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Original Research Article

Incidence of hypertensive disorders of pregnancy and it's maternal-fetal outcome in admitted antenatal patients in tertiary care centre, Bhilai, Chhattisgarh, India

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ABSTRACT

Background: Pre-eclampsia refers to any new onset of hypertension and proteinuria after 20 weeks of gestation in a previously normotensive, non proteinuric women. Hypertension is a very common medical complication of pregnancy. It is one of the leading causes of maternal and fetal mortality and morbidity worldwide. Early detection, close surveillance and timely delivery are necessary to reduce complications and improvement in maternal and fetal health and outcome. To determine the incidence, risk factors and maternal and fetal outcomes in women with hypertensive disorders of pregnancy in all pregnant women attending Obstetrics and Gynaecology department, Shanakaracharya Institute of Medical Science, Bhilai.

Methods: This is a retrospective record-based observational study conducted over a period of one year from January 2020-December 2020 after getting approval from the institutional ethical committee. Patients diagnosed with hypertensive disorders of pregnancy were evaluated and data was collected and analyzed.

Results: Of the 1503 deliveries in the hospital during the period under review, 131(8.7%) were managed for hypertensive disorders of pregnancy. Pre-eclampsia was the commonest type of hypertensive disorder of pregnancy (69.3%) with the majority presenting with severe disease. Women of all age group were affected with highest incidence among 21-30years of age (69.4%). The incidence was maximum among primigravida (67.2%) compared to multipara 100 (32.8%). Intra uterine deaths were recorded among 12.2%, while a major share of fetus (41.2%) were diagnosed to have intrauterine growth retardation. Most common maternal complication in our study was abruption (7.6%), followed by HELLP (2.2%). Two maternal deaths were recorded, giving a case fatality rate of 1.5%.

Conclusions: Hypertensive disorders of pregnancy are associated with high maternal and fetal morbidity and mortality. Regular antenatal follow up will help in early diagnosis and timely intervention of the cases. Also, special consideration and close surveillance of those women with early-onset disease is important. There is need for strengthening of communication and referral systems in the healthcare.

Keywords: Hypertensive disorders of pregnancy, Maternal and fetal outcome, Pre-Eclampsia

INTRODUCTION

Preeclampsia refers to any new onset of hypertension and proteinuria after 20 weeks of gestation in a previously normotensive, non proteinuric women.^{1,2} It is a highly

variable, multisystem disorder unique to pregnancy and a leading cause of maternal and fetal/neonatal morbidity and mortality. Hypertensive disorders complicates about 5-10% of all pregnancies and together forms the deadly triad along with heart disease and hemorrhage that

contributes maximum to maternal morbidity and mortality.³ WHO reported 14% of maternal death attributed to hypertensive disorders of pregnancy.⁴

ACOG classified hypertensive disorders of pregnancy into four groups.⁵

Gestational hypertension

Diagnosed when systolic blood pressure >140 mmHg or diastolic blood pressure >90 mmHg measured on two occasions four to six hours apart after 20 weeks of gestation without proteinuria or systemic signs and symptoms.

Pre-eclampsia

Systolic blood pressure (SBP) > 140 mmHg or diastolic blood pressure (DBP) > 90 mmHg with proteinuria with or without systemic signs and symptoms.

Chronic hypertension

Systolic blood pressure > 140 mmHg or diastolic blood pressure > 90 mmHg present pre-pregnancy or < 20 weeks of gestational age.

Pre-eclampsia superimposed on chronic hypertension

Increased blood pressure and new onset proteinuria or other end organ dysfunction in addition to pre-existing hypertension.

Also, Eclampsia: Pre-eclampsia with grandmall tonic clonic seizure.

Some of the risk factors for preeclampsia are primi paternity, extremes of maternal age, multifetal gestation, pregnancies through assisted reproductive technique, pre-eclampsia in previous pregnancies, renal disease, connective tissue disorders and family history of pre-eclampsia.⁶ The rate of HDP is likely to increase along with obesity and metabolic syndrome in women of reproductive age.⁷ Smoking reduces the risk of hypertension during pregnancy.⁸ As effective treatments are currently limited, prevention and identification of the causes and risk factors are of importance.

PE has been linked to adverse perinatal outcomes for the mother and fetus as well as increased maternal blood pressure and other cardiovascular risks later in life.⁹ Women with a history of preterm PE have a seven- to eight-times increased risk of coronary heart disease morbidity and mortality.¹⁰

The main maternal and fetal risk associated with hypertensive disorders of pregnancy include Abruptio, abortion, preterm delivery, HELLP syndrome, pulmonary edema, postpartum hemorrhage, acute renal failure, DIC, fetal growth restriction, intrauterine fetal demise and perinatal death.

Early detection, close surveillance and timely intervention are need of an hour to reduce complications and improvement in maternal and fetal health and outcome.

METHODS

Type of Study: Retrospective record-based study. Place of Study: Shri Shankaracharya Institute of Medical Sciences, Bhilai. Study Duration: January 2020-December 2020.

Inclusion criteria

All pregnant women attending obstetrics OPD who were diagnosed as hypertensive disorders of pregnancy were included in this study.

