Original Article

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# Fetal Outcome in Hypertensive Disorders of Pregnancy.

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## ABSTRACT

**Introduction:** Hypertensive disorders are the most common medical complications of pregnancy, affecting approximately 5-10% of pregnancies and the major cause of maternal and infant disease and death worldwide. Very few researches have been done in Nepal to analyze the effect of hypertension in fetus. The aim of this study was to determine the incidence and perinatal morbidity of hypertensive disorders of pregnancy.

**Methods:** This was a hospital based prospective observational study conducted at Paropakar Maternity and Women's hospital. The study was conducted from 18th October to 22nd December 2007. All primi and multigravid patient with BP ≥140/90 mmHg after 28 weeks of pregnancy were included in the study. Women with a blood pressure ≥140/90mmHg at or before 20 weeks of gestation, previous hypertension or women on antihypertensive drugs and Intrauterine fetal death (IUFD) were excluded from the study.

**Results:** A total of 126 cases of hypertensive disorders of pregnancy were identified among 3819 obstetric cases. The incidence of hypertensive disorders of pregnancy was 3.3%. Among 100 cases who were included in the study, 42 had pre eclampsia and 58 had gestational hypertension. Among 42 preeclamptic patients, 15(35.71%) had low birth weight babies, and 9(15.5%) babies had low birth weight among 58 gestational hypertensive mothers.

**Conclusions:** Preeclampsia increases the risk of intrauterine growth restriction, low birth weight and stillbirth.

**Keywords:** hypertension; low birth weight; preeclampsia.

## INTRODUCTION

Hypertensive disorders are the most common medical complications of pregnancy, affecting approximately 5-10% of pregnancies[1]. The incidence varies among different countries, region and hospital. The terminology used to classify hypertensive disorders of pregnancy has been inconsistent and confusing. Therefore, the classification of hypertensive disorders complicating pregnancy developed by working group of National High Blood Pressure Education Program (NHBPEP) 2000 have divided into five different types. Chronic hypertension, preeclampsia, eclampsia, gestational hypertension and preeclampsia superimposed upon chronic hypertension. Hypertensive disorders of pregnancy results in 12% of maternal deaths[2]. The etiopathogenesis of hypertensive disorder of pregnancy is vasospasm and endothelial dysfunction as a consequence of utero-placental blood flow. This results in decreased placental perfusion leading to decreased supply of oxygen and nutrients necessary for fetal growth and well-being. As a result incidence of intrauterine growth restriction, low birth weight are increased and so does the perinatal mortality and morbidity. Maternal risks include hypoperfusion of major organs causing brain edema, hemorrhage and seizures.

Many western literatures have studied the perinatal effects of hypertensive disorders in pregnancy, but very little in our country. This study was conducted to see the perinatal outcome in hypertensive disorder of pregnancy in terms of low birth weight, intrauterine growth restriction and stillbirth.

## METHODS

This was a hospital based prospective observational study conducted between 18th October to 22nd December 2007. All primi and multigravid patients with BP ≥140/90 mm Hg after 28 weeks of pregnancy were included. Women with a Blood Pressure ≥140/90 mm Hg, at or before 28 weeks of gestation, previous history of hypertension or patients using anti-hypertensive drugs, hypertension in multiple gestation and intrauterine fetal death (IUFD) were excluded from the study.

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After taking the approval from the institution, questionnaire was developed with the area covering the related subject of study. Written consent was taken from the patient after explaining all the aspects of the study. Confidentiality of the subject was maintained. The pretested questionnaire was filled with information details given in the record and information from the lady herself. General and systemic examination of women were carried out thoroughly and findings were recorded. Diagnosed cases of hypertensive disorders of pregnancy were noted from admission and were followed up in wards and their blood pressure was rechecked after 4-6 hours; if the DBP (Diastolic Blood Pressure) ≥ 90 mm Hg, then they were enrolled for study. Those with DBP ≥110 mm Hg were also enrolled for study and classified as severe hypertension. Blood pressure was measured by sphygmomanometer cuff on the both arms in sitting position. Koratokoff 5 (K5) sound was used for diastolic blood pressure. All women who developed hypertension during intrapartum and postpartum period (within 24 hours of delivery) were also enrolled in study. Urine for protein was tested once they were diagnosed as a case of hypertensive disorders of pregnancy by sulphosalicylic acid method 12 hours apart and proteinuria was considered significant if it was 1+ in two or more occasion. Special attention was given to Still Birth (SB), Low Birth Weight LBW (<2.5 kg) and Intra uterine growth retardation (IUGR) as the perinatal outcome. Statistical analysis was done using SPSS v 13 software.

