ORIGINAL ARTICLE

PREGNANCY INDUCED HYPERTENSION AS A RISK FACTOR FOR LOW BIRTH WEIGHT OF BABY AT TERM IN TERTIARY CARE HOSPITAL

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ABSTRACT

Background: PIH is the commonest medical disorder comprises of 10-15% of all pregnancies. Hypertensive disorders of pregnancy are responsible for significant maternal and perinatal morbidity and are one of the leading causes of maternal mortality. Early detection and appropriate management of the pregnancy may improve the outcome for both the mother and fetus. The aim of the study was to identify pregnancy induced hypertension as a risk factor for low birth weight of baby at term in tertiary care hospital.

Methods: A sample of 100 patients was selected from Dr. Ziauddin Hospital Karachi through non-probability purposive sampling technique. Patients were divided into two groups on the basis of presence and absence of pregnancy induced hypertension. Total of hundred patients were taken. Fifty patients of PIH and fifty were normotensive patients. The patients in both groups were followed till term. After the delivery of the patients, weight of the babies was compared in both groups. Low birth weight is classified as the weight of the infant below 2.5 kg at term.

Results: Babies born to the patients with PIH were found to be low birth weights as compared to the birth weight of the babies born to normotensive patients. 76% of the babies born to hypertensive patients were low birth weight whereas 18% of the babies born to normotensive patients were found to be of low birth weight.

Conclusion: There is significant association between PIH and low birth weights of babies at term. It was significant enough to make the p-value 0.01 which is less than the level of significance (0.05).

KEY WORDS: Pregnancy induced hypertension, low birth weight, term pregnancy.

INTRODUCTION

PIH is the commonest medical disorder comprises of 10-15% of all pregnancies. PIH is the onset of persistent increase in systolic blood pressure >140mmHg and diastolic blood pressure >90mmHg returning to normal after delivery. Hypertensive disorders of pregnancy are responsible for significant maternal and perinatal morbidity and are one of the leading causes of maternal mortality. Early detection and appropriate management of the pregnancy may improve the outcome for both the mother and fetus[1].

PIH or gestational hypertension is used to describe hypertension that appears after 20 weeks of gestation and resolve after delivery. Gestational hypertension which includes pre-eclampsia and eclampsia whereas chronic hypertension represents 30% of hypertensive disorders of pregnancy[2]. HELLP syndrome (hemolysis, elevated liver enzymes low platelet) is a grave complication and is considered to be a sub type of pre-eclampsia.

Pre-eclampsia is diagnosed when hypertension is accompanied by proteinuria >300mg/dl or persistently >2+ proteinuria on urinanalysis[3]. It is mainly a disease of young primigravidas. Pre-eclampsia complicates 3-5% of first pregnancy and 1% in subsequent pregnancy with around 5-10% cases

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been severe[4]. Risk is related to gestation at presentation. Some women remain hypertensive following a pregnancy complicated by PIH. So women with PIH have increased risk of hypertension in later life. Maternal morbidity and mortality is higher in developing countries 70-120/10,000. Recent inquiries identify 16-20% deaths are related to hypertension in pregnancy[5].

Maternal risks include eclampsia, placental abruption, heart failure and intra cerebral hemorrhage. Fetal morbidity and mortality is closely related to degree of severity of placental insufficiency leading to growth restriction and abruption is often related to poor fetal outcome[6]. Predisposing factors include extremes of reproductive ages, previous history of hypertension, family history of hypertension, pre-existing vascular diseases, obesity and low socioeconomic class. The etiology of gestational hypertension is unknown despite intensive research worldwide but placenta is considered to play a major role in the etiology[7]. Great advances in understanding of pathophysiology of gestational hypertension allow clinicians to better evaluate and manage the patient. This progress is primarily responsible for the recent decline in maternal and perinatal mortality and morbidity rates[8].