Exclusion criteria

Patients diagnosed with other causes of convulsion.

Procedure

Women who fulfilled the above inclusion criteria were included in the study. Study included patients admitted in labor room in the department of Obstetrics and Gynaecology. Data collection was done from the records maintained by hospital after getting approval from the institutional ethical committee. Based on the records, patients were categorized into gestational hypertension, pre-eclampsia, eclampsia, chronic hypertension and preeclampsia superimposed on chronic hypertension. All patients with hypertensive disorders of pregnancy in our study were treated with anti-hypertensives. Cases of impending preeclampsia/eclampsia were treated with MgSO₄ as per Pritchards or zuspan regimen. Fetal growth and amniotic fluid volume evaluated by physical examination and sonography (including fetal doppler and biophysical profile). Dexamethasone were given to patients less than 37 weeks of gestation for fetal lung maturity. Termination of pregnancy was decided for severe pre-eclampsia and eclampsia. Obstetrics management was done following standard protocols.

Data analysis

Datas were recorded in Excel sheet and descriptive analysis was performed and results were expressed in numbers and percentages.

RESULTS

According to the statistics, 1503 births were attended in 2020, out of which 131 were diagnosed as hypertensive disorder of pregnancy over a period of one year from January 2020-December 2020 with a prevalence of 8.7%. Among which 74% of births were delivered by cesarean section 25.9% were delivered vaginally. This study was conducted to determine the maternal and fetal outcome.

Our study showed incidence of hypertensive disorders among which gestational hypertension was 16.0%, pre-eclampsia was most common, contributing to maximum (69.4%), among which, non severe pre-eclampsia patients were 33.5%, while severe pre eclampsia was seen in 35.8%. Eclampsia accounted for 13.7%, and chronic hypertension 0.76% (Table 1) (Figure1).

Table 1: Prevalence of hypertensive disorders.

Types of hypertensives disorder	Number of cases	Percentage
Gestational hypertension	21	16.0
Non-severe pre-eclampsia	44	33.5
Severe pre-eclampsia	47	35.8
Eclampsia	18	13.7
Chronic hypertension	1	0.76
Pre-eclampsia superimposed on chronic hypertension	0	0

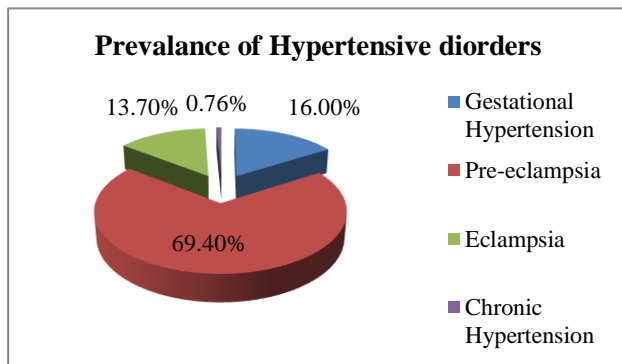


Figure 1: Prevalence of hypertensive disorders.

In age distribution of cases, hypertensive disorders were maximum in the age group of 21-30 years (69.4%) followed by 16.7% of patients in the age group of 31-35 years of age, 7.6% of patients among <20 years of age and patients of >35 years accounts for 6.1% (Table 2).

Table 2: Age-wise distribution of cases.

Maternal age (in years)	Number of cases	Percentage
<20	10	7.6
21-30	91	69.4
31-35	22	16.7
>35	8	6.1

Distribution as per parity showed majority of cases among primigravida accounting for 67.1% and multigravida accounts for 32.8% (Table 3).

Adverse fetal complication is common, among which intrauterine growth retardation/low birth weight was the

most common contributing to 41.2%, followed by preterm deliveries 35.1%. Fetal death was seen in 12.2% patients which is alarming (Figure 2).

Table 3: Distribution as per parity.

Gravidity status	Number of cases	Percentage
Primigravida	88	67.2
Multipara	43	32.8

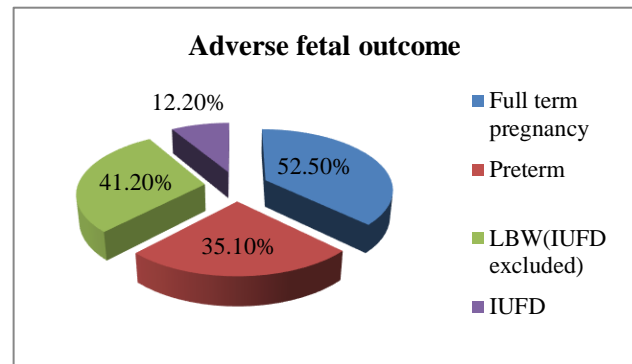


Figure 2: Adverse fetal outcome.

Maternal Complications were no less. Most common complication was severity of pre eclampsia (35.8%), followed by eclampsia (13.7%). Placental abruption was seen in 7.6%, followed by HELLP (2.2%). Two patients developed DIC (1.5%). Two maternal deaths were recorded, giving a case fatality rate of 1.5%. (Figure 3).

