ORIGINAL ARTICLE

A COMPARISON OF FETAL AND MATERNAL OUTCOMES IN PATIENTS HAVING ESSENTIAL HYPERTENSION VERSUS PREGNANCY-INDUCED HYPERTENSION

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ABSTRACT

Objectives: The purpose of this study was to ascertain whether pregnancy-induced hypertension (PIH) has more serious consequences as compared to essential hypertension on fetal and maternal outcomes or vice versa.

Material and Methods: This study was carried out at the department of Gynecology and Medicine in KRL hospital Islamabad from September 2021 to February 2022. The patient detailed profile was recorded during antenatal follow-up and admissions. Prior approval was taken from the ethical committee. Data were analyzed using SPSS version 23. Descriptive statistics were performed and results were interpreted in frequencies and percentages.

Results. PIH was more common (n=41, 82 %) as compared to essential hypertension (n=9, 18%). The total number of participants was 50. Age ranged from 21-40 years with a mean of 28.24 in the PIH group and 32.8 in the EH group. PIH was relatively more common in Primigravida (n=23,56.1%) while essential hypertension was common in multigravida (n=6, 66.7%). Maternal complications including preeclampsia, and preterm delivery were fairly more common in PIH (70.7%) as compared to essential hypertension. Fetal complications in the PIH group were, mainly prematurity (51.2%) and IUGR (12.2%). While IUGR was the main complication in patients having essential hypertension (53.6%).

Conclusion: Maternal complication mainly preeclampsia was fairly common (in the PIH group while it was nil in the EH group. The fetal complication in terms of prematurity was about five times more common in the PIH group as compared to the EH group conversely IUGR was common in the EH group as compared to the PIH group.

Keywords: Essential hypertension, PIH, Pre-eclampsia, Eclampsia, IUGR.

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INTRODUCTION

Essential hypertension is a multifactorial condition in which a person has abnormally high blood pressure i.e., systolic blood pressure >140mmHg and a diastolic pressure of >90mmHg, due to some idiopathic cause of pregnancy-induced hypertension or gestational hypertension new-onset hypertension after 20 weeks of gestation[1]. Pregnancy-induced hypertension (PIH) and Essential hypertension (EH) both are the leading causes of maternal and neonatal morbidity and mortality.

PIH with proteinuria (300 mg or more of protein in a 24-hour urine collection or a protein: creatinine ratio of 0.3 mg/dL using a spot urine specimen) or thrombocytopenia, renal insufficiency, impaired liver function, pulmonary edema, or cerebral or visual symptoms is called pre-eclampsia. This can develop into a more severe form called eclampsia in which a patient apart from the symptoms of pre-eclampsia can develop seizures and coma[2].

PIH can present in any of the following ways a) pre-existing hypertension, b) gestational hypertension and Pre-Eclampsia, c) pre-existing hypertension plus superimposed gestational hypertension with proteinuria and d) unclassifiable hypertension[3]. One difference between PIH and EH is that later persists even after the delivery while PIH usually resolves after delivery but evidence suggests that women with PIH have a high risk of developing hypertension later in their lives[4]. A family history of hypertension is strongly associated with an increased risk of gestational hypertension[5].

Studies done in recent years reported that hypertension during pregnancy complicates things to such an extent that the damage is beyond repair. High rates of intrauterine growth restriction, severe brain injury, neonatal respiratory distress syndrome, bronchopulmonary dysplasia, necrotizing enterocolitis, early onset of sepsis, and retinopathy of prematurity have been reported in studies regarding hypertensive disorders of pregnancy[6]. On the

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other side, the mother is at a very high risk of placental abruption, cerebrovascular events, organ failure, and disseminated intravascular coagulation and there has been reported a high rate of cesarean deliveries in such women[1].

In Japanese women, the risk of PIH is approximately 2.7-fold greater in those whose mothers also had PIH compared with those whose mothers did not. PIH is a risk factor for hypertension, hypercholesterolemia, and diabetes mellitus in later life.[7] While a Considerable amount of work regarding pregnancy and hypertensive disorders has been done on the international level but not much has been done specifically in our region where daily 50-100 women and children lose their lives at the hands of this disease.

The main aim of this study is to identify the maternal and fetal effects caused by essential hypertension and PIH and to compare the effects seen on maternal and fetal outcomes caused by essential hypertension versus Pregnancy induced hypertension.

MATERIAL AND METHODS

This study was carried out at the department of Gynecology and Medicine KRL hospital Islamabad from September 2021 to February 2022. Patient detailed profile was recorded during antenatal follow-up and admissions through the nonprobability random sampling technique. Patients were categorized as having pregnancy-induced hypertension when they had no history of high blood pressure in between pregnancies and during the 1st five months of conception and essential hypertension when there was a history of high blood pressure throughout pregnancy and before conception. Prior approval was taken from the ethical committee at KRL Hospital Islamabad. Data were analyzed using SPSS version 23. Descriptive statistics were performed and results were interpreted in frequencies and percentages.

