

Evaluation of Maternal and Perinatal Outcome in Pregnancy Induced Hypertension

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Abstract

Background: Pregnancy Induced Hypertension (PIH) is a very common cause of several types of adverse maternal and perinatal outcome which accounts for nearly 18% of all maternal deaths worldwide.

Objectives: The objectives of the study were to evaluate the maternal and perinatal outcome in pregnancy induced hypertension.

Methods: This cross-sectional study was conducted at inpatient department of Obstetrics and Gynecology of Rangpur Medical College Hospital, Rangpur from January to December, 2017. A total number of 100 cases of gestational hypertension without proteinuria, pre-eclampsia, eclampsia who fulfilled the inclusion and exclusion criteria were enrolled into the study.

Results: Total patients were divided into 5 categories according to age group and 21-25 years age group was the highest, 36%, Pre-eclampsia, 53% and Eclampsia was 24% among all types of PIH. Edema and headache were the highest among presenting symptoms, 65% and 54% respectively. Moderate albuminuria was present in 22(41.50%) cases. Adequate liquor amnii was present in 72% cases. Blood urea, serum creatinine and uric acid level were raised in 22, 16 and 15 cases respectively and it was statistically significant (p=0.000). Maternal complication was present in 26% cases. Out of different complications, the highest complication was progression of pre-eclampsia in 24% cases. Live birth was found in 90% babies, other fetal outcome were IUD, 3 and still birth 7. Normal birth weight was present in 75% babies and low birth weight was in 25% babies.

Conclusion: This study concludes that the most maternal and fetal-neonatal complications are associated with PIH especially severe pre-eclampsia.

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Keywords: Pregnancy Induced Hypertension (PIH), Eclampsia, Pre-eclampsia

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Introduction

Pregnancy Induced hypertension (PIH) continues to be rampant globally and is associated with high perinatal and maternal mortality and morbidity.¹⁻⁴ Hypertensive disorders occur in about 12-22% of pregnancies depending on the population.² It is a syndrome of hypertension appearing after 20 weeks of gestation without proteinuria.³ It includes gestational hypertension, pre-eclampsia and eclampsia.⁴ PIH accounts for nearly 18% of all maternal deaths worldwide, with an estimated of 62000-77000 deaths per year.⁵ Approximately, 30% of hypertensive disorders of pregnancy are caused by chronic hypertension and 70% of cases are diagnosed as gestational hypertension/pre-eclampsia.² Pre-eclampsia is a hypertensive disorder of pregnancy, which usually manifests after 20 weeks of gestation with hypertension and proteinuria, where hypertension is defined with blood pressure at least 140 mm of Hg for systolic and/or 90 mm of Hg for diastolic on at least two occasions and at least 4-6 hours apart in women known to be normotensive beforehand.^{6,7} When convulsions occur in addition to these signs, the pre-eclampsia is referred to as eclampsia.⁸ All pregnancies with hypertensive disorder have a tragic story.^{8,9} Increased mortality and morbidity as a result of Pre-eclampsia during pregnancy is not only a terror to the mother but also to the fetus.¹⁰ Pre-eclampsia has hang around till this century and continues being public health concern in both developed and developing countries.¹¹ The usual markers of developing countries like poor antenatal care, illiteracy, lack of awareness and poverty in developing countries continues to favor these nightmares of pregnant mothers.^{7,8} Perinatal complications include preterm delivery, low birth weight(LBW), prematurity, intrauterine fetal death (IUFD), intrauterine growth restriction (IUGR), fetal asphyxia, acidosis, stillbirths and neonatal deaths.¹² Maternal risks associated with gestational hypertension

include development of uncontrolled hypertension, superimposed pre-eclampsia, eclampsia, HELLP syndrome (hemolysis, elevated liver enzymes and low platelets), acute renal and hepatic failure, acute pulmonary edema, cerebrovascular accidents, congestive heart failure, intracranial hemorrhages, proteinuria more than 4-5 grams/day, microangiopathic hemolytic anemia, abruptio placentae, deep vein thrombosis (DVT), occipital lobe blindness, post partum hemorrhages, disseminated intravascular coagulation (DIC) and /or consumptive coagulopathy.^{12,13}

