

## HYPERTENSION COMPLICATING PREGNANCY AND OUTCOMES IN A TERTIARY CARE HOSPITAL - A RETROSPECTIVE STUDY

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### Abstract

**Background:** The objective of this study was to identify the prevalence of the hypertensive disorders and its effect on pregnancy and fetal outcomes. **Materials and Methods:** This is a retrospective study conducted at a tertiary care centre, which included 181 hypertensive women over a period of 1 year from July 2022 to June 2023. Data was gathered from medical records. **Result:** Among 825 women delivered at our centre 181 had hypertension, accounting to prevalence of 21.9%. In a total of 181 patients 95(52.4%) were diagnosed as gestational Hypertension, 56(30.9%) as Preeclampsia, 19 (10.4%) had Eclampsia, 11(6.07%) as Chronic Hypertension. Among 181 pregnant women 134(74.03%) underwent LSCS and 47(25.9%) had vaginal birth. On analysing the fetal outcomes 101(55.8%) babies were >2.5kg and 80(44.2%) were <2.5kg. Among these 89(47.17%) babies required NICU admission and 46(25.4%) babies had APGAR <7 at 1minute. **Conclusion:** Hypertension in pregnancy is one of the most common medical complications. It accounts for most of the preterm deliveries and NICU admission of babies. It is one of the leading causes for maternal morbidity and mortality.

## INTRODUCTION

Hypertensive disorders in pregnancy is on the rise in today's world which is one among the leading causes of both the maternal and perinatal morbidity and mortality.<sup>[1-3]</sup> Hypertension in pregnancy along with bleeding and infection are the most common causes of maternal mortality and morbidity.<sup>[4-7]</sup> Hypertension in pregnancy is a major challenge in antenatal practice due to its impact on obstetric and fetal outcomes. Hypertension plays a significant role in up to 15% of complications over the course of pregnancy and the postpartum period.<sup>[8]</sup> Hypertensive disorders of pregnancy encompass preexisting (or chronic) hypertension, gestational hypertension, preeclampsia, and eclampsia; accounting for an estimated prevalence of 5% to 10% in women belonging to the reproductive age group.<sup>[9,10]</sup> Systolic blood pressure reading of more than 140 mmHg and a diastolic pressure of more than 90 mmHg obtained at 6 hours interval after 20 weeks period of gestation is termed as hypertensive disorder in pregnancy. The acute elevation of blood pressure in pregnancy had several maternal complications like convulsions, abruption, HELLP syndrome, hepatic and renal failure, and retinal detachment and also rises the risk of heart attacks, cardiac failure,

cerebrovascular accidents of the mother. Fetal complication is mainly due to the abnormal blood circulation from the mother to the fetus, which reduces the oxygen transfer to the fetus leading to condition like IUGR, premature delivery, fetal hypoxia to stillbirth, and higher rate of neonatal death.<sup>[2]</sup>

The American College of Obstetricians and Gynecologists (ACOG) and National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy has classified the hypertensive disorders in pregnancy into four major groups: 1) Gestational hypertension, where resting BP is 140/90 mmHg or higher after the 20 week of gestation, 2) Chronic hypertension, that exists before pregnancy or begins in the first 20 weeks of gestation, 3) Preeclampsia (raised BP and edema or proteinuria)/eclampsia (preeclampsia and seizures), 4) Preeclampsia superimposed on chronic hypertension.<sup>[3,4,11,12]</sup> The pathology, clinical presentation and the outcome varies greatly with each category of cases.<sup>[13]</sup> After a very extensive clinical research, the cause is attributed to be immunological. This theory states that the abnormal trophoblastic invasion of the placenta, leads to the secretion of certain substances that activate vascular endothelial cells and damages them. These secretions have a

vasoconstriction effect on all the systemic blood vessels leading to the rise of blood pressure.

Hypertensive disorders is more common among the nulligravidas and elderly women. It is a progressive disorder, which initiates at fertilization and courses until the total expulsion of the placenta. The changes occurring in the body will progress to a state of multi organ involvement increasing the mortality and morbidity in both the mother and the fetus.<sup>[4]</sup> Medical management of the hypertensive disease does not prevent the fetal prognosis but studies have proven that early detection of the disease and treatment decreases both the hypertensive crises in the mother and reduces fetal complications. The use of antihypertensive is to prolong the pregnancy and slow down the progression of the disease until the period of viability reached in the fetus not compromising the mother.<sup>[14]</sup> The objective of this study is to identify the prevalence of hypertensive disorders, and maternal and fetal outcomes.

