[10]

Preeclampsia - Preeclampsia refers to the new onset of hypertension and either proteinuria or end-organ dysfunction after 20 weeks of gestation in a previously normotensive woman.

Eclampsia - which is considered a complication of severe preeclampsia, is commonly 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.[11]

Results

We have studied a total of 100 pregnant patients with hypertension. Mean age of the study population was 23.65 years (SD±4.92). Table 1 shows the socio-demographic characteristics of the study population.

Table 1: Socio-demographic characteristics of the study people (n=100)

Variables	Frequency	Percentage (%)
Level of education		
Illiterate	29	29%
Primary	48	48%
Secondary	17	17%
Higher secondary	5	5%
Graduate and above	1	1%
Occupation		
Housewife	90	90%
Service	9	9%
Others	1	1%
Residence		
Rural	70	70%
Urban	30	30%
Monthly income		
<5000 taka	65	65%
5000-10000 taka	28	28%
10001-15000 taka	3	3%
>15000 taka	4	4%

Among the study population 20% had history of hypertension prior to pregnancy. Among the remainder 3.75% (3) patients diagnosed as hypertension before 20th week of pregnancy. So in this study 77% patient was suffering from gestational hypertension. Preeclampsia developed 40.25% (31) of the patients and eclampsia in 55.84% (43) of the patients. Mean systolic blood pressure of the patients at the time of diagnosis were 160.41 mm of Hg and diastolic blood pressure were 108.96 mm of Hg.

Presenting symptoms of hypertension during pregnancy detailed in Table II. In both the condition (gestational hypertension and preeclampsia and eclampsia), headache was the principal symptoms either singly or combination with neck pain, blurring of vision etc. (p=000)

Table II: Presenting symptoms of hypertension during pregnancy

Symptoms	Frequency
Asymptomatic	17 (17%)
Headache	15 (15%)
Headache and blurred vision	14 (14%)
Neck pain and headache	19 (19%)
Neck pain	3 (3%)
Blurred vision	2 (2%)
Edema	3 (3%)
Oliguria	1 (1%)
Sleep disturbances	1 (1%)
Others (combination of above symptoms)	25 (25%)

Among the study population family history of hypertension was present in 20% (20). In 68% of the cases hypertension developed in 1st pregnancy, among them 2 was detected before 20 weeks of gestation, so gestational hypertension occurred in 66% of the cases in 1st pregnancy. 77.92% (60) of the preeclampsia and eclampsia occurred in 1st pregnancy (p=0.00000774). Figure I shows the detailed. Among the study population 19% had history of use of hormonal

contraceptive, 2% used barrier method and 79% did not use any contraceptive. Blood grouping was available in 75% of the patients, majority 24% of the patients had O+ve blood group. (Table III showing blood group of the study population).

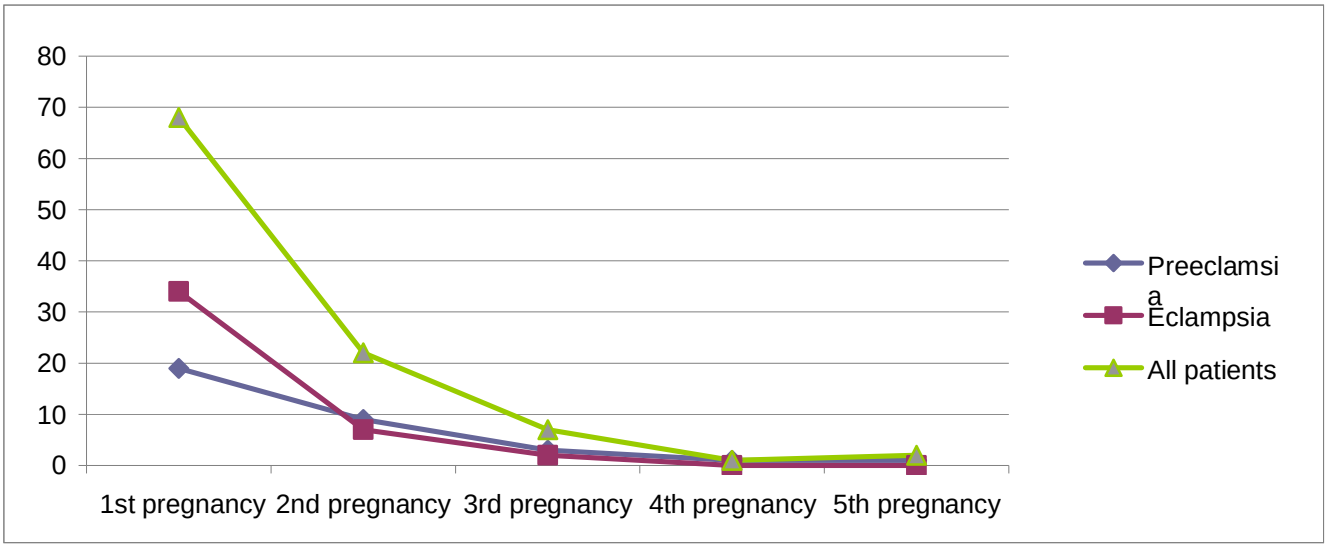

Figure 1. Occurrence of preeclampsia and eclampsia in number of pregnancy

Table III: Blood group of the study population

Blood group	Frequency/percentage
A+ve	15 (15%)
B +ve	22 (22%)
O +ve	24 (24%)
AB +ve	14 (14%

Among the study population proteinuria was present in 80% of the patients. Table IV showing the different grade of proteinuria.