Although a lot of work has been done on PIH but a very few studies show follow up till term gestation in booked patients and hence the outcome of baby. Attempt was made in the study to identify PIH as a risk factor for low birth weight of babies so that complications arising due to low birth weight were dealt with at appropriate time[9]. Aggressive management of PIH may prevent low birth weight and hence early neonatal mortality. Thus the aim of this study was to find out the association of pregnancy induced hypertension with low birth weight of baby at term. All booked patients were taken who have been under our follow up so that strict maternal and fetal surveillance was done to prevent complications.

METHODS

100 pregnant patients with pregnancy induced hypertension and with normal blood pressure after 20 weeks of gestation were recruited from Obstetrics OPD and ward of Ziauddin Medical University Hospital, Karachi through non probability purposive sampling technique over a period of one year starting from January 2013 till December 2013. Patients were divided into two groups. 50 patients presented with blood pressure >140/90mmHg after 20 weeks of gestation two readings six hours apart with or without proteinuria diagnosed as having PIH were included in Group A. 50 patients with normal blood pressure after 20 weeks of gestation were included in Group B. Known hypertensive patients before 20weeks of gestation or before pregnancy, patients with PIH with any other associated illness like GDM, renal or hepatic illness, patients with twin pregnancy, ante partum hemorrhage and patients with severe anemia were excluded from study. Informed consent was taken from recruited patients. The data included maternal age, parity, gestational age, history of PIH in previous pregnancies and multiple gestations. Blood pressure of all the patients coming to antenatal OPD and ward was taken. Their baseline investigations (CBC, RBS, Urine DR, and HbsAg and AntiHCV) were sent along with special investigations for high blood pressure (urine for albumin, serum urea, creatinine, and uric acid, LFTs). Safe antihypertensives in pregnancy were given to hypertensive group (alpha methyl dopa). Serial ultrasound examination was also done to monitor growth of fetus. Regular antenatal blood pressure record was maintained and treatment was decided accordingly. Those patients who persistently had raised B.P were considered as high risk and were admitted at 37 – 38 weeks gestation, fresh investigations were done and mode of delivery was decided according to Bishop Score, placentation, presentation, previous obstetrical outcome condition of mother and baby at that time. All babies born were assessed by their Apgar score and weight. All deliveries were under pediatric cover who performed the detailed pediatric examination. All the patients were advised for follow up after 10 days and then after six weeks. Their B.P was taken which should be normal by around 6 weeks (as in PIH).

STATISTICAL ANALYSIS

Data analysis was performed through SPSS version 10.0. Frequencies and percentages were computed to present all categorical variables including presenting complaints, previous history of pregnancy induced hypertension, obstetrical history, associated medical problems, general physical examination, mode of delivery, fetal weight, Apgar score. Chi-square test was applied to compare prescribed variables between two groups at a significance level of <0.05.

RESULTS

Weight of the babies in patients with PIH was LBW in 76% while in normotensive group it was in 16% of cases. The percentage of primigravida patients was 50%, gravida (1-3) were 38% and multiparas (>4 babies) were 12% in hypertensive patients while in normotensive patients the percentage of primigravidas was 24%, parity (1-3) were 64 % and multiparas were 12%. 36% of patients in both groups were of 15-24 years of age, while 42% of patients in cases and 56% of the patients in control group were of 25-35 years of age and 22% of patients from cases and 8% of patients from control group were of >35 years of age. History of PIH was present in 42% of patients in cases and 18% of patients in control group respectively. Complications developed were

eclampsia 4%, pre-eclampsia 28%, abruptio placenta 2%. There were two stillbirths in hypertensive group one was born to a patient having severe pre-eclampsia and 1 was born to the patient having eclampsia. Apgar score was overall satisfactory. It was taken at 5 min and was categorized as <5, 5-8 and >8. Apgar score <5 was 4% and 2% in cases and controls respectively. Apgar score between 5-8 was 66% and 44% in cases and controls respectively and the babies having Apgar score >8 was in 30% of cases and 54% of controls.

