FETO-MATERNAL OUTCOME IN PREGNANCIES COMPLICATED BY HYPERTENSIVE DISORDER: A RETROSPECTIVE STUDY AT A TERTIARY CARE CENTRE OF EASTERN NEPAL

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ABSTRACT

Introduction

Hypertensive disorder of pregnancy is one of the major cause of maternal and fetal morbidity and mortality.

Objective

The objective of this study was to estimate the associated maternal and fetal outcome and complications in pregnancies complicated by hypertensive disorders at a tertiary care hospital in eastern Nepal.

Methodology

This retrospective cross section observational study included purposely-selected one hundred thirty four pregnant women from April 2019 to April 2020 in the Department of Obstetrics and Gynaecology at Birat Medical College Teaching Hospital, Tankisinuwari, Morang, Nepal. Maternal age, gravidity, period of gestation at presentation, associated maternal comorbidities / risk factors, mode of delivery, indication for surgery, maternal outcome and complications, fetal outcome was recorded and data was analysed using SPSS version 23 software.

Result

Out of the 134 study population,35.8% of the mothers with hypertensive disorders were noted in the age group between 25-29 years and almost two third of the patients were multigravida. 55.2% patients had mild, while 44.8% had severe hypertension. About 83.6% of the hypertensive pregnant mothers delivered preterm between 33 to 36 weeks of gestation. 61.9% mothers underwent cesarean section with the most common indication being non-reassuring fetal heart rate pattern, while 34.3% women delivered vaginally. 86 out of 134 cases did not develop any complications while, postpartum haemorrhage was the most frequently encountered complication seen in 17.9% cases followed by eclampsia encountered in 13.4% patients. The mortality encountered was 0.7%. Neonatal complications were found in 50% cases, 15.7% neonates had low APGAR score and 8.2% had meconium aspiration, while 4.5% intrauterine deaths and 3% neonatal deaths were observed.

Conclusion

There is adverse impact of hypertension during pregnancy over maternal and perinatal outcome. Hence, early identification and prompt referral to the well-equipped center is necessary to reduce the associated morbidity and mortality.

KEYWORDS

Fetomaternal outcome, hypertensive disorders of pregnancy, morbidity, mortality

INTRODUCTION

Hypertensive disorder of pregnancy which includes gestational hypertension, preeclampsia and eclampsia complicates 5-10% of all the pregnancies.[1] It is one of the major causes of maternal and perinatal morbidity and mortality.[2] Multinational survey analysis conducted by the World Health Organisation (WHO) has revealed about three and five fold increased risk of perinatal death in women with pre-eclampsia and eclampsia respectively.[3] In Nepal, eclampsia accounts for 30% of the maternal mortality.[4] The non-availability of the essential drugs for the management of disease, failure of early recognition and referral to well-equipped centres and the lack of adequate infrastructure to deal with the disease are the major factors implicated for the maternal morbidity and mortality.[5]

Although the etiopathogenesis of pregnancy induced hypertension (PIH) remains unclear, trophoblastic cells and accelerated maternal systemic response to trophoblastic tissue has been implicated as the cause by some authors.[6,7] Certain factors have been identified as risk factors, which includes, maternal age younger than 20 years or older than 40 years, primigravida, associated comorbidities like diabetes, chronic hypertension, previous history of PIH etc.[8]

Most of the deaths due to PIH occur due to the complications and not due to hypertension per se. The life threatening maternal complications include abruptio placenta, disseminated intravascular coagulopathy (DIC), HELLP (Hemolysis, Elevated Liver Enzymes, Low Platelet count) syndrome, pulmonary edema, eclampsia, ARDS (acute respiratory distress syndrome) hepatic failure, haemorrhage, cerebral haemorrhage, congestive heart failure, renal failure and permanent disability etc.[9]

The perinatal complications related are preterm delivery, low birth weight, prematurity, intra uterine growth restriction, intra uterine fatal death, fatal asphyxia, still birth and neonatal death.[8,10]

With the advent of antenatal care, the severity of the disease and its complications can still be prevented.

