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Original Research Article.

Evaluation of Pregnancy Induced Hypertension and Neonatal Outcome: An Institutional Based Study

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ABSTRACT

Background: This study was conducted to assess Hypertension induced by pregnancy and neonatal outcome.

Materials and Methods: Preterm children born alive with gestational ages (GA) ranging from 24 to 33 weeks were included in this retrospective cohort research. Premature babies who were moved straight from the delivery room to another service, twins, newborns from other services, patients with severe malformations, mothers with diabetes, and neonates who had not had umbilical artery doppler flowmetry were all excluded. The study involved monitoring all patients while they were in the hospital and assessing them for the relevant outcomes at 28 days of life, discharge, death, or transfer, and 18 months of corrected gestational age.

Results: In this study, the newborns were divided into two groups of 50 each based on the status of hypertension in their mothers (Group 1- Normotensive mothers, and group 2- Hypertensive mothers). The anthropometric measurements of birth weight and head circumference were significantly lower in Group 2 and had a higher risk of being born with a weight less than 1000 g. Newborns in the 2nd group had more necrotizing enterocolitis and leukomalacia.

Conclusion: Among the results examined, low birth weight, leukomalacia and enterocolitis are made more likely by arterial hypertension during pregnancy.

Keywords: Hypertension, Pregnancy, Neonatal, Enterocolitis, Leukomalacia.

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INTRODUCTION

Pregnancy-induced hypertension (PIH) was defined as new hypertension that appears at 20 weeks or more gestational age of pregnancy with or without proteinuria, which includes gestational hypertension, pre-eclampsia, and eclampsia.[1-3] Hypertension is defined as a sustained systolic BP ≥140 mmHg or diastolic BP ≥ 90 mmHg based on the average of at least two measurements, using the same arm.[4] Globally, PIH is a significant public health threat both in developed and developing countries contributing to high perinatal deaths.[5]

Decreased utero-placental perfusion also significantly increases the risk of intrauterine growth restriction, preterm birth and other neonatal comorbidities (like respiratory distress syndrome, intraventricular hemorrhage) and other systemic disturbances.[6,7] In addition, these children are more susceptible to neurodevelopmental and behavioral problems as well as chronic non-communicable disease later in life.[8,9] In Ethiopia, the burden of PIH ranges from 2.23 to 18.25%.[10,11] Hence, this study was conducted to assess Hypertension induced by pregnancy and neonatal outcome.

MATERIAL AND METHODS

Preterm children born alive with gestational ages (GA) ranging from 24 to 33 weeks and 6 days were included in this retrospective cohort research conducted at Index Medical College Hospital & Research Centre, Indore, MP, India. Premature babies who were moved straight from the delivery room to another

service, twins, newborns from other services, patients with severe malformations, mothers with diabetes, and neonates who had not had umbilical artery doppler flowmetry were all excluded. The study involved monitoring all patients while they were in the hospital and assessing them for the relevant outcomes at 28 days of life, discharge, death, or transfer, and 18 months of corrected gestational age. One hundred babies were included in the sample, fifty of whom had mothers with hypertension and fifty of whom had mothers without hypertension. Statistical analysis was carried out using SPSS software.

RESULTS

In present study, group 1 comprised of newborns having normotensive mothers while the other group comprised of newborns having hypertensive mothers. Both the groups had 50 subjects each. Table 2 demonstrates the morbidity of the newborns examined. The measurements of birth weight as well as head circumference were found to be significantly lower in Group 2 and had a higher risk of being born with a weight less than 1000 g. Newborns in the 2nd group had more necrotizing enterocolitis and leukomalacia.

Table 1: Group-wise distribution of subjects.

Groups	Number of newborns	Percentage
Group 1 (infants with normotensive mothers)	50	50%
Group 2 (infants having hypertensive mothers)	50	50%
Total	100	100%

Table 2: Neonates' morbidity considering the presence or not of Hypertensive disorders of pregnancy.

