Clinico-Epidemiological Profile of Patients with Hypertension in Pregnancy: A Cross-Sectional Study in Mumbai.

Roza Bardeskar[1], Chetan Powar[1], Asha Dalal[1]

[1]Department of Obstetrics and Gynecology, Topiwala National Medical College and Nair Hospital, Mumbai.

ABSTRACT

Background: Hypertensive disorders complicate nearly 10% of pregnancies. Hypertensive disorders are a common cause of maternal and perinatal morbidity and mortality worldwide. This study is aimed at understanding the clinic-epidemiological profile of patients with hypertension in pregnancy. **Methods:** A cross-sectional study of pregnant females who presented to the Obstetric clinic of Department of Obstetrics and Gynaecology, Topiwala National Medical College and BYL Nair Hospital, Mumbai from June 2011 till May 2014. All pregnant females who were in the first 20 weeks of gestation were included in the study. We collected information on their socio-demographic profile like age, race, type of residence and occupation. A detailed family history, personal history, other associated medical conditions was obtained. We also noted the anthropometric measurements and gestational age. The data thus collected was analysed in Epi Info and tabulated with frequency and percentages. **Result:** During the study period 300 patients satisfied our inclusion and exclusion criteria with mean age 24.61 ± 4.02 years. 96% had regular menstrual flow, 59% were multipara and 77% had gestational age between 13 and 20 weeks. Mean weight of the study subjects was 50.29 ± 9.18 kgs, mean height 160.35 ± 9.42 cms and mean BMI was 19.71 ± 4.02 kg/m2. Majority of the hypertensive patients were in the group of 29 to 32 weeks of gestational age. Severe hypertension was seen most commonly in the same group. **Conclusion:** Hypertension in pregnancy is one the most common cause of adverse maternal and perinatal outcome. Future studies should survey pregnant females with hypertension at multiple centres to improve our understanding of hypertension in pregnancy.

Keywords: Pregnancy, hypertension, preeclampsia, epidemiology.

INTRODUCTION

Hypertensive disorders complicate nearly 10% of pregnancies. Hypertensive disorders are a common cause of maternal and perinatal morbidity and mortality worldwide. In developing countries hypertension ranks second only to anemia, with approximately 7-10% of all pregnancies being complicated by some form of hypertensive disorder. Occurrence of hypertension in pregnancy is a challenge to the obstetrician because despite best available treatment, maternal and fetal morbidity and mortality is still high. Severe hypertension increases the mother's risk of heart attack, cardiac failure, cerebral vascular accidents, and renal failure. The fetus and neonate also are at increased risk from complications such as poor placental transfer of oxygen, fetal growth restriction, preterm birth, placental abruption, stillbirth, and neonatal death.

Name & Address of Corresponding Author
Dr. Roza Bardeskar
Department of Obstetrics and Gynecology
Topiwala National Medical College and Nair Hospital,
Mumbai.

In pregnant women, hypertension is defined as a systolic blood pressure level 140 mmHg or higher and diastolic blood pressure level of 90mmhg or higher which occurs after 20 weeks of gestation in a woman with previously normal blood pressure. Unfortunately, the pathogenesis behind the development of hypertension in pregnancy is still unknown. This study is aimed at understanding the clinic-epidemiological profile of patients with hypertension in pregnancy.

MATERIALS AND METHODS

Study Design and Sample population

We designed a cross-sectional study of pregnant females who presented to the Obstetric clinic of Department of Obstetrics and Gynaecology, Topiwala National Medical College and BYL Nair Hospital, Mumbai, a large municipal corporation run tertiary level care hospital. We included all patients who presented to our hospital from June 2011 till May 2014. All pregnant females who were in the first 20 weeks of gestation were included in the study. We excluded any known case of type 1 or type 2 diabetes mellitus, essential or pre-gestational hypertension, chronic renal failure, chronic liver

failure, known malignancy or those patients who were on corticosteroids.

Data Collection and Data Analysis

After obtaining approval of the institutional ethics committee, we took detailed history of the study subjects. We collected information on their socio-demographic profile like age, race, type of residence and occupation. A detailed family history was taken to document the presence of diabetes and hypertension in family. Personal history regarding menstrual cycle, smoking, sedentary life style, food habits and exercise was taken to determine the risk factors for development of insulin resistance. History of any other associated medical conditions like hypertension, chronic liver or renal failure, malignancy, steroid treatment was taken to determine their inclusion or exclusion from the study. A thorough general and physical examination with blood pressure measurement was done. We also noted the anthropometric measurements like weight, height, body mass index (BMI). Gestational age was also noted for all study subjects. For the diagnosis of hypertension in pregnancy we used the American College Of Obstetrics and Gynecology criteria : New onset of hypertension (blood pressure is >140mmHg systolic and/or >90mm Hg diastolic) occurring in pregnant woman after 20 weeks of gestation who is previously normotensive or proteinuria defined as urinary excretion of more than 0.3gms protein in 24 hours. The data thus collected was analysed in Epi Info and tabulated with frequency and percentages.

RESULTS

Table 1: Baseline characteristics of the patients.

