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ORIGINAL ARTICLE

A Comparative Study of Obstetric Outcome of Patients with Pregnancy Induced Hypertension

AMMARA MANSOOR[1], TAHIRA AKHTAR[2], AYESHA NAEEM[3], SAMIA SHAFIQ[4], ARIFA INAYAT[5], FIRDOUS ARA[6]
[1,2]Assistant Professors, [4]Senior Registrar, Department of Obstetrics & Gynaecology, Gujranwala Medical College, Gujranwala
[3]Assistant Professor, Department of Gynaecology & Obstetrics, Khawaja Muhammad Safdar Medical College, Sialkot
[5]Associate Professor, Department of Gynaecology & Obstetrics Unit 3, Civil Hospital, Quetta
[6]Associate Professor, Department of Gynaecology & Obstetrics Unit 1, BMC Sandeman Provincial Hospital, Quetta
Correspondence to: Ammara Mansoor, E-mail: ammaramansoor61@gmail.com

ABSTRACT

Background: Pregnancy-induced hypertension (PIH) is a common complication that affects maternal and fetal health.
Objective: To assess and compare the obstetric outcomes in patients diagnosed with pregnancy-induced hypertension, including maternal complications, fetal health, and delivery outcomes.
Methodology: This comparative study was conducted at Department of Gynaecology & Obstetrics, Gujranwala Medical College, Gujranwala from 1st January 2023 to 30th June 2023. A total of 320 patients were added in the study. Data were collected from hospital records, structured questionnaire and follow-up visits. The demographic and clinical data included patient age, parity, gestational age at diagnosis, obstetric history, and comorbid conditions.
Results: Women with severe PIH had a higher incidence of complications such as preeclampsia (45% vs. 25%), placental abruption (15% vs. 5%), and stroke/acute renal failure (3% vs. 1%), and were more likely to undergo cesarean delivery (45% vs. 20%), with an average hospitalization duration of 6 days compared to 3 days for the mild PIH group. Fetal outcomes were also worse in the severe PIH group, with higher rates of intrauterine growth restriction (IUGR) (25% vs. 10%), preterm birth (18% vs. 8%), and lower average birth weight (2.7 kg vs. 3.1 kg). Neonates in the severe PIH group had lower Apgar scores, with 85% achieving a score of 7+ at 1 minute (compared to 95% in the mild PIH group), more frequent NICU admissions (20% vs. 6%), and higher rates of neonatal complications (25% vs. 7%).
Conclusion: Severe pregnancy-induced hypertension is associated with higher maternal and fetal morbidity compared to mild PIH. Early diagnosis, close monitoring, and appropriate management are essential to reduce complications and improve obstetric outcomes in PIH patients.
Keywords: Pregnancy-induced hypertension, maternal outcomes, fetal outcomes, preeclampsia, cesarean section, birth weight, preterm birth, NICU admissions.

INTRODUCTION

Pregnancy-induced hypertension (PIH) is a complex condition that can present as mild or severe, with potential for significant maternal and fetal morbidity and mortality and it serves as the primary reason for maternal and neonatal complications throughout the world but particularly affects developing nations because of restricted timely medical treatment.[1] Healthcare professionals diagnose PIH in pregnant women whose blood pressure surpasses 140 mmHg systolic and 90 mmHg diastolic levels beginning at week 20 of pregnancy when hypertension does not already exist.[2] Some PIH cases lead to mild symptoms but several women show rapid deterioration into severe conditions especially preeclampsia that damages liver and kidney organs. The precise causes of PIH remain unknown although scientists agree that poor placental development combined with altered endothelial functions which add to genetic susceptibility drive PIH formation.[3]

The connection between hypertension during pregnancy and its impact on obstetric outcomes involves multiple factors. Research demonstrates that pregnancy-driven hypertension can elevate the chances of preterm labor alongside intrauterine growth restriction (IUGR) and fetal distress and low birth weight and it leads to admissions in the neonatal intensive care unit (NICU). These adverse outcomes typically connect to hypertension severity and duration together with the degree of placental insufficiency alongside other co-existing medical conditions such as diabetes or obesity.[4] The early delivery needed for women with severe PIH or preeclampsia elevates the risk of preterm birth and causes its connected issues such as respiratory distress syndrome and developmental delays and jaundice. Predominantly the management of Persistent Hypertension depends on swift identification and quality monitoring. The essential detection of worsening hypertension depends on regular prenatal examinations together with specific blood pressure tracking.[5]

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Physicians sometimes prescribe antihypertensive drugs to treat elevated blood pressure in order to prevent dangerous complications of severe hypertension. Monitoring the treatment needs should consider risks affecting both mother and fetus particularly regarding fetal developmental and growth outcomes.[6] Medical practitioners face a challenge with PIH severe cases since early delivery may hurt premature infants yet delayed delivery might worsen maternal health conditions leading to complications including eclampsia or placental abruption.[7]

