

PERINATAL OUTCOME OF WOMEN WITH PREGNANCY INDUCED HYPERTENSION

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Abstract

Background: Pregnancy Induced Hypertension (PIH) is a life-threatening complication of pregnancy which adversely affects the maternal and perinatal outcome. Most of the deaths associated with PIH occur due to its adverse effects. Proper management of these complications can improve the perinatal outcome. The present study was aimed to find out the perinatal outcome associated with PIH.

Method: A quantitative approach with the prospective cross-sectional design was adopted to study the perinatal outcome of pregnant women with PIH in tertiary care hospital, Dehradun, Uttarakhand. Fifty-one pregnant women who diagnosed with PIH and registered in respective study centre belongs to a hilly area, is Primigravida, gestational age between 26 – 30 weeks, is experiencing at least three vascular symptoms were selected purposively. The women with PIH followed till early puerperal period. Ethical permission was taken from the Institutional Ethical Committee. Informed written consent was taken from each participant. The data were entered and analyzed in SPSS version 21.

Result: More than half of the women with PIH (66.67%) hospitalized during pregnancy. Among them, 17.65% had specialized care in ICU. The highest percentage of women (64.71%) had preterm labour. More than half (54.90%) of the women had undergone an emergency caesarean section and every fifth woman (21.57%) underwent elective caesarean section. Most of the women (94.12%) have developed complications. Most of the babies (90.38%) had low birth weight. Majority of the newborn (71.43%) were admitted in NICU. Among them, 42.86% of the babies were resuscitated. All (100%) babies were developed complications. The most common complication seen in the women was Intra Uterine Growth Retardation (IUGR) (79.17%).

Conclusion: Early Screening and treatment of women with PIH will help in improving perinatal outcome.

Keywords: Pregnant Women, Pregnancy Induced Hypertension, Perinatal outcome

Introduction

Pregnancy Induced Hypertension is a serious complication and typically starts after 20th week of pregnancy and is related to increased blood pressure and protein in mother's urine.^{1,2} Pregnancy-induced hypertension associated with 7-10% of pregnancy complications i.e. 70% of preeclampsia- eclampsia and 30% of chronic hypertension. It is a second leading cause of maternal mortality in developing countries and 1/3 of all maternal deaths are from hypertensive disorders of pregnancy.³

Perinatal outcome of women with PIH in Niloufer hospital, Hyderabad shows that 70.67% of babies delivered to PIH mothers were delivered by caesarean section compared to only 27% in the control group and 54.67% of neonates delivered to PIH mothers were low birth weight. More than fifty per cent (63.01%) of newborns were preterm in the study group.⁸⁰ The study conducted in Bhopal shows that the incidence of pregnancy-induced hypertension is 5.97%, low birth weight is 57.7%, preterm birth is 44.2%, IUGR is 20.4%, stillbirth is 4.4%, early neonatal death is 22 (12.2%). The highest incidence of Low Birth Weight (LBW) (88%), Preterm (80%), IUGR (12%) is present in the eclampsia group. In control group, incidence of LBW is 22% ($p < 0.001$), prematurity is 18% ($P < 0.001$) and IUGR is 6% ($p < 05$).⁴

Most of the PIH related mortality occurs due to its complications. Proper management of these complications can improve the perinatal outcome. Hence, the present study was conducted to find out the maternal and perinatal outcome associated with PIH.⁵

Methods

A quantitative approach with a prospective cross-sectional design adopted to study the perinatal outcome of pregnant women with PIH. The study was conducted in a tertiary care hospital, Dehradun, Uttarakhand. Fifty-one women with PIH were selected for study by using a purposive sampling technique. Pregnant women who diagnosed with PIH and registered in respective study centre belongs to a hilly area, is primigravida, gestational age between 26 – 30 weeks, is experiencing at least three vascular symptoms, were willing to give written consent for the study and can understand and speak the Hindi Language were included in the study. The tools used to

collect the data were 1. Demographic Questionnaire and 2. Perinatal outcome questionnaire which includes both maternal and neonatal parameters. The women with PIH followed till early puerperal period. The tools were first prepared in English then translated into the local language (Hindi) and back to English to maintain conceptual consistency. Ethical permission was taken from the Institutional Ethical Committee. Informed written consent was taken from each participant. The data were entered and analyzed in SPSS version 21.

