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Original Research Article

A study of patients with hypertensive disorders in pregnancy and their fetomaternal outcomes at tertiary care center: a retrospective study

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ABSTRACT

Background: Hypertensive disorders of pregnancy (HDP) are a major cause of maternal and perinatal morbidity and mortality worldwide, particularly in developing countries. These disorders complicate 5-10% of pregnancies and are associated with adverse fetomaternal outcomes. Objectives were to study the clinical profile of HDP and to evaluate their associated maternal and fetal outcomes at a tertiary care center.

Methods: This retrospective observational study was conducted in the Department of Obstetrics and Gynecology at a Cama and Albless Hospital over a period of 6 months. Pregnant women with gestational age ≥ 20 weeks diagnosed with HDP were included. Data regarding maternal age, parity, gestational age at admission, type of hypertensive disorder, mode of delivery, maternal complications, and fetal outcomes were collected and analyzed using descriptive statistics.

Results: A total of 30 women with HDP were studied. The majority of patients were in the age group of 25-34 years, with 40% being primigravidae. Gestational hypertension was the most common hypertensive disorder (63.3%), followed by Preeclampsia (16.7%) and eclampsia (3.3%). Cesarean section was performed in 86.7% cases. Common maternal complications included severe preeclampsia, eclampsia, placental abruption, and HELLP syndrome. Low birth weight in 0%, and NICU admission in 16.7% of neonates and no stillbirths were observed.

Conclusions: HDP are associated with significant maternal and perinatal morbidity. Early diagnosis, close antenatal surveillance, and timely referral to tertiary care centers are crucial in improving fetomaternal outcomes.

Keywords: Hypertensive disorders of pregnancy, Preeclampsia, Eclampsia, Maternal outcome, Fetal outcome

INTRODUCTION

Hypertensive disorders of pregnancy (HDP) are among the most common medical complications encountered during pregnancy and remain a leading cause of maternal and perinatal morbidity and mortality worldwide.^{1,2} These disorders complicate approximately 5-10% of all pregnancies and contribute significantly to preventable maternal deaths, particularly in low-and middle-income countries.^{1,8}

HDP comprises a spectrum of conditions including

gestational hypertension, preeclampsia, eclampsia, chronic hypertension, and chronic hypertension with superimposed preeclampsia.^{3,4} Preeclampsia is a pregnancy-specific multisystem disorder characterized by new-onset hypertension after 20 weeks of gestation, associated with proteinuria and/or end-organ dysfunction.^{5,6} The incidence and severity of preeclampsia vary across populations and are influenced by demographic and clinical risk factors.^{14,15}

The disease course is often unpredictable and may progress rapidly to severe complications such as eclampsia, HELLP syndrome, placental abruption, acute

renal failure, and disseminated intravascular coagulation.^{7,8} Several studies have highlighted the substantial burden of maternal morbidity associated with HDP in both developed and developing settings.^{9,10}

Fetal and neonatal complications associated with HDP include prematurity, low birth weight, intrauterine growth restriction, stillbirth, and increased neonatal intensive care unit admissions.^{11,13} Despite improvements in antenatal care and availability of antihypertensive therapy, HDP continues to pose a significant challenge due to delayed diagnosis, poor antenatal compliance, and late referrals.^{3,11}

The present study was undertaken to evaluate the clinical profile of HDP and to assess their associated fetomaternal outcomes in patients managed at a tertiary care center.

METHODS

This retrospective observational study was conducted in the Department of Obstetrics and Gynecology at a Cama and Albless teaching hospital over a period of 6 months from June 2025 to November 2025.

Study population

All pregnant women diagnosed with HDP after 20 weeks of gestation and admitted to the antenatal ward or labor room during the study period were included.

Sample size

A total of 30 pregnant women with HDP were included in the study.

The inclusion criteria comprised pregnant women with a gestational age of 20 weeks or more who were diagnosed with one of the following hypertensive disorders: gestational hypertension, preeclampsia, eclampsia, or chronic hypertension with or without superimposed preeclampsia, and who had complete medical records available for review. The exclusion criteria included women with known chronic renal disease and those with known autoimmune disorders.

Data collection

Data were collected retrospectively from hospital case records, labor room registers, and neonatal intensive care unit records using a structured data extraction proforma. The following variables were recorded:

Maternal demographic details

They were age, parity, and gestational age at admission.

