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Maternal and neonatal outcomes in pregnancy induced hypertension: an observational study

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Summary

Hypertension during pregnancy has been extensively studied due to significant maternal morbidity, mortality, and perinatal mortality that may result. The outcome in hypertensive disorders in pregnancy vary significantly across populations and between institutions serving the same populace. *Objective:* In the present study, the authors sought to determine the outcome for mother and fetus with pregnancy induced hypertension (PIH) in a rural community at a tertiary care center at Thrissur Medical College, Kerala, India. *Materials and Methods:* The authors included all singleton pregnancies with hypertensive disease that had deliveries in our institution in a six-month period excluding the ones with pre-existing hypertension and other comorbidities. *Results:* 46.5% of the patients required a cesarean section, 37.2% had pre-term labor, 52.4% had low birth weight, and 9.4% unfortunately were stillborn. *Discussion:* These results emphasize the need for screening and close follow-up of hypertension in pregnancy for safeguarding fetal and maternal wellbeing. Even after practicing the current standard of care, the higher rate of complications associated with PIH is unacceptable. The authors feel that unique management protocols should be implemented for different patient populations, based on ethnicity, lifestyle, and availability of medical resources.

Key words: Pregnancy induced hypertension (PIH); Low birth weight; Perinatal mortality.

Introduction

Hypertensive disorder is the second most common medical disorder seen during pregnancy. Along with haemorrhage and infection, it contributes greatly to maternal morbidity, mortality, and perinatal mortality throughout the world [1]. Hypertensive disorders affect about 10% of all pregnancies. In many low income countries, complications from pregnancy and childbirth are the leading cause of death among women of reproductive years [2].

Gestational hypertension is a pregnancy-specific multisystem disorder characterized by development of edema, hypertension, and proteinuria after 20 weeks of gestation [3]. According to the National High Blood Pressure Education Program Working Group, gestational hypertension is defined as a systolic BP of at least 140 mm Hg and/or a diastolic BP of at least 90 mm Hg on at least two occasions at least six hours apart after the 20th week of gestation in women known to be normotensive before pregnancy and before 20 weeks' gestation. The BP recordings used to establish the diagnosis should be no more than seven days apart.

The group of diseases includes preeclampsia and eclampsia, which are exclusive to pregnancy. Preeclampsia is a common disease and is a significant contributor to maternal and neonatal morbidity and mortality [4]. Hypertension during pregnancy carries with it the increased risk of abruptio placentae, disseminated intravascular coagulation, cerebral hemorrhage, hepatic failure, and acute renal failure. It is estimated that up to 10% to 15% of maternal deaths are associated with preeclampsia and eclampsia. This number is likely to be higher in developing nations, up to 100 times higher in some parts of Africa and as compared with Western world. Reduction in maternal mortality by 75% has been set as one of the millennium development goals by the United Nations to be achieved by year 2015.

"Mild preeclampsia" was defined as BP > 140/90 mm Hg but < 160/110 mm Hg with proteinuria > 300 mg/24 hours. "Severe preeclampsia" was defined as BP > 160/110 mm Hg with urinary protein excretion of >2.0 g/24 hours or any of oliguria (> 400ml urine/24 hours), visual disturbance, serum creatinine > 1.2 mg/dl, platelet count of < 100,000/microL, microangiopathic hemolysis (increased lactate dehydrogenase [LDH], and elevated serum alkaline phosphatase). "Eclampsia" was defined as occurrence of new-onset grand mal seizure in a patients with preeclampsia. "HELLP syndrome" is another entity described as liver enzyme elevation (aspartate transaminase ≥70 IU/L), hemolysis (LDH ≥ 600 IU/L), and low platelet count (< 100,000/microL).

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Materials and Methods

This was an observational study conducted at the Department of Obstetrics and Gynecology and Pediatrics, Government Medical College Thrissur for a duration of six months. Subjects includes all hypertensive pregnancies delivered in the present hospital during the study period and enrolled 170 patients. The authors included singleton pregnancies with hypertension first detected during this pregnancy (SBP ≥ 140 DBP ≥ 90) and those delivered in the present institutions were included in the study. Excluded were those with chronic hypertension, coexisting diabetes mellitus, renal diseases, other medical illness, pregnancies with fetal anomalies, and multiple pregnancies.

