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RESEARCH ARTICLE

Maternal and neonatal outcome in gestational hypertension

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ABSTRACT

Background: Gestational hypertension (GH) has an incidence of 10–12% in Indian women. This leads to complications in both mother and fetus in later stages of pregnancy such as pre-eclampsia/eclampsia, small for gestational age, intrauterine death, and preterm delivery and may also lead to maternal and fetal death. There are less Indian studies relating adverse outcomes in mother and fetus to GH. **Aims and Objectives:** This study was done to compare the maternal and fetal outcome in GH and normal pregnancy. **Materials and Methods:** Fifty cases of GH and 50 women with normal pregnancy were included in the study. Routine general examination and investigations were done in all the subjects. Participants were followed up until the delivery to know the maternal and fetal outcome. **Results:** Adverse maternal and fetal outcome was significantly higher in GH compared to normal pregnant women. **Conclusion:** GH is one of the common complications of pregnancy and can be easily diagnosed. It is associated with adverse outcomes in mother and fetus which can be avoided if properly monitored.

KEY WORDS: Gestational Hypertension; Small for Gestational Age; Intrauterine Death

INTRODUCTION

Hypertensive disorders are one of the common medical complications of pregnancy, with an incidence of 5–10%. These disorders can result in maternal and perinatal mortality and morbidity worldwide.[1] Hypertensive disorders can present in the form of gestational hypertension (GH), pre eclampsia, eclampsia, and chronic essential hypertension.

GH which was earlier known as pregnancy-induced hypertension is the most frequent cause of hypertension during pregnancy. It is defined as systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg after 20 weeks of gestation without proteinuria (or <300 mg/24 h urine protein).[2] Majority of the cases of GH develop after 37 weeks of gestation.[1]

Hypertensive disorders can lead to complications in 10% of all pregnancies and can result in severe complications such as eclampsia, placental abruption, preterm delivery, the syndrome of hemolysis, elevated liver enzymes, and low platelets, and ultimately even neonatal and maternal death.[3] Approximately 15–25% of women with GH will develop pre-eclampsia and 10% will progress to eclampsia if GH is diagnosed after 36 weeks of gestation.[4]

Furthermore, neonates of mothers having GH are more often small for gestational age (SGA) with more incidence of morbidity and higher neonatal intensive care unit (NICU) admission rates than those born to normotensive mothers.[5] Another study done by Buchbinder[6] has showed that there is increased rate of both preterm delivery and frequency of SGA infants in women with severe GH.

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There are very few Indian studies regarding maternal and neonatal outcomes in GH. This study was done to know if adverse maternal and neonatal outcome is significant in GH compared to normal pregnancies.

MATERIALS AND METHODS

Study Design

It is a prospective observational study.

Participants

Cases and controls were taken from patients who came to obstetrics and gynecology (OBG) outpatient department of a medical college in Bangalore for routine antenatal check-up and also those who were admitted in wards of OBG for delivery.

Group A (cases): A total of 50 pregnant women with GH satisfying both inclusion and exclusion criteria were included in the study.

Inclusion Criteria

Women with systolic blood pressure of ≥ 140 mmHg and/or diastolic blood pressure of ≥90 mmHg after 20 weeks of pregnancy and without proteinuria (or urine protein of <300 mg/dl for 24 h) were included in the study.[2]

Exclusion Criteria

Women suffering from essential hypertension, diabetes mellitus, renal diseases, cardiac diseases also with multiple pregnancies, and fetal anomalies were excluded from the study.

Group B (controls): A total of 50 normal pregnant women after 20 weeks were taken as control group.

Method of Collection of Data

Institutional ethical committee approval was obtained. Informed consent was taken from all the participants. Routine general physical examination was done and vitals such as pulse rate, blood pressure, and temperature were checked. If blood pressure was ≥140/90, the subject was made to rest for 30 min and checked again to confirm the diagnosis of GH.

Systemic examination including respiratory, cardiovascular, abdominal, and central nervous system and routine obstetric examination were done thoroughly in both cases and controls.

Both cases and controls were followed up till delivery to evaluate fetal outcome (term/preterm, birth weight, and if any fetal anomalies) and maternal outcome (term/preterm, pre-eclampsia/eclampsia, type of delivery, and if cesarean section, its indication was noted).

Statistical Analysis[7,8]

It was a duration-based study for 1 year with a sample size of 50 cases of GH and 50 controls of normal pregnant women.

Fisher exact test has been used to find the significance of study parameters on continuous scale between two groups. It was considered significant if $P < 0.05$. The statistical software SPSS was used for the analysis of the data and Microsoft Word and Excel have been used to generate graphs, tables, etc.

RESULTS

This is a comparative study of two groups with 50 cases of GH and 50 controls of normal pregnant women. Adverse fetal outcome was seen in 22% of cases and 4% of controls. Incidence of adverse fetal outcome is significantly more in cases compared to controls with P=0.015 [Table 1]. We divided adverse maternal outcome into those which are related to GH and those not related to GH. Progression to pre-eclampsia/eclampsia, abruption placenta, and cesarean section indicated due to intrauterine growth restriction (IUGR), intra uterine death. (IUD), fetal distress, absent diastolic flow, and bad obstetric history which were related to GH. Cesarean section indicated due to previous lower segment cesarean section (LSCS), cephalopelvic disproportion (CPD), breech presentation, and non-progression of labor which were the outcomes not related to GH. About 48% of cases had adverse maternal outcome and 52% had normal maternal outcome [Table 2]. Among 48%, 36% of cases had outcomes related to GH which was statistically significant with P=0.009 and 12% of them had outcomes not related to GH.

