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Original Research Article

Effect of pregnancy induced hypertension on maternal and perinatal outcome at tertiary care center in Ahmedabad, Gujarat, India

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ABSTRACT

Background: Pregnancy is a physiological event for utmost women. Almost 20% - 30% of the adult population and more than 5% - 8% of all pregnancies in the world suffered from hypertension (HTN) and 5% - 22% of all pregnancies have develop some kind of medical problem due to hypertensive. To study the prevalence of PIH and to find out the association of PIH with perinatal and maternal outcome.

Methods: Prospective study was done among 110 cases of PIH admitted at department of obstetrics and Gynecology in B.J. Medical college, Ahmedabad during July 2005 to July 2007. Hypertension was identified based on the definition by the Australian Society of the Study of Hypertension in Pregnancy and that of the Working Group Report on High Blood Pressure in Pregnancy, which establish blood pressure levels > 140/90 mmHg or hypertension diagnosis marked on the record.

Results: Almost 44% participants had mild PIH and 56% had severe PIH. Almost 32% participants had grade I changes and 29% had grade II changes. Low birth weight was found in 53% baby. Maternal complication observed in 16% participants. Out of 16 patients, highest incidence of eclampsia was observed followed by APH, DIC respectively. One incidence of maternal death also occurred. Perinatal complications were observed in 46% cases which include IUGR (60.9%), birth asphyxia (8.7%), RDS (4.3%) and perinatal death (15.2%) respectively.

Conclusions: Pregnancy-induced hypertension is associated with multiple complications in the mother and baby, and particularly preterm delivery. Timely intervention of regular ANC check-up, nutrition, health education etc. can reduce the severity of PIH which lead to decrease in maternal and perinatal complications.

Keywords: ANC care, Eclampsia, Maternal complication, Pregnancy induced hypertension, Preeclampsia, Perinatal complication

INTRODUCTION

Pregnancy is a physiological event for utmost women.¹ Almost 20% - 30% of the adult population and more than 5% - 8% of all pregnancies in the world suffered from hypertension (HTN) and 5% - 22% of all pregnancies have develop some kind of medical problem due to hypertensive.²⁻⁶ Severe HTN raises maternal complications like the risk of heart attacks, cardiac

failure, cerebro-vascular accidents and renal failure and neonatal complications like inappropriate placental oxygen transfer, Intra-uterine growth retardation (IUGR), premature delivery, placental abruption, stillbirth, and neonatal death.² Pregnancy-induced hypertension (PIH) is become a one of the major public health issue.⁷⁻⁸

Pregnancy-induced hypertension (PIH) is classified as 1) Pregnancy-induced hypertension (without proteinuria), 2)

Pre-eclampsia (with proteinuria), 3) Eclampsia (pre-eclampsia with convulsions), 4) Gestational hypertension (transient hypertension of pregnancy or chronic hypertension identified in the latter half of pregnancy).⁹

Treating the hypertension does not modify the progression of disease. In spite of, early diagnosis and treatment of PIH decreases not only the incidence of hypertensive crisis, but also the rate of neonatal complications. Present study was conducted with objectives to study the prevalence of PIH and to find out the association of PIH with perinatal and maternal outcome.

METHODS

This prospective study was done among 110 cases of PIH admitted at department of obstetrics and Gynecology in B. J. Medical college, Ahmedabad during July 2005 to July 2007. Data collection was done after ethical permission from institutional ethical committee and informed consent of clients. Inclusion criteria for present study was all pregnant women ≥28 week of pregnancy irrespective of age and parity. Pre-tested questionnaire was administered and details like socio-demographic information, past history of medical illness, menstrual history was collected.

Hypertension was identified based on the definition by the Australian Society of the Study of Hypertension in Pregnancy and that of the Working Group Report on High Blood Pressure in Pregnancy, which establish blood pressure levels >140/90 mmHg or hypertension diagnosis marked on the record.^{8,10} The data were recorded in an Excel sheet and descriptive analysis was performed, of which data are presented in the tables.

RESULTS

A Table 1 show that 51% participants belonged to 21 to 25 years age group and mean age was 27.6 years with 5.6 SD. Mean gestational age was 36.5 week with 7.4 SD. Almost 46% participants had blood group ‘O’ followed by 28% had ‘A’ and 22% had ‘B’. Almost 67% participants had done ANC visit in routine visit and among them 64% were belonged in primigravida group. Around 67% delivery was done through vaginal route and 16% through instrumental (forceps and vacuum).

Figure 1 shows that 44% participants had mild PIH and 56% had severe PIH. Incidence of PIH was 6.1% (100/1639). Figure 2 shows that severe anemia was present in 19% participants and very severe anemia in 4% participants.

