Original Research Article

Indian Journal of Obstetrics and Gynecology
Volume 7 Number 4 (Part - II), October – December 2019
DOI: http://dx.doi.org/10.21088/ijog.2321.1636.7419.2

# Clinical Study of Hypertensive Disorders in Pregnancy

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**How to cite this article:**
Jagdale Supriya Yashwant, Kakade Aniket Shashikant. Clinical Study of Hypertensive Disorders in Pregnancy. Indian J Obstet Gynecol. 2019;7(4)(Part-II):574–578.

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**Received on** 04.10.2019; **Accepted on** 13.11.2019

**Abstract**

*Background and aim:* Hypertensive disorder in pregnancy is a common medical complication of pregnancy and contributes about 12–22% of all pregnancies. It is a major cause of maternal mortality and morbidity. Aim of our study is to determine frequency of hypertensive disorder in pregnancy and to determine maternal and neonatal outcome of patients delivering at our hospital with hypertensive disorder in pregnancy.

*Materials and methods:* This is a retrospective study conducted in the department of Obstetrics and Gynaecology in a tertiary care teaching hospital. Retrospectively data was collected for a period of one year from July 2018 to June 2019. It included all the patients delivered during study period with any type of hypertensive disorder of pregnancy.

*Results:* Incidence of hypertensive disorder in pregnancy was more common in younger age group (18–25 years) that is 41.9%. Mild preeclampsia was the commonest type around 47.7%. Incidence of hypertensive disorder of pregnancy was more common in term pregnancy 38.1% (37–40 weeks). Mode of delivery by Cesarean section was common in our study 63.2%.

*Conclusion:* Hypertensive disorder of pregnancy is the dreaded complication of pregnancy if left untreated. The outcome in hypertensive disorder of pregnancy can be improvised with good antenatal care, preconceptional counseling, risk stratification, properly planned investigations and markers, ultrasonography and with good NICU and ICU care.

This study about outcomes will help formulate preventive strategies of hypertensive disorder of pregnancy.

**Keywords**: Hypertensive disorder in pregnancy; Preeclampsia; High-risk pregnancy.

## Introduction

Hypertensive disorder of pregnancy is defined as a sustained systolic blood pressure of 140 mm Hg or more and/or diastolic blood pressure of 90 mm Hg or more measured on two different occasions six hours apart but within 7 days.[1]

Hypertensive disorder of pregnancy is common medical complication affecting pregnancy. It constitutes 12–22% of all pregnancies out of which preeclampsia is the commonest disorder contributing about 10% of hypertensive disorder of pregnancy.[2] The prevalence of hypertensive disorder of pregnancy in India has been reported to be 6–8%.[3] Hypertensive disorder of pregnancy is a medical condition which is major cause of maternal and neonatal mortality and morbidity.[4]

The high perinatal mortality in women with HDP is mainly due to premature delivery and growth restricton.[5,6] Fetal complications are related to the severity of preeclampsia, duration of the disease and degree of proteinuria.[7]

As per National High Blood Pressure Education Program Working Group hypertensive disorder of pregnancy is classified in four categories as gestational hypertension, preeclampsia, eclampsia syndrome, chronic hypertension, and chronic hypertension with superimposed preeclampsia.

Gestational hypertension is defined as blood pressure more than 140/90 mm Hg without proteinuria. Gestational hypertension can progress to preeclampsia which is indicated by development of proteinuria (300 mg or more protein in 24-hour urine collection or at least 30 mg/dl or 1+ in dipstick in at least 2 random urine samples collected at least 6 hours apart). Eclampsia is an extremely severe form of preeclampsia in which patient develops convulsions.

Maternal complications like elevated liver enzymes, thrombocytopenia, abruption, post-partum hemorrhage, convulsions can complicate pregnancy.

Fetal complications arise due to prematurity and hypoxia like preterm, low birth weight, low Apgar score, NICU admission, early neonatal death.

It is two stage disorders. Primary stage involves abnormal placentation. Second stage of preeclampsia involves conversion of utero-placental mal-adaptation to maternal systemic syndrome of preeclampsia. There is endothelial cell damage and multi-organ failure.

So rationale of our study is to find out frequency of hypertensive disorder of pregnancy delivering at our tertiary care hospital. And to study maternal and neonatal outcome of patients delivering at our hospital with hypertensive disorder of pregnancy.

Expectant management with temporizing treatment should be performed when possible to lengthen gestation which may be associated with enhanced perinatal survival.[8]

Good ICU facilities for mother and expert NICU facilities for baby are required for better maternal and neonatal outcome.