Methods

This cross-sectional study was conducted at inpatient department of Obstetrics and Gynecology of Rangpur Medical College Hospital, Rangpur from January to December, 2017. A total of 100 cases of gestational hypertension without proteinuria, pre-eclampsia and eclampsia were enrolled into the study. Pregnancy induced hypertension was defined as systolic blood pressure of at least 140 mm of Hg and/or diastolic blood pressure of at least 90 mm of Hg on 2 occasions at least 6 hours apart after the 20th weeks of gestation in women known to be normotensive before pregnancy and regressing after delivery. Women suffering from essential HTN in pregnancy, history of hypertensive disorders with other systemic diseases such as CCF, CLD and endocrinopathy, Patients with CKD, Women with less than 20 weeks pregnancy were excluded from the study. Informed written consent was obtained for each patient after explaining the purpose of the study. Clinical details including age, duration of illness, address, associated clinical conditions, concomitant illness, fetal and maternal outcome was recorded on a standard questionnaire. Data were collected and enrolled into Microsoft Excel Software that was later analyzed using SPSS version 21.0.

Appropriate statistical tests i.e. percentage calculation and chi-square test analysis were performed and significant was set at $p < 0.05$.

Results

During the 12 months of study period, total 100 cases of PIH were selected by purposive sampling according to inclusion and exclusion criteria. Total patients were divided into 5 age group and 21-25 years age group was the highest, 36% (Table I). Pre-eclampsia were 53% of all types of PIH (Table II). Edema and headache were the highest among presenting symptoms, 65% and 54% respectively (Figure 1). Moderate albuminuria was present in 22 cases (Table III). Adequate liquor amnii was present in 72% cases (Table IV). Blood urea, serum creatinine and uric acid level were raised in 22, 16 and 15 cases respectively (table V). Maternal complication was present in 26% cases (Figure 2). Out of complications, progression of pre-eclampsia was the highest, 24% (Figure 3). Live birth

was found in 90% babies, IUD and still birth were other fetal outcomes (Table VI). Normal birth weight was present in 75% and low birth weight in 25% babies (Figure 4).

Table I: Age distribution of patients (n=100)

Age group (years)	Number of patients	%
16-20	6	6
21-25	36	36
26-30	28	28
31-35	27	27
36-40	3	3

Table II: Distribution of study subjects according to case (n=100)

Diagnosis	Number of cases	%
Gestational hypertension	23	23
Pre-eclampsia	53	53
Eclampsia	24	24

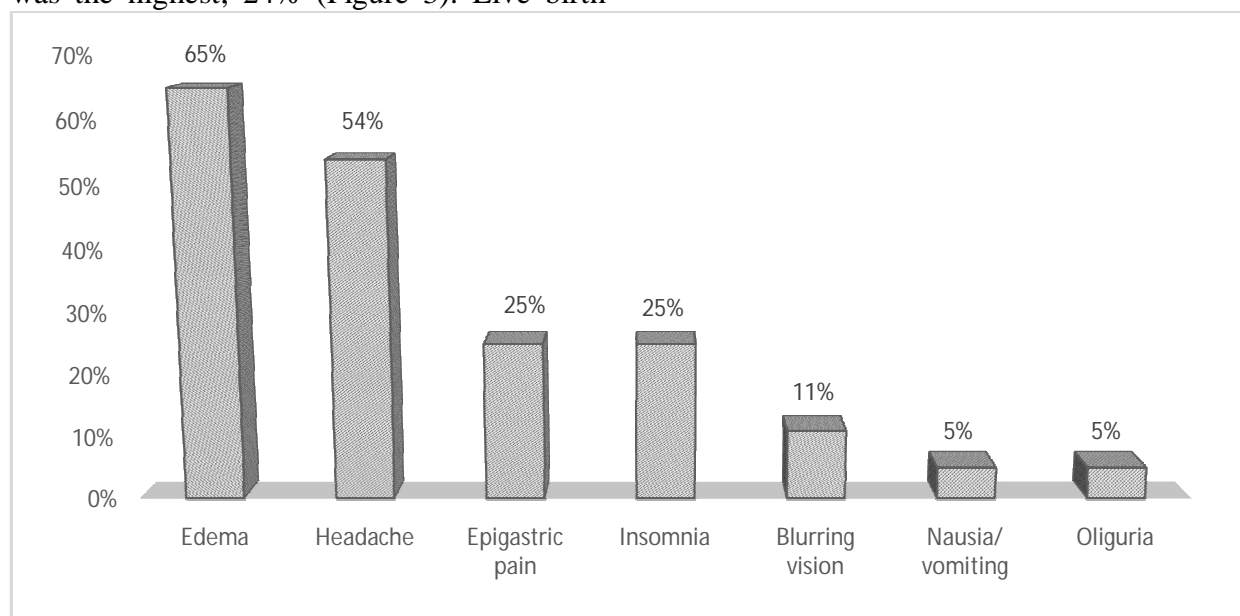


Figure 1. Presenting symptoms of the patients

Table III: Severity of albuminuria in pre-eclampsia patients (n=53)

