Original Article

STUDY OF RISK FACTORS OF PERINATAL DEATH IN PREGNANCY INDUCED HYPERTENSION (PIH)

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ABSTRACT

Background: Hypertensive disorders are common complication occurring during pregnancy responsible for maternal & fetal mortality & morbidity. Though the condition is on decline, still stands a public health problem.

Objectives: To determine risk factors of perinatal death in women with pregnancy induced hypertension.

Materials & Method: A cross-sectional study was conducted over period of one year in the department of Obstetrics & Gynecology in NHL municipal college, Ahmadabad. A total of 100 pregnant women with PIH were enrolled in the study. A pre-tested structured Performa was prepared & women were interviewed to collect necessary information such as detailed history, clinical examination findings & investigations performed. Results were analyzed using MS Excel & Epi Info.

Results: In the present study, 29%, 21% & 50 % were of mild PIH, moderate PIH & severe PIH respectively. The incidence of PIH was found more among teenage pregnancy, among primigravidas, those from low socio-economic status, those with history of PIH in previous pregnancy, having family history of PIH & those who were found obese. Emergency delivery, having diastolic blood pressure > 90 mm Hg, higher degree of proteinuria & low birth weight among PIH cases had an adverse perinatal outcome in terms of higher perinatal death. The findings were statistically significant On Univariate analysis; diastolic blood pressure & degree of proteinuria were found to be significant risk factors responsible for perinatal mortality among PIH women.

Conclusion: Pregnancy induced hypertension is a common medical disorder associated with pregnancy. In the present study, PIH cases who delivered in emergency, with raised diastolic blood pressure & more proteinuria & neonate with low birth weight were found risk factors for perinatal death. Fetal morbidity & mortality can be reduced by early recognition & institutional management.

Keywords: Pregnancy induced Hypertension, Risk Factors, Perinatal Death

INTRODUCTION

PIH is the second most common medical disorder seen during pregnancy. They along with haemorrhage & infection, contribute greatly to maternal morbidity & mortality[1]. PIH is a pregnancy specific, multisystem disorder characterized by development of oedema, hypertension & proteinuria after 20 weeks of gestation[2]. World Health Organization estimates that at least one woman dies every seven minutes from complications of hypertensive disorders of pregnancy[3]. Pregnancies complicated with hypertensive disorders are associated with increased risk of adverse fetal, neonatal & maternal outcome including preterm birth, intrauterine growth retardation (IUGR), perinatal death, ante partum haemorrhage, postpartum haemorrhage & maternal death[4, 5]. Most deaths in PIH occur due to its complications & not due to hypertension per se. With the advent of antenatal care in large cities, severe degree of toxaemia & eclampsia has

become mostly preventable. However, in developing country, it still continues to be a major obstetric problem[6]. Thus, we can reduce the maternal mortality by prevention & proper management of these complications. Hence, the present study was conducted to find out risk factors for perinatal death in PIH cases.

MATERIAL AND METHODS

A cross-sectional study was carried out for period of one year in the Department of Obstetrics & Gynaecology in NHL municipal college, Ahmadabad, Gujarat, India. A consecutive 100 pregnant women including, both booked & unbooked, who presented to the Hospital with pregnancy induced hypertension during the study period (one year from December 2003 to November 2004), were enrolled for the study. On admission, a detailed history was taken; thorough clinical examination & relevant laboratory investigations were performed. Verbal informed consent of each pregnant woman was taken. Data was entered in MS Excel & analyzed using Epi Info.

Definitions used in study: Hypertension in pregnancy is defined as blood pressure =/> 140/90 mm Hg. When hypertension in pregnancy accompanied by proteinuria (urinary excretion of=0.3g protein in a 24 hour specimen/1+/> using random urine dipstick evaluation) it is known as pre-eclampsia. The diagnosis of preeclampsia in absence of proteinuria highly suggestive when hypertension is accompanied by headache, blurring of vision, abdominal pain or certain laboratory abnormalities particularly low platelet count and elevated liver enzyme either alone or in combination. Eclampsia is defined as occurrence of new onset grand mal seizure in women with preeclampsia that cannot be attributed to other causes[4].