Pregnancy-induced hypertension increases the risk of maternal health decline because it tends to advance into dangerous hypertensive conditions including preeclampsia. Pre-eclampsia advances through elevated blood pressure and proteinuria to generate various organ and system de facto in the body specifically targeting the kidneys liver and brain.[8] Preeclampsia often develops into eclampsia if proper treatment is not received because this condition causes seizures along with fatal consequences in some patients. Women who have PIH face increased risks of eclampsia development because diagnosis after latency or inadequate medical monitoring.[9] Women with PIH can develop cerebrovascular accidents (strokes) together with acute renal failure as other complications. The occurrence of additional health problems tends to be more frequent during severe PIH and preeclampsia yet they may arise in women experiencing any level of these conditions. PIH patients require hospital stays that last longer because they need continuous care monitoring and interventions that drive up healthcare expenses for the system.[10]

MATERIALS AND METHODS

This comparative study was conducted at Gynae and Obstetrics department Gujranwala Medical College, Gujranwala during January 2023 till June 2023. A total of 320 patients were added in the study. Pregnant women diagnosed with PIH after 20 weeks of gestation, consent to participate and both primigravida and multigravida women were included. All women with preexisting hypertension or other chronic conditions such as diabetes, kidney disease, or cardiovascular disease, preeclampsia, eclampsia, or

HELLP syndrome at the time of diagnosis and unable or unwilling to participate in the study were excluded. The patients in the study were divided into two groups based on the severity of their condition: mild PIH and severe PIH. Mild PIH was defined as blood pressure readings between 140-149 mmHg systolic and/or 90-99 mmHg diastolic, without proteinuria or other signs of organ dysfunction. Severe PIH was characterized by blood pressure readings of 150 mmHg or higher systolic and/or 100 mmHg or higher diastolic, with or without proteinuria or signs of organ dysfunction such as elevated liver enzymes or low platelet counts. Data were collected from hospital records, structured questionnaire, and follow-up visits. The demographic and clinical data included patient age, parity, gestational age at diagnosis, obstetric history, and comorbid conditions. Maternal outcomes focused on blood pressure measurements at each prenatal visit, the onset of complications such as preeclampsia, HELLP syndrome, and eclampsia, mode of delivery, duration of hospitalization, and the need for antihypertensive medications. Fetal outcomes included birth weight, gestational age at delivery, Apgar scores, the incidence of intrauterine growth restriction (IUGR), fetal distress, neonatal intensive care unit (NICU) admissions, prematurity, and neonatal complications such as respiratory distress syndrome or jaundice. Data were analyzed using SPSS-26.

RESULTS

The slightly older mean maternal age in the severe PIH group (29.1±4.6 years) compared to the mild PIH group (28.4±4.2 years). Both groups had an equal distribution of primigravida and multigravida patients, though there was a higher proportion of primigravida women in the severe PIH group (55%) compared to the mild PIH group (50%). The average gestational age at diagnosis was similar in both groups, with a slightly later diagnosis in the severe PIH group (24.7±2.3 weeks vs. 24.3±2.5 weeks). Other baseline characteristics, such as obesity, gestational diabetes, and a history of PIH in a previous pregnancy, were more prevalent in the severe PIH group (Table 1).

In terms of maternal outcomes, the severe PIH group experienced a higher incidence of preeclampsia (45%) compared to the mild PIH group (25%). The mode of delivery showed significant differences, with 55% of women in the severe PIH group undergoing cesarean sections, compared to 20% in the mild PIH group. Additionally, the severe PIH group had a higher rate of placental abruption (15% vs. 5%) and more frequent complications such as stroke and acute renal failure (3% vs. 1%) [Table 2).

The severe PIH group had a higher incidence of intrauterine growth restriction (IUGR) (25% vs. 10%) and preterm birth (18% vs. 8%). Additionally, the average birth weight was lower in the severe PIH group (2.7 kg vs. 3.1 kg), indicating a higher risk of low birth weight. The Apgar scores were lower in the severe PIH group, with only 85% of neonates achieving a score of 7+ at 1 minute, compared to 95% in the mild PIH group. Neonatal intensive care unit (NICU) admissions were significantly higher in the severe PIH group (20% vs. 6%), and neonatal complications, such as respiratory distress and jaundice, were more prevalent in the severe PIH group (25% vs. 7%) [Table 3).

Table 1: Demographic and baseline characteristics (n=320)

Characteristics	Mild PIH (n=160)		Severe PIH (n=160)	
	No.	%	No.	%
Mean maternal age (years)	28.4±4.2		29.1±4.6	
Gestational age at diagnosis (weeks)	24.3±2.5		24.7±2.3	
Parity (Primigravida)	80	50.0	88	55.0
Parity (Multigravida)	80	50.0	72	45.0
Obesity (BMI ≥ 30 kg/m²)	29	18.0	35	22.0
Gestational Diabetes	8	5.0	16	10.0
History of PIH in Previous Pregnancy	24	15.0	40	25.0
Smoking History	5	3.0	8	5.0
Hypertensive Family History	64	40.0	80	50.0

The use of antihypertensive medications was significantly higher in the severe PIH group. In the severe PIH group, 45% of patients received methyldopa, and 40% were treated with labetalol, compared to just 10% and 5%, respectively, in the mild PIH group. Nifedipine was used in 10% of the severe PIH cases, while only 2% of the mild PIH group received this medication. A striking difference was observed in the use of no medication, with 83% of patients in the mild PIH group not requiring any antihypertensive treatment, compared to only 5% in the severe PIH group (Table 4).

