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Original Research Article

Decoding hypertensive disorders in pregnancy: a tertiary center experience of risk, delivery, and outcome

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ABSTRACT

Background: Hypertensive disorders are a major cause of maternal and perinatal morbidity and mortality worldwide. This study aimed to investigate the prevalence, risk factors, clinical manifestations, and maternal and fetal outcomes associated with hypertension in pregnancy.
Methods: This prospective observational study was conducted in the Department of Obstetrics and Gynaecology at a tertiary care teaching hospital in Navi Mumbai over a defined study period. Pregnant women diagnosed with hypertensive disorders of pregnancy were included. Clinical and obstetric data were collected, including demographic characteristics, gestational age, parity, mode of delivery, and neonatal outcomes. Data were analyzed using descriptive statistics and appropriate inferential tests, with a p value of <0.05 considered statistically significant.
Results: The mean age of participants was 31.04±4.8 years. Most women were multigravida or grand multipara (61.2%). Caesarean section was the predominant mode of delivery (82.7%). The most common neonatal birth weight was between 2 and 2.5 kg (23.5%). No statistically significant association was observed between demographic or obstetric factors and mode of delivery, although obesity showed a trend toward significance (p=0.07).
Conclusions: Hypertensive disorders during pregnancy are prevalent and associated with adverse maternal and fetal outcomes. Early identification of risk factors and close monitoring of high-risk pregnancies are crucial for improving outcomes.

Keywords: Fetal outcomes, Hypertension, Maternal outcomes, Preeclampsia, Pregnancy, Risk factors

INTRODUCTION

Hypertensive disorders are among the most common medical complications of pregnancy, affecting approximately 6-8% of all pregnancies worldwide.[1] These disorders represent a significant cause of maternal and perinatal morbidity and mortality. Hypertension in pregnancy encompasses a spectrum of conditions, including chronic hypertension, gestational hypertension, preeclampsia, and eclampsia.[2]

Preeclampsia, characterized by new-onset hypertension and proteinuria or end-organ damage after 20 weeks of gestation, is a leading cause of maternal and fetal complications.[3] It is associated with an increased risk of placental abruption, cerebrovascular accidents, liver and renal failure, and intrauterine growth restriction.[4] Eclampsia, the occurrence of grand mal seizures in preeclamptic women, represents the most severe manifestation and can be life-threatening for both mother and baby.

The etiology of hypertensive disorders in pregnancy is not fully understood, but it is believed to involve placental ischemia, endothelial dysfunction, and an imbalance of angiogenic and anti-angiogenic factors.[5] Several risk factors have been identified, including nulliparity, obesity, multiple gestation, diabetes, renal disease, and a family history of preeclampsia.[6] Early identification and

appropriate management of hypertension in pregnancy are crucial to prevent adverse outcomes.

Despite advances in prenatal care and treatment, hypertensive disorders remain a significant public health challenge, accounting for nearly one-fifth of all maternal deaths worldwide.[7] Improving our understanding of these conditions, their risk factors, and optimal management strategies is essential to enhance maternal and fetal outcomes.

This clinical study aimed to investigate the prevalence, risk factors, clinical manifestations, and management approaches for hypertension in pregnancy within our local population. The findings may contribute to the development of better screening, prevention, and treatment strategies, ultimately improving the care and outcomes for pregnant women and their babies affected by these disorders.

METHODS

Study design

This was a prospective observational study conducted to evaluate maternal and perinatal outcomes in women diagnosed with hypertensive disorders of pregnancy.

Study setting and duration

The study was carried out in the Department of Obstetrics and Gynaecology, Padmashree Dr. D. Y. Patil Deemed to be University Hospital, Navi Mumbai, over a period of (mention exact months and years, e.g. January 2022 to December 2022)

Selection criteria

All pregnant women admitted with hypertensive disorders of pregnancy during the study period were included. Hypertension in pregnancy was defined as systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg recorded on at least two occasions. Women with pre-existing renal disease, chronic medical disorders other than hypertension, or incomplete medical records were excluded.