Characteristics	Group 1	Group 2
Birth weight (grams)	1251.4	1036.8
Head circumference (cm)	29.6	27.5
Necrotizing Enterocolitis (%)	5.2	8.6
Apgar 1 min	6.4	5.5
Apgar 5 min	6.9	6.9
Weight at hospital discharge	1799.1	1954.7
Leukomalacia (%)	3.7	7.5
NB <850 g %	10.5	24.4

DISCUSSION

Hypertensive Disorders of Pregnancy (HDP) present a serious complication that affects approximately 2.5 to 3.0 percent of women, increasing the risk of maternal and neonatal complications.[12,13] Worldwide, hypertensive disorders remain the leading cause of maternal mortality related to pregnancy.[12]

Hypertensive disorders of pregnancy appear as a hypertensive condition that develops at any time after 20 weeks of pregnancy, accompanied or not by proteinuria. Among the manifestations of these syndromes is eclampsia, which presents with a convulsive component, and HELPP syndrome, which manifests with the presence of hemolysis, elevated liver enzymes and thrombocytopenia; HELLP is a severe form of preeclampsia and not a separate disorder.[14,15] Hypertensive disorder of pregnancy are among the leading cause of maternal and perinatal mortality in developing countries.[16] Hypertension affects more than 5-8% of all pregnancies in the world.[17] Maternal complications includes acute renal failure, hepatic failure, postpartum haemorrhage, disseminated intravascular coagulation, abruptio, and cerebrovascular accident. Foetal complications includes premature deliveries, intrauterine growth restriction, stillbirth, and neonatal deaths.[17,18] Hence, this study was conducted to assess Hypertension induced by pregnancy and neonatal outcome.

In this study, the newborns were divided into two groups of 50 each based on the status of hypertension in their mothers. The anthropometric measurements of birth weight and head circumference were significantly lower in Group 2 and had a higher risk of being born with a weight less than 1000 g. Newborns in the 2nd group had more necrotizing enterocolitis and leukomalacia. Group 1 comprised of newborns having normotensive mothers while the other group comprised of newborns having hypertensive mothers. Habli M et al, in a previous study, compared neonatal outcomes of pregnancies with preeclampsia or gestational hypertension with those of normotensive pregnancies that delivered at 35, 36, or 37 weeks of gestation separately. As compared with normotensive pregnancies, hypertensive pregnancies that delivered at 35 and 36 weeks of gestation had higher rates of small for gestational age births (17.9% vs 1.7% [P < .05] and 33.3% vs 12.2% [P < .01], respectively) and neonatal intensive care unit admission (57.1% vs 34.5% [P < .05] and 33.3% vs 10.7% [P < .001]). The rate of neonatal intensive care unit admission (25.6% vs 8.7%; P < .001) and duration of neonatal stay (3.9 vs 2.0 days; P < .001) were greater in hypertensive pregnancies that delivered at 37 weeks of gestation. These differences were observed largely in women

whose condition required labor induction, regardless of the severity of the hypertensive disease. Pregnancies with preeclampsia or gestational hypertension that delivered between 35 and 37 weeks of gestation had higher rates of neonatal intensive care unit admission, small for gestational age, and longer neonatal stay than normotensive pregnancies, regardless of the severity of the hypertensive disease.[19]

Chaim SRP, et al identified the prevalence of pregnancy-induced hypertension and to verify diastolic blood pressure (DBP) association with type of birth and perinatal outcome. The data were collected from the mothers' records, in the governmental maternity hospital indicated for high-risk pregnancies, in São Paulo city. During hospitalization, 62.1% had systolic blood pressure > 160 mmHg and 49.6% had a DBP < 110 mmHg. There was no significant association of DBP (p=0.799). The frequency of caesarean section was 64.5%, 28.9% for normal birth, and 6.6% for forceps; 93.4% were live born, 81.0% weighed > 2,500 g, 10.6% were premature, 68.1% were born with adequate gestational age, 84.0% and 99.2% had APGAR score > 7 at 1st and 5th minutes, respectively. The DBP e" 110 mmHg was associated with low birth weight (p=0.002) and prematurity (p=0.013).[20]

CONCLUSION

Among the results examined, low birth weight, leukomalacia and enterocolitis are made more likely by arterial hypertension during pregnancy.

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