Table 1: Distribution of fetal outcome in two groups of patients studied

Fetal outcome	Cases		Controls	
	No	%	No	%
Normal fetal outcome	39	78.0	48	96.0
Adverse fetal outcome	11	22.0	2	4.0
Total	50	100.0	50	100.0
Inference	Incidence of adverse fetal outcome is significantly more associated with cases with P=0.015*			

Table 2: Maternal outcome in women with GH

Maternal outcome	Number of patients (n=50)	%
Adverse outcome related to GH	18	36.0
Adverse outcome not related to GH	6	12.0
Normal maternal outcome	26	52.0

P=0.009, GH: Gestational hypertension

DISCUSSION

Hypertensive disorders are the most common medical complications of pregnancy and a major cause of maternal and perinatal morbidity and death. Women with GH can have adverse outcomes such as progression to preeclampsia/eclampsia, abruptio placenta, or increased incidence of cesarean section. Neonates of mothers suffering from GH may also have adverse outcome such as IUGR, IUD, or preterm.

In our study, we divided the adverse maternal outcome in cases into those which are related to and which are not related to GH. Outcomes related to GH were progression to preeclampsia/eclampsia, abruption placenta, and cesarean section indicated due to IUGR, IUD, fetal distress, absent diastolic flow, and bad obstetric history. Outcomes not related to GH were cesarean section indicated due to previous LSCS, CPD, breech presentation, and non-progression of labor. In our study, 48% of cases had adverse maternal outcome, among which 36% were related to GH which was significant. IUGR, IUD, fetal distress, and prematurity were the adverse neonatal outcomes that were seen in our study among which three neonates presented with IUGR, one with IUD, four with preterm delivery, and two with fetal distress. The number of adverse fetal outcome was also significantly more in GH compared to normal pregnant women.

Related to adverse maternal and fetal outcomes in GH many controversial studies have been done. A prospective study done by Barton *et al*.[9] showed that there was a significant adverse maternal outcome (preeclampsia) and adverse fetal outcomes (earlier gestational age at delivery, lower birth weight, and increased incidence of small-for-gestational-age infants) in women with mild GH. Furthermore, one more study on GH found that adverse maternal and neonatal outcome was significantly higher in cases when compared to normotensives.[10]

A prospective study done by Barton *et al*.[9] on women with mild GH remote from term showed that 46% developed proteinuria and 9.6% progressed to severe disease. The development of proteinuria was associated with an earlier gestational age at delivery, lower birth weight, and increased incidence of SGA infants. The induction and cesarean delivery rates in GH were similar to preeclampsia and chronic hypertension groups and almost double of control subjects. The length of labor and postpartum stays and the incidence of operative vaginal delivery, postpartum hemorrhage, and neonatal intensive care involvement were greater in the GH group than in the control subjects.[10] A retrospective analysis done by Langenveld *et al*.[5] revealed that SGA was significantly greater in pre-eclampsia compared to GH. Furthermore, children who got admission to NICU were more in pre-eclampsia than in GH.

There are few controversial studies. Buchbinder *et al*.[6] compared the frequency of adverse fetal outcome in women who developed hypertensive disorders. They found that there were no statistically significant differences between normotensive and women with mild GH (≥140/90 mmHg) regarding rates of preterm delivery, SGA infants, LGA infants, macrosomia, and abruption placenta, whereas women with severe GH (≥160/110 mmHg) had higher rates of preterm deliveries and SGA infants, when compared to normotensive or mild GH groups. Furthermore, there were no statistically significant differences in perinatal outcomes between normotensive/mild GH and mild preeclampsia groups. Finally, it was concluded that severe GH had more adverse perinatal outcome than women who had mild GH or mild pre-eclampsia.[6]

It is very important for the clinicians to be aware of adverse maternal and neonatal outcomes in GH as it is one of the most common complications in pregnancy. There are very few studies done in India in this regard. Hence, this study is done to create awareness so that maternal and neonatal mortality and morbidity can be avoided. Limitations of our study are that we have not classified into mild, moderate, and severe GH and, hence, cannot conclude if incidence of adverse outcomes is more or same in all degrees of hypertension. Furthermore, further studies need to be done with more number of samples.

CONCLUSION

Our study revealed that incidence of adverse maternal and neonatal outcomes was significantly higher in GH cases such as pre-eclampsia/eclampsia, abruption placenta, IUGR, IUD, and fetal distress. This indicates that timely necessary investigations should be done in patients and closely monitored so that untowardly complications can be prevented. Furthermore, we observed in our study that adverse neonatal outcomes were seen mostly among mothers with severe GH. Hence, there is a need for more studies for relating the adverse outcomes and severity of GH.

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