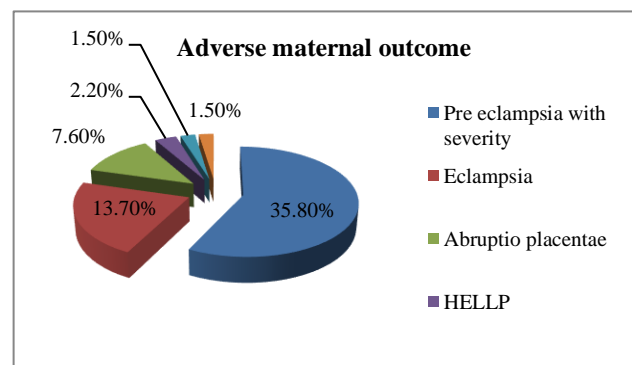


Figure 3: Adverse maternal outcome.

DISCUSSION

Hypertensive disorder of pregnancy is a multisystem disorder that causes most detrimental effect on both mother and fetus. This disease is one of the major public health problems responsible for increase in maternal and perinatal morbidity and mortality. Risk factors for preeclampsia are primi paternity, extremes of maternal age, multifetal gestation.

Pathogenesis behind the primary cause of pre-eclampsia is failure of second wave of cytotrophoblastic invasion of

spiral arterioles in the muscular layer. Other causes may also include immunological intolerance between maternal, placental and fetal tissues, maternal maladaptation to inflammatory changes of normal pregnancy and genetic influences. The increased incidence of perinatal morbidity and mortality seen in pregnancies complicated by preeclampsia, although complex and multifactorial, is primarily due to uteroplacental insufficiency causing compromise of blood flow to the fetus and need of preterm delivery resulting in increased admissions in NICU.

In a study done by Subha Sivagami et al, overall prevalence of hypertensive disorders of pregnancy were 10.4%, gestational hypertension was diagnosed in 962 cases (47.4%), pre-eclampsia 661 cases (32.6%), chronic hypertension 166 cases (8.2%), severe pre-eclampsia superimposed on chronic hypertension 239 cases (11.8%).¹¹ In our study, overall prevalence of hypertensive disorders of pregnancy were 8.7%, gestational hypertension was diagnosed in 21 cases (16.0%), pre-eclampsia 44 cases (33.5%), severe pre-eclampsia 47 cases (35.8%), eclampsia 18 cases (13.7%) and chronic hypertension superimposed pre eclampsia, 1 case (0.76%).

Subha Sivagami et al concluded that the incidence was 39.6% in the age group of 18-22 years, 30.4% in the age group of 23-27 years.¹¹ In Gogaram et al study highest incidence of hypertensive disorders occurred among 23-27 years of age group.¹² In our study, highest incidence was seen in the age group of 21-30years, 69.4% followed by 31-35years, 16.7%.

Bindu K et al, reported the prevalence of PIH was 10.7% among primipara and 9.1% among multipara. Kolluru V et al, reported in their study that incidence of hypertensive disorders in primigravida as 48.3% and multigravida as 50.9%.^{13,14} In our study the prevalence were highest among primigravida i.e 67.1% compared to multigravida, 32.8%.

Lemi Belay et al did a study and maternal complication was seen in 31.7%. These complications were: progression to severe preeclampsia (18.2%), placental abruption (5%), HELLP syndrome (2.4%) and DIC (1.22%).¹⁵ Our present study revealed that abruption placenta as commonest maternal complication affecting 7.6% and HELLP syndrome were next common complication affecting 2.2%. Other major complications included DIC affecting 1.5% and Maternal death rate was 1.5%.

The perinatal mortality in our study was 12.2%, while the overall perinatal complication rate was about 47.5%. Intrauterine growth restriction was the commonest perinatal complication observed in this study accounting for 41.2%. Preterm being the second complication accounts for 35.1% of the cases, whereas intrauterine fetal demise was 12.2%. The increased perinatal

complication seen might be explained by the progression of preeclampsia to severe diseases in those women who developed preeclampsia before 34 weeks and concomitant high preterm birth.

Women older than 35 years have 2.54 times increased chance of having an adverse maternal outcome in this study compared to those in the middle age group (20–35).

CONCLUSION

Preeclampsia is a multi-organ, heterogeneous disorder of pregnancy associated with significant maternal and neonatal morbidity and mortality. Although, gestational hypertension cannot be prevented but development of pre-eclampsia and its complications can be prevented through early detection of cases, proper and regular antenatal checkup at all health care centers along with early initiation of antihypertensive drugs to overcome adverse maternal outcome. Fetal well being can be monitored clinically by per abdomen examination, radiologically by interval growth scan for AFI and birth weight, fetal Doppler for early detection of IUGR, biophysical profile and Non stress test.

Also, close surveillance of the patients plays a major role in prevention of maternal and fetal complications. Because preeclampsia is a progressive disorder, in some circumstances, delivery is needed to halt the progression to the benefit of the mother and fetus.

However, based on the data, we believe that a multidisciplinary and collaborative approach between the fields of maternal-fetal medicine and neonatology is necessary to weigh the maternal and fetal risks of prolonging the pregnancy versus the potential benefits of further fetal maturation across most gestational ages.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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