Table 1: Comparison of Variables of Cases (PIH Group) and Control (Normotensive Group)

VARIABLES	PIH (N=50)	Normotensive (N=50)	P value
Age			
15-24 years	18 (36)	18(36)	0.118
25-35 years	21(42)	28(56)	
>35 years	11(22)	4 (8)	
No. of Pregnancies			
Primigravida	25(50)	12(24)	0.019
Gravid 2-4	19(38)	32(64)	
Multigravida	6 (12)	6 (12)	
Presenting complaints	35(70)	0	
Asymptomatic (high	9(18)	3(6)	<0.001
BP)	2(4)	0	
Headache	4(8)	0	
Visual symptoms	0	47(94)	
Epigastric pain			
Others			
History of PIH			
Yes	21(42)	9(18)	0.009
Edema			
Yes	43(86)	44(88)	0.766
Past obstetric history	23(46)	34(68)	
NVD	1 (2)	2(4)	0.048
C-section	26(52)	14(28)	
Not applicable			
Mode of delivery			
NVD	35(70)	39(78)	
C-section	11 (22)	6(12)	0.239
Instrumental delivery	4(8)	5(10)	
Fetal outcome			
Alive	48(96)	50(100)	0.153
Not alive	2(4)	0	
APGAR at 5 min			
<5	2(4)	1 (2)	0.05
5 to 8	33(66)	22(44)	
>8	15(30)	27(54)	
Weight of baby			
<2.5 kg	38(76)	8(16)	<0.001
>2.5 kg	12(24)	42(84)	

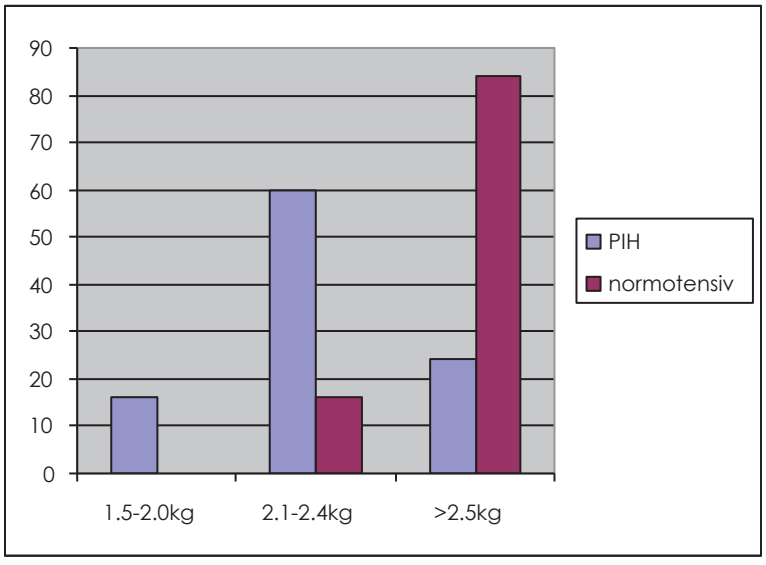

Figure 1: Comparison of Weight of Babies in Mothers with Pregnancy Induced Hypertension and in Normotensive Mothers

DISCUSSION

Low birth weight is the most important challenge confronting those responsible for new born care especially in developing country like Pakistan as greater proportion of morbidity and mortality fall in this group. Death of LBW babies account for about 50% of neonates and 50% of handicapped infants[10].

Current study was performed to confirm the association of maternal hypertension with birth weight of baby in our population. The association of birth weight with pre-eclampsia allows more precise estimation of potential effects of pre-eclampsia[11]. Individualized birth weight has been shown to be a better estimate of growth potential of a fetus and deviation from this standard has been shown to be a better predictor of neonatal complications[12]. So the birth weight model was adopted in this study which allowed a more precise estimation of the potential effects of PIH on neonate.