The present study was designed to evaluate the extent of hypertensive disorder during pregnancy at our tertiary care hospital in eastern Nepal and to estimate the associated maternal and fetal outcomes and complications.

METHODOLOGY

This retrospective, cross sectional observational study was conducted over a period of one year between April 2019 to April 2020 in the Department of Obstetrics and Gynaecology at Birat Medical College Teaching Hospital, Tankisinuwari, Morang, Nepal. Ethical approval was obtained from the institutional review committee (IRC), Birat medical college teaching hospital. A total of 134 purposely selected pregnant women who presented with pregnancy induced hypertension as defined by the National High Blood Pressure Education Program working Group on High Blood Pressure in Pregnancy (NHBPEP 2000) classification of the hypertensive disorder of pregnancy[11] were enrolled for the study and their case records were retrospectively analyzed. A proforma was maintained to record the maternal age, parity, registration status, and period of gestation at diagnosis, severity of hypertension, associated maternal risk factors / comorbidities, type of delivery conducted, indication for caesarean section, maternal and perinatal complications. Antihypertensive drugs used were Cap Nifedipine and /or Tab Labetalol. Magnesium sulphate was the anticonvulsant used according to Pitchard's regimen. The data collected were coded and entered in MS Excel and transferred for processing and data analysis by SPSS version 23 for calculation of frequency table.

RESULTS

Out of the total 3471 deliveries conducted at our tertiary care hospital over a one-year study period one hundred thirty-four patients (134) were diagnosed with hypertensive disorder of pregnancy, with the hospital based disease prevalence of 3.86%. The age of the patients ranged between 18 to 39 years, with the maximum number of cases noted in the age group between 25-29 years (35.8%) followed by 20-24 years (29.9%) of age (Table 1), while only 4 (3%) cases were above 35 years. Almost two-third of the patients in our study were multigravida (69.4%) with the number of pregnancies ranging from frequency of 2 to 5, while 30.6% were primigravida. We also observed that 53.7% of patients who presented with hypertensive disease of pregnancy were unbooked (Table 1)

Table 1: Sociodemographic variables

Age (in years)	No. of cases	Percentage
<20	16	11.9
20-24	40	29.9
25-29	48	35.8
30-34	26	19.4
35+	4	3
Gravidity	**No. of cases**	**Percentage**
Primigravida	41	30.6
Multigravida	93	69.4
Registration status		
Unbooked	72	53.7
Booked	62	46.3

More than two-third (83.6%) of our cases delivered preterm between 33 to 36 weeks of gestation, on the other hand only 9% of mothers were among those who delivered at term or beyond. (Table 2)

Table 2: Maternal characteristics

Gestational age at presentation (in weeks)	No. of cases	Percentage
<28	1	0.7
29-32	9	6.7
33-36	112	83.6
>/=37	12	9

Not much difference was seen in the percentage of mild (55.2%) and severe (44.8%) hypertensive subjects.(Table 3)

Table 3: Severity of hypertension

Severity of hypertension	No. of cases	Percentage
Mild	74	55.2
Severe	60	44.8

Apart from hypertensive disorder of pregnancy, few patients also presented with medical comorbidities like anaemia (4.5%), diabetes (1.5%), heart disease (0.7%) and others with certain complications related to pregnancy like placenta previa (2.2%), PROM-premature rupture of membrane (9.7%), twins (4.5%), postdated pregnancy (8.2%). One patient presented with diabetes with PROM. (Table 4)

Table 4 : Associated maternal risk factors related to pregnancy

Maternal risk factor	No. of cases	Percentage
PROM	13	9.7
Postdated	11	8.2
Anaemia	6	4.5
Twins	6	4.5
Placenta praevia	3	2.2
Diabetes	2	1.5
Heart disease	1	0.7
Diabetes + PROM	1	0.7

We observed that lower segment caesarean section (61.9%) were maximally performed for various obstetric indications, to follow were 34.3% cases of spontaneous vaginal deliveries and 3.7% of vacuum deliveries. (Table 5). The most common indication for caesarean was non reassuring fetal heart rate pattern (14.2%), followed by non progress of labour (9%) and previous CS (9%) (Table 6).