PIH classified into mild ((140/90 to 149/99 mmHg)), moderate (150/100 to 159/109 mmHg) & severe PIH (160/110 mmHg or higher) [7].

In the present study, Modified B. G. Prasad Socio-economic classification was used of which class I, II, II have been considered as upper & class IV, V as lower socio-economic status. Women with BMI > 25 was considered as obese.

RESULTS

In India, the incidence of PIH is more than 4 percent (41.2 per 1,000) reported in 2009. This level has risen more than 50 percent since 1990 which was 2% (27.2 per 1000)[8].

Table 1: Distribution of PIH cases

Variables	PIH Category			
	Mild (n = 29)	Moderate (n = 21)	Severe (n = 50)	Total (N = 100)
Age in years				
</= 20	09(17.0)	07 (13.2)	37(69.8)	53
21-30	20(42.6)	14 (33.3)	13(27.7)	47
Parity				
Primi	10(18.2)	08 (14.5)	37(67.3)	55
Multi	19(42.2)	13 (28.9)	13(28.9)	45
Socio-economic status				
Lower	06(11.8)	10 (19.6)	35(68.6)	51
Upper	23(46.9)	11 (22.4)	15(30.6)	49
Past h/o PIH				
Yes	19(27.9)	06(08.8)	43(63.2)	68
No	10(31.3)	15(46.9)	07(21.9)	32
Family h/o PIH				
Yes	14(25)	07(11.7)	39(65)	60
No	15(37.5)	14(35.0)	11(27.5)	40
Obesity				
Yes	13(21.3)	06(09.8)	42(68.9)	61
No	16(41.0)	15(38.5)	08(20.5)	39
Mode of delivery				
Normal	24(38.1)	17(27)	22(34.9)	63
C-section	05(13.5)	04(10.8)	28(75.7)	37

Figure in parenthesis indicate percentage

Out of 100 cases of PIH, majority (50%) were of severe PIH, 29% of mild PIH & 21% of moderate PIH. The incidence of PIH was higher among teenage pregnancy & maximum of them were having severe PIH. The present study revealed that, primigravidas constituted 55% of total PIH cases. 51% women were from low socio-economic status. 68%, 60% & 61% were having past h/o PIH, Family h/o PIH, Obesity respectively & most of them were of severe PIH. Rate of caesarean delivery & vaginal delivery were 37% & 63% respectively among women. Caesarean delivery was more among severe PIH. (Table I)

Table II: Risk factors associated with perinatal death among PIH women

Variables	PIH Women (N= 100)	Perinatal Death (n=17)	OR
Booked Vs emergency			
Emergency	58	16	0.09
Planned	42	01	
		χ2=6.67; p=0.01; **S**	
Age in years			
</= 20	53	13	0.35
21-30	47	04	
		χ2=2.37; p=0.12; N**S**	
Parity			
Primi	55	10	0.86
Multi	45	07	
		χ2=0.00; p=0.98; N**S**	
Diastolic blood pressure			
90-110	45	02	**6.14**
>110	55	15	
		χ2=5.37; p=0.02; **S**	
Degree of proteinuria			
Mild	74	05	**6.83**
Moderate	26	12	
Severe	00	00	
		χ2=11.22; p=0.00; **S**	
Birth weight (kg)			
< 2	32	16	0.03
>2	68	01	
		χ2 =20.68; p = 0.00; **S**	

S= significant, NS=Not significant

Perinatal death was more among PIH women who delivered in emergency, PIH women having diastolic blood pressure > 90 mm Hg & more proteinuria & neonate with low birth weight. (Table II). The findings were statistically significant. On Univariate analysis Diastolic blood pressure (OR=6.14) & degree of proteinuria (OR=6.83) were found significant risk factors associated with perinatal mortality among PIH women.

