

Maternal and perinatal outcome in women with hypertensive disorders in pregnancy

Abstract

Aims and objectives

- To determine the effect of hypertension in pregnancy
- To determine the maternal and fetal outcome in patients with hypertensive disorders of pregnancy.

Materials and methods

This is a retrospective study conducted in ESIC MC and PGIMSR, Bangalore from January 2020 to December 2020. All pregnant women who presented with Hypertensive disorder in pregnancy were included in the study.

Results

A total of 1503 patients who delivered during the study period were included in the study of which 172 patients had hypertensive disorder (11.44 %). Gestational hypertension occurred in 113 cases, preeclampsia in 45 cases, chronic hypertension in 8 cases, chronic hypertension with superimposed preeclampsia in 2 cases and eclampsia in 4 cases. Of these 85(49.41%) cases were primigravida and 87(50.58%) were multigravida. 38 deliveries occurred preterm and 134 were term. 4 patients had intrauterine fetal demise. Gestational diabetes occurred in 30(17.44%) cases, hypothyroidism in 45 cases(26.16%), IUGR in 11 cases(6.39%), oligohydramnios in 10 cases(5.81%).

Discussion

Hypertensive disorders in pregnancy is a spectrum of disease. It is one of the non communicable diseases occurring in pregnancy. It is the third most common cause of maternal mortality. By timely detection and proper management, it is possible to decrease the complications and adverse outcomes associated with this condition.

Conclusion

Hypertensive disorders in pregnancy is an important cause for maternal and fetal mortality and morbidity. Hence it is important to identify the risk factors and prevent it for better outcome.

Keywords: hypertensive disorder, pre eclampsia, eclampsia, chronic hypertension, pregnancy

Volume 10 Issue 2 - 2021

Lakshmi A,¹ Akshatha DS,¹ Pooja P,¹ Prashanth FG,¹ Veena MV,¹ Sreelatha S²

¹Junior resident, Department of Obstetrics and Gynecology, ESIMC and PGIMSR, India

²Professor, Department of Obstetrics and Gynecology, ESIMC and PGIMSR, India

Correspondence: Lakshmi A, Junior resident, Department of Obstetrics and Gynecology, ESIMC and PGIMSR, India, Tel 7760883893, ORCID 0000-0002-7841-3839, Email Laks229@gmail.com

Received: March 19, 2021 | **Published:** May 06, 2021

Introduction

Hypertensive disorders in pregnancy is one of the most common non communicable diseases occurring in pregnancy. It is a spectrum of disease occurring in pregnancy. Its incidence ranges from 10- 22% of all pregnancies.¹ Gestational hypertension is defined as the new onset hypertension SBP \geq 140 mm Hg or DBP \geq 90 mm Hg on two occasions measured 4 hours apart, occurring for the first time after 20 weeks period of gestation in a previously normotensive woman and returning back to normal within 12 weeks of delivery, not associated with proteinuria. Pre eclampsia is said to be present when there is associated proteinuria(300 mg per 24 hours equivalent to a protein/creatinine ratio of 30 mg/mmol) along with gestational hypertension. Severe pre eclampsia is characterized by SBP \geq 160 mm Hg or DBP \geq 110 mm Hg or with features of end organ damage characterised by pulmonary edema, deranged liver enzymes, thrombocytopenia, cerebral and visual symptoms, oliguria and fetal growth restriction.²

Chronic hypertension is the presence of hypertension before conception or before 20 weeks period of gestation and that which

persists even 12 weeks after delivery. Chronic hypertension with superimposed pre eclampsia is the development of proteinuria in a known case of chronic hypertension. Eclampsia is defined as the new onset of generalised tonic clonic seizures in a woman with severe pre eclampsia, not attributable to other causes. Hypertensive disorders in pregnancy is the third most common cause for maternal mortality in India.³ It accounts for 24% of all maternal deaths in India. Complications include preterm labour,abruption, DIC, Pulmonary edema, thromboembolism, cardiac failure, HELLP syndrome, renal failure and cerebral hemorrhage. Fetal complications include pre term baby,Intra Uterine Growth Restriction, intra uterine fetal demise. Long term complications include chronic hypertension, insulin resistance and susceptibility of the female baby to develop pre eclampsia in future pregnancy.