Data was collected using a questionnaire by direct interview and medical records. All patients underwent a clinical examination and laboratory workup during admission in labour after delivery (< five days postpartum) each patient underwent clinical examination including blood pressure and screening for symptoms. If symptoms were present, laboratory workup, including complete blood count, urine albumin, liver function tests, renal function tests, and serum uric acid were carried out. Babies also underwent detailed examination to assess condition and to rule out any delays. Maternal outcome was determined by preeclampsia, eclampsia, preterm labour, abruptio placenta, postpartum hemorrhage, HELLP syndrome, and renal failure. Fetal outcome determination included prematurity, birth asphyxia, and neonatal death.

All data were entered in Excel and were analyzed using appropriate statistics analyzing software.

Results

The majority of the study population (90%) belonged to the 20-35 years age group; 50.6% were primipara, 45.9% were multipara, and 3.5% grand multipara (≥ 4). Among the subjects, 68.8% had onset of hypertension after 32 weeks of gestation and 81.2% had initial diastolic BP < 110 mm Hg. Among the multipara, 29.8% had previous history of PIH. At the present institution, 90% were given medications to control the BP, whereas the others were controlled with diet and exercise. 46.5% of the patients required a cesarean section, 37.2% had a pre-term labor, and 52.4% were low birth weight. 9.4% of the PIH pregnancies culminated in an intrauterine death and 29.4% of the subject population had a NICU admission with 38% of them requiring a prolonged NICU stay (> seven days). The maternal outcome was such that 46.5% had preeclampsia, 7.1% had eclampsia, and 1.2% had abruptio placenta.

Discussion

Preeclampsia is estimated to occur in 4.6% (95% CI 2.7-8.2) of pregnancies worldwide. In India in 2006, the incidence of PIH was 5.38%, while preeclampsia, eclampsia, and HELLP (hemolysis, elevated liver enzymes, and low platelet count) syndrome accounted for 44%, 40%, and 7% of complications, respectively [5].

The direct consequences of gestational hypertension are reflected on the patient's mode of delivery, prematurity of labor, birth weight, and the incidence of intrauterine death. 46.5% of the present patients required a cesarean section and the remaining 53.5% had a vaginal delivery. The number of operational delivery is relatively high when in direct comparison with Perloff *et al.* who had 61.26% with normal vaginal deliveries [6]. In the present population, 37.2% had a pre-term labor and 52.4% were low birth weight. 9.4% of the PIH pregnancies culminated in an intrauterine death. In a study conducted in North India by Rekha Sachan *et al.*, the incidence of low birth weight was 56.30%, stillbirths 16.90%, and 4.23% of neonates overall died [7]. There seems to be no significant outliers in these numbers in the present study. In a study conducted in Maharashtra, India in 2011 by Vidhydar *et al.*, prematurity was the commonest fetal complication seen in 17.99%, 47.62%, and 52.63% of mild PIH, severe PIH, and eclampsia cases, respectively [8]. The present study did not categorize the cases but 37.2 % had a preterm delivery which is in sync with the aforementioned data. Yadav *et al.* in another study reported preterm deliveries in 28.8%, stillbirths in 4.8%, and 14.8% overall perinatal mortality [9].

In the present subject population, 29.4% had NICU admission with 38% of them requiring a prolonged NICU stay (> seven days). The maternal outcome was such that 46.5% had preeclampsia, 7.1% had eclampsia, and 1.2% had abruptio placenta. Perloff *et al.* measured the maternal outcome in terms of various maternal complications, mode of delivery, and maternal mortality. Overall maternal mortality was 2.8%. The highest maternal mortality was observed in the eclampsia group (8.89%), which contrasts with the 17–18% rate reported in patients with eclampsia in two other studies [10, 11]. Major causes of death in preeclampsia and eclampsia are neurological complications, such as intracerebral hemorrhage and cerebral edema [12]. The present subject population had no maternal mortality which was a welcome result, given that the rate of fetal complications were in tandem with the pre-existing literature. Reported stillborn of 9.4 % was an unacceptable figure in center where they practiced the current standard of care. The present authors feel that unique management protocols should be implemented for different patient populations, based on ethnicity, lifestyle, and availability of medical resources.

The present authors recognize and acknowledge that the small study population limits the accuracy of the observations they made and that the data might be skewed by the unpredictable nature of the patient population they happened to come across during a six-month period.

Conclusion

Screening and close follow-up of hypertension with pregnancy is crucial for safeguarding fetal and maternal well-being. In spite of attempts at optimization of care and the adaptation of practice based medicine, the rate of intrauterine death in PIH looming above 9% should be a concern for Obstetrics practitioners all over the world. Even

after practicing the current standard of care, the higher rate of complications associated with PIH is unacceptable. The present authors feel that unique management protocols should be implemented for different patient populations, based on ethnicity, lifestyle, and availability of medical resources.

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