

Incidence and associated risk factors of pregnancy induced hypertension: A study at tertiary care hospital

B Vani^{1*}, S Sabitha²

¹PG Resident, ²Associate Professor, Department Gynecology and Obstetrics, PES Institute of Medical Sciences and Research, Nalagampalli, Kuppam, Andhra Pradesh, INDIA.

Email: vanireddy2729@gmail.com

Abstract

Background: Hypertensive disorders of pregnancy are among the leading causes of maternal and perinatal deaths in developing countries. **Aims and Objectives:** To study Incidence and associated risk factors of pregnancy induced hypertension: A study at tertiary care hospital. **Methodology:** This was a Prospective Observational study in The Patients with pregnancy induced hypertension attending PESIMSR were included into the study during the period of 18 months i.e. January 2018-June 2019). **Statistical software:** MS Excel, SPSS version 21 was used to analyze data. EPI Info was used to estimate sample size, odds ratio and reference management in the study. Graphical representation of data: MS Excel and MS word was used to obtain various types of graphs. **Result:** Total Hypertensive disorders in pregnancy in our study -408 among the 4393 incidence is about 9.2%, more than 40% of patients accounting to 408 patients are diagnosed to have gestational hypertension .Total number of patients in the study are 4393(primi with age less than 20 -1150, more than 20 years 3243),In our study highest incidence of the hypertensive disorders occurred among those aged below 20 years(117 among 1150). In our study most of the PIH cases occur at term more than or equal to 36 weeks of gestation. As per parity majority were Primi were 59.85% and Multi were -40.15%. **Conclusion:** It can be concluded from our study that In our study highest incidence of the hypertensive disorders occurred among those aged below 20 years more common at term in Primi parity.

Key Words: pregnancy induced hypertension (PIH), Parity, Gestational age (GA).

*Address for Correspondence:

Dr B Vani, PG Resident, Department Gynecology and Obstetrics, PES Institute of Medical Sciences and Research, Nalagampalli, Kuppam, Andhra Pradesh, INDIA.

Email: vanireddy2729@gmail.com

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INTRODUCTION

Hypertensive disorders of pregnancy are among the leading causes of maternal and perinatal deaths in developing countries. Hypertension is a common medical problem that affects 20% - 30% of the adult population and more than 5% - 8% of all pregnancies in the world¹⁻² . Hypertensive disorders of pregnancy rank high among

the causes of maternal mortality and morbidity. Hypertension in pregnancy is defined as a systolic BP of 140 mmHg and higher, and a diastolic BP of 90 mmHg and higher. Severe HTN raises the risk of heart attacks, cardiac failure, cerebrovascular accidents and renal failure in the mothers. The fetuses of hypertensive mothers are also at increased risks, such as: inappropriate placental oxygen transfer, IUGR, premature delivery, placental abruption, stillbirth, and neonatal death¹⁻². The hypertensive disorders of pregnancy affect 5% - 22% of all pregnancies. Hypertension, bleeding and infection are the triad of lethality that greatly contributes to maternal mortality and morbidity³⁻⁴. The American College of Obstetricians and Gynecologists (ACOG) has classified pregnancy induced hypertension (PIH) into four groups of disorders: gestational hypertension, where resting BP is 140/90 mmHg or higher after the 20th week of gestation; chronic hypertension, that exists before pregnancy or begins in the first 20 weeks of gestation; preeclampsia

(raised BP and edema or proteinuria), eclampsia (preeclampsia and seizures); and preeclampsia superimposed on chronic hypertension²⁻³. Among the theories proposed so far, the most important is the immunologic one. Based on this theory, an immunologic disorder leads to an unnatural implantation and secretion of substances that activate vascular endothelial cells, or damage them, leading to vascular constriction and eventually a raised BP⁵. PIH is more commonly seen in nulliparous women, and older women (owing to the risk of chronic HTN) are at greater risk of preeclampsia being superimposed. Mothers who have had a history of preeclampsia (17.9%) are at a greater risk than nulliparous women⁶. Hypertensive mothers usually give birth to preterm babies, who in turn will most likely need Neonatal Intensive Care Unit care (NICU) as a result of their IUGR and low birth weight (LBW)⁷ so being this significant public health problem we have studied the incidence and associated risk factors of pregnancy induced hypertension: A study at tertiary care hospital

METHODOLOGY

This was a Prospective Observational study in The Patients with pregnancy induced hypertension attending

RESULT

Table 1: Distribution of the patients as per the incidence of various types hypertensive disorder during the pregnancy

