Original Article

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Maternal and perinatal outcome of hypertensive disorders of pregnancy in a tertiary hospital of Kathmandu

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Abstract

Background: Hypertensive disorders of pregnancy are considered to be a major worldwide health problem causing an increased risk of perinatal and maternal morbidity and mortality. Hypertensive disorders are the most common medical disorders encountered during pregnancy.

Objective: This study aimed to assess the maternal and perinatal outcome of hypertensive disorders in pregnancy.

Methods: A hospital based prospective study was conducted in Obstetrics ward of Kathmandu Medical College Teaching Hospital. Total one hundred pregnant women admitted in antenatal ward with the diagnosis of hypertensive disorders in pregnancy were included in the study. A structured questionnaire was designed and data collection was done through one- to- one interview technique during the period of December 2015 to January 2017. The collected data were analyzed by using Statistical Package for Social Science version 20.

Results: Among 100 hypertensive disorders; 80% respondents had gestational hypertension, 16% had preeclampsia and two percent had eclampsia. Of total, 52% respondents had normal vaginal delivery followed by 46% caesarian section. One respondent had ante-partum hemorrhage, 11% had post-partum hemorrhage and one had developed hemolysis, elevated liver enzymes low platelets counts syndrome. Fortunately, no maternal mortality was occurred. Regarding perinatal outcome, 17% babies were born preterm, 13% babies had low birth weight and seven percent babies had birth asphyxia. Total five were stillbirths and one percent had early neonatal death.

Conclusion: Maternal outcome was good except few morbidities but perinatal outcome was found to be adverse. Proper management of hypertensive disorders is required to reduce perinatal morbidities and mortalities.

Key words: Eclampsia, Gestational hypertension, Maternal, Perinatal outcome, Preeclampsia

INTRODUCTION

Hypertension is the most common medical problem encountered during pregnancy occurring in approximately 7% -10% of all pregnancies[1]. Hypertensive disorders of pregnancy (HDP) are among the leading causes of maternal mortality, along with thromboembolism, hemorrhage and non-obstetric injuries. There are significant adverse maternal effects, some resulting in serious maternal morbidity and death. Maternal death is largely following complications from abruption placenta, hepatic rupture and eclampsia[2].

HDP are classified into 4 categories, as recommended by the National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy: 1) chronic hypertension, 2) preeclampsia-eclampsia, 3) preeclampsia superimposed on chronic hypertension, and 4) gestational hypertension or pregnancy induced hypertension[3].

Chronic hypertension is high blood pressure that precedes pregnancy, is diagnosed within the first 20 weeks of pregnancy, or does not resolve by the 12-week postpartum checkup. Gestational hypertension, formerly known as pregnancy-induced hypertension (PIH), is the new onset of hypertension after 20 weeks of gestation. The diagnosis requires that the patients have: elevated blood pressure (systolic ≥ 140 or diastolic ≥ 90 mm Hg), previously normal blood pressures, no protein in the urine, and no manifestations of preeclampsia-eclampsia. Preeclampsia is defined as elevated blood pressure after 20 weeks of gestation (≥ 140 mm Hg systolic or ≥ 90 mm Hg diastolic) plus proteinuria (> 0.3 g/24 hours). Severe preeclampsia is defined as any of the following: Markedly

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elevated blood pressure measurements (systolic ≥ 160 mm Hg or diastolic ≥ 110 mm Hg) taken at least 6 hours apart with the patient on bed rest Proteinuria (≥ 5 g/24 hours or ≥ 3+ on two random samples 4 hours apart). Eclampsia is the development of convulsions in a preexisting pre-eclampsia or it may appear unexpectedly in a patient with minimally elevated blood pressure and no proteinuria[3].

Hypertensive disorders represent a significant proportion of maternal deaths worldwide. Such deaths account 9.1%, and 25.7% in South Asia, and Latin America respectively[4] and case fatality rates are higher in less developed countries than developed countries, ranging from 26.3% in South Africa to 1.8% in the United Kingdom[5].Between 2011 and 2013, pregnancy-induced hypertension caused 7.4% of maternal deaths in the United States[6].In Nepal, preeclampsia-eclampsia is the second leading direct cause of maternal mortality at the community level after post partum hemorrhage. It is the number one direct cause of maternal death in health facilities which accounts for 30% of maternal deaths. The Nepal Maternal Mortality and Morbidity Study 2008/2009 revealed that 21% maternal death was due to eclampsia, which was increased from 14% in 1998[7]. Fetal complications associated with HDP especially preeclampsia and eclampsia are IUGR, oligohydramnios, preterm delivery, non reassuring fetal heart rate patterns during labor, low APGAR scores at birth and NICU admission[8]. This study was carried out to identify the maternal and perinatal outcome of hypertensive disorders among mothers in a tertiary hospital setting of Nepal.