It is an idiopathic disorder with multifactorial causes. Risk factors include primigravida, extremes of age group, multifetal gestation, obesity, long interpregnancy interval, diabetes, renal disorders, APLA syndrome, SLE, woman with past history of preeclampsia

and with family history of pre eclampsia, conception with assisted reproductive techniques. The main pathogenesis is abnormal placentation and the maternal response to it which is multisystemic. In this condition there is no cytotrophoblastic invasion of the spiral arteries, so the vessels remain high resistance, low capacitance. Also there is no loss of vasomotor control. Oxidative stress by cytokines, TNF alpha, interleukins, endothelial dysfunction, inflammation, imbalance between the angiogenic factors (VEGF and PlGF) and the anti angiogenic factors (s Flt 1 and sEng) also have a role to play. The ultimate management is removal of the ischemic placenta by termination of pregnancy. Depending on the severity of the disease and the associated complications, after stabilising the patient's blood pressure by administration of anti hypertensives, and administration of Magnesium sulphate in cases of imminent eclampsia and eclampsia, the decision for termination can be taken.

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Materials and methods

This is a retrospective study conducted in ESIC MC and PGIMS, Bangalore from January 2020 to December 2020. All pregnant women who presented with Hypertensive disorder in pregnancy were included in the study. A total of 1503 patients delivered during the study period of which 172 patients had hypertensive disorders. The outcome of each patient was determined in our study. The patients underwent regular BP monitoring, anti hypertensive treatment using drugs like labetalol, nifedipine. Steroids were given for fetal lung maturity wherever required. Magnesium sulphate was administered in cases where required. The decision for termination of pregnancy depended on the period of gestation, the severity of the disease and the complications associated. Cesarean section was done for obstetric indications. Neonatal care was provided by the pediatrician as per protocols. All these patients were followed up for 6 weeks to see if the blood pressure returned to normal and to look for other complications. The results were compiled and analyzed.

Results

Out of 1503 patients who delivered during the study period, 172 (11.44%) patients had hypertensive disorders of pregnancy. (Table 1) 69 women were aged between 26-30 years and 60 women were aged between 21-25 years. 85 women were primigravida, while 87 women were multiparous. (Table 2) Out of this, gestational hypertension occurred in 113 cases, preeclampsia in 45 cases, chronic hypertension in 8 cases, chronic hypertension with superimposed preeclampsia in 2 cases and eclampsia in 4 cases. (Table 3) 168 pregnancies were singleton pregnancies. 4 were twin gestations. Gestational diabetes mellitus was associated in 30 cases, hypothyroidism in 45 cases. Oligohydramnios occurred in 10 patients, Intra uterine growth restriction in 11 cases. Anemia was associated in 7 patients. (Table 4) 134 patients delivered at term (> 37 weeks gestation) of which there was 1 intra uterine fetal demise. 38 patients delivered < 37 weeks gestational age of which there were 3 cases of intra uterine fetal demise. (Table 5) 110 patients underwent LSCS. 44 patients delivered by FTVD. (Table 6) 65 babies weighed between 2.6 to 3 kg. 45 babies weighed between 3.1 to 3.5 kg and 40 babies weighed between 2 to 2.5 kg. (Table 7) Abruption occurred in 11 cases, pulmonary edema in 5 cases, HELLP syndrome in 10 cases and PPH in 37 cases (Table 8).

Table 1 Age distribution

Age	Cases	Percentage
<20 years	3	1.7
21 – 25 years	60	34.8
26 – 30 years	69	40.11
31 – 35 years	28	16.2
36 – 40 years	11	6.3
>40 years	1	0.5

Table 2 Parity

Parity	Number	Percentage
Primigravida	85	49.42%
Multiparous	87	50.58%

Table 3 Type of hypertensive disorder

Type of disorder	No. of cases	Percentage
1. Gestational hypertension	113	65.69%
2. Preeclampsia	45	26.16%
3. Chronic hypertension	8	4.65%
4. Chronic hypertension with superimposed preeclampsia	2	1.16%
5. Eclampsia	4	2.32%

Table 4 Associated conditions

Associated condition	No of cases	Percentage
Gestational diabetes mellitus	30	17.44%
Hypothyroidism	45	26.16%
IUGR	11	6.39%
Oligohydramnios	10	5.81%
Anemia	7	4.06%

Table 5 Gestational age at termination of pregnancy

Period of gestation	No of cases	Percentage	No of IUD	Percentage of IUD
< 37 weeks	38	22.10%	3	1.74%
>37 weeks	134	77.90%	1	0.58%

Table 6 Mode of delivery

Mode of delivery	No of cases	Percentage
LSCS	110	63.95%
FTVD	44	25.58%
VAVD	5	2.90%
FAVD	2	1.16%
PTVD	6	3.48%
Hysterotomy	1	0.58%
IUD	4	2.32%