Hypertensive disorder	FREQUENCY	PERCENT
ECLAMPSIA	17	4.1
GESTATIONAL HYPERTENSION	18	44.36
IMMINENT ECLAMPSIA	77	18.87
MILD PREECLAMPSIA	42	10.29
PARTIAL HELLP SYNDROME	1	0.25
SEVERE PRE-ECLAMPSIA	74	18.14
STATUS ECLAMPTICUS	16	3.9
TOTAL	408	100

Total Hypertensive disorders in pregnancy in our study -408 among the 4393(total delivered women from jan 2018 to june 2019) incidence is about 9.2%, more than 40% of patients accounting to 408 patients are diagnosed to have gestational hypertension

Table 2: Age distribution characterized in hypertensive disorders in pregnancy

DIAGNOSIS	< 20 YEARS	21 -30 YEARS	31 + YEARS	TOTAL
ECLAMPSIA	7	10	11	18
GESTATIONAL HYPERTENSION	47	125	9	181
IMMINENT ECLAMPSIA	24	46	7	77
MILD PREECLAMPSIA	9	32	1	42
PARTIAL HELLP SYNDROME	0	1	0	1
SEVERE PREECLAMPSIA	24	46	4	74
STATUS ECLAMPTICUS	6	8	1	15
TOTAL	117	268	23	408

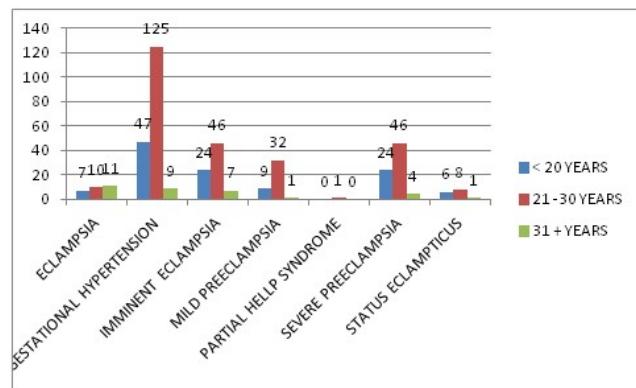
Total number of patients in the study are 4393(primi with age less than 20 -1150, more than 20 years 3243),In our study highest incidence of the hypertensive disorders occurred among those aged below 20 years(117 among 1150).

PESIMSR were included into the study during the period of 18 months i.e. January 2018-June 2019)

INCLUSION CRITERIA: All pregnant women with onset of hypertension after 20 weeks of gestation- either booked with us or referred to us. All pregnant women with BP> 140/90 mm Hg

EXCLUSION CRITERIA: Chronic hypertension- Patients with connective tissue disorders-Multiple pregnancies- Polyhydramnios- Gestational diabetes mellitus- Those patients who were very ill and unable to participate- and lost follow up.

SAMPLE SIZE: The number of patients included in the study was 408. **DATA COLLECTION:** Each patient fulfilling the inclusion criteria was included in the study. The following data was collected: A structured interviewer-administered questionnaire was filled for all the participants, to obtain information on age, parity , gestational age at the onset of PIH, Statistical software: MS Excel, SPSS version 21 was used to analyze data. EPI Info was used to estimate sample size, odds ratio and reference management in the study. Graphical representation of data: MS Excel and MS word was used to obtain various types of graphs such as bar diagram, Pie diagram and Scatter plots. p-value (Probability that the result is true) of <0.05 was considered statistically significant.



Graph 1: Age distribution characterized in hypertensive disorders in pregnancy

Table 3: Gestational age characterized in hypertensive disorders in pregnancy

DIAGNOSIS	25-30 WEEKS	31-35 WEEKS	36 + WEEKS	TOTAL
ECLAMPSIA	2	5	11	18
GESTATIONAL HYPERTENSION	2	9	170	181
IMMINENT ECLAMPSIA	4	27	46	77
MILD PREECLAMPSIA	1	8	33	42
PARTIAL HELLP SYNDROME	0	1	0	1
SEVERE PREECLAMPSIA	5	15	54	74
STATUS ECLAMPTICUS	4	4	7	15
TOTAL	18	69	321	408

In our study most of the PIH cases occur at term more than or equal to 36 weeks of gestation.

Table 4: Distribution of the patients as per the parity

Parity	No.	Percentage
Primi	244	59.85%
Multi	164	40.15%

DISCUSSION

This longitudinal study provided an opportunity to study the incidence of hypertensive disorders in pregnancy. Hypertensive disorders in pregnancy are considered to be a major worldwide health problem running an increased risk of Perinatal and maternal mortality¹. The prevalence of Hypertensive Disorder in Pregnancy varies according to geographic regions of world. Hypertension is a common medical problem that affects 20% - 30% of the adult population and more than 5% - 8% of all pregnancies in the world.

