

## Research Article

# Pattern of feto-maternal outcome and complications in pregnancy induced hypertension from a tertiary level health care teaching institution of Tamil Nadu, India

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## ABSTRACT

**Background:** Hypertensive disorder is the second most common medical disorder seen during pregnancy. They along with hemorrhage and infection, contribute greatly to maternal morbidity and mortality. Most deaths in PIH occur due to its complications and not due to hypertension per se. Thus, maternal mortality and these complications are preventable. The objective of the present study was undertaken to study pattern of feto-maternal outcome and complications in cases of pregnancy induced hypertension with a view to identify them at the earliest.

**Methods:** The current survey was planned and executed by the department of obstetrics and gynaecology of a tertiary care teaching institution of Tamil Nadu during November 2013 to October 2015 using a pre-designed questionnaire among 245 study participants. The study population consisted of pregnant women seeking care for PIH.

**Results:** 59.6% cases of mild PIH, 22% cases of moderate PIH and 18.4% cases of severe PIH. Regarding maternal complications in PIH, in severe cases of PIH there were CCU admissions in 8.9% cases, imminent eclampsia in 31.1% cases and abruptio placentae, CVA, acute renal failure in 2.2% cases. DIC and maternal mortality was seen in 4.4% cases. Regarding foetal complications in PIH, in severe cases of PIH there was birth asphyxia in 31.1% cases. Intra uterine growth retardation was seen in 24.4% cases. The most common reason for NICU admission was preterm with low birth weight.

**Conclusions:** Emphasis should be on early registration and regular ANC visits. Early detection and prompt intervention of complications is vital for ensure a healthy outcome to both mother and baby.

**Key words:** Pattern, Foetal outcome, Maternal complications, Pregnancy induced hypertension.

## INTRODUCTION

Hypertensive disorder is the second most common medical disorder seen during pregnancy. They along with hemorrhage and infection, contribute greatly to maternal morbidity and mortality.<sup>1</sup> Pregnancy induced hypertension (PIH) is one of the most common causes of both maternal and fetal morbidity and mortality.

Pregnancy induced hypertension is a pregnancy specific, multisystem disorder characterized by development of oedema, hypertension and proteinuria after 20 weeks of gestation.<sup>2</sup> The group of diseases includes preeclampsia and eclampsia. With efficient antenatal care and early treatment of pregnancy induced hypertensive disorders, the serious form i.e. eclampsia has become almost a clinical rarity in developed countries. However, in developing country like ours and in the rural population, it still continues to be a major obstetric problem.<sup>3,4</sup>

Eclampsia, disseminated intravascular coagulopathy, acute renal failure, HELLP syndrome, intra - cerebral haemorrhage, antepartum haemorrhage and even maternal death can occur. Long term complications like persistent hypertension and cardiovascular morbidity are known risks for the mothers suffering from PIH.<sup>5</sup> Fetal complications like intra - uterine growth retardation, sudden intra - uterine fetal death, still births, preterm and low birth weight babies, increased need for NICU care, increased neonatal morbidity and mortality are prevalent.<sup>6</sup>

Most deaths in PIH occur due to its complications and not due to hypertension per se. Thus, maternal mortality and these complications are preventable. We can prevent the maternal mortality by early detection and prompt management of these complications. Therefore the present study was planned with an objective to study pattern of foeto-maternal outcome and complications in cases of pregnancy induced hypertension with a view to identify them at the earliest and ensure a healthy outcome to both mother and baby.

## METHODS

A prospective observational study was carried out for a period of two years from November 2013 to October 2015 in the Department of Obstetrics and Gynecology attached to tertiary level health care teaching institution in Chennai, Tamil Nadu, India. A consecutive 300 pregnant women including, who presented to Obstetrics and Gynecology department with pregnancy induced hypertension during the study period, were enrolled for the study. Department of Obstetrics and Gynecology is providing super specialty care to underserved population and serving primarily patients mainly from lower socio-economic strata of community not only from Chennai but also from neighboring cities and states. On an average 70-120 patients seek care at Department of Obstetrics and Gynecology, on outpatient (OPD) basis per day. So this

institution provided us a perfect base to plan and execute this study.