Study procedure

A total of 98 pregnant women fulfilling the inclusion criteria were enrolled. Detailed clinical information including maternal age, gestational age at delivery, obstetric history, parity, associated risk factors, and previous history of preterm labour was recorded. Patients were followed up throughout their hospital stay to assess mode of delivery and neonatal outcomes. Neonates requiring additional care were managed in the neonatal intensive care unit (NICU).

Ethical approval

The study was approved by the Institutional Ethics Committee of Padmashree Dr. D. Y. Patil Deemed to be University. As this was an observational study, the requirement for individual informed consent was waived.

Statistical analysis

Data were entered into Microsoft Excel and analyzed using SPSS version 21.0. Continuous variables were expressed as mean ± standard deviation and compared using the independent sample t-test. Categorical variables were expressed as frequencies and percentages and analyzed using the Chi-square test. A p value <0.05 was considered statistically significant.

RESULTS

We studied total of 98 pregnant women with hypertension were observed during this study. The average age of patients was 31.04±4.8 years. The age distribution shows that the majority of participants were in the 26-35-year age range, with 30.6% between 26-30 years and 34.7% between 31-35 years. 17.3% were younger, aged 21-25 years, while 13.3% were 36-40 years old and 4.1% were over 40 years. Most participants (61.2%) were grand multiparas, having had more than 3 pregnancies previously. 38.8% had less than 3 previous pregnancies (Table 1).

Table 1: Demographic and obstetric characteristics.

Variables		Frequency	Percentage
Age in years	21-25	17	17.3
	26-30	30	30.6
	31-35	34	34.7
	36-40	13	13.3
	>40	4	4.1
Gravida	>3	60	61.2
	<3	38	38.8
Parity	≤1	82	83.7
	≥2	16	16.3
History of abortions	Yes	82	83.7
	No	16	16.3
Weeks of gestation	24 to 28	4	4.1
	29 to 32	14	14.3
	32 to 37	80	81.6
Obstetric history	Primigravida	37	37.8
	Multigravida	61	62.2

Table 2 shows that majority of patient had no history of hypertension in self or family.

Table 3 shows the delivery outcome and newborn birth weight of hypertensive pregnant women. We found that majority of them were delivered by caesarean section and weighed between 2 to 2.5 kgs.

Table 2: History of hypertension in family.

		Frequency	Percentage
Previous history of hypertension	Yes	25	25.5
	No	73	74.5
H/O maternal hypertension	Yes	2	2
	No	96	98
H/O paternal hypertension	Yes	6	6.1
	No	92	93.9
H/O preterm birth	Yes	13	13.3
	No	85	86.7
Obesity	Yes	36	36.7
	No	62	63.3

Table 3: Outcome of hypertensive pregnancy.

		Frequency	Percentage
Mode of delivery	Caesarean section	81	82.7
	NVD	16	16.3
Baby weight at birth (Kgs)	<1	3	3.1
	1 to 1.5	13	13.3
	1.5 to 2	19	19.4
	2 to 2.5	23	23.5
	2.5 to 3	20	20.4
	>3	20	20.4

Table 4: Association of demographic and obstetric factors with mode of delivery in hypertensive pregnancies.

Variables		Caesarean section	Normal delivery	P value
Age in years	21-25	12	5	0.445
	26-30	24	6	
	31-35	29	5	
	36-40	12	1	
	>40	4	0	
Baby weight at birth (Kgs)	<1	2	1	0.131
	1 to 1.5	7	6	
	1.5 to 2	9	10	
	2 to 2.5	10	13	
	2.5 to 3	6	14	
	>3	3	17	
Weeks of gestation	24 to 28	4	0	0.325
	29 to 32	13	1	
	32 to 37	64	16	
Obstetric history	Primigravida	33	4	0.18
	Multigravida	48	13	

Table 4 examines how various demographic and obstetric factors relate to the mode of delivery (caesarean section or normal delivery) in hypertensive pregnancies. The factors analyzed include maternal age, baby weight at birth, weeks of gestation, and obstetric history. The p values provided in the table suggest that none of these factors showed a statistically significant association with the mode of delivery (all p values >0.05).