Age distribution	n
Less than 20 years	49 (16.3%)
21-25 years	145 (48.3%)
26-30 years	83 (27.7%)
More than 30 years	23 (7.7%)
Average age is 24.61±4.02 years	
Religion distribution	
Hindu	212 (71%)
Muslim	88 (29%)
Past medical history	
Hypertension in previous pregnancy	6 (2%)
Gestational diabetes mellitus	0 (0%)
Hypertension in pregnancy	24 (8%)
Obstetric history	
Menstrual history	
Regular	289 (96%)
Oligomenorrhea	11 (4%)
Gravid status	
Primipara	123 (41%)
Multipara	177 (59%)
Gestational weeks	
1-12 weeks	68 (23%)
13-20 weeks	232 (77%)
Anthropometric measurements	Average and SD
Weight (kgs)	50.29±9.18
Height (cms)	160.35±9.42
Body Mass Index (kg/m2)	19.71±4.02

During the study period 300 patients satisfied our inclusion and exclusion criteria. Average age of the study subjects was 24.61 ± 4.02 years and majority of the study population was in the age group of 21 to 25 years [Table 1] and 71% of the population was Hindu by religion. 8% (n=24) of the population developed hypertension during pregnancy. Obstetric history of the study participants revealed that 96% had regular menstrual flow, 59% were multipara and 77% had gestational age between 13 and 20 weeks. Mean weight of the study subjects was 50.29 ± 9.18 kgs, mean height 160.35 ± 9.42 cms and mean BMI was 19.71 ± 4.02 kg/m2. Four participants had BMI higher than 30 kg/m2. There were 5 patients who developed hypertension in first 12 weeks of gestation and 19 who developed hypertension between 13 to 20 weeks of gestation. [Table 2] shows the distribution of patients with different severity of hypertension and gestational age. Majority of the hypertensive patients were in the group of 29 to 32 weeks of gestational age. Severe hypertension was seen most commonly in the same group.

Table 2: Distribution of patients with hypertension according to their gestational age.

Gestational age	Severe	Moderate	Mild
21-24 weeks	0	2	4
25-28 weeks	0	2	3
29-32 weeks	2	1	4
33-36 weeks	0	0	2
37 weeks-till delivery	1	0	3
Total	3	5	16

DISCUSSION

The four types of hypertension in pregnancy recognized are preeclampsia, chronic hypertension, chronic hypertension with superimposed preeclampsia, and gestational hypertension. The precise mechanism for the development of hypertension in pregnancy is unknown. It has been postulated that the excessive placental production of antagonists to both vascular epithelial growth factor (VEGF) and transforming growth factor β (TGF-β) is a major component in the development of preeclampsia. These antagonists disrupt endothelial and renal glomerular function resulting in edema, hypertension, and proteinuria. Moreover a heritable component, oxidative stress and abnormal placental implantation has been suggested to further increase the risk. Hypertension during pregnancy can be viewed as a continuum. On one end of the spectrum is chronic hypertension in which the patient had hypertension before pregnancy started or was recognized during the first half of pregnancy and it does not worsen during pregnancy. On the other end of the spectrum is the patient with preeclampsia, who had no evidence of hypertension before the pregnancy, but has a sudden onset of hypertension

and proteinuria during pregnancy, which gets resolved postpartum. In this case, hypertension may be the result of factors related entirely to pregnancy and not to an underlying medical condition. In between these two ends of the spectrum are gestational hypertension and cases in which preeclampsia is superimposed upon chronic hypertension. This broad classification can help us in estimating risk. It has been seen that mild to moderate chronic hypertension have little effect on pregnancy outcomes. However, severe hypertension of any type may result in increased risk to mother and fetus.

The mean age in our study was 24.61 ± 4.02 years. About 41% females were primigravida and 59% were multigravida, while only 2% gave history of hypertension in previous pregnancy. In a study to find the demographic predictors of hypertension in pregnancy by Jasovic-Siveska et al they found that mean age of the subjects was 25.7 ± 5.7 years with majority of them belonging to 21-25 years. Around 54% of the study subjects were primigravida and 4.1% gave history of hypertension in previous pregnancy. In a similar study by Jasovic-Siveska et al in Macedonian population, mean age was 27.5 ± 5.04 years and 46.7% subjects were primigravida. Our study found that 24 (8%) females developed hypertension in pregnancy. A similar study by Dey et al showed the incidence of hypertension in pregnancy to be 8% in study subjects. The general examination findings showed that mean weight and height of subjects was 50.29 kg and 160.35 cm respectively and mean BMI was 19.71 ± 4.02 kg/m2. The mean BMI in study population of Jasovic-Siveska et al was 22.65 ±1.7 kg/m2.

Previously published literature has identified a number of risk factors in the causation of hypertension in pregnancy. A past history of preeclampsia increases the risk of developing preeclampsia in a subsequent pregnancy seven times (relative risk [RR] 7.19, 95% CI 5.85-8.83). Similarly, a family history of preeclampsia in a first-degree relative increases the risk by three times, thereby suggesting a heritable mechanism in some cases. Some studies have also enumerated raised BMI, pre-gestational diabetes and chronic kidney disease as important risk factors in causing hypertension in pregnancy. Apart from hypertension, patients may present with epigastric pain, headache, visual symptoms, edema and seizures. Headache may be temporal, frontal, occipital, or diffuse. Although not pathognomonic, a feature that suggests preeclampsia-related headache rather than another type of headache is that it persists despite administration of over-the-counter analgesics and it may become severe.

CONCLUSION

Hypertension in pregnancy is one the most common cause of adverse maternal and perinatal outcome. It can be regarded as a spectrum of disease which ranges from isolated chronic hypertension to preeclampsia–eclampsia. Future studies should survey pregnant females with hypertension at multiple centres to improve our understanding of hypertension in pregnancy.

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