The study population consisted of pregnant women seeking care for PIH at Obstetrics and Gynecology Department. For the purpose of this study, they were divided into mild, moderate and severe PIH. The cases with systolic blood pressure greater than 130 mmHg, diastolic blood pressure greater than 90 mmHg on two measurements taken 6 hours apart, in association with proteinuria more than 300 mg in 24 hours urine were included in the mild preeclampsia group. The cases were accepted as mild preeclampsia if the diastolic blood pressure was less than 100 mmHg and as moderate preeclampsia if the diastolic blood pressure was 110 mmHg. Severe cases were defined if the following criteria were present: Systolic blood pressure  $\geq 160$  mm Hg, diastolic blood pressure  $\geq 110$  mmHg and proteinuria 3+ or more.

Subjects with gestational hypertension (hypertension (BP $\geq 140/90$  mmHg) without proteinuria), superimposed preeclampsia (on chronic hypertension) [new onset proteinuria in hypertensive women but no proteinuria before 20 weeks gestation), chronic hypertension (BP  $\geq 140/90$  mmHg before pregnancy or diagnosed before 20 weeks not attributable to gestational trophoblastic disease) and patients who were diagnosed with other causes of convulsions in pregnancy like cerebral malaria and epilepsy were excluded from the study.

Informed consent was obtained from the study participants. On admission, a detailed history was taken; thorough clinical examination and relevant laboratory investigations were performed. Information about maternal complications like CCU admission, imminent eclampsia, eclampsia, abruption placentae, CVA, DIC etc and foetal complications like IUGR, birth asphyxia, prematurity etc was captured. Foetal outcomes viz. LBW, SGA, NICU admissions were also noted down. Anonymity of the study subjects was maintained. Ethical committee approved the study. All the questionnaires were manually checked and edited for completeness and consistency and were then coded for computer entry. After compilation of collected data, analysis was done using Statistical Package for Social Sciences (SPSS), version 20 (IBM, Chicago, USA). The results were expressed using appropriate statistical methods.

## RESULTS

Out of total 245 cases of pregnancy induced hypertension, there were 146 (59.6%) cases of mild PIH, 54 (22%) cases of moderate PIH and 45 (18.4%) cases of severe PIH. Regarding maternal complications in PIH, in severe cases of PIH there were CCU admissions in 8.9% cases, imminent eclampsia in 31.1% cases and abruption placentae, CVA, acute renal failure in 2.2% cases. DIC and maternal mortality was seen in 4.4% cases (Table 1).

**Table 1: Pattern of maternal complications with varied severity of pregnancy induced hypertension.**

Complications	Pregnancy induced hypertension (n=245)		
	Mild PIH (n=146)	Moderate PIH (n=54)	Severe PIH (n=45)
CCU admission	0 (0.00%)	0 (0.00%)	4 (8.89%)
Imminent eclampsia	1 (0.68%)	6 (11.11%)	14 (31.1%)
Eclampsia	1 (0.68%)	3 (5.55%)	11 (24.4%)
Abruptio placentae	0 (0.00%)	2 (3.70%)	1 (2.22%)
Cerebrovascular accident	0 (0.00%)	0 (0.00%)	1 (2.22%)
DIC	0 (0.00%)	0 (0.00%)	2 (4.44%)
Acute renal failure	0 (0.00%)	0 (0.00%)	1 (2.22%)
Mortality	0 (0.00%)	1 (1.85%)	2 (4.44%)

In our study, total 61 babies needed NICU admissions. The most common reason for admission was preterm with low birth weight (Table 2).

Regarding foetal complications in PIH, in severe cases of PIH there was birth asphyxia in 31.1% cases. Intra uterine growth retardation was seen in 24.4% cases (Table 3).

**Table 2: Foetal outcomes with varied severity of pregnancy induced hypertension.**

Severity of PIH	Birth weight <2 Kg		Small for gestation age babies		NICU Admission	
	n	%	n	%	n	%
Mild PIH	11	7.5	18	12.3	17	37.8
Moderate PIH	24	44.4	33	61.1	18	33.3
Severe PIH	35	77.8	39	86.7	26	17.8

**Table 3: Pattern of foetal complications with varied severity of pregnancy induced hypertension.**

Foetal Complications	Pregnancy induced hypertension (n=245)		
	Mild PIH (n=146)	Moderate PIH (n=54)	Severe PIH (n=45)
Prematurity	0 (0.00%)	0 (0.00%)	4 (8.89%)
Birth asphyxia	1 (0.68%)	6 (11.11%)	14 (31.1%)
IUGR	1 (0.68%)	3 (5.55%)	11 (24.4%)
Intra uterine deaths	0 (0.00%)	2 (3.70%)	1 (2.22%)
Neonatal death	0 (0.00%)	0 (0.00%)	1 (2.22%)

