



## STUDY OF FETAL OUTCOME IN PREGNANCY INDUCED HYPERTENSION- A PROSPECTIVE OBSERVATIONAL STUDY

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**ABSTRACT** **BACKGROUND AND OBJECTIVES:** Pregnancy induced hypertension (PIH) is one of the most common causes of fetal morbidity and mortality. Compared with normotensive gravidas, patients with elevated blood pressure have significantly greater fetal mortality and morbidity. In developing countries they rank second only to anemia. Thus reducing the perinatal morbidity and mortality by prevention and proper management of this condition.

**AIM:** To Study the fetal outcomes in Pregnancy induced hypertension patient.

**MATERIALS AND METHODS:** A "prospective observational study" was conducted in the department of Obstetrics and Gynecology, Narayana Multispeciality Hospital, Jaipur. Total 80 pregnant women presenting with pregnancy induced hypertension for total 18 months (2018-2020) duration and Incidence of Fetal outcomes noted associated with varying severity of PIH.

**STATISTICAL ANALYSIS:** The results were expressed in percentages. Chi square test applied for categorical /nominal variables/ Qualitative Data. P-value < 0.05

**RESULTS:** In our study out of total 80 cases patients with Gestational Hypertension (73.75%) was more followed by Mild Preeclampsia (13.75%), Severe Preeclampsia (10%) and Eclampsia (2.50%). Higher percentage of PIH was noted among 18-22 years of age group (48.75%) and was more prevalent among Nulliparus (58.75%). Among the Fetal outcomes preterm babies (40.00%) and babies with low birth weight (38.75%) were majority followed by NICU admission (11.25%), Intrauterine growth restrictions (8.75%), Meconium Aspiration (5.00%), and IUD/still birth (2.50%). Incidence of Preterm birth in severe preeclampsia (87.50%) were more as compared to Gestational Hypertension (30.50%) and Mild Preeclampsia (63.63%).

**CONCLUSION:** Pregnancies complicated with hypertension are associated with adverse fetal outcomes. Low birth weight due to prematurity/IUGR are the main reasons for NICU admissions in hypertensive disorders of pregnancy. Incidence of fetal outcomes varies with the severity of PIH with more adverse outcomes seen in Preeclampsia and Eclampsia group as compared to Gestational hypertension group.

**KEYWORDS :** Pregnancy induce hypertension, Blood pressure, Fetal outcome, Preeclampsia.

### INTRODUCTION

Pregnancy induced hypertension (PIH) is one of the most common causes of fetal morbidity and mortality. Compared with normotensive gravidas, patients with elevated blood pressure have significantly greater fetal mortality and morbidity<sup>1</sup>. Anca M. Panaitescu et al<sup>2</sup> in London reported that in hypertensive disorder of pregnancy was associated with increased risk of stillbirth (OR 2.38, 95% CI 1.51-3.75), Small for gestational age (OR 2.06, 95% CI 1.79-2.39), iatrogenic Preterm baby <37 weeks (OR 3.73, 95% CI (3.07-4.53).

Women with mild gestational hypertension have an increased incidence of obstetrical interventions. Approximately 15–25% of women with gestational hypertension subsequently progress to develop the clinical syndrome of preeclampsia.

PIH causes 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.<sup>1</sup> In current multiple research studies on effect of severity of PIH we analyzed that the incidence of above fetal outcomes vary from one center to another may be due to difference in available diagnostic and management resources in the center of study.

### MATERIAL & METHODS

The study was conducted after prior approval from Ethics Committee & Institutional research committee of Narayana Multispeciality Hospital, Jaipur and after taking informed consent from the patient.

All the pregnant women attending the antenatal care screened for hypertension. Hypertensive pregnant women grouped based on the criteria defined by ACOG-2013b and was included in the study namely, (1) Gestational hypertension (2) Pre-eclampsia (3) Eclampsia.

On admission, a thorough clinical examination including general physical and systemic examination and vitals were noted. Abdominal

examination was done for height of uterus in weeks, the lie of fetus, presentation, and position of the fetus, fetal heart rate. Ultrasonic for fetal wellbeing and Doppler study were done. Blood samples were collected for laboratory investigations. 24 hour urine albumin also determined. Blood pressure monitoring was done every 2 hourly. Fetal status was observed for any perinatal morbidity and mortality and evaluated with Non Stress Test and Ultrasonography.

### OUTCOME MEASURES:

Incidence of Prematurity, Need for NICU (Neonatal intensive care unit) care, Incidence of fetal growth retardation, Meconium aspiration, Low birth weight babies, Sudden intrauterine fetal death or still births

### STATISTICAL ANALYSIS:

Sample size 80 is determined by RAOSOFT SAMPLE SIZE CALCULATOR with population size of 100 with confidence level 95%, and margin of error 5%. The data obtained was compiled systematically, transformed from a pre-coded proforma to a computer and a master table was prepared. The total data was distributed meaningfully and presented as individual tables along with graphs. The results were expressed in percentages. Chi square test applied for categorical /nominal variables/ Qualitative Data. P-value < 0.05 was considered statistically significant in hypothesis testing.

### RESULTS:

In our study out of total 80 cases patients with Gestational Hypertension (73.75%) was more followed by Mild Preeclampsia (13.75%), Severe Preeclampsia (10%) and Eclampsia (2.50%). Higher percentage of PIH was noted among 18-22 years of age group (48.75%) and was more prevalent among Nulliparus (58.75%) than Multiparus (41.25%). Among the Fetal outcomes preterm babies (40.00%) and babies with low birth weight (38.75%) were majority followed by NICU admission (11.25%), Intrauterine growth restrictions (8.75%), Meconium Aspiration (5.00%), and IUD/still

birth(2.50%).Incidence of Preterm birth in severe preeclampsia (87.50%) were more as compared to Gestational Hypertension (30.50%) and Mild Preeclampsia(63.63%).