Table 7 Birth weight

Birth weight	No of babies	Percentage
1.5 – 2 kg	20	11.62%
2.1 – 2.49 kg	26	15.11%
2.5 – 3 kg	79	45.93%
3.1 – 3.5 kg	45	26.16%
>3.5 kg	6	3.48%

Table 8 Maternal complications

Complication	Number of cases	Percentage
Abruption	11	6.39%
Pulmonary edema	5	2.90%
HELLP syndrome	10	5.80%
Post partum hemorrhage	37	21%

Discussion

During the study period there were 1503 deliveries in total of which 172 cases had hypertensive disorders of pregnancy. In our study maximum number of patients are between 21 – 30 years (74.9%). This is comparable to the study by Onuh et al where the mean age of women was 27.1±5.64 years.⁴ A study done by Singhal SR et al also showed the same findings with 90% patients less than 30 years of age.⁵ 49 % of cases in our study were primigravidas. This is in good agreement with study by Deepika Jamwal where 46.6% patients were primigravida.⁶ In a study done by Priyanka et al 53.57% cases were primigravida.⁷ Another study by Singhal et al showed that 73 % patients were primigravida. This is due to limited sperm exposure in primigravida women and exposure to chorionic villi for the first time. A previous abortion or delivery with the same partner is associated with a lower risk of pre eclampsia. In multiparous women, as the age advances there is abnormality in lipid metabolism leading to endothelial dysfunction and predisposing to hypertension. By taking preventive measures, development of pre eclampsia can be reduced in the group.

In our study 65.69 % cases were gestational hypertension, and 26.16% pre eclampsia. A study done by Onoh et al found that pre eclampsia was seen in 62% cases, eclampsia in 10.3%, gestational hypertension in 18.8%, chronic hypertension in 4.3% and pre eclampsia on chronic hypertension in 4.6% cases.⁸ 63.95 % of patients delivered by LSCS in our study. This is in good agreement with the study done by Shaikh et al which showed a Caesarian section rate of 73%.⁹ Study by Sasmita Das et al showed a LSCS rate of 69.2% in patients with hypertensive disorder of pregnancy.¹⁰ Study by Pillai showed LSCS rate of 64.5%.¹¹ Tufnell et al reported as high as 72% caesarean section rate in BJOG.¹² Caesarean section rates of 71% and 78% respectively were reported by Miguel M et al. and Dissanayake VH et al.^{13,14} The high incidence of LSCS was due to prev LSCS, fetal distress and CPD in labor. LSCS was done due to Prev LSCS in 40% cases, fetal distress in 10% and CPD in labour in 13%. In our study 77.9% patients delivered after 37 weeks period of gestation. This is in accordance with study by Sasmita Das et al with similar rate of 68.1%.¹⁰ Study by Devi et al showed that 60% of patients were term.¹⁵ Study by Saxena et al showed 64% cases had gestational age between 31 to 37 weeks and 35% cases had term pregnancies.¹⁶ In our study 45.93% babies weighed between 2.5 to 3 kg and 26.73% weighed

less than 2.5 kg. The study by Sasmita das et al showed that 45.1% weighed less than 2.5kg and by Priyanka R et al showed low birth weight of 47.8%.^{10,8}

In our study, the babies were followed up for one month. Out of the total 25.73% babies were admitted in NICU. In our study Post partum hemorrhage occurred in 21%, abruption in 6.39% and HELLP syndrome in 5.8%. These findings correlate well with the results by Saxena et al.¹⁶ Abruption occurred in 7.85% and PPH in 36.1% in the study conducted by Priyanka et al.⁸ Abruption occurred in 4% cases and oligohydramnios in 4% in a study done by Devi SA et al.¹⁷ Gestational Diabetes Mellitus was associated with 17.4% cases in our study. In a study by Bej P et al pre eclampsia was seen in 3.3% cases who had past history of diabetes mellitus.¹⁸ Ros et al stated that in diabetic women, high level of plasma triglycerides cause endothelial cells to accumulate triglycerides leading to endothelial cell dysfunction that predisposes to developing high blood pressure.¹⁹ Preeclampsia leads to decreased uteroplacental blood flow leading to IUGR and oligohydramnios. There were no maternal deaths in our study. 4 cases of Intra uterine fetal demise occurred in our study.

Conclusion

Our study concluded that Hypertensive disorders in pregnancy is an important cause for maternal and fetal mortality and morbidity. It is important to identify the risk factors and initiate early preventive measures which helps in decreasing Caesarian section rate.

Conflicts of interest

None.

Acknowledgments

None.

Funding

None.

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