In this study when birth weights of babies born to patients having PIH were compared to those of babies born to normotensive mothers at term. There was statistically significant difference in both groups and birth weights of babies born to hypertensive gravidas were lower i.e. 76% versus 16% in controls respectively. Our results clearly demonstrated that PIH at term is associated with an increase incidence of small for gestational age babies and decreased neonatal birth weight. P-value was found to be 0.01 (<0.05).

Babies having weight <2.5kg were taken as low birth weight babies[13]. Majority of low birth weight babies born in Pakistan are growth retarded rather than preterm[14]. The incidence of LBW has declined to <10% of babies in developed countries due to socioeconomic advancement, whereas in developing countries it is still in the range of 15-40%. In Pakistan 12-25% of babies are LBW at birth[15]. A case-control study was conducted at civil hospital Karachi Pakistan where maternal and perinatal outcome of hypertensive disorders was studied.it clearly showed increased incidence of low birth weight babies was found in various hypertensive disorders[16]. About 50 percent babies born to mothers having pre eclampsia and eclampsia were low birth weight. This study was in agreement with observation from cross sectional study conducted in health care facilities across Pakistan where maternal and fetal effects of eclampsia were studied about 70% babies born to mothers having hypertensive disorders were found to be low birth weight babies[17]. In a population based study conducted in India regarding hypertensive disorders in pregnancy, it was observed that there was positive association between small for gestational age babies and PIH[18].

Severity of LBW increases as the pathophysiology of PIH and pre-eclampsia worsens and this can lead to fetal death in extreme cases[19]. In the present study two stillbirths were observed. Both were low birth weight babies. Among them one was born to the patient having severe pre-eclampsia and the other one was born to the patient who had eclampsia and the weights of the babies were 1.8 kg and 1.6 kg respectively.

Another large population based study published in 2015 conducted in Harare Zimbabwe confirmed and quantifies the magnitude of the excess risk of low birth weight and stillbirth babies born to women with hypertensive disease in pregnancy[20]. Women with any hypertensive disorder, gestational hypertension with or without proteinuria and pre-existing

hypertension were at a significantly higher risk of having small for gestational age infants and stillbirth babies[21].

Regarding age distribution it was seen that majority of the patients in both groups had ages between 25-35 years i.e. (42% in hypertensive and 56% in controls). As this is the peak reproductive age so majority of the patients had ages between 25-35 years. Another observation drawn was that 22% of the patients had age >35 years in hypertensive group whereas only 8% of the patients had age >35 in control group however, favoring the increase incidence of PIH with increase in the age of mother.

In hypertensive group 50% of the patients were primigravidas while in control group 24% of the patients were having their first baby. This also favored the belief on increased incidence of PIH in primiparas[1] while 64% of the normotensive patients were multigarvidas while 38% of the patients were multigravidas in hypertensive group which signifies that with increasing parity frequency of PIH decreases.

All the babies born alive had Apgar scores of >5 at 5 minutes. Majority of the babies in hypertensive group had Apgar score in between 6-8 while in control group the majority of the babies had Apgar score 8-10. So overall the babies born to normotensive mothers had better Apgar score as compared to the babies born to hypertensive group it can be because of the fetal compromise associated with low birth weight and growth restricted babies in hypertensive patients. Majority of the hypertensive patients had systolic blood pressure ranging from 140-160mmhg and only 4% of the patients had systolic BP > 160mmhg, While diastolic blood pressure in majority of the patients was 90-110mmhg. No maternal mortality was seen in either group. This may be because of the possibility that we included only booked patients in our study and they were on regular follow up and treatment. However, two stillbirths were seen and majority of the babies in hypertensive mothers were low birth weight.

CONCLUSION

PIH is associated with decreased fetal birth weight at birth and this proves our hypothesis as 76% of babies were found to be low birth weights as compared to 16% in control group. In conclusion there is need for further co-ordination to make the best use of the available resources to improve the perinatal outcome. Proper awareness and timely intervention decreases perinatal complication associated with PIH. Early recognition, regular follow up, proper awareness can decrease the complications associated with PIH.

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