Result

Table No 1: Frequency and percentage-wise distribution of the demographic variables of pregnant women with PIH

N = 51

S. No	Demographic Characteristics		f	%
1	Age (in years)	18-21	7	13.70
		22-25	27	53.00
		26-29	7	13.70
		30 and above	10	19.60
2	Educational status	No formal education	4	7.84
		Primary	3	5.89
		Secondary	18	35.29
		Higher secondary	13	25.49
		Graduate and above	13	25.49
3	Occupation	Housewife	46	90.20
		Working	5	9.80
4	Monthly family income (In Rs)	36,997 and above	1	1.96
		18,498 – 36,996	9	17.65
		13,874 - 18,497	15	29.41
		9,249 - 13,873	18	35.29
		5547 – 9248	6	11.76
		1866 – 5546	2	3.93
5	Type of family	Nuclear	20	39.22
		Joint	31	60.78
		Extended	0	0
6	Place of residence	Urban	2	3.92
		Rural	37	72.55
		Semi-Urban	12	23.53

Table No: 1 Depicts that highest percentage of the women belong to the age group of 22-25 (53.00%) and had secondary education (35.29%). Most of the women (90.20%) were housewives, the highest percentage (35.29%) of women had the family income of 9,249 – 13,873 Rs. Majority of women belongs to the joint family (60.78%) and rural area (72.55%).

Table No 2: Frequency and percentage-wise distribution of perinatal (Maternal) outcome in the experimental and control group

N = 51

S. No	Perinatal Outcome (Maternal Parameter)	f	%	
1	Hospitalization during Pregnancy	Yes	34	66.67
		No	17	33.33
2	Specialized care during pregnancy (ICU – Ventilator)	Yes	9	17.65
		No	42	82.35
3	Gestational age at onset of labour	Term	18	35.29
		Preterm	33	64.71
4	Mode of delivery	Normal Vaginal Delivery (NVD)	12	23.53
		Elective Caesarean Section	11	21.57
		Emergency Caesarean Section	28	54.90
5	Mode of onset of labour (If Normal Delivery) n= 35, 12	Spontaneous	9	75
		Induced	3	25
6	Progress of labour (If Normal Delivery)	Normal	6	11.76
		Precipitate	6	11.76
		Prolonged	39	76.48
7	Initiation of breastfeeding	Within half an hour	4	7.84
		Half an hour to 6 hours	2	3.92
		Six hours - 24 hours	7	13.73
		After 24 hours	21	41.18
		IUD / Stillbirth / Neonatal death	17	33.33
8	Emotional status during immediate puerperium	Happy	6	11.76
		Neutral	6	11.76
		Sad	39	76.48
9	Received specialized/advanced care during immediate puerperium	Yes	6	11.76
		No	45	88.24
10	Development of maternal complications	Yes	48	94.12
		No	3	5.88

More than half of the women (66.67%) hospitalized during pregnancy. Among them, 17.65% had specialized care in ICU. The highest percentage of women (64.71%) had preterm labour and only 35.29% of them had term labour.

Mode of delivery of the women shows that more than half (54.90%) of the women had undergone an emergency caesarean section and every fifth woman (21.57%) underwent elective caesarean section whereas, 23.53% of them undergone normal vaginal delivery. Among them, three fourth (75%) had spontaneous onset of labour and every fourth (25%) women in the control group had induced labour. Among the normal delivery women, 1.67% of women had normal progress of labour and 08.33% of the woman had prolonged labour. Initiation of breastfeeding shows that only 7.84% of women had initiated breastfeeding within half an hour, 3.92% started breastfeeding between half an hour to six hours and 13.73% initiated breastfeeding between six to 24 hours. Nearly half of the women (54.90%) initiated breastfeeding after 24 hours and one third (33.33%) of women had IUD/ stillbirth/ neonatal death, so they have not given breastfeeding. Emotional status during immediate puerperium shows that most of the women (76.48%) were sad. Whereas, similar to 11.76 % of women were happy and had neutral emotion. And 11.76% of women in the control group received specialized care / advanced care during immediate puerperium. Most of the women (94.12%) had developed complications.