**Table 4: Pattern of maternal and foetal outcome with gestational age of onset.**

Variables		Gestational age of onset			
		<28 weeks	28-32 weeks	32-36 weeks	>36 weeks
Maternal outcome	Maternal complications	8 (18.2%)	10 (22.7%)	20 (45.5%)	6 (13.6%)
	Induction of labour	17 (23.3%)	19 (26.0%)	23 (31.5%)	14 (19.2%)
	Preterm delivery	20 (21.7%)	28 (30.4%)	43 (46.7%)	1 (1.1%)
	LSCS	4 (4.2%)	13 (13.5%)	35 (36.5%)	44 (45.8%)
Foetal outcome	SGA	13 (14.4%)	20 (22.2%)	33 (36.7%)	24 (26.7%)
	NICU admission	8 (11.8%)	17 (25.0%)	21 (30.9%)	22 (32.4%)
	Foetal wastage	16 (45.7%)	7 (20.0%)	6 (17.1%)	6 (17.1%)

In earlier stages of gestational age of onset, induction of labor and preterm delivery were observed to be more common whereas in later stages of gestational age of onset, lscs was observed to be more common maternal

outcome. With regard to foetal outcome, in earlier stages of gestational age of onset, foetal wastage was observed to be more common whereas in later stages sga and nicu admission were observed to be more common (Table 4).

## DISCUSSION

In our study, out of total 245 cases of pregnancy induced hypertension, there were 146 (59.6%) cases of mild PIH, 54 (22%) cases of moderate PIH and 45 (18.4%) cases of severe PIH. Similar findings were also seen in a study by C. J. Lee et al in a study for risk factors of PIH in the Asian population in 2000.<sup>7</sup> Duckitt et al observed teenage pregnancy to be one of the risk factors for PIH and eclampsia.<sup>8</sup>

Antenatal care is one of the most important determinants of early detection of PIH. Regular ANC visits help to identify such cases at the earliest and enable prompt intervention, thus improving the pregnancy outcome. Bandar Abbas et al in their study showed that women of PIH with IUGR babies had less than three antenatal visits during pregnancy. There was a significant negative correlation found between number of ANC visits and PIH severity indicating that patients with fewer ANC visits had more severe PIH.<sup>9</sup>

In the present study, in severe cases of PIH there were CCU admissions in 8.9% cases, imminent eclampsia in 31.1% cases and abruptio placentae, CVA, acute renal failure in 2.2% cases. DIC and maternal mortality was seen in 4.4% cases. There was a significant positive correlation between occurrence of maternal complications & severity of PIH i.e. more the severity of PIH, more are the chances of complications. These were similar to results obtained by others.<sup>10,11</sup>

Similar study by Farid M et al reported that in the entire cohort of women with eclampsia, major maternal complications included abruptio placentae (10 percent), HELLP syndrome (11 percent), disseminated intravascular coagulopathy (6 percent), neurological deficits and aspiration pneumonia (7 percent), pulmonary oedema (5 percent), cardiopulmonary arrest (4 percent), acute renal failure (4 percent) and death (1 percent).<sup>12</sup>

Our study observed that in earlier stages of gestational age of onset, induction of labor and preterm delivery were observed to be more common whereas in later stages of gestational age of onset, LSCS was observed to be more common maternal outcome. In another study by Buchbinder shown that in women who have gestational hypertension or preeclampsia, increased rates of preterm delivery and delivery of small for- gestational-age infants are present only in those with severe disorder.<sup>13</sup>

With regard to foetal outcome, in earlier stages of gestational age of onset, foetal wastage was observed to be more common whereas in later stages SGA and NICU admission were observed to be more common. A significant positive correlation was seen between the NICU admissions and severity of the cases, i.e. severe PIH cases had more chances of the baby getting admitted in NICU which has also been studied by Ray et al.<sup>14</sup>

## CONCLUSION

To conclude, the empirical evidence of the current study indicate that emphasis should be on early registration and regular ANC visits so as to detect cases of pregnancy induced hypertension as early as possible in turn preventing severity and its associated complications. Early detection and prompt intervention of complications is vital for ensure a healthy outcome to both mother and baby.

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