Clinical details

They were-Blood pressure readings, urine protein analysis, and type of hypertensive disorder

Obstetric details

They were-Mode of delivery and gestational age at delivery.

Maternal outcomes assessed included: mode of delivery, development of complications such as severe preeclampsia, eclampsia, placental abruption, HELLP syndrome, ICU admission, and maternal mortality. Fetal outcomes assessed included: birth weight, prematurity, NICU admission, stillbirth, and neonatal mortality.

Management protocol

All patients were managed as per standard institutional protocols based on the severity of hypertensive disorder and gestational age at presentation.

Statistical analysis

Data were entered into a Microsoft excel spreadsheet and analyzed using statistical software. Descriptive statistics were used, and results were expressed as frequencies and percentages.

RESULTS

A total of 30 women with HDP were analyzed. Gestational hypertension was the most common diagnosis (63.3%), followed by mild preeclampsia (16.7%), severe preeclampsia including HELLP syndrome and chronic hypertension with superimposed preeclampsia (16.7%), and eclampsia (3.3%). Similar patterns with gestational hypertension as a frequent subtype have been reported in tertiary care studies. More than half of the patients (53.3%) were aged 25-34 years, while 30.0% were aged ≥ 35 years and 16.7% were younger than 24 years. Severe forms of disease were more frequently observed in women aged ≥ 35 years, consistent with evidence linking advanced maternal age to higher HDP severity. At admission, 46.7% of patients were between 34-36 weeks of gestation, 30.0% presented before 34 weeks, and 23.3% were ≥ 37 weeks gestation. Early-onset disease (< 34 weeks) was more commonly associated with severe preeclampsia, consistent with previous reports. Cesarean section was the predominant mode of delivery, performed in 86.7% of cases, while 13.3% delivered vaginally, similar to other tertiary-center cohorts.

Low birth weight (1500-2499 g) was observed in 36.7% of neonates and was more frequent among mothers with severe preeclampsia and eclampsia. Low birth weight, a frequent outcome in HDP, reflects placental insufficiency. All pregnancies resulted in live births, with no stillbirths recorded in this cohort, although stillbirth remains a known risk in HDP. Neonatal outcomes were favorable in most cases, with 83.3% of neonates having no complications. NICU admission was required in 16.7% of cases, primarily due to low birth weight and transient neonatal morbidity, consistent with documented NICU

admission risks in hypertensive pregnancies. No cases of intrauterine growth restriction/neonatal resuscitation.

Maternal outcomes were uniformly good, with no maternal mortality or major complications reported.

Table 1: Maternal outcomes of the HDP.

Maternal outcomes	Gestational hypertension, n=19	Mild pre-eclampsia, n=5	Severe pre-eclampsia, n=5	Eclampsia, n=1	Total
Maternal age (in years)					
<24	5 (26.3%)	0	0	0	5
25-34	10 (52.6%)	4 (80%)	2 (40%)	0	16
>35	4 (21.1%)	1 (20%)	3 (60%)	1 (100%)	9
Gestational age (in weeks)					
<34	6 (31.6%)	1 (20%)	2 (40%)	0	9
34-36	9 (47.4%)	3 (60%)	2 (40%)	0	14
>37	4 (21.1%)	1 (20%)	1 (20%)	1 (100%)	7
Mode of delivery					
Vaginal	3 (15.8%)	0	1 (20%)	0	4
Cesarean	16 (84.2%)	5 (100%)	4 (80%)	1 (100%)	26

Table 2: Perinatal outcomes of the HDP.

Perinatal outcomes	Gestational hypertension	Mild Pre-eclampsia	Severe pre-eclampsia	Eclampsia	Total
Birth weight (gm)					
<1500	0	0	0	0	0
1500-2499	5 (26.3%)	2 (40%)	3 (60%)	1 (100%)	11
>1500	1 (73.7%)	3 (60%)	2 (40%)	0	19
Birth outcome					
Still birth	0	0	0	0	0
Alive	19 (100%)	5 (100%)	5 (100%)	1 (100%)	30
Neonatal complications					
No complication	15 (78.9%)	5 (100%)	4 (80%)	1 (100%)	25
IUGR	0	0	0	0	0
Need for resuscitation	0	0	0	0	0
Need for NICU	4 (21.1%)	0	1 (20%)	0	5