METHODS

A hospital based prospective study was carried out to assess the maternal and perinatal outcome of hypertensive disorders in pregnancy. Ethical approval for the study was obtained from the institutional review committee of Kathmandu Medical College Teaching Hospital (KMCTH). One hundred pregnant women with the diagnosis of hypertension in pregnancy, admitted in obstetric ward of KMCTH were purposively selected for the study. Permission for data collection was taken from head of the department of Obstetrics/Gynaecology and written informed consent was taken from each respondent. One-on-one interview technique was used to collect the necessary data by using pre-designed structured questionnaire. The data collection period was from December 2015 to January 2017. All the baseline information of each woman was gathered at the time of admission and women were continuously followed-up until discharged from the hospital after delivery to get information regarding outcome. According to severity of blood pressure and proteinuria presence in the respondents, hypertensive disorders were categorized as: chronic hypertension (presence of high blood pressure before 20 weeks of pregnancy), gestational hypertension (systolic ≥ 140 or diastolic ≥ 90 mmHg, after 20 weeks of pregnancy, and no protein in the urine), preeclampsia (elevated blood pressure after 20 weeks of gestation plus proteinuria 1+dipstickor more) and eclampsia (preeclampsia with convulsion). Similarly, blood pressure was characterized as mild (140-159/90-99 mm of Hg), moderate (160/179/100-109 mm of Hg) and severe (≥180/≤110 mm of Hg). Collected data were coded and entered in Microsoft excel 2007 and data were analyzed by using statistical package for social sciences (SPSS) 20 version. Categorical variables were analyzed using frequency distribution and percentages and continuous variables were expressed in means and standard deviations.

RESULTS

Socio-demographic characteristics of the respondents are presented in table 1. Two third (66%) of the respondents were between the age group of 20-30 years with the mean age 27.71 years(range18-39 years). On the basis of resident, most (96%) of the respondents were from urban areas. Most (91%) of the respondents were Hindu and majority (58%) of the respondents were belong to nuclear family. Majority (58%) of the respondents had obtained secondary to higher secondary level education and more than three fourth (77%) of the respondents were home makers by occupation. Most (94%) of the respondents were non vegetarian regarding the food pattern.

On the basis of obstetrical characteristics, half (50%) of the respondents were primigravida, all in all respondents had done antenatal visits and most (93%) of the respondents had gone for antenatal visit more than four times and around 70% of women were admitted after 37 weeks of gestation. Most (88%) of the respondents, had no family history of hypertension in pregnancy and almost all (98%) of the respondents were diagnosed to have hypertensive disorder in third trimester of pregnancy. According to grading of blood pressure, 87% of the respondents had mild hypertension and 81% were taking antihypertensive drugs. On the basis of category of hypertensive disorder in pregnancy, 80% respondents had gestational hypertension, 16% had preeclampsia, two percent had eclampsia and remaining two had chronic hypertension (Table 2).

In around 60% of the respondents, delivery was done by induction of labor, 52% had normal vaginal delivery, 46% underwent caesarian section and two percent had vacuum delivery. One respondent had ante-partum hemorrhage, 11% respondents had postpartum hemorrhage and one had developed hemolysis, elevated liver enzyme, low platelets count (HELLP) syndrome. Nine women were admitted to intensive care unit (ICU) for close monitoring and supervision (Table 3). Fortunately, there was not any maternal mortality.

Regarding perinatal outcome of hypertensive disorders, 17% babies were born preterm, 13% babies had low birth weight, 54% babies had low APGAR score at birth and seven percent babies had birth asphyxia. Likewise, five percent babies were delivered still birth and one percent had early neonatal death. One fourth (25%) neonates were admitted in neonatal intensive care unit for further management (Table 4).

Table 1: Socio-demographic characteristics of the respondents (n=100)

Variables	Frequency	Percentage
Age (years)		
Below 20	2	2.0
20-30	66	66.0
30-40	32	32.0
Mean ± S.D= 27.71±4.924		
Resident		
Rural	4	4.0
Urban	96	96.0
Religion		
Hindu	91	91.0
Buddhist	5	5.0
Others	4	4.0
Type of family		
Nuclear	58	58.0
Joint	42	42.0
Education		
Non-formal education	4	4.0
Primary level	15	15.0
Secondary level	18	18.0
Higher secondary level	40	40.0
Bachelor and above	28	28.0
Occupation		
Homemaker	77	77.0
Private employee	15	15.0
Government employee	4	4.0
Business	4	4.0
Food Pattern		
Vegetarian	6	6.0
Non Vegetarian	94	94.0

Table 2: Distribution of the respondents according to obstetrics and medical history