## Materials and Methods

This study was conducted in the department of Obstetrics and Gynaecology in tertiary care teaching hospital and referral center in Pune.

It was a retrospective study for one year duration from July 2018 to June 2019. It included all the patients delivered during study period with diagnosis of any type of hypertensive disorder of pregnancy. Data was collected from labor room register after Internal Ethics Committee approval.

All antenatal women more than 28 weeks of gestation admitted to Bharati Hospital with diagnosis of any type of hypertensive disorder of pregnancy during study period were included in the study.

Patients who develop hypertensive disorder of pregnancy and delivered before 28 weeks of gestation were excluded. Patients who left hospital against medical advice or having incomplete data were also excluded from the study.

We studied frequency of hypertensive disorder of pregnancy in patients delivering at our hospital. We studied maternal and neonatal outcome of patients delivering at our hospital.

During study period total 1833 deliveries were conducted out of which 155 patients were diagnosed with hypertensive disorder of pregnancy. So frequency of hypertensive disorder of pregnancy delivering at our hospital comes to around 8.45%.

During delivery BP was controlled by antihypertensive like oral methyldopa, nifedipine, IV labetalol. In severe preeclampsia and eclampsia magnesium sulfate was used as anticonvulsant of choice and Zuspan regimen was followed. 4 gm of 50% magnesium sulfate IV was given slowly over 15–20 min and 1 gm/hour of magnesium sulfate infusion was continued for 24 hours after monitoring toxicity.

Maternal complications like PPH, HELLP were analyzed.

Fetal outcome was analyzed in terms of birth weight, maturity (term, preterm), live birth rate, NICU admission, early neonatal death.

Collected data was analyzed using SPSS (Statistical Package for Social Sciences) version 25:0. Qualitative data variables were expressed by using frequency and percentage(%). Quantitative data variables were expressed by Mean and SD.

Different variables like maternal age, parity, gestational age, booked unbooked status, type of hypertensive disorder of pregnancy, mode of delivery, perinatal outcome were studied to assess maternal and neonatal outcome in this study.

Patients were classified in different groups of hypertensive disorder of pregnancy according to classification NHEBP.

## Results

During study period 1833 women were delivered. Out of which 155 cases were identified as hypertensive disorder of pregnancy. So frequency of hypertensive disorder of pregnancy comes to be 8.45% in our study.

**Table 1:** Demographic characteristics of mother with hypertensive disorder of pregnancy in our study

| Age group | *N* = Frequency | Percentage (%) |
|---|---|---|
| 18–25 | 65 | 41.9 |
| 30 | 50 | 32.3 |
| 31–35 | 29 | 18.7 |
| >35 | 11 | 7.1 |

Incidence of hypertensive disorder in pregnancy was more common in younger age group (18–25 years) that is 41.9% (Table 1). And also slightly more common in primigravida 54.8% in our study (Table 2).

**Table 2:** Distribution of cases according to parity

| Parity | *N* = Frequency | Percentage (%) |
|---|---|---|
| Primigravida | 85 | 54.8 |
| Multigravida | 70 | 45.2 |

**Table 3:** Distribution of cases according to type of hypertensive disorder of pregnancy

| Type of HDP | *N* = Frequency | Percentage (%) |
|---|---|---|
| GHTN | 34 | 21.9 |
| Mild preeclampsia | 41 | 47.7 |
| Severe preeclampsia | 74 | 26.5 |
| Eclampsia | 6 | 3.9 |

Amongst all types of hypertensive disorder of pregnancy mild preeclampsia was the commonest type around 47.7% followed by severe preeclampsia 26.5%. Frequency of gestational hypertension was 21.9%. Out of 155 patients 6 had eclampsia (Table 3).

**Table 4:** Distribution of cases according to gestational age

| Gestational age (weeks) | *N* = Frequency | Percentage (%) |
|---|---|---|
| Early preterm (28–34) | 44 | 28.4 |
| Late preterm (34–37) | 48 | 31.0 |
| Term (37–40) | 59 | 38.1 |
| Post-term >40 | 4 | 2.6 |

Incidence of hypertensive disorder of pregnancy was more common in term pregnancy 38.1% (37–40 weeks) followed by late preterm 31% (34–37 weeks). It can be attributed to late registration of pregnancy. It may be due to lack of education, lack of sensitization about benefits of early registration of pregnancy (Table 4).