## RESULTS

Among 3819 pregnant women seen during the study period, 126 (3.3%) met the diagnostic criteria of hypertensive disorders of pregnancy. Out of these 126 cases, 26 cases were excluded from the study as they did not meet inclusion criteria. Total of 100 cases that fulfilled the inclusion criteria were analysed. Incidence of preterm birth in our study was 13 %. The birth weight of getational hypertension and preeclampsia are given in Table 1. There were 15 (35.7%) babies with low birth weight (<2.5 Kg) in pre eclamptic mother and 9 (15.5%) babies had low birth weight from mothers diagnosed as gestational hypertension. 2 (4.76%) cases of IUGR were diagnosed at 36 weeks of pregnancy in mother with severe pre eclampsia. The weight of new born baby who were diagnosed as IUGR was1600 gm and 1800 gm respectively. There were total four still births in this study. All of them were fresh still birth, 3(17.6%) with severe hypertension and 1(1.20%) with mild hypertension at gestation of 30,31,36 and 39 weeks.

## DISCUSSION

Various studies have shown low birth weight for gestational age in relation to severity of hypertension. In our study also we found that incidence of low birth weight babies were more with pre eclampsia than gestational hypertension. This indicates that higher the severity of hypertension larger the chance of low birth weight. Our results are comparable to similar studies. Tze Kin[3] and his colleagues found incidence of low birth weight as 24.6% among the pre eclamptic pregnancies which was higher than our study (15.7%). This finding is comparable with a retrospective cohort study done by Xiong X, Mayes D, et al from China found the adjusted odds ratios of low birth weight were 2.65 (1.73-4.39) for preeclampsia and 2.53 (1.19-4.93) for severe preeclampsia, even though the risk of low birth weight was not increased significantly for gestational hypertension (adjusted odds ratio 1.56 [1.00-2.41]) as compared with pre eclampsia[4].

Even, Xiong X and associate in Canada have found that women with preeclampsia were at markedly higher risk of having low birth weight (adjusted odds ratio, 4.14; 95% confidence interval, 3.32-5.15) and small for gestational age (adjusted odds ratio 2.56; 95% confidence interval, 1.92-3.41) babies[5]. These facts indicate that preeclampsia increases the risk of

**Table 1. Birth weight in relation to hypertension**

| Birth weight in kg | Gestational HTN | Pre eclampsia | Total |
|---|---|---|---|
| <2.5 kg | 9 (15.5%) | 15(35.71%) | 24 |
| 2.5-3 kg | 28(48.27%) | 15(35.71%) | 43 |
| 3.1-3.5 kg | 15(25.86%) | 10(23.81%) | 25 |
| >3.5 kg | 6(10.34%) | 2(4.76%) | 8 |
| Total | 58 | 42 | 100 |

intrauterine growth restriction and low birth weight.

Incidence of preterm birth in our study was 13%. Preterm delivery was higher in patients with severe pre eclampsia (11%) in comparision to (2%) in gestational hypertension. Studies have reported the incidence of preterm delivery ranging from 13-54%[6]. Buchbinder A et al in their study done in United States of America had compared mild pre eclampsia with severe gestational hypertension. They found higher rates of preterm delivery at <37 weeks (54.2 % vs. 17.8 %, p =.001) and at <35 weeks of gestation (25.0 % vs. 8.4 %, p =.0161) in mothers with severe eclampsia. Similarly a prospective study done in Lithuania by Arlauskiene found a higher incidence of intrauterine growth restriction with severe pre eclampsia (38.2 %) and preterm delivery in mother with severe pre eclampsia was 69.6 %[8]. All hypertensive groups had increased risks for low birth weight and preterm birth but uncomplicated pre-existing hypertension was not associated with small for gestational age infants.

The incidence of hypertensive disorders of pregnancy in this study was 3.3% which is almost similar with the study done by Vatten and Skjaerven (2.6%)[9].

In this study, two cases of intrauterine growth restriction were identified. Varma TR noted 38% intrauterine growth restriction in severe preeclampsia and 18% intrauterine growth restriction in women with mild preeclampsia[10]. Whereas,Voto at el noted 16% low birth weight in women with severe preeclampsia and 12% with mild preeclampsia[11]. Since our sample size is very small, we cannot make any conclusion on it. A larger study is recommended.

## CONCLUSIONS

The incidence of hypertensive disorders of pregnancy was found to be 3.3%. Perinatal morbidity and mortality increased in women with severe hypertension and pre eclampsia.

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