Table IV: Different grade of proteinuria (n=100)

+	5 (5%)
++	30 (30%)
+++	45 (45%)
Absent	20 (20%)

Among the patients with (+++) proteinuria 62.22% (28) developed eclampsia. Table V shows clinical parameters of the patients who developed eclampsia.

Table V: Clinical parameters of the patients who developed eclampsia.

Clinical parameters	Percentage (n=55)
Age (mean)	23.30 years
1st pregnancy	79.06% (34)
Blood pressure (mean)	162.21/111.15 mm of Hg
Urinary proteinuria (+++)	50.9% (28)

In this study caesarian section was done in 71% of the cases, in the remaining cases normal vaginal delivery was done. Table VI shows the indication of caesarian section.

Table VI: Indication of caesarian section n=69

Pregnancy with eclampsia	79.71% (55)
Pregnancy with preeclampsia	5.79% (4)
Severe preeclampsia with IUGR	2.89% (2)
Preeclampsia with APH	1.44% (1)
Elective caesarian section	10.14% (7)

After delivery 61% of the baby was normal, 25% was preterm, IUGR was 8%, perinatal asphyxia was occurred in only 1%.

Intrauterine death was occurred in 5% of the cases. Delivery before 30th week was in 7.44% (7). After delivery mean follow up blood pressure at 3rd day was 135.55/89.23 mm of Hg.

Discussion

In this study we have studied hospital admitted pregnant patients with hypertension of 17-35 years. More than two third patients were from rural area, 90% were house wife and 96% had education below secondary level, this may be due to this study was carried out in Govt. hospital where usually the poor, rural people used to take health services. Higher percentage of preeclampsia (40.25%) and eclampsia (55.84%) in this study may be due to reason of hospital based study, where all the very sick patients usually admitted. There is conflicting data on the relationship of age with preeclampsia. Some studies have reported association between age and preeclampsia especially in elderly women above the age of 35 years, while others have shown an association of preeclampsia with younger age groups. Advancing maternal age as well as young maternal age is a risk factor for PE.[12-19] Amongst the complications during pregnancy, pregnancy induced hypertension was commonest complication in elderly primigravidas. A high proportion of preeclampsia cases occur in those at the extreme ends of the reproductive age. Women above 40 years had twice the risk of preeclampsia, whether they were primiparous or multiparous women.[20] Mean age of the study population in this study were 23.65 years, whereas mean age of the patients who developed preeclampsia and eclampsia were 23.76 years. Mean age of the preeclamsia patients were slightly higher than eclampsia patients (24.32 years vs 23.30 years). Savita et al[21] has shown that majority (90%) of the preeclamsia and eclampsia patient was less than 30 years age and primigravida (73%). Ketz et al[22] has shown that 70% of the patients were primigravida. Our study findings found almost similar findings, 77.92% of the cases of preeclampsia and eclampsia occurred in 1st pregnancy. The etiology of preeclampsia remains unclear despite extensive research. Risk factors for preeclampsia include nulliparity, a family or own history of PE, pre-existing diabetes or increased body mass index, multiple pregnancy, maternal age, renal disease, hypertension or raised blood pressure at booking and chronic autoimmune disease.[23] In our study, increased age was an important factor, all the patient of ≥25 years developed preeclampsia and/or eclampsia.

In our study family history of chronic hypertension was an important risk factor of preeclampsia and eclampsia, this result is consistent with several previous reports. These results suggest that family history of hypertension reflects genetic and behavioral factors whereby women may be predisposed to an increased preeclampsia risk. Family history of chronic hypertension is a proxy measure for hereditary factors as well as common environmental or behavioral exposures that may underlie preeclampsia risk.[24-28] With respect to blood group O, A, B and Rh type, no statistically significant correlation with severe preeclampsia has been found. However in one study an increased risk of preeclampsia for mothers with blood type AB (adjusted odds ratio = 3.07; 95% confidence interval 1.486.36) has been found out. Although these results should be considered with caution, they support the hypothesis of a linkage mechanism involving blood group in the inheritance of susceptibility to preeclampsia. In our study preeclampsia and eclampsia was more in O positive blood group, followed by B positive and AB positive was least.[29-30]

Role of contraceptives in development of preeclampsia and eclampsia is not well

established. Klonoff-Cohen HS et al[31] and Hernández-Valencia M. et al[32] has shown 2.37 to 2.52 fold increased risk of preeclampsia for users of barrier contraceptives compared with women using nonbarrier contraceptives methods. Our study differed with these findings, in our study hormonal contraceptive (OCP and injectable contraceptives) was used more than other contraceptive by the preeclampsia and eclampsia patient. Savita Rani Singhal et al [21] has found, headache was the most common symptoms of pre-eclampsia (44%), followed by epigastric pain (20%) and oliguria (9%), blurring of vision (8%). In our study, we have also found similar results; headache was the principal symptoms of preeclampsia and eclampsia. In our study preterm delivery was in 52.12%, which is lower than the previous reports (65.3%[33] to 66%[21]). This may be due to improvement of management of preeclampsia and eclampsia than before. In contrast to preeclampsia, gestational hypertension is often considered a benign condition. However, gestational hypertension is associated with adverse outcomes such as increased cesarean section rates and decreased birth weight.[34-36] LUCS was done in 72.1% [33], 54%[37] and 49%[38] in different studies. Our study findings found similar result (71%). In our study only 61% of the baby was normal, others were preterm, IUGR, IUD and perinatal asphyxia, which is much lower than previous report of Savita Rani Singhal et al.[21]

Conclusion

Headache and neck pain was the main symptom of hypertensive disorders during pregnancy. Degree of proteinuria may be important predictors of development of eclampsia. Study with large sample size should be done to determine the true prevalence of preeclampsia and eclampsia as the sample size of our study is small.

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