

Diversities of Presentation of Pregnancy Associated Hypertension and Its Outcome at a Tertiary Care Hospital

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ABSTRACT

Background: Hypertensive disorder represents a common medical complication of pregnancy affecting 7-15% of all gestations and account for approximately a quarter of all antenatal admissions. Aim of this study was to identify the prevalence of pregnancy induced hypertension (PIH) as well as their outcomes depending upon the diversity of presentation and also to evaluate the risk factors and patients' negligence that can be avoidable.

Methods: This cross-sectional study was carried out at the Department of Obstetrics & Gynecology of Shaheed Ziaur Rahman Medical College Hospital, Bogura over the period of January 2020 to December 2020. Total 100 PIH patients were selected among the PIH patients who are admitted into the Obstetrics & Gynecology ward of Shaheed Ziaur Rahman Medical College Hospital (SZMCH) by purposive sampling technique. Inclusion criteria were: patients having hypertensive disease during pregnancy, gestational age more than 20 completed weeks, both primigravida and multipara. Exclusion criteria were: congenital heart disease.

Results: The result showed that most (64%) of PIH patients were 2nd and 3rd Gravida, having bad obstetric history (BOH) (60%) cases, unplanned pregnancy 81%, 50% having no ANC with 66% unbooked, 70% were at preterm pregnancy (28-37 weeks) belong to lower middle class and poor socioeconomic condition (89%), depending upon their classical symptom they are categorized as Pre-eclampsia (PE) with severe symptom(39%), Eclampsia (28%), PE without sever symptom (21%), Superimposed PE (8%), and gestational hypertension (HTN)(4%). Most common presentation was convulsion (28%) and among them antepartum convulsion was most common (60.71%). Regarding maternal outcome, mortality was 21%; 50% showed varieties of morbidity, most common was puerperal sepsis (42%). 54% patients were delivered by Lower Segment Cesarean Section (LSCS) and 35.72% improved by the end of 1st postpartum day. Regarding investigations 42% patients showed severe proteinuria, 65% patient mildly anemic; 58% showed leukocytosis; 92% raised uric acid; 38% decreased serum albumin; 100% impaired liver function tests (LFT) different category, most common comorbidity was diabetes mellitus (17%). Regarding fetal outcome mortality was 24% and morbidity was 41%; among them most common morbidity was IUGR (11%). 50% babies APGAR score in 1st minute was (5-7) and most of the babies (61-83%) birth weight was within 1.6-2.5 kg.

Conclusion: PIH remain undiagnosed in younger age group and low-family-income patients due to poverty and lack of knowledge. So, we should be cautious about the diversities of presentation of PIH case and should pay attention to avoid the probability of under-diagnosis, in order to prevent maternal and neonatal complications to achieve the targets of maternal mortality up to 70 / Lakh Live births and perinatal mortality up to 12/1000 live births by the year 2030.

Keyword: Pregnancy induced hypertension, Bad obstetric history, Antenatal care.

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INTRODUCTION

Hypertensive disorder represents the most common medical complication of pregnancy affecting 7-15% of all gestations and account for approximately a quarter of all antenatal admissions¹. According to

world health organization (WHO) systemic review on maternal mortality worldwide, hypertensive disease remains a leading cause of direct maternal mortality. Together with hemorrhage & infection, hypertension forms the deadly triad that contributes to mortality and morbidity during pregnancy & childbirth². To determine

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the prevalence and outcome of diversities of presentation of pregnancy induced hypertension (PIH) patients, to identify the risk factors and negligence of the patients that can be avoidable, is the main objective of this study. Hypertensive disorder of pregnancy is a spectrum of disorders ranging from already existing chronic hypertension in pregnancy to complex multisystem disorders like preeclampsia, eclampsia, HELLP syndrome, pulmonary edema, strokes, Acute Renal Failure (ARF) and left ventricular failure LVF³.

About 16% of maternal deaths were attributed to hypertensive disorder in developed countries and over half of these hypertensive deaths were preventable⁴. As per the National Eclampsia Registry (NER) of the FOGSI, ACOG, incidence of pre-eclampsia was found to be 10.3% and incidence of eclampsia was 1.9% of all pregnancies; more than half (50%) of the eclampsia cases were antepartum, and approximately 20% of the cases occurred postpartum³. Maternal mortality is 4-6% and the perinatal loss is as high as 30-40%; possibly the incidence is lower in booked cases compared to cases who did not receive any antenatal care³. Hypertensive disorders also carry a risk for the baby. Hypertension and/or proteinuria is the leading single identifiable risk factors in pregnancy, associated with still birth. In the most recent perinatal mortality reports 1 in 20 still births without congenital abnormality occurred in women with preeclampsia. Preeclampsia is strongly associated with fetal growth restriction, low birth weight, spontaneous or iatrogenic preterm delivery, respiratory distress syndrome and admission to neonatal intensive care unit⁵. About 1 in 250 primigravida (0.4%) will give birth prior to 34 weeks as consequence of preeclampsia and 8-10% of all preterm births results from hypertensive disorders. Half of women with severe preeclampsia give birth preterm babies⁶. Growth retardation arising from placental disease is common (20-25%). Preterm births in women with pre-eclampsia is less than 10th centile of birth weight for gestation⁷. In PIH patient of our country, most of them are admitted in the hospitals undiagnosed with severe life-threatening variable presentations and show diversity of their signs as well as investigations. When they are admitted undiagnosed, it is very difficult to diagnose, because of their diversity, severity – that also increases perinatal