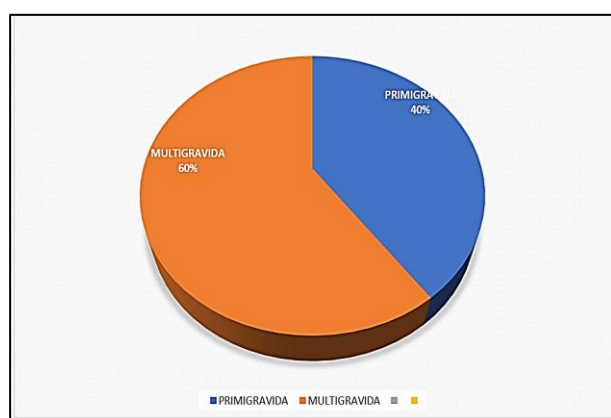


Figure 1: Percent of hypertensive heart diseases among primigravida and multiravida.

DISCUSSION

In the present study, gestational hypertension was the most common hypertensive disorder of pregnancy (63.3%),

followed by preeclampsia and its severe forms, which is comparable with findings from several Indian and international studies where gestational hypertension has been reported as the predominant subtype of HDP.^{1,2} This pattern may be attributed to early detection through routine antenatal screening and improved awareness among pregnant women.

The majority of affected women were in the age group of 25-34 years (53.3%), which is similar to observations reported by Singh et al. and Patel et al who found that most cases of HDP occurred in women in their late twenties and early thirties.^{3,4} However, severe forms of disease were more frequently observed in women aged ≥ 35 years in the present study, supporting earlier evidence that advanced maternal age is associated with an increased risk of severe preeclampsia and related complications.⁵

Nearly half of the patients presented between 34-36 weeks of gestation, while 30% had early-onset disease before 34 weeks. Early-onset HDP was more commonly associated with severe preeclampsia, which is consistent with

previous studies suggesting that early-onset disease is often linked to placental dysfunction and worse maternal and fetal outcomes.^{6,7}

The cesarean section rate in this study was notably high (86.7%), which is comparable to reports by other tertiary care center-based studies where operative delivery rates ranged from 70-85% in women with HDP.^{8,9} This reflects the need for timely termination of pregnancy in the presence of maternal or fetal compromise, particularly in severe disease.

Low birth weight was observed in 36.7% of neonates, predominantly among mothers with severe preeclampsia and eclampsia. Similar findings have been reported by Gupte and Wagh, who noted a strong association between HDP and low birth weight due to uteroplacental insufficiency.¹⁰ However, no neonate in the present study weighed less than 1500 g, which may be attributed to effective antenatal monitoring and timely obstetric intervention.

All pregnancies resulted in live births, with no stillbirths or cases of intrauterine growth restriction, which contrasts with earlier studies reporting higher rates of perinatal mortality in HDP.¹¹ This favorable outcome may reflect improvements in obstetric and neonatal care. NICU admission was required in 16.7% of cases, mainly due to low birth weight and transient neonatal morbidity, a rate comparable to previous studies.¹²

Maternal outcomes were uniformly good, with no maternal mortality or major complications, which is better than older studies that reported significant maternal morbidity and mortality associated with HDP.¹³ This improvement highlights the impact of early diagnosis, standardized management protocols, and availability of tertiary care facilities.

Overall, the findings of the present study are largely consistent with existing literature and reinforce the importance of early antenatal care, close monitoring, and timely intervention in improving both maternal and neonatal outcomes in HDP.

However, the present study has certain limitations. Being a retrospective, single-center study, the findings may not be generalizable to the wider population. The study relied on existing medical records, which may have been subject to incomplete documentation or information bias. Additionally, long-term maternal and neonatal outcomes could not be assessed due to the limited follow-up period. Despite these limitations, the study provides valuable insights into the pattern and impact of HDP in a tertiary care setting.

CONCLUSION

HDP remain a significant cause of adverse fetomaternal outcomes. Early detection, appropriate antenatal

surveillance, and timely intervention are essential to reduce maternal and neonatal morbidity and mortality. Strengthening antenatal care services and ensuring early referral of high-risk pregnancies can substantially improve outcomes associated with HDP.

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Conflict of interest: None declared

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

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