Table 5 explores the relationship between various hypertension-related risk factors and the mode of delivery. The factors considered include previous history of hypertension, maternal and paternal history of hypertension, history of preterm birth, and obesity.

Table 5: Association of history of hypertension factors with mode of delivery.

		Caesarean section	Normal delivery	P value
Previous history of hypertension	Yes	23	2	0.153
	No	58	15	
H/O maternal hypertension	Yes	2	0	0.513
	No	79	17	
H/O paternal hypertension	Yes	6	0	0.247
	No	75	17	
H/O preterm birth	Yes	12	1	0.324
	No	69	16	
Obesity	Yes	33	3	0.07
	No	48	14	

DISCUSSION

The present study aimed to investigate the prevalence, risk factors, and maternal and fetal outcomes associated with hypertensive disorders in pregnancy. Our findings are largely consistent with previous literature, while also highlighting some unique observations.

The age distribution in our study population, with the majority between 26-35 years, is similar to other studies on hypertensive disorders in pregnancy.[8] The study found that the prevalence was higher (82.7%) in the age group ≥25 years old than in the age group <25 (17.3%). Parazzini et al found that the risk of getting PIH tends to rise with maternal age, which is consistent with our findings.[9] The odds ratio (OR) was 3.2 for women over 30 years old and 3.5 for those between the ages of 26 and 25. Similar results have also been reported by Owiredu et al.[10]

Additionally, the higher proportion of multiparas and grand multiparas in our cohort aligns with the well-established association between increased parity and risk of preeclampsia and gestational hypertension.[11,12]

According to our study, 81.6 percent of pregnant women with a gestational period of 32 to 37 weeks had a considerably greater incidence of hypertension during pregnancy. Similarly, it was shown that preeclampsia and eclampsia, which appear after 20 weeks of gestation, occur

more frequently in a number of hospital-based investigations.[13-15]

According to the current study, 25.5% of pregnant women with hypertension had a history of the condition from a prior pregnancy. Nisar et al and Tebeu et al discovered a noteworthy correlation between a prior history of hypertension during pregnancy and hypertension during the present pregnancy.[16,12]

In this study, patients with a history of maternal hypertension (2%), and paternal hypertension (6.1%), were included. Tebeu et al found no significant difference between the history of maternal hypertension and hypertension during pregnancy, but they did disclose a higher risk of hypertension during pregnancy for women with a history of paternal hypertension.[12]

Regarding maternal age (Table 4), our findings contrast with several previous studies. For instance, Londero et al reported that advanced maternal age was associated with a higher risk of cesarean section in hypertensive disorders of pregnancy.[17] The lack of significant association in our study might be due to our smaller sample size or differences in population characteristics.

Concerning birth weight and gestational age, our results differ from some existing literature. Ananth et al reported that both low and high birth weight were associated with increased odds of cesarean delivery in women with preeclampsia.[18] The absence of this association in our study warrants further investigation with a larger sample size.

Our study has several strengths, including a prospective design, standardized data collection, and assessment of multiple risk factors and outcomes. However, limitations include a relatively small sample size and the absence of long-term follow-up data on maternal and neonatal health.

CONCLUSION

In conclusion, our findings contribute to the growing body of evidence on the burden of hypertensive disorders in pregnancy, particularly in developing countries. Early identification of risk factors and close monitoring of high-risk pregnancies are essential to improve maternal and fetal outcomes. Future research should focus on exploring preventive strategies, optimizing management protocols, and investigating the long-term consequences of these conditions.

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