

Original Article

Mode of Delivery in Hypertensive Disorder of Pregnancy and Fetomaternal Outcome

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Abstract

Hypertensive disorder of pregnancy is a leading cause of maternal and perinatal mortality and morbidity. Along with control of blood pressure, control or prevention of convulsion, management of other complications, the management of hypertensive disorder of pregnancy comprises timely delivery. This prospective study evaluated the incidence of obstetrical interventions and maternal and fetal outcome in hypertensive disorder of pregnancy. During its six months study, 2365 women were admitted in maternity unit of Dhaka Medical College Hospital. Among them 329 patients were documented to have various hypertensive disorders (incidence rate is 13.9%). Within these, 50 patients 17 (34%) patients had gestational hypertension. Thirty one (62%) had normal vaginal delivery and 17 (34%) had cesarean section. Eight subjects (53.3%) with pre-eclampsia and 6 (54.5%) women with eclampsia underwent caesarean sections. Rate of caesarean section was higher in primigravida (43.5%) compared to multipara (26%). Out of 11 patients with eclampsia 5 (45.5%) developed various complications in combination or alone. There was no maternal death among either group. The study also analyzed the fetal outcome of 50 mothers prospectively. Among 48 live births, 10 (20.8%) babies were of low birth weight, which included both premature (14%) and intra uterine growth retardation babies (6%), 2 babies were below 1 kg (4.1%), 36 (72%) babies were healthy, 2 babies were still birth. Nine (19.6%) babies developed jaundice but 35 (76%) babies had no complications after birth. Perinatal mortality was highest in eclamptic patients followed by pre-eclampsia (6.7%) and gestational hypertension (5.9%).

Key words : Hypertension, maternal, pregnancy.

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Introduction:

Bangladesh was one of the top listed countries of the world as far as the high maternal and neonatal mortality rates were concerned. Recently Bangladesh improves a lot on this field and earned award from United Nations for reducing maternal death which was one of the prime concerns of Millennium Development Goal (MDG). The 4th Health, Population and Nutrition Sector Program 2017–2022 has set the target of reaching an maternal mortality rate of 105 per 100,000 live births in 2022¹. In spite of different preventive approaches to improve the obstetric care in Bangladesh, hypertensive disorders during pregnancy still contributes to 16 percent of maternal mortality².

Hypertension is the most common medical problem encountered in pregnancy and remains an important cause of maternal and fetal morbidity and mortality. It complicates up to 8-15% of pregnancies and account for approximately a quarter of all antenatal admissions³⁻⁵. Among different forms of pregnancy associated hypertension, pre-eclampsia and

eclampsia has the highest impact on morbidity and mortality. Chronic hypertension may result in preterm and small for gestational age infants, even when it is mild to moderate. The objective of this study was to assess the complication of hypertension in pregnancy and its delivery mode with fetal and maternal outcome.

Materials and methods

This hospital based study was conducted in the department of Obstetrics and Gynaecology . Dhaka Medical College Hospital(DMCH) carried out from January 2013 to June 2013. All patients presented hypertensive disorders of pregnancy in Gynae & Obstetrics Department of DMCH within this 6 months were taken for the study. Inclusion criteria included alive fetus with singleton pregnancy and cephalic presentation. Screening was done by history and clinical examination. Non probability Purposive sampling technique was applied for the study. Patients having other obstetric indication for caesarean section like malpresentation, placenta Previa, previous caesarean section, fetal distress were excluded from the study. Eclampsia with complications such as Disseminated intravascular coagulation (DIC), Cerebro vascular accident (CVA), Renal Failure, Respiratory failure were also excluded.

Results:

During the period from January 2013 to June 2013, a total of 2365 pregnant women were admitted in the Gynae & Obstetrics Department of Dhaka Medical College Hospital. Among them 329 (13.9%) patients were documented to have hypertensive disorders of pregnancy.