DISCUSSION

In our study, the incidence of PIH was higher among teenage pregnancy. Study by Vidyadhar B. Bangal[9] also found the same result. Duckitt et al[10] observed teenage pregnancy to be one of the risk factors for PIH & eclampsia. Sudarsan S. et al[11] concluded that eclampsia involves young primigravidas & 87.6% of eclamptic patients were below 25 years of age in his study. Contrary to this Lamminppa et al[12] mentioned higher incidence of pre-eclampsia in advanced maternal age. Jasovic Siveska E et al[13] mentioned Bimodal variability i.e. PIH among young primipara & old multipara women. The present study revealed that, PIH was more common among primigravidas & constituted 55% of the total cases & majority of them were having severe PIH. Among primigravida majority were having severe PIH. Study by Bhattacharya S.[14] & Duckitt et al [10] also reported that primigravida was a risk factor for preeclampsia & eclampsia. It was observed in our study that PIH were high in women with lower socioeconomic status having poor access to antenatal care. The reason could be illiteracy; they come to the hospital only in case of serious problems, & in a large majority of patients preeclampsia remains asymptomatic & remits spontaneously, since diagnosis of preeclampsia is often missed. Hence these patients never come in contract with the health care system. This is consistent with the literature by Yucesoy G. et al [15]. Most of the PIH cases were having h/o PIH in previous pregnancy, Family h/o PIH, Obesity. Similar result observed in a study done by S Ganesh Kumar wherein Past H/o PIH in previous pregnancy, family h/o PIH & obesity were risk factors of PIH[16]. In the present study, most of the women delivered vaginally. Caesarean delivery was more among severe PIH. However variable results were observed regarding route of delivery among PIH cases in different study. C-section rate was 58.8% in a study done by Yucesoy G et al [15]. However studies by, Miguil M et al [17] & Dissanayake VH et al [18] revealed caesarean section rates as 71% & 78% respectively.

Perinatal death was more among PIH women who delivered in emergency, among teenage pregnancy, among primigravida, diastolic blood pressure > 90 mm Hg & more proteinuria & neonate with low birth weight. Similar results were observed in a study by BS Dhananjay G et al [19]. Maternal micro vascular damage & endothelial dysfunction associated with chronic

hypertension may cause the proteinuria, edema, utero placental vascular insufficiency & the development other risk factors leading to the adverse perinatal outcome. As rightly said, there are short & long-term effects influenced by the severity of hypertension. The immediate impact observed is altered foetal growth resulting in greater foetal liability. Foetal health as well as its weight is highly compromised; leading to various degrees of foetal morbidity & foetal damage may be such as to cause foetal death[18]. Hypertension is complicated by the development of proteinuria, there is a 33% incidence of fetal growth restriction & a perinatal mortality rate of up to 24% [20].Studies by Waugh et al[21] & Schiff et al[22] also found that higher degree of proteinuria associated with adverse perinatal outcome. However, statistically emergency registration, diastolic blood pressure more than 90 mm Hg, proteinuria & neonatal low birth weight were significantly associated with perinatal death. On Univariate analysis diastolic blood pressure more than 90 mm Hg & proteinuria found to be a risk factor.

CONCLUSION

Among PIH cases severe cases were more. The incidence of PIH was higher among teenage pregnancy, primigravidas, those having h/o PIH in previous pregnancy, Family h/o PIH, Obesity. Perinatal death was more among PIH women who delivered in emergency, PIH women having diastolic blood pressure > 90 mm Hg & more proteinuria & neonate with low birth weight.

Hypertensive disorders cause substantial morbidity & mortality for both mother & fetus, despite improved prenatal care. The adverse perinatal outcome can be improved by early registration, health education of couple, regular antenatal checkups, & early identification of hypertension, timely decision regarding mode of delivery & availability of specialist care during labour and after birth.

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