## MATERIALS AND METHODS

The study was performed at the ASRAM medical college, a tertiary care center, Eluru. This is a retrospective study, which included 181 cases, studied over a period of 1 year from July 2023 to June 2023. Hypertension was identified based on the definition by the National Working Group Report on High Blood Pressure in Pregnancy, a recorded blood pressure of > 140/90 mmHg. Based on the signs and symptoms of the disease and a past history of hypertension before pregnancy, the patients were classified into the following groups of gestational hypertension, chronic Hypertension, preeclampsia, and eclampsia. The various data regarding

demographic details, presenting complaints, gestational age, obstetrics history, diagnosis, blood pressure monitoring, current medications, antihypertensive drugs prescribed, maternal complications, fetal outcome were gathered from medical record files. The collected data were tabulated and analyzed in SPSS software.

## RESULTS

Among 825 pregnant women who delivered in our institute over a period of one year 181(21.9%) were diagnosed with Hypertension. Out of 181 women with Hypertension majority were Primigravida 112 (61%) and 3(1.65%) were grand multiparous. Of 181 patients 29(16.02%) women were in age group of <20yrs, 78(43.09%) were between 21-25years, 48(26.5%) were between 26-30 years, 19(10.49%) were between 31-35years and 7(3.86%) were >35years. Among these 99(54.6%) underwent preterm delivery and 82(45.3%) had term delivery. In a total of 181 patients 95(52.4%) were diagnosed as gestational Hypertension, 56(30.9%) as Preeclampsia, 19 (10.4%) had Eclampsia, 11(6.07%) as Chronic Hypertension.

Complications like HELLP (1.1%) and Abruptio (6.6%) occurred in 7.7% of patients. Among 181 pregnant women 134(74.03%) underwent LSCS and 47 (25.9%) had vaginal birth.

On analyzing the fetal outcomes 101 (55.8%) babies were >2.5kg and 80(44.2%) were <2.5kg. Among these 89(47.17%) babies required NICU admission and 46(25.4%) babies had APGAR <7 at 1minute. FGR was noted in 16(8.8%) and IUFD noted in 13(7.18%).

**Table 1: Demographic characteristics of the population (N=181)**

Variables	Number (%)
Age in years	
<20	29(16.02%)
21-25	78(43.09%)
26-30	48(26.5%)
31-35	19(10.49%)
>35	7(3.86%)
Parity	
0	112(61.8%)
1	42(23.2%)
2	17(9.3%)
3	7(3.8%)
≥4	3(1.65%)
Period of gestation in Weeks	
<37	99(54.6%)
>37	82(45.3%)

**Table 2: Prevalence types of hypertensive disorders in the study population**

Type of the hypertensive disease (N=181)	Number (%)
Gestational hypertension	95(52.4%)
Preeclampsia	56(30.9%)
Chronic hypertension	11(6.07%)
Eclampsia	19(10.4%)

**Table 3: Prevalence of maternal and fetal outcomes in the study population (N=181)**

Complications	Number (%)
HELLP syndrome	2(1.1%)

Abruption	12(6.6%)
Fetal growth restriction	16(8.8%)
Low birth weight	80(44.2%)
NICU admission	89(49.17%)
APGAR <7	46(25.4%)
Intrauterine fetal demise	13(7.18%)

**Table 4: Mode of delivery (N=181)**

Vaginal delivery	47(25.9%)
LSCS	134(74.5%)

## DISCUSSION

Hypertensive disorders in pregnancy even today continues to be a major problem in pregnant women even after extensive research. American Society of Nephrology reported an increased prevalence in preeclampsia in a rural area in developing countries.<sup>[15]</sup> Adverse maternal and fetal outcome associated with hypertension complicating pregnancy can be prevented by regular antenatal visits.