Table I: Overall incidence of hypertensive disorders in pregnancy

Total number of admission	Number of patients have hypertensive disorders	Percentage
2365	329	13.9

Out of 50 patients with hypertensive disorders of pregnancy, 17 (34%)patients had Gestational hypertension and 04 (08%) women were noted to have Pre-eclampsia superimposed on chronic hypertension

Table II : Incidence of various hypertensive disorders of pregnancy (n =50)

Type of disorder	Number of cases (%)
Gestational hypertension	17 (34)
Pre-eclampsia	15(30)
Eclampsia	11(22)
Chronic hypertension	03(6)
Pre- eclampsia superimposed on chronic hypertension	04(8)
Total	50(100)

Among the patients 28% had severe hypertension and 62% patients admitted in hospital with hypertensive disorder had normal vaginal delivery .

Table – III: Grading of hypertension during admission in hospital with hypertensive disorders in pregnancy and their mode of delivery

Diastolic BP(mm of Hg)	Number of cases (Percentage)
91-100	16 (32%)
101-110	20(40%)
>110	14(28%)
Mode of delivery	Number of cases (Percentage)
Normal vaginal delivery	31 (62%)
Caesarian section	17 34%
Vacuum extraction	1(2%)
Forceps delivery	1 (2%)

Obstetrical intervention in patients with pre-eclampsia (n=15) . Here 53.3% had caesarian section .

Table – IV: Sub group analysis – obstetrical intervention in patients with pre-eclampsia(n=15)

Mode of delivery	Number of cases	Percentage
Normal vaginal delivery	07	46.7
Caesarian section	08	53.3

Obstetrical intervention in patients with eclampsia (n=11). Here 6 (54.5%)cases had caesarian section.

Table – V : Sub group analysis – obstetrical intervention in patients with eclampsia (n=11)

Mode of delivery	No. of cases	Percentage
Normal vaginal delivery	04	36.36
Caesarian section	06	54.5
Vacuum extraction	01	9.09

Among primigravida out of 23 cases 10 (43.5%) needed cesarean section and on the other hand out of 27 multigravida 7 (26%) required cesarean section.

Table – VI : Mode of delivery according to parity (n=50)

Mode of delivery Primigravida(n=23)

Multygravida(n=27)

	No. of cases	Percentage	No. of cases	Percentage
Normal vaginal delivery	12	52.2	20	74
Caesarian section	10	43.5	7	26
Vacuum extraction	1	4.3	--	--

Out of 15 patients with pre-eclampsia, 4 (26.7%) developed various types of complications in combination or alone.

Table – VII : Incidence of maternal complications in patients with pre-eclampsia (n=15)

Complications	No. of cases	Percentage
Pulmonary oedema	1	6.7
Placental abruption	1	6.7
Acute renal failure	1	6.7
HELLP syndrome	1	6.7

Again out of 11 patients with pre-eclampsia, 5 (45.4%) developed various types of complications in combinations or alone.

Table – VIII : Incidence of maternal complications in patients with eclampsia

Complications	No. of cases	Percentage
Aspiration pneumonia	2	18.2
Pulmonary oedema	1	9.1
Acute renal failure	1	9.1
Placental abruption	1	9.1

Maternal outcome and complications in the two groups, among them cesarean delivery, blood transfusion, acute renal failure, aspiration pneumonia, HELLP syndrome, placental abruption and pulmonary edema are common on both groups.

Table – IX: Maternal outcome and complications in the two groups

Variable	Pre-eclampsia Number(%)	Eclampsia Number(%)
Cesarean delivery	8 (53.3%)	6 (54.5%)
Blood transfusion	2(13.3%)	3(27.3%)
Acute renal failure	1(6.7%)	1(9.1%)
Aspiration pneumonia	1(6.7%)	2(18.2%)
HELLP syndrome	1(6.7%)	X
Placental abruption	1(6.7%)	1(9.1%)
Pulmonary edema	1(6.7%)	1(9.1%)

Among the 48 live birth babies delivered, 10 (20.8%) babies were of low birth weight below 2.5 kg.