Table 2 shows that edema was present in 59% participants followed by headache (33%) and visual disturbance (19%). Proteinuria was present in 78% participants. Adverse perinatal outcomes were increased with increased level of Proteinuria. Almost 36.36%

participants with mild PIH and 73.21% participants with severe PIH had retinal changes which were reversible. Almost 32% participants had grade I changes and 29% had grade II changes. Normal Doppler finding was observed in 54% participants. Present study observed APGAR score 0-3 in 4% and 4-6 in 46% participants at 1 min. Low birth weight was found in 53% baby.

Table 1: Socio-demographic information of participants (N=100).

Variable	Number (%)
Age (in years)	
18-20	2
21-25	51
26-30	32
>30	15
Mean age ± SD	27.6 ± 5.6
Gestational age (in week)	
28-32	23
33-36	34
37-40	42
>40	1
Mean Gestational age ± SD	36.5 ± 7.4
Blood group	
O	46
A	28
B	22
AB	4
Gravidity	
1 st	64
2 nd	15
3 rd	8
4 th	5
5 th	3
6 th	5
Ante-natal visit	
Booked	67
Emergency	33
Mode of delivery	
Vaginal	67
Instrumental (forceps and vacuum)	16 (3 forceps + 13 vacume)
Caesarean Section	17

SD - Standard Deviation

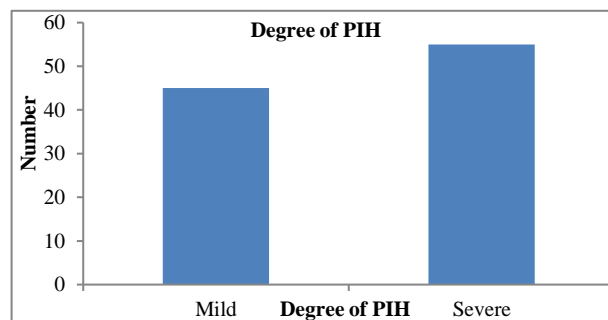


Figure 1: Degree of PIH among participants (N=100/1639).

Table 2: Maternal and perinatal outcome among participants (N=100).

Variable	Number				
Maternal Morbidity					
Headache	33				
Edema	59				
Visual disturbance	19				
Loss of fetal movement	8				
Epigetric pain	2				
Convulsion	6				
Proteinuria	Total	IUD (n=6)	SB (n=1)	Neaontal Death (n=4)	Preterm Delivery (n=57)
Nil	3	0	0	0	2
Trace	10	0	0	0	8
+1	18	1	0	0	9
+2	28	1	1	1	14
+3	32	3	0	1	18
+4	9	2	0	2	6
Fundoscopy (in Grade)	Mild PIH (n=44)			Severe PIH (n=56)	
I	11			5	
II	5			16	
III	0			15	
IV	0			5	
Gestational Age at onset of labour					
Pre-term	57				
Full-term	42				
Post-term	1				
Placental Grading					
0	8				
I	32				
II	29				
III	31				
Biophysical Profile Score					
0-2	0				
4	1				
6	7				
8-10	86				
Doppler Finding					
Normal	54				
Abnormal	46				
APGAR Score (n=93)					
At 1 Min					
0-3	4				
4-6	46				
7-10	43				
At 5 min					
0-3	0				
4-6	11				
7-10	82				
Birth Weight (in Kg)					
<2.5	53				
2.5-3	40				
>3	7				
Blood Pressure on follow-up					
Normal	87				
High	12				
Proteinuria on follow-up					
Absent	95				
Present	4				
IUD – Intra-uterine death, SB – Still Birth,					

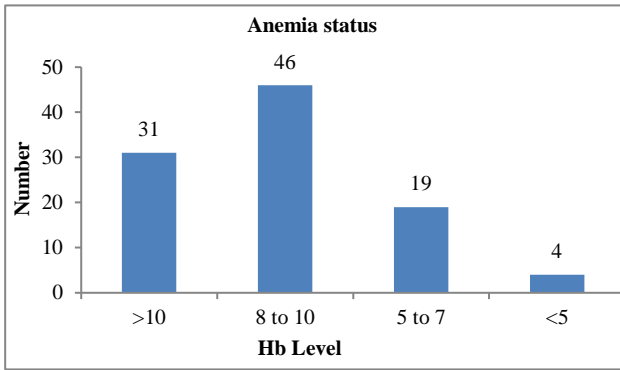
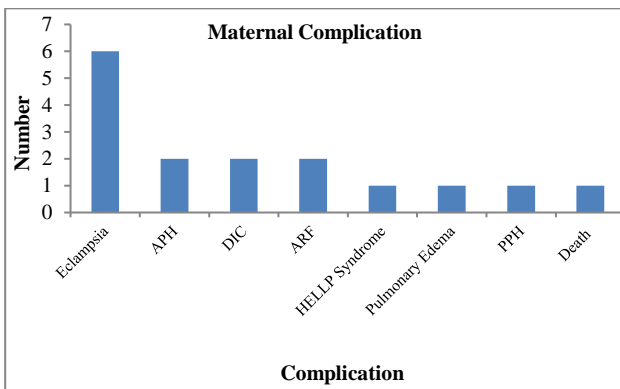