Variables	Frequency	Percentage
Gravidity		
Primi	50	50.0
Multi	50	50.0
Weeks of Gestation		
Below 37	31	31.0
Above 37	69	69.0
Number of antenatal visits		
< 4 times	7	7.0
> 4 times	93	93.0
Family history of hypertension		
Yes	12	12.0
No	88	88.0
Severity of hypertension		
Mild*	87	87.0
Moderate**	12	12.0
Severe***	1	1.0
Antihypertensive drugs used		
Yes	81	81.0
No	19	19.0
Category of HDP		
Gestational hypertension	80	80.0
Preeclampsia	16	16.0
Eclampsia	2	2.0
Chronic hypertension	2	2.0
Grading of edema		
Nil	62	62.0
Mild (Grade+)	36	36.0
Moderate (Grade++)	2	2.0

*140-159/90-99 **160/179/100-109***≥180/≤110mm of Hg

Table 3: Obstetrical / maternal outcome of hypertensive disorders of pregnancy

Variables	Frequency	Percentage
Type of Delivery		
Normal vaginal	52	52.0
Caesarean Section	46	46.0
Vacuum Delivery	2	2.0
Gestational age of Delivery		
Term	83	83.0
Preterm	17	17.0
Induction of Labour		
Yes	59	59.0
No	41	41.0
Maternal Morbidity		
HELLP* Syndrome	1	1.0
APH**	1	1.0
PPH***	11	11.0
ICU**** admission	9	9.0

*Hemolysis, Elevated Liver enzyme, Low platelet counts, **Ante-partum Hemorrhage
*** Post-partum Hemorrhage. **** Intensive Care Unit

Table 4: Perinatal outcome of hypertensive disorders of pregnancy

Variables	Frequency	Percentage
Perinatal Outcome		
Premature birth	17	17.0
Low birth weight (< 2500gm)	13	7.0
Low APGAR* score (< 6/10) at birth	54	54.0
Birth asphyxia	7	5.0
Stillbirth	5	5.0
NICU** admission	25	25.0
Early neonatal death	1	1.0

*Appearance, Pulse, Grimace, Activity, Respiration, **Neonatal Intensive Care Unit

DISCUSSION

Hypertensive disorders of pregnancy are responsible for significant maternal and perinatal morbidity and are the second leading cause of maternal mortality[9]. Eclampsia is the leading direct cause of maternal mortality in Nepal, occurring in 1 in 25 women and resulting in an estimated 21% of maternal deaths annually[7]. The condition is also associated with adverse neonatal outcomes, including higher rates of neonatal intensive care unit admission and length of stay, small for gestational age, stillbirth, and mortality[10]. Because termination of pregnancy is the definitive management of gestational hypertension and eclampsia, such complications remain the leading cause of provider-initiated preterm delivery globally[11].

Studies have shown that risk factors of hypertensive disorders of pregnancy are early pregnancy (<20 years) or advanced age pregnancy (>40 years) and first pregnancy. But in this study, majority of respondents were between the age group of 20-30 years and half proportion of respondents were multi-gravid. 80% respondents had gestational hypertension, 16% had preeclampsia, two percent had eclampsia and remaining two had chronic hypertension. Slightly different findings were observed in a study conducted in a tertiary hospital of India in which it was mentioned that among hypertensive disorders, 50.2% were pre eclampsia, 35.7% eclampsia, 12.5% were gestational hypertension and rest was chronic hypertension[12].

In the present study, 46% hypertensive women underwent caesarian section delivery, one percent respondent had ante-partum hemorrhage, 11% respondents had postpartum hemorrhage, one percent had developed HELLP syndrome and nine women were admitted to intensive care unit. The findings are comparable with a study done at Korle Bu Teaching Hospital, Ghana which revealed that overall, 45.7% women with hypertensive disorders in pregnancy delivered by cesarean, 4.3% had placental abruption, 0.8% had HELLP syndrome, and 5.7% were admitted to the intensive care unit[13].

Regarding perinatal outcome of hypertensive disorders, the findings of this study revealed that 17% babies were born preterm, 13% babies had low birth weight, five percent babies were delivered still birth and one percent had early neonatal death which is consistent with the findings of a study done at Shree Birendra Hospital in which among 100 hypertensive disorders of pregnancy, the incidence of preterm birth was 13 %, 15 babies had low birth weight (<2.5 Kg) and total four were stillbirths[14].

This study was carried out in only one hospital with very small sample size. Study unit was selected by using purposive sampling technique. So, the findings of the study may not represent the whole population. Community based similar studies can be conducted in a large scale.

CONCLUSION

On the basis of findings, it can be concluded that maternal outcome of hypertensive disorders of pregnancy was not significantly adverse but perinatal outcome was found to be adverse. Overall, management of hypertensive disorders of pregnancy in KMCTH was satisfactory. Adverse effects of hypertensive disorders can be minimized by appropriate management. So, prompt management is required to prevent its complications among mothers and to reduce perinatal morbidities and mortalities.

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