Table – X : Weight of live born babies (n= 48)

Weight (Kg)	Number of cases	Percentage
> 3.6	2	4.1
2.5 – 3.5	34	70.8
1.5 – 2.4	10	20.8
1.0 – 1.4	2	4.1

Immediately after delivery the baby were assessed in terms of birth weight and their correlation with gestational age, 72% babies were found healthy during their assessment. Out of 02 stillbirth 1 was macerated stillbirth and another had intrapartum death.

Table – XI : Overall fetal outcome (n=50)

Outcome	Number of cases	Percentage
Healthy	36	72
Premature	7	14
IUGR	3	06
Stillbirth	2	04
Death after delivery	2	04

There was all together 4 deaths with overall perinatal mortality 8%. Perinatal mortality highest in eclamptic patients(18.2%).

Table-XII : Foetal mortality according to disease pattern (n=4)

Variable	Number of cases	Percentage
Gestational hypertension (n=17)	1	5.9
Pre-eclampsia(n=15)	1	6.7
Eclampsia (n=11)	2	18.2

Here, 76% had no complications, 19.6% developed jaundice.

Table – XIII : Distribution of Perinatal morbidities

Disease	Number of cases	Percentage
Jaundice	9	19.6
Umbilical sepsis	1	2.2
Septicemia	1	2.2
No complication	35	76

Discussion

Gestational hypertension and pre-eclampsia constitutes major bulk of the patients in this study. Seventeen (34%) women were categorized as gestational hypertension and 15 (30%) subjects documented to have pre-eclampsia. There are 11 (22%) eclampsia cases in this series which is much higher compared to other published data. The incidence of eclampsia varies from 0.03 to 0.9% of deliveries, with significant maternal mortality, depending on the availability of high quality intensive care⁶. In a recently published series the incidence of eclampsia was 0.6% of the deliveries⁷. The incidence of eclampsia has decreased significantly in different developed countries due to tremendous improvement in antenatal and perinatal care. The data published in Singapore in the year 2006 reveals that the incidence of eclampsia is very rare in this country.

A series published from KK Women's and Children's Hospital. Singapore showed that out of 61,595 deliveries between the period of July 1999 and June 2003 only 10 cases were documented to have eclampsia. Overall incidence is only 0.02% which reflects very high quality

antenatal care in that country.⁸ The incidence of eclampsia is still quite high in our country mainly in lower socioeconomic class. In this study 64% patients with eclampsia were from lower socioeconomic group and 27% of subjects were from middle class group. No woman from upper class was noted to have eclampsia. This indicates that eclampsia is very uncommon if the pregnant woman gets proper antenatal care.

Out of 50 pregnant women with hypertensive disorders, 31 women had normal vaginal delivery (62%) obstetrical intervention required in 34% of cases. Out of 15 subjects with pre- eclampsia 7 women (46%) had normal vaginal delivery and 8 cases (53.3%) had caesarean operation. In the eclampsia group 4 cases (36.36%) had vaginal delivery and 6women (54.5%) underwent caesarean section.

The above mentioned data reflect that the incidence of obstetrical interventions in the present series particularly the rate of caesarean section in the pre-eclampsia and eclampsia are almost similar to the data from other developed countries. One series published in Journal of Indian Med. Assoc in recent past by Yadav et al showed relatively lower rate of caesarean section in hypertensive disorders of pregnancy. In that series rate of caesarean section is around 14.8%⁹. In another series published by Lee W et al revealed very high caesarean section rate in patients with eclampsia, which is 79%¹⁰. The rate of obstetrical interventions are very high in women with toxemia of pregnancy. Even in United States more than half of women with pre-eclampsia and eclampsia undergo caesarean delivery¹¹.