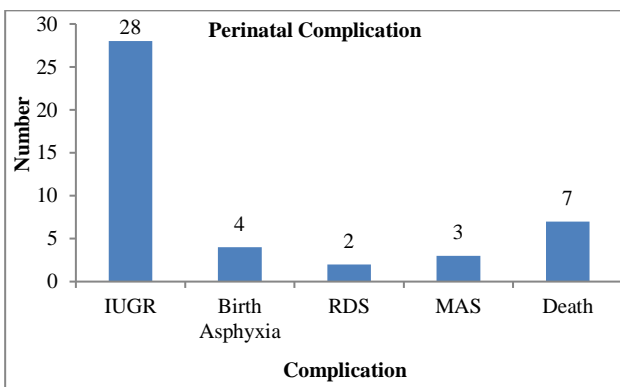
Figure 2: Anemia status of participants (N=100).

Figure 3 shows that maternal complication observed in 16% participants. Out of 16 patients, highest incidence of eclampsia was observed followed by APH, DIC respectively. One incidence of maternal death also occurred. Perinatal complications were observed in 46% cases which include IUGR (60.9%), birth asphyxia (8.7%), RDS (4.3%) and perinatal death (15.2%) respectively.



APH – Ante-partum heamorrhage, DIC – Disseminated Intravascular coagulation, ARF – Acute renal failure, PPH – Post-partum heamorrhage

Figure 3: Maternal complication among study participants (N=16).



RDS – Respiratory distress syndrome, MAS – Muconium Aspiration syndrome.

Figure 4: Perinatal complications among study participants (N=46).

DISCUSSION

In present study, incidence of PIH was observed in 6.1% cases (100/1639). This finding is lower than the similar study done by Chaim SRP et al, Cunningham FG et al, Oliveira CA et al and Rose J et al.^{1,10-12} Factors like Awareness among women regarding ANC care, less incidence of teenage pregnancy responsible for the low incidence of PIH. Present study observed 1/3rd emergency cases which is comparable with the similar study done by Sivkumar S et al and Gadappa S et al.^{13,14} Low incidence of emergency cases is due to awareness and counseling of the pregnant women. Present study observed PIH was more common in Primigravida cases and It is due to several factors like teenage pregnancy, early marriage, illiteracy, social ignorance and ritual and lack of family planning adaptation. This finding is correlated with the similar study done by Rose J et al and Dekker and Sibai et al.^{12,15} Mean age of participants was 27.6 years which is comparable with similar study done by Rose J et al.¹² Mean age of gestational age was 36 week which quite similar with the study done by Rose J et al.¹² Present study also observed higher incidence of PIH among preterm delivery. Preterm delivery was due to early spontaneous labour or because of therapeutic induction necessitated by severe PIH. In present study, out of 57 preterm delivery 6 patients had induction done die to IUD, 3 patients had induction done due to severe PIH and remaining 48 patients had gone in spontaneous labour.

In our study, normal hemoglobin level found in only 31% cases and anemia is responsible for high incidence of preterm delivery and low birth weight babies which leads to increase incidence of perinatal morbidity and mortality. Present study observed incidence of convulsion in 6 cases which is lower than the similar study done by Sivakumar S et al.¹³ Events of convulsion can be decrease by regular ANC care. Present study observed poor perinatal outcome in patients with $\geq +2$ proteinuria. Present study found that incidence of severe PIH is was increased with rise in the retinal change in fundoscopy grade. LSCS incidence in present study found among 17% cases and the indication for it were severe PIH, foetal distress, precious pregnancy, non-progress labour etc. Higher incidence of LSCS was found in similar study done by Sivakumar S et al.¹³

Eclampsia was the most common complication in present study which was followed by APH, DIC, ARF etc which is quite comparable with the similar study done by Bansal V et al.¹⁶ One maternal death was occurred in present study which is quite lower than the similar study done by Rose J et al and Shrinivas et al.¹² In our study, only 42% patients had term delivery and 57% had preterm delivery. Association was preterm delivery with PIH is well known fact.

Nutrition of the pregnant women is an important factor in foetal development. In our study, low birth weight incidence was observed in 53% cases. Low APGAR

score (<7) in present study found in 53.8% cases (at 1 min) and 11.8% cases (at 5 min) which is higher than the similar study done by Khosravi S et al and Chaim SRP et al.^{17,1} Present study was found higher perinatal mortality and morbidity with increase in placental maturity.

CONCLUSION

Pregnancy-induced hypertension is associated with multiple complications in the mother and baby, and particularly preterm delivery. Complications such as HELLP syndrome can sometimes prove fatal to mother and fetus. In our study, incidence of PIH was found to be more in Primigravida, age group of 21-25 years and gestational age. Timely intervention of regular ANC check-up, nutrition, health education etc. can reduce the severity of PIH which lead to decrease in maternal and perinatal complications.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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