Roberts et al. studied 250 women with hypertensive disorder in pregnancy and they reported the prevalence to be 9.8%, 0.6% of which had chronic hypertension, 4.2% were diagnosed as preeclampsia, 0.3% women had preeclampsia superimposed on chronic hypertension, and 4.3% had gestation hypertension.<sup>[16]</sup> Whereas another study conducted in Nigeria, reported 5.3% of the population to be affected by hypertension complicating pregnancy, gestational hypertension, preeclampsia superimposed on chronic hypertension and preeclampsia-eclampsia were noted in 54.1%, 26.2% and 19.7% respectively.<sup>[17]</sup> In the study conducted by Chaitra S et al they reported the prevalence to be 8.8%, 80.06% had gestational hypertension, 14.68% had preeclampsia-eclampsia, 0.34% had preeclampsia superimposed on chronic hypertension, 2.79% had chronic hypertension and 2.09% had eclampsia.<sup>[18]</sup> In this study, the prevalence of hypertension was 21.9% and 52.4% had gestational hypertension, 30.9%, 6.07%, 10.4% had preeclampsia, chronic hypertension, eclampsia respectively.

In this study the highest prevalence was noted among women between 21-25years (43.09%) and among primigravidas (61.8%). In the study conducted by Shahla et al and Chaitra S et al the prevalence of the disorder was noted among the women <20 and > 32 years and among the primigravidas.<sup>[18,19]</sup> Yadav et al,<sup>[20]</sup> concluded that the risk of PIH was higher when the age of pregnant women was less than 25 years, and this observation was in similarity with ours. A study by Mohanty et al,<sup>[21]</sup> reported that primiparous patients with PIH below 20 years of age was in 26% but only 15% of the controls were less than 20 years. Placental abruption was noted in 6.6% of the women in our study which is higher than 1.74% noted by Chaitra S et al,<sup>[18]</sup> and 2% noted by Eshetu et al,<sup>[22]</sup> in contrast to a study by Hall et al which reported as high as 20%.<sup>[23]</sup> HELLP syndrome was noted in 1.1% which was much lower than 4.54% of cases noted by

Chaitra S et al,<sup>[18]</sup> and 12.4% of the cases noted by Eshetu et al,<sup>[22]</sup> and Prakash et al. reported HELLP syndrome in 7.5% of cases of preeclampsia.<sup>[24]</sup>

The fetal outcome was noted in the form of preterm deliveries, Apgar score, fetal growth restriction, low birth weight, the need for neonatal resuscitation, admission to neonatal intensive care unit and intrauterine fetal demise. Incidence of preterm delivery 54.6% was much higher than noted by Chaitra S et al,<sup>[18]</sup> and Yadav et al,<sup>[20]</sup> which are 28.67% and 28.8% respectively. Incidence of FGR was 8.8% lower than compared to 14.68% of births in the study by Chaitra S et al,<sup>[18]</sup> and there is a higher incidence of low birth weight 44.2% and IUFD of 7.18% compared to Chaitra S et al,<sup>[18]</sup> study with incidence of low birth weight in 26.57% and intrauterine fetal demise in 2.09. A study by Yadav et al,<sup>[20]</sup> higher IUFD of 4.8% was noted. In this study, we noted 25.9% mothers had vaginal delivery, and higher percentage (74.5%) underwent cesarean section.

## CONCLUSION

Hypertension in pregnancy is one of the most common cause of maternal and perinatal morbidity and mortality. A higher frequency of adverse fetal outcomes was found in hypertensive pregnant women than in normotensive pregnant women. Hence there is a need to create awareness of the importance of antenatal checkups during early pregnancy to prevent complications. Early detection and timely intervention of hypertensive disorders complicating pregnancy and provision of specialized systemic antenatal maternal care could reduce the impacts of complications.

## REFERENCES

1. Henry CS, Biedermann SA, Campbell MF, Guntupalli JS. Spectrum of Hypertensive Emergencies in Pregnancy. *Critical Care Clinics*. 2004; 20: 607-712.
2. De Cherney AH, Nathan L, Laufer N, Roman AS. *Current Diagnosis and Treatment - Obstetrics and Gynecology : Hypertension in Pregnancy*. 11th Edition. New York: McGraw Hill; 2012.
3. Report of the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy. *American Journal of Obstetrics and Gynecology*. 2000; 183(1): S1-S22.
4. Cunningham FG, Leveno K, Bloom S, et al. *Williams Obstetrics*. 23rd Edition. New York: McGraw-Hill- Medical Publishing Division; 2010.