Table 5: INCIDENCE OF PIH AMONG DIFFERENT STUDIES

SL.NO	YEAR	STUDY	% OF PIH
1	2005	GULSEREN ET AL ¹²	8.4%
2	2007	SOLANGE REGINE ET A ¹⁰	13.9%
3	2012	BOLAJOKO ET AL ¹¹	6.2%
4	2012	BANGAL ET AL ¹⁴	8.9 %
5	2014	MANJUSHA SAJITH ET A ⁹	7.8%
6	2014	SWATHI SINGH ET A ⁸	9.7%
7	2014	SHAHLA KHOSRAVI ET AL ¹³	9.8%
8	2015	MOUNICA MUTI ET A	19.4%
9	2017	MEGHAVINI ET AL ¹⁵	6.1%
10	2018	PRESENT STUDY	9.2%

A study conducted by Parmar *et al* at NHL municipal college, Ahmedabad, Gujarat noted that PIH is more prevalent among pregnant mother aged less than 20 years of age (53.0%) and 21-30 years (47.0%). Gandhi *et al* in their study found that 48.42% of PIH mother was 21-25 years of age group, followed by greater than 30 years of age (25.26%), 14.73% in 26-30 years of age group and 11.57% in less than 20 years of age.¹⁰ Similarly Bangal *et al* in their study found majority of PIH mother were in age group of 15-20 years (52.63%) followed by 21-25 years (31.59%), 26-30 years of age (10.52%) and above 30 years (5.26%). Khosravi *et al* also noted that 55.6% PIH mother was 21-30 years of age followed by more than 30 years of age (32.2%) and less than 20 years of age (12.2%) age (25.26%), 14.73% in 26-30 years of age group and 11.57% in less than 20 years of age.¹⁰ Similarly Bangal *et al* in their study found majority of PIH mother were in age group of 15-20 years (52.63%) followed by 21-25 years (31.59%), 26-30 years of age (10.52%) and above 30 years (5.26%). Khosravi *et al* also noted that 55.6% PIH mother was 21-30 years of age followed by more than 30 years of age (32.2%) and less

than 20 years of age (12.2%). In our study highest incidence of the hypertensive disorders occurred among those aged between 21-30 years. This could be because the majority of conceptions take place in this age group in our country. The age distribution of eclampsia patients in our study is similar to other reports and suggests that eclampsia is probably, a disease of young women. The incidence of PIH is distributed unevenly throughout late gestation, increasing with advancing gestation. Approximately half of PIH cases occur at term (≥ 36 weeks gestation), including most cases of gestational hypertension. Early-onset PIH is often associated with severe preeclampsia

Table 6:

SL.NO	YEAR	STUDY	AGE % 21-30YEARS
1	2011	BANGAL ET AL ¹⁴	41%
2	2012	PARMAR ET AL ¹⁶	47%
3	2014	SHAHLA KHOSHRAVI ET AL ¹⁴	55.6%
4	2018	PRESENT STUDY	65.6%

The mean gestational age at presentation was 37 weeks which is comparable with manjusha sajith ET AL (i.e. 37 weeks) ⁹. Hypertensive disorders in pregnancy is primarily regarded as a disease of first pregnancy. In our study, 59.8% were primigravidae and 40.1 % were multigravidae , 39.2% were booked cases and 60.7% were booked outside cases, booked patients in our hospital had a good outcome with less maternal and fetal morbidity . Several other authors have reported primiparity in 52-73% patients of hypertensive disorders in pregnancy. In our study, primigravidae were more affected with eclampsia. According to Hellman incidence of eclampsia in primigravida and multigravida was in the proportion of 3:1 . Antihypertensives are agents that lower blood pressure. The aim of antihypertensive therapy in the management of pregnancy induced hypertension is to prevent complications due to hypertension while prolonging the course of pregnancy. in our study showed usage of antihypertensives during antenatal period were 5.6% did not have any complications compared to the patients who are not on any treatment and 3.6% patients had previous pregnancy history of hypertensive disorders of pregnancy with a good outcome in present pregnancy .0.4% patients had deranged PIH profile ,0.9% of patients had grade 1 hypertensive retinopathic changes ,2.4% of patients had abrupton

Table7:

SL.NO	YEAR	STUDY	PRIMI %	MULTI %
1	2012	PARMAR ET AL ¹⁶	67.3%	28.9%
2	2014	MANJUSHA SAJITH ET AL ¹¹	53.8%	46.1%
3	2017	RAVIKANT ET AL ¹⁷	57%	42%
4	2018	PRESENT STUDY	59.85%	40.1%

CONCLUSION

It can be concluded from our study that In our study highest incidence of the hypertensive disorders occurred among those aged below 20 years more common at term in Primi parity.

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