Table 5: Mode of delivery.

Mode of delivery	No.of cases	Percentage
Normal vaginal delivery	46	34.3
LSCS	83	61.9
Vacuum delivery	5	3.7

Table 6 : Indication for caesarean section

Indication of CS	No. of cases	Percentage
Non reassuring fetal heart rate	19	14.2
Previous CS	11	8.2
NPOL	11	8.2
Failed IOL	9	6.7
Fetal distress	9	6.7
Eclampsia	6	4.5
CPD	5	3.7
Twins	5	3.7
Uncontrolled HTN	3	2.2
Placenta Praevia	3	2.2
Abruptio Placentae	1	0.7
Fetal macrosomia	1	0.7

Out of the 134 hypertensive mothers, 48 developed life-threatening complications and were hence managed in intensive care unit. Postpartum haemorrhage (17.9%) was the most frequently encountered complication while eclampsia complicated 13.4% of pregnancies. Wherein, four unbooked patients presented with eclampsia and delivered vaginally, while six eclamptic mothers were planned for caesarean section and eight presented with post-partum eclampsia. Three patients developed HELLP syndrome, one developed DIC and one presented with abruptio placentae and delivered by caesarean section. One patient developed pulmonary edema and was successfully managed in ICU, while one patient with preexisting heart disease succumbed to death due to cardiac failure (Table 7).

Table 7 : Maternal complications

Maternal complications	No of cases	Percentage
PPH	24	17.9
Eclampsia	18	13.4
HELLP	3	2.2
DIC	1	0.7
Abruptio placentae	1	0.7
Pulmonary edema	1	0.7
Death	1	0.7

No complication was observed among 50% of the neonates but 15.7% of the delivered babies had low APGAR score and 8.2% babies had meconium aspiration who were resuscitated and further managed in NICU. Among the total hypertensive mothers, 4.5% presented with intra uterine death while 3% died in the neonatal period. (Table 8)

Table 8: Fetal complications and outcome

Fetal complications/outcome	No. of cases	Percentage
Low APGAR	21	15.7
Meconium aspiration	11	8.2
NICU admission	8	6
IUD	6	4.5
IUGR	5	3.7
LBW	5	3.7
Neonatal death	4	3
RDS	4	3
Prematurity	3	2.2

DISCUSSION

Pregnancy induced hypertension is a pregnancy specific disorder involving multiple organs leading to adverse maternal and fetal outcome. Young as well as advanced maternal age has been shown as a risk factor for pregnancy induced hypertension.[12] However, similar to the findings of Das S et al[13] and Pillai SS et al[14], we noticed that most of our cases with hypertensive disorder of pregnancy were between the age group of 25-29 years followed by 20-24 years, this is probably because 20-29 years is the usual childbearing age group. Abalone RS et al[15] in their retrospective study to explore and describe the fetomaternal outcome of hypertensive mothers in Pakistani population showed a similar finding as ours, where multigravidae were more frequently affected by hypertension than primigravida. On contrary to this finding, study conducted by Aabidha PM et al[16] showed that

primigravida were more frequently affected. This could possibly be due to early and frequent child birth in the developing countries. Antenatal care is a crucial determinant of early detection of pregnancy-induced hypertension enabling early and prompt intervention to improve the maternal and fetal outcome. However, we did not appreciate much difference in the percentage of booked and unbooked cases.

The ultimate treatment of preeclampsia is delivery of the fetus irrespective of the gestational age and preterm delivery is one of the commonest complications of hypertensive disorders of pregnancy. Our finding was in line with that of Dağdeviren et al[12] where we observed that 83.6% mothers delivered preterm while 8.2% were postdated.