In this series 31(62%) patients had normal vaginal delivery. 17 (34 %) patients underwent caesarean section operation. Around every third women required surgical intervention. This data is in agreement with other series published in recent past from other countries. In one series caesarean section rate was 48.1%¹². Obstetrical intervention rate was higher in pre-eclampsia and eclampsia group. 53.3%of subjects in pre-eclampsia group and 54.5% from eclampsia had caesarean section. No patients with eclampsia required forceps delivery and 1 (9.09%) of eclampsia needed vacuum extraction. Foetal distress was the leading indication intervention in women with PE and failed induction was the leading cause of caesarean operation in eclampsia.

Women with pre-eclampsia and eclampsia has a 3 to 25 fold increased risk of severe complications, such as abruptio placentae, thrombocytopenia, disseminated

intravascular coagulation. (DIC), pulmonary oedema, and aspiration pneumonia¹¹. Out of 15 patients with PE 4 patients (26.7%) developed various types of complications in combinations or alone. One patient (6.7%) developed the features of pulmonary oedema and 1 patient had placental abruption and another 1 patient progressed to eclampsia only one patient developed HELLP syndrome. Out of the 11 patients admitted with eclampsia 5 women (45.4%) had various types of complications. 18.2% of eclamptic women developed aspiration pneumonia and 9.1% had placental abruption. In a recently published series in 2006 maternal mortality rate was 9.4% in eclampsia¹³.

In a recently randomized study the authors assessed the maternal complication rate in that study abruptio placentae (8.4%), HELLP syndrome (8.4%), acute renal failure (3.9%), pulmonary oedema (1.3%), postpartum encephalopathy (1.3%) were the leading maternal complications¹⁴. These complications were also the predominant causes of maternal morbidity and mortality in our current series.

None of the women died in this study. This indicated that obstetric outcome of gestational hypertension is excellent in tertiary hospital. In our series maternal mortality was 0%. Our findings are almost consistent with the randomized studies published in recent past. In one randomized study maternal mortality in gestational hypertension, PE and eclampsia were 1.8%, 4.8% and 6.4% respectively¹⁵.

In this series 8 patients with pre-eclampsia underwent caesarean section operation, overall rate is 53.3% whether in eclampsia group 54.5% women underwent caesarean operation. The difference in caesarean operation rate in pre-eclampsia and eclampsia is not statistically significant. 2 patients with eclampsia developed aspiration pneumonia whereas 1 patient in the pre-eclampsia group developed this complication. One (1) patient (9.1%) had ARF in eclampsia and ARF also occurred in 1 woman (6.7%) in pre-eclampsia.

The incidence of perinatal mortality is very high in hypertensive disorders of pregnancy. Foetal complications include intrauterine death, IUGR, prematurity, brain damage and neonatal deaths.¹⁶ Here analyzed the foetal outcome of 50 babies of 50 mother. 36 babies (72%) were apparently healthy, 7 babies (14%) were noted to have prematurity and 3 had IUGR (6%) 2 babies (4%) were stillborn. 2 babies died during one week after birth. There were all together 4 deaths with

overall perinatal mortality 8%. Perinatal mortality was highest in eclamptic patients (18.2%) followed by pre-eclampsia 6.2%. 1 baby from a mother with gestational hypertension died, fatality rate 5.9%. Perinatal mortality has been documented to be higher in hypertensive disorder of pregnancy. A 12- year review of all the obstetric admissions in an intensive care unit published in 2006 revealed a significant prenatal and maternal deaths due to hypertensive disorders of pregnancy. This data showed 20% perinatal and 9.4% maternal mortality from these disorders¹³.

Conclusion

This study has reflected the fact that there was no significant difference observed regarding maternal and perinatal morbidity. In hypertensive disorder there was no maternal death but perinatal mortality was highest among eclampsia followed by pre-eclampsia. Early detection and treatment will keep hypertensive disorder under well control and will reduce the incidence of severe pre-eclampsia maternal death and eclampsia. Cesarean section is preferred in many cases considering the fact that these patients and fetus may not tolerate the stress of labor.

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