RESULTS

This study included 50 patients. The sample size was calculated using the Raosoft calculator. 41(82 %) had PIH and 9 (18%) had EH. Two third of our patients were less than 30 years of age.

Age ranged from 21-40 years with a mean of 28.24 in the PIH group and 32.8 in the EH group. PIH was common in Primigravida (56.1%) while essential hypertension was common in Multigravida (66.7%). Table 1 shows the age-wise distribution in groups.

Common maternal complications with PIH were pre-eclampsia (43.9%), and preterm delivery (19.5%). Common fetal complications with PIH were prematurity (51.2%) and IUGR (Intrauterine growth retardation) (12.2%). IUGR was a common fetal complication with EH (55.6%). Cesarean section was the predominant mode of delivery in both groups (88.8% EH: 85.3% PIH). Table 2 shows detailed maternal and fetal outcomes in both groups.

DISCUSSION

Hypertensive disorders during pregnancy are one of the leading causes of maternal and infant morbidity and mortality, resulting in complications in about 2-3% of pregnancies [9]. A study conducted locally showed this figure to be 2.06% [10]. In our study, it was found that PIH leading to preeclampsia was more common in women of early reproductive years and it was more likely to be associated with feto-maternal complications. Maternal and fetal complications were less likely in cases of essential hypertension. Another study revealed similar results [11].

One-third of our patients had a BMI of more than 30. Another study also establishes an association between elevated BMI and hypertensive disorders of pregnancy [12]. Yet another study also supports the influence of obesity on maternal and fetal complications [13].

Our study reveals that preeclampsia was more common in primigravida. In a study, it was found that multiparous women were at low risk of having preeclampsia[14]. An inverse relation was found between parity and pregnancy-associated hypertension[15].

In the current study, preeclampsia and preterm labor were frequently observed. A study elsewhere shows that hypertensive disorders were major risk factors for preterm labor and birth [16]. A couple of studies have shown fetal growth restriction and preterm birth as major complications of hypertensive disorders of pregnancy[17-18].

The most common mode of delivery in the present study was Cesarean section with a low frequency of spontaneous vaginal births. Similar findings were reported in another study where the rate of cesarean deliveries was 84.9% and was considered a safer mode of delivery than vaginal births[19].

Hypertensive disorders of pregnancy are considered to be the second most common cause of death worldwide[20]. However, in the present study, no maternal death was reported although severe complications with eclampsia and prolonged ICU (Intensive Care Unit) admission were observed. Similarly, the number of fetal mortality and NICU admissions were also low, although low birth weight and IUGR were commonly observed. The limitation of this study was the relatively small sample size.

CONCLUSION

Maternal complication mainly preeclampsia was fairly common in the PIH group while it was nil in the EH group. The fetal complication in terms of prematurity was about five times more common in the PIH group as com-

Table 1: Age-wise distribution of PIH and EH

AGE GROUPS	PIH		EH	
	(n)	(%)	(n)	
21-25	(%)	24.4	1	11.1
26-30	21	51.2	1	11.1
31-35	10	24.4	5	55.6
>35	0	0	2	22.2
Total	41	100	9	100

Table 2: Maternal and fetal outcomes in PIH and EH group

VARIABLES	PREGNANCY INDUCED HYPERTENSION (PIH) N (%)	ESSENTIAL HYPERTENSION N(%)
PARITY		
Primigravida	23(56.1%)	3(33.3%)
Multigravida	18(43.9%)	6(66.7%)
BMI		
Normal (18.5-22.9)	09(21.95%)	1(11.1%)
Overweight(23-24.9)	24(58.5%)	3(33.3%)
Obese (>25)	08(19.5%)	5(55.5%)
MODE OF DELIVERY		
SVD	6(14.6%)	1(11.1%)
C-section	35(85.3%)	8(88.8%)
MATERNAL COMPLICATIONS		
Pre-eclampsia	18(43.9%)	0(0%)
Eclampsia	2(4.9%)	0(0%)
Preterm delivery	8(19.9.%)	2(22.2%)
Miscarriages	1(2.4%)	2(22.2%)
FETAL COMPLICATIONS		
Prematurity	21(51.2%)	1(11.1%)
Birth asphyxia	1(2.4%)	0(0%)
IUGR	5(12.2%)	5(53.6%)
IUD	1(2.4%	0(0%)
Neonatal deaths	1(2.4%)	0(0%)
NICU admissions	3(7.3%)	0(0%)

pared to the EH group conversely IUGR was common in the EH group as compared to the PIH group.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

Ali A:	Concept, Design, and write up
Rehmatullah N:	Data collection and literature review
Fayyaz A:	Data collection and literature review

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.