In our study, we did not observe any striking difference in the percentage of the severity of hypertension. 55.2% of mothers had mild hypertension where the systolic blood pressure was between 140-160 mm of Hg and diastolic BP was between 90-100 mm Hg, while 44.8% presented with severe hypertension, where systolic and diastolic BP was more than 160 mm Hg and 110 mm Hg respectively. This finding was in contrast to the observation of Patel R et al[8] where they found 85.93% patients with mild and 15.51% patients with severe PIH. This discrepancy could be because our hospital is a tertiary care centre which also deals with patients who are referred from the interior parts of Eastern Nepal where the medical facilities are almost inaccessible.

Few of our patients had associated medical co morbidities like anaemia, diabetes, heart disease or associated obstetrics related conditions like twin pregnancy, premature rupture of membrane and postdated pregnancy. One patient has diabetes along with premature rupture of membrane. Aabidha PM et al[16] in their study conducted at secondary care hospital in South India also found association of anaemia, diabetes mellitus and multiple pregnancies with preeclampsia.

Rani C et al[17] and many other researchers[14,18] in their study showed that caesarean section was the most frequent mode of delivery, which was also the commonest route encountered in our study, with the most common indication being non progress of labour. In the present study 86 out of 134 patients did not present with any complications, while 17.9% women had post-partum haemorrhage, to follow was eclampsia which accounted for 13.4% of the cases. Pillai SS et al[14] encountered identical pattern of complications in their study. A case of maternal mortality in our study was evidenced in a patient with preexisting heart disease who succumbed due to cardiac failure. The death was not solely due to hypertensive disease of pregnancy per se.

Perinatal morbidity and mortality can be reduced by early intervention and good neonatal care services. We observed that the perinatal period was uneventful in 50% cases and in the remaining half, 15.7% of the neonates had low APGAR score at 1 and 5 minutes while 8.2% of the newborns had meconium aspiration. We observed that there were 4.5% cases of intrauterine deaths mainly in mothers with eclampsia and 3% of neonatal deaths were predominantly seen in the babies of mothers with associated morbidities like diabetes, anaemia and preexisting heart disease. Amongst the neonates who required NICU admission, most of the babies were of the mothers who had history of premature rupture of membrane, had positive CRP test, and hence required intravenous antibiotics. The rate of perinatal morbidity and mortality was in line with the findings of Patel R et al[8], where they showed 1.56% each of IUFD and neonatal deaths, although Pillai SS et al[14] showed higher percentage of perinatal complications.

CONCLUSION

Pregnancies complicated by hypertensive disorders continue to have significant impact on the maternal and perinatal morbidity and mortality. Early identification, intervention and referral to well-equipped centres capable of dealing with the illness can significantly reduce the related morbidity and mortality. Our tertiary care hospital serves population from eastern part of Nepal and is a well-equipped centre capable of handling high risk cases and also extends effective neonatal care, hence we did not encounter major maternal and perinatal complications. Maternal and perinatal mortality was also low.

LIMITATION OF THE STUDY

Although Birat Medical College Teaching Hospital keeps an organized and well-preserved record files on its patients, the possibility of some cases going unreported cannot be ruled out entirely. On the other hand, the nature of purposive sampling inherently raises questions of selection bias. The researchers put a thorough effort in going through each files as meticulously as possible, so as selection bias is encountered to the minimum. As this study was conducted in a single centre in Eastern Nepal, it does not represent the whole population of the eastern region of Nepal and hence, its general generalisation is also limited.

RECOMMENDATION

The allied health professionals at the community grass root level should be strengthened for antenatal surveillance and early recognition of hypertensive disorders in pregnancy. Appropriate up to date training should be provided and prompt referral of patients to adequately equipped higher health care centres should be the standardized protocol to follow in order to minimise maternal and perinatal causalities.

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