Table No 3: Frequency and percentage-wise distribution of maternal complications

N = 48

S. No	Maternal Complications	f	%
1	Gestational Diabetes Mellitus (GDM)	7	14.58
2	Eclampsia	19	39.58
3	Intra Uterine Growth Retardation (IUGR)	38	79.17
4	Intra-Uterine Death (IUD)	9	18.75
5	Post-Partum Hemorrhage (PPH)	3	6.25
6	Hypertensive Retinopathy (HTR)	26	54.17
8	Meconium Aspiration Syndrome (MAS)	3	6.25
9	Oligohydramnios	7	14.58
10	HELLP syndrome	1	2.08
14	Antepartum Hemorrhage (APH)	1	2.08
15	Premature Rupture of Membrane (PROM)	1	2.08
16	Preterm Labour (PTL)	1	2.08
17	Stillbirth	1	2.08
18	Fetal distress	5	10.42
19	Nephropathy	1	2.08

20	Respiratory Distress Syndrome (RDS)	1	2.08
21	Cardiomegaly	1	2.08
22	Blindness	1	2.08
23	Magnesium Toxicity	1	2.08

Table No: 3 shows that most of the women (94%) were developed complications. Highest percentage of women developed Intra Uterine Growth Retardation (IUGR) (79.17%), Hypertensive Retinopathy (HTR) (54.17%) followed by eclampsia (39.58%), Intra Uterine Death (IUD) (18.75 %), Gestational Diabetes Mellitus (GDM) (14.58%), oligohydramnios (14.58%), fetal distress (10.42%), Post Partum Hemorrhage (PPH) (6.25%), Meconium Aspiration Syndrome (MAS) (6.25%), HELLP syndrome (2.08%), pulmonary edema (2.08 %), Antepartum Hemorrhage (APH) %, Premature Rupture of Membrane (PROM) (2.08 %), Preterm Labour (PTL) (2.08%), still birth (2.08%), nephropathy (2.08 %), Respiratory Distress Syndrome (RDS) (E 2.08 %), cardiomegaly (2.08 %), blindness (2.08 %) and magnesium toxicity (2.08 %).

Table No 4: Frequency and percentage wise distribution of perinatal (Neonatal) outcome

N = 52

S. No	Perinatal Outcome (Neonatal Parameter)		f	%
1	Condition of the baby at birth (n = 52)	Live	42	80.77
		Dead	10	19.23
2	Weeks of gestation	Term	18	34.62
		Preterm	34	65.38
3	APGAR score at 1 mt	No depression (7-10)	24	46.16
		Moderately depression (4-6)	14	26.92
		Severely Depression (0-3)	14	26.92
4	APGAR score at 5 mt	No depression (7-10)	28	53.85
		Moderately depression (4-6)	11	21.15
		Severely Depression (0-3)	13	25.00
5	APGAR score at 10 mt	No depression (7-10)	33	63.46
		Moderately depression (4-6)	6	11.54
		Severely Depression (0-3)	13	25
6	Sex of the baby	Female	20	38.46
		Male	32	61.54
7	Weight of the neonate (Kg)	≥ 2500 gms	5	9.62
		< 2500 gms	47	90.38
8	Length of the neonate (cm)	≥ 50cm	3	5.77
		< 50 cm	49	94.23
9	Head Circumference of the	≥ 32 cm	7	13.46

	neonate (cm)	< 32cm	45	86.56
10	Chest Circumference of neonate (cm)	≥ 30 cm	07	13.46
		< 30cm	45	86.56
11	Admission in NICU (n = 52)	Yes	30	71.43
		No	12	28.57
12	History of Resuscitation (n = 18)	Yes	18	42.86
		No	24	57.14
13	Neonatal Complication (n = 52)	Yes	47	90.38
		No	05	9.62

Table No: 4 show the frequency and percentage-wise distribution of neonatal parameters of perinatal outcome. One woman in the control group had twin pregnancy. Total babies were 52. Among them, 61.54% were males and 38.46% were females. Most (80.77%) of the newborn was alive whereas, 10 newborns were dead at birth. Weeks of gestation of the newborn shows that most of the babies (65.38%) were preterm babies and only 34.62% were completed 37 weeks.