Albuminuria	Number of patients	P
Mild	17 (32.07%)	0.397
Moderate	22 (41.50%)	
Severe	14 (26.41%)	

Table IV: Volume of liquor amnii (n=100)

Liquor amnii	Number	%	P
Adequate	72	72	0.000
Less than adequate	24	24	
More than adequate	04	4	

Table V Biochemical alterations in pre-eclampsia cases (n=53)

Parameters	Number of patients	P
Raised blood urea (>4.5 mmol/L)	22	0.000
Raised serum creatinine (>0.8 mg/dl)	16	0.000
Raised uric acid (>4.5 mg/dl)	15	0.000

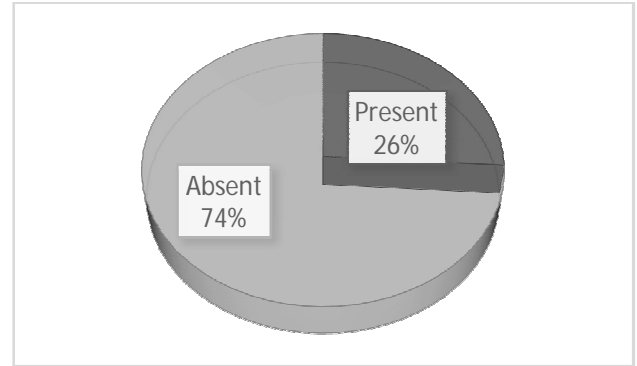


Figure 2. Maternal complications of study cases

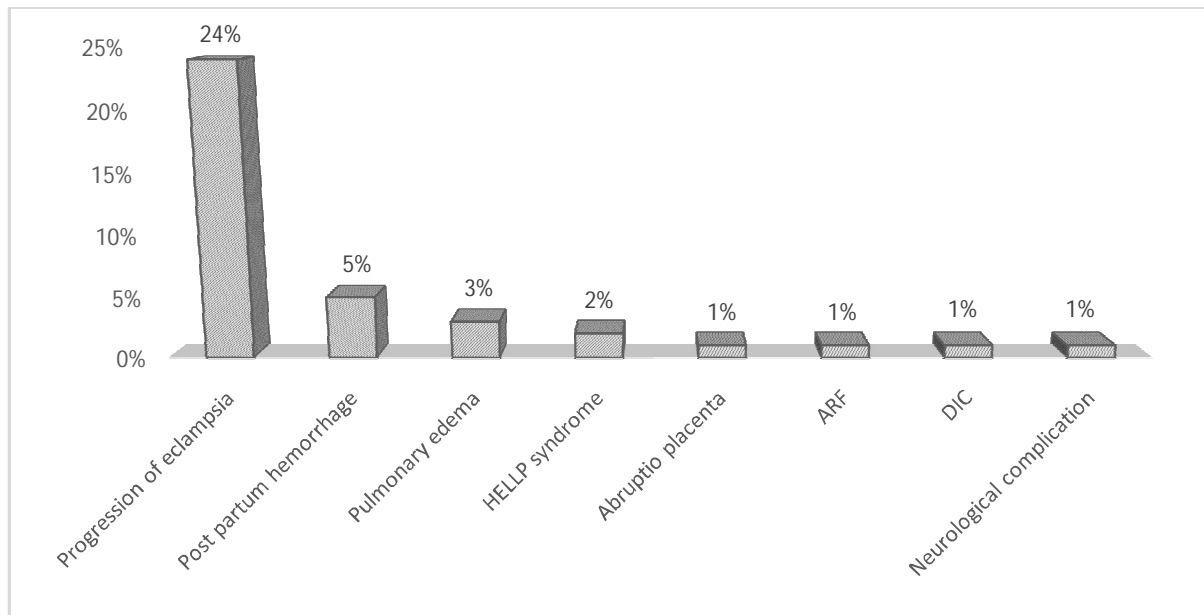


Figure 3. Different maternal complications in PIH cases

Table VI: Fetal outcome of PIH patients (n=100)