Table 2: Maternal outcomes

Maternal outcome	Mild PIH (n=160)		Severe PIH (n=160)	
	No.	%	No.	%
Pre-eclampsia	40	25.0	72	45.0
Mode of Delivery (Vaginal)	128	80.0	88	55.0
Mode of Delivery (Cesarean)	32	20.0	72	45.0
Placental Abruption	8	5.0	24	15.0
Stroke/Acute Renal Failure	2	1.0	5	3.0
Hospitalization Duration (Days)	3 days	3 days	6 days	6 days

Table 3: Fetal outcomes

Fetal outcome	Mild PIH (n=160)		Severe PIH (n=160)	
	No.	%	No.	%
Intrauterine Growth Restriction (IUGR)	16	10.0	40	25.0
Preterm Birth	13	8.0	29	18.0
Average Birth Weight (kg)	3.1kg	3.1kg	2.7kg	2.7kg
Apgar Score 7+ (1 minute)	152	95.0	136	85.0
Apgar Score 7+ (5 minutes)	157	98.0	144	90.0
NICU Admission	10	6.0	32	20.0
Neonatal Complications (Respiratory Distress, Jaundice)	11	7.0	40	25.0

Table 4: Antihypertensive medication use

Antihypertensive medications	Mild PIH (n=160)		Severe PIH (n=160)	
	No.	%	No.	%
Methyldopa	16	10.0	72	45.0
Labetalol	8	5.0	64	40.0
Nifedipine	3	2.0	16	10.0
No Medication Required	133	83.0	8	5.0

DISCUSSION

The important distinctions between maternal and fetal health outcomes that demonstrated serious hazards connected to severe PIH cases. The study found preeclampsia together with placental abruption and stroke/acute renal failure occurred more frequently in the severe PIH group than in the mild PIH group according to the findings.[11] The severe PIH group experienced preeclampsia in 45% of patients although this condition results in multi-organ dysfunction thereby endangering both mom and baby health. Patients in the mild PIH group experienced less incidence of preeclampsia at 25% and this pattern supports the understanding that increasingly severe hypertension levels. Placental abruption rates remained three times higher in the severe PIH group (15%) than in the mild PIH group (5%) according to the provided research.[12] Severe hypertension levels as reported in scientific studies enhance placental dysfunction risks and placental abruption risk which results in poor fetal and maternal results.[13]

The two delivery routines between these groups showed marked dissimilarity. Out of the women with mild PIH eighty percent delivered their babies vaginally whereas the women with severe PIH showed lower vaginal delivery rates at fifty-five percent and forty-five percent needed to undergo cesarean section. Logically more severe cases of PIH force physicians to conduct early delivery and surgical interventions to protect maternal and fetal outcomes. The medical team typically recommends performing a c-section when maternal health declines or fetal distress appears because this condition primarily occurs with severe PIH.[14] The average length of hospital stays for patients with severe PIH reached 6 days compared to the 3 days experienced

by patients with mild PIH indicating that these cases needed intensive medical supervision. These patients in the severe PIH group experienced significantly poorer fetal health results. Fetuses from pregnant women with severe PIH displayed intrauterine growth restriction (IUGR) at a 25% rate while mothers with mild PIH had a 10% incidence.[15]

Severe hypertension and placental blood flow limitations create restricted fetal growth because the developing baby cannot receive adequate nutrients and oxygen delivery. A higher rate of preterm birth occurred in the severe PIH group with 18% than the mild PIH group that showed an incidence of only 8%. Early termination of pregnancy occurs frequently when PIH reaches severe levels because it becomes essential to protect maternal wellness according to literature reports.[16,17] The research analyzed long-term maternal results which included examinations of postpartum hypertension as well as cardiovascular complications.[18] The findings from this study demonstrate important information about maternal as well as fetal results from PIH yet it carries certain restrictions to its overall validity. The research based its findings on a single institution therefore its potential applicability extends only to this distinct population. The study outcomes might have been influenced by confounding factors which include differences in healthcare access and socioeconomic status and lifestyle variations.

CONCLUSION

Pregnancy-induced hypertension (PIH) significantly impacts both maternal and fetal outcomes, with more severe cases associated with a higher incidence of complications. Women with severe PIH were found to have a greater risk of developing preeclampsia, placental abruption, and other maternal complications, which required more frequent cesarean deliveries and longer hospitalizations. In terms of fetal outcomes, severe PIH was associated with higher rates of intrauterine growth restriction, preterm birth, and neonatal complications, including NICU admissions.

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