Three times APGAR score was assessed for newborn i.e., at 1 mt, at 5 mts and 10 mts. APGAR score at 1 mt shows that less than half of the newborns (46.16%) had no depression. Equal and one-fourth of the babies (26.92%) were moderately and severely depressed. APGAR score at 5mts shows that 53.85% of the babies were normal, almost similar percentages of babies were moderately (21.15%) and severely (25.00%) depressed. APGAR score at 10mts shows that 63.46% of the babies were normal, 11.54% were moderately depressed and 25% were severely depressed.

The weight of the neonate shows that most of the babies (90.38%) had low birth weight 9.62% had normal weight. Length of the neonate shows that only 5.77% in the control group had normal lengths and most of the babies (94.23%) had length < 50cm. Head Circumference of neonate shows that 13.46% in the control group had normal head circumference and most of the babies (86.56%) had head circumference < 32cm. Chest Circumference of neonate shows that 13.46% in the control group had normal chest circumference and most of the babies (86.56%) had chest circumference < 30cm.

Admission in the NICU of newborns shows that the majority of the newborn (71.43%) were admitted. Among them, 42.86% of the babies were resuscitated. The causes of resuscitation were asphyxia (57.14%), preterm birth (21.43%) and LBW (50%). All (100%) babies were developed complications.

Table No 5: Frequency and percentage-wise distribution of neonatal complications

N = 52

S. No	Maternal Complications	f	%
1	LBW	47	90.38%
2	Preterm	36	70.21%
3	MAS	6	10.64%
4	Jaundice	2	4.26%
5	Asphyxia	13.2	25.53%
6	RDS	1	2.13%
8	Meningocele	1	2.13%
9	perinatal death	18	36.17%

All (100%) babies were developed complications. The complications were LBW (90.38%), Preterm (70.21%), MAS (10.64%), Jaundice (4.26%), Asphyxia (25.53%), RDS (2.13%), Meningocele (2.13%) and perinatal death (36.17%). Among the perinatal death, 9 were IUD, one stillbirth (SB) and 5 early neonatal death (END).

Association between the demographic variables with the perinatal outcome of pregnant women with PIH in the control group

ANOVA and Independent sample t-test were computed to find the association. There was no statistically significant association found between perinatal outcome of women with their education ($F = 0.524$, $p = 0.718$), family monthly income ($F = 1.33$, $p = 0.266$), occupation ($t = 0.902$, $p = 0.371$), type of family ($t = 0.507$, $p = 0.614$) and residence ($F = 1.38$, $p = 0.260$). Hence, it can be interpreted that demographic variables did not have any influence on perinatal outcome in the control group.

Discussion

Ngwenya S⁶ stated that the most common maternal complication found in her study was HELLP syndrome, and no mortality was observed. Kolluru V et al.⁷ stated that HELLP syndrome was the commonest complication in his study seen in 3.4% of cases followed by ARF in 1.28%. PPH was seen in 3 cases, abruption placenta seen in one case, 2 cases developed pulmonary oedema with cerebral haemorrhage.

Gandhi MR et al.⁵ stated that eclampsia was the commonest maternal complication affecting 11.6% of women. Followed by similar percentages (5.26%) of women affected with

abruptio placentae, Post-Partum Hemorrhage (PPH) and HELLP syndrome. Siromani SM et al.⁸ stated that 2.67% of IUD in the PIH group was found as compared to 1% in the control group. Various authors stated that highest percentage of the babies born to women with PIH was found to be in the low birth weight category (< 2.5kgs) i.e., Gandhi MR et al.⁵ (67.3%), Siromani SM et al.⁸ (54.67%), Sailaja B et al.⁹ (16.88%) and Adu-Bonsaffoh K et al.¹⁰ (24.7%).

Ngwenya S⁶ stated that approximately 22% of the babies were stillborn and approximately half of the babies (54.5%) were admitted to NICU. The most common (81.5%) causes of NICU admission were due to a combination of prematurity, low birth weight, and respiratory distress syndrome (RDS) and 18.5% were due to low Apgar scores. Out of the total number (127) of babies born, 35 (27.6%) were early neonatal deaths. Early neonatal mortality was high in those with very low/low birth weight babies.

Conclusion

The present study shows that Pregnancy Induced Hypertension contributed maternal and perinatal complications including perinatal loss. The prevalence of mortality and morbidity due to PIH is more among the rural hilly area women. So, the women with PIH in the hilly area should be identified prospectively and then given special care, thereby maternal and perinatal complications can be reduced.

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Conflict of Interests: None

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