**Table 5:** Distribution of cases according to mode of delivery in our study

| Mode of delivery | *N* = Frequency | Percentage (%) |
|---|---|---|
| Vaginal delivery | 57 | 36.8 |
| LSCS | 98 | 63.2 |

Mode of delivery by Cesarean section was common in our study 63.2%. Most common indications were uncontrolled blood pressure, poor Bishop's score, non-reassuring fetal heart rate on CTG, compromised fetus indicated by color Doppler changes (Table 5).

**Table 6:** Distribution of cases according to maternal outcome

| Maternal outcome | *N* = Frequency | Percentage (%) |
|---|---|---|
| Abruption | 8 | 5.1 |
| Postpartum haemorrhage | 18 | 11.6 |
| HELLP | 3 | 1.9 |
| Eclampsia | 6 | 3.8 |
| HDU/ICU admission | 75 | 50.0 |
| Renal failure | 2 | 1.2 |
| Blood transfusion | 10 | 6.4 |
| Dialysis | Nil | – |
| Maternal mortality | Nil | – |

Amongst 155 cases 126 patients (81.3%) had normal outcome with no complications, 18 patients (11.6%) had postpartum hemorrhage, 8 patients (5.1%) had abruption, 3 patients developed HELLP and 6 patients had eclampsia (Table 6).

**Table 7:** Distribution of cases according to Perinatal Outcome

| Perinatal outcome | *N* = Frequency | Percentage (%) |
|---|---|---|
| IUD | 14 | 9.0 |
| Baby with mother | 92 | 59.4 |
| NICU admission | 49 | 31.6 |

Amongst 155 cases 14 had IUD (9%). 49 babies (31.6%) required NICU admission. Common reasons for NICU admissions were prematurity, low birth weight, respiratory distress (Table 7).

**Table 8:** Distribution of cases according to fetal weight

| Fetal weight | *N* = Frequency | Percentage (%) |
|---|---|---|
| <1.5 kg | 39 | 25.2 |
| 1.5–2.5 kg | 62 | 40.0 |
| >2.5 kg | 54 | 34.8 |

Sixty-two (40%) fetuses had birth weight in the range of 1.5–2.5 kg (Table 8).

**Table 9:** Distribution of cases according to Registered/Out registered status

| Registered/Out registered | *N* = Frequency | Percentage (%) |
|---|---|---|
| Registered | 92 | 59.4 |
| Out registered | 63 | 40.6 |

In our study 92 patients were registered at our hospital while 63 patients were registered at outside hospital (Table 9).

## Discussion

Hypertensive disorder of pregnancy is a major challenge to pregnancy. Many theories regarding its etiology have been suggested including abnormal placentation, immunologic phenomenon, coagulation abnormalities, angiogenesis factors or endothelial damage.[9] Still there are no definitive screening tests or predictors of disease. But if it's neglected it can lead to serious maternal and perinatal complications. So its awareness among antenatal mothers is important.

Early detection and timely intervention are required for good maternal and neonatal outcome. In our study incidence of hypertensive disorder of pregnancy is 8.45% which is comparable to study conducted by Lo Jo et al. that shows incidence of 3–10%.[2]

Frequency in younger age group less than 25 years of age is 41.9% in present study.

Frequency in primigravida is 54.8%.

Mild preeclampsia was the commonest type of hypertensive disorder of pregnancy 47.7% in our study. Incidence of HDP in term (37–40 weeks) pregnancy was 38.1%. Cesarean section was the most common mode of delivery (63.2%). Most common indications were uncontrolled blood pressure, poor Bishop's score, non-reassuring fetal heart rate on CTG, compromised fetus indicated by color Doppler changes.

Eighteen patients developed postpartum hemorrhage, 3 had HELLP, 8 had abruption.

Forty-nine babies required NICU admission. In hypertensive disorder of pregnancy there is chronic uteroplacental insufficiency which leads to intrauterine growth restriction, fetal hypoxia, and preterm delivery. So low birth weight due to prematurity, intrauterine growth restriction are main reasons for NICU admissions.

## Conclusion

Hypertensive disorder of pregnancy is the dreaded complication of pregnancy if left untreated. So its awareness and sensitization among antenatal mothers is required for early detection of the disease. Early detection and timely intervention can prevent complications of the disease. And can modify maternal and neonatal outcome.

The outcome in hypertensive disorder of pregnancy can be improvised with good antenatal care, pre-conceptional counseling, risk stratification, properly planned investigations and markers, ultrasonography and with good NICU and ICU care.

This study about outcomes will help formulate preventive strategies of hypertensive disorder of pregnancy.

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