Outcome	Number of babies	P
Live birth	90	
IUD	3	0.000
Still birth	7	

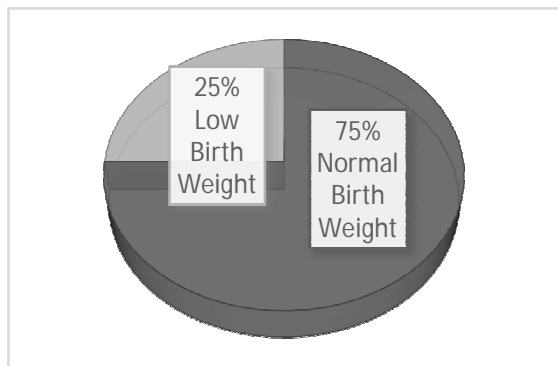


Figure 4. Birth weight of babies in PIH cases

Discussion

In this study, among different age group, 21-25 years age group was the highest, 36%. Randhawa AK et al in Punjab, India found

similar results in their study.¹⁴ but in another study done by Patel R et al in Gujrat, India, they found that age group 23-27 years were only 28.12%.¹⁵ The possible cause of difference might be due to different socioeconomic status and awareness about the disease and availability of treatment.

In current study, the pattern of PIH was pre-eclampsia 53%, gestational hypertension, 23% and eclampsia 24%. In a study done by Barbosa IRC et al found that pre-eclampsia was 38.57%, gestational HTN, 37.57% and eclampsia only 4.9%.¹⁶ The probable cause of difference might be due to larger sample size of that study.

In present study, major presenting symptoms were edema (65%) and headache (54%). Sivakumar S et al found edema in 72%, blurring of vision and headache in 30% cases in a study.¹⁷ This was similar.

In current study, mild albuminuria was present in 17 (32.07%) cases, moderate in 22 (41.50%) and severe in 14 (26.41%) cases.

Severity of albuminuria was statistically non-significant ($p=0.397$). In a study, Mekonen L et al in Ethiopia also found mild albuminuria in 0.5% cases and moderate in 10.4% and severe proteinuria in 5.4% cases.¹⁸ The possible cause of difference might be due to different stages of the diseases and timely treatment of the patients.

Volume of liquor amnii was adequate in 72% cases of PIH in this study. It was statistically significant, ($p=0.000$). Similarly, Ganguly S also found adequate liquor amnii in 75.65% cases.¹⁹

In this study, blood urea and serum creatinine level was found to be raised in 41.5% and 30.18% pre-eclampsia cases respectively. Ganguly S and Kobra KT also found raised blood urea level in 45% and 37.2% cases respectively and also raised S.creatinine in 35% cases in both study.^{19,20}

Serum uric acid level was found to be raised in 28.30% pre-eclampsia cases in current study. It was raised in 24.5% cases in a study done by Ganguly S,¹⁹ But Kobra KT found that it was raised in 53.3% cases.^{19,20} All these biochemical alteration was statistically significant, ($p=0.000$). This differences was also might be due to different stages of the diseases.

Maternal complications were found in 26% PIH cases in present study. In a similar study done by Ganguly S found that maternal complication was present in 24.3% cases.¹⁹

Out of maternal complications, progression of eclampsia was present in 24% cases. Other complications were post partum hemorrhage (5%), pulmonary edema (3%), HELLP syndrome (2%), abruptio placenta (1%), DIC (1%) and neurological complication (1%) cases.

3 types of fetal outcome were present in this study. Live birth was the highest among them (90%) and It was statistically significant, ($p=0.000$). Other fetal outcome was IUD in 3% and still birth in 7% cases. Stillbirth was found in 0.5%, 12.5 and 20% of mild pre-eclampsia, severe pre eclampsia and eclampsia cases respectively in a study by Raghavendra AY et al.²¹

Normal birth weight was found in 75% and low birth weight in 25% babies in current study. Normal birth weight was found in 81.5%, low birth weight, 11.8% and very low birth weight was found in 5.5% cases in a study done by Khosravi S et al in Iran in 2014.²²

Conclusion

PIH is a common complication in antenatal women and is a major cause of maternal and fetal morbidity and mortality. This study concludes that the most maternal and fetal-neonatal complications are associated with PIH especially severe pre-eclampsia. However, in spite of recent advances in public health care unit, much effort and skilled care is needed for further decline in adverse maternal and perinatal outcome.

Recommendation

Early detection of high risk pregnancies, regular antenatal checkup, timely referral to advanced centers, early treatment of pre-eclampsia cases, correct training and awareness of the mothers about fertility age and the importance of care during pregnancy may lead to improved maternal and perinatal outcomes.

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