Incidence of Low birth weight birth in Severe Preeclampsia (87.50%) were more as compared to Gestational Hypertension(28.8%)and Mild Preeclampsia(63.63%). NICU requirement increased in the babies of severe preeclampsia mothers 6(75.00%) as compare to Gestational Hypertension 01(1.69%) and Mild Preeclampsia 02(18.18%), Fetal Meconium Aspiration in the babies of severe preeclampsia mothers 2(25.00%) as compare to Gestational Hypertension 01(1.69%) and Mild Preeclampsia 1(9.09%), IUGR increased in the babies of severe preeclampsia mothers 4(50.00%) as compare to Gestational

Hypertension 01(1.69%) and Mild Preeclampsia 02(18.18%), two patient had Eclampsia,fetal outcomes of both the patients was IUD of fetuses at term pregnancy.

**Table 1 Fetal Outcomes in PIH patients**

FETAL OUTCOMES	NUMBER	PERCENTAGE
Preterm	32	40.00
NICU Admission	9	11.25
IUGR	7	8.75
LBW(<2.5kg)	31	38.75
Meconium	4	5.00
IUD/Still Birth	2	02.50

**Table 2 Fetal outcomes in various severity of PIH**

Fetal Outcomes	Gestational Hypertension No(%)	Mild Preeclampsia No(%)	Severe Preeclampsia No(%)	Eclampsia No(%)	P-Value
Term	41(69.49%)	4(36.36%)	1(12.50%)	2 (Both IUD)	0.002284
Preterm	18(30.50%)	7(63.63%)	7(87.50%)	0	
No NICU admission	58(98.30%)	9(81.81%)	2(25.00%)	0	< 0.00001
NICU admission	1(1.69%)	2(18.18%)	6(75.00%)	0	
No IUGR	58(98.30%)	9(81.81%)	4(50.00%)	0	0.000022
IUGR	1(1.69%)	2(18.18%)	4(50.00%)	0	
No Meconium Aspiration	58(98.30%)	10(90.90%)	6(75.00%)	0	0.015941
Meconium Aspiration	1(1.69%)	1(9.09%)	2(25.00%)	0	
<2.5(LBW)	17(28.8%)	7(63.63%)	7(87.50%)	0	0.00137
≥2.5kg B.Wt	42(71.20%)	4(36.36%)	1(12.50%)	0	
Live birth	59(100%)	11(100%)	08(100%)	0	NA
IUD/Stillbirth	0	0	0	2(100%)	

**DISCUSSION**

In this study the PIH mother incidence of preterm delivery, low birth weight, need for NICU admission and IUGR were more common followed by meconium aspiration and IUD/still birth . Similar result were found in **Ravikant patel et al** <sup>3</sup> and **Ahmed et al** <sup>4</sup> study. In contrast to this **Bangal et al** <sup>5</sup> in their study found the incidence of IUGR and still birth were more common.

In this study Incidence of Preterm birth were increased as severity of PIH increased and incidences in severe preeclampsia were more as compared to Gestational Hypertension and Mild Preeclampsia.(**P-0.002284**) . Similar finding was observed by **Mustafa Captain et al (2019)** <sup>6</sup> study that incidences of Preterm birth were lower in Gestational hypertension than preeclampsia and was statistically significant. **Edward T dassah et al (2019)** <sup>7</sup> study also showed that when compared to gestational hypertension.

NICU admission requirement increased in the babies of severe preeclampsia mothers as compare to Gestational Hypertension and Mild Preeclampsia (**P<0.00001**).**Sachan R et al (2013)** <sup>8</sup> and **Kwame Adu-Bonsaffohal et al (2017)** <sup>9</sup> also found that incidences of NICU admission increases as severity of hypertensive disorder of pregnancy increases.

Fetal growth retardation were increased as severity of PIH increased and incidences in severe preeclampsia were more as compared to Gestational Hypertension and Mild Preeclampsia (**P -0.000022**) .**Gawde et al (2014)** <sup>10</sup> and **Dr.D.P.Meshram et al (2014)** <sup>11</sup> also found Incidences of IUGR increases as severity of PIH increased.

Fetal Meconium Aspiration higher among women with pre-eclampsia/eclampsia. (**P-0.015941**) Our finding were similar to **Mustafa Captain et al(2019)** <sup>6</sup> ,**Kwame Adu-Bonsaffohal et al (2017)** <sup>8</sup>.

Incidences of Low birth weight babies increased in patients with severe preeclampsia mothers as compare to Gestational Hypertension and Mild Preeclampsia, (**P-0.00137**) Similarly **Wolde Z, Segni H et al (2011)** <sup>12</sup> found that incidence of LBW babies was lower in Mothers with Gestational Hypertension as compares preeclampsia

In our Study we observed that out of 80 PIH patients two had Eclampsia. Fetal outcomes of both the patients was IUD of fetuses at term . Similar finding was noted by **Thanh G.N. et al (2015)** <sup>13</sup> and **Edward T et al(2019)** <sup>7</sup> study showed that when compared to gestational hypertension , Perinatal mortality were significantly higher among women with pre-eclampsia/eclampsia.

**CONCLUSION:**

Pregnancies complicated with hypertension are associated with

adverse fetal outcomes. Low birth weight due to prematurity/IUGR are the main reasons for NICU admissions in hypertensive disorders of pregnancy. Incidence of fetal outcomes varies with the severity of PIH with more adverse outcomes seen in Preeclampsia and Eclampsia group as compared to Gestational hypertension group. This incidence may vary from center to center depending upon the available diagnostic and management resources.

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