5. Vest AR, Cho LS. Hypertension in Pregnancy. *Cardiology Clinics*. 2012; 30: 407-23.
6. Wagner SJ, Barac S, Garovic VD. Hypertensive Pregnancy Disorders: Current Concepts. *Journal of Clinical Hypertension*. 2007; 9: 560-66.
7. Henry CS, Biedermann SA, Campbell MF, Guntupalli JS. Spectrum of Hypertensive Emergencies in Pregnancy. *Critical Care Clinics*. 2004; 20: 697-712.
8. World Health Organisation. Health topics. Maternal Health. Available from: [http://www.who.int/topics/maternal\\_health/en/](http://www.who.int/topics/maternal_health/en/). [Last accessed 2020 Feb 19].
9. Regitz-Zagrosek V, Roos-Hesselink JW, Bauersachs J, Blomstrom-Lundqvist C, Cifkova R, De Bonis M, et al. ESC Scientific Document Group. 2018 ESC guidelines for the management of cardiovascular diseases during pregnancy. *Eur Heart J* 2018;39:3165-241.
10. Umesawa M, Kobashi G. Epidemiology of hypertensive disorders in pregnancy: Prevalence, risk factors, predictors and prognosis. *Hypertens Res* 2017;40:213-20
11. Liu CM, Cheng PJ, Chang SD. Maternal Complications and Perinatal Outcomes associated with Gestational Hypertension and Severe Preeclampsia in Taiwanese Women. *Journal Formes Medical Association*. 2008; 107(2):129 -38.
12. National High Blood Pressure Education Program Working Group Report on High Blood Pressure in Pregnancy. *American Journal of Obstetrics and Gynecology*. 1990; 163:1689-712.
13. Hnat MD, Sibai BM, Caritis S, Hauth J, Lindheimer MD, MacPherson C, et al. Perinatal Outcome in Women with Recurrent Preeclampsia Compared with Women Who Develop Preeclampsia as Nulliparas. *American Journal of Obstetrics & Gynecology*. 2002; 20, 422-26.
14. Matthys LA, Coppage KH, Lambers DS, Barton JR, Sibai BM. Delayed postpartum preeclampsia: an experience of 151 cases. *American Journal of Obstetrics and Gynecology*. 2004; 190(5):14646.
15. American Society of Nephrology; News release, Nov. 8, 2008. Available from [http://www.wrongdiagnosis.com/hd/news/62113\\_8.pregnant-rural-womenmore-at-risk.htm](http://www.wrongdiagnosis.com/hd/news/62113_8.pregnant-rural-womenmore-at-risk.htm)
16. Roberts CL, Albert CS, Morris JM, et al. Hypertensive Disorders in Pregnancy: A Population-Based Study. *Medical Journal of Australia*. 2005; 182: 332-35.
17. Vigil-De Garcia P, Montufar-Rueda C, Smith A. Pregnancy and Severe Chronic Hypertension: Maternal Outcome. *Hypertension in Pregnancy*. 2004; 23: 285-93.
18. Chaitra S, Jayanthi, Sheth AR, Ramaiah R, Kannan A, Mahantesh M. Outcome in hypertension complicating pregnancy in a tertiary care center. *The New Indian Journal of OBGYN*. 2017; 4(1):42-6
19. Khosravi S, Dabiran S, Lotfi M, Asnavandy M. Study of the Prevalence of Hypertension and Complications of Hypertensive Disorders in Pregnancy. *Open Journal of Preventive Medicine*. 2014; 4: 860-67.
20. Yadav S, Yadav R, Saxena U. Hypertensive disorders of pregnancy and perinatal outcome. *J Obset Gynecol India*. 1997; 17: 322-30.
21. Mohanty S, Nayak N, Nanda NN, Rao P. Serum lipids and malondialdehyde levels in primiparous patients with pregnancy induced hypertension. *Ind J of Clin Biochem*. 2006; 21(1): 189-92.
22. Seyom E, Abera M, Tesfaye M, Fentahun N. Maternal and fetal outcome of pregnancy related hypertension in Mettu Karl Referral Hospital, Ethiopia. *J Ovarian Res*. 2015; 8: 10.
23. Hall DR, Odendaal HJ, Steyn DW, Grové D. Expectant management of early onset, severe preeclampsia: maternal outcome. *BJOG*. 2000; 107(10):1252-7.
24. Prakash J, Pandey LK, Singh AK, Kar B. Hypertension in pregnancy: hospital based study. *J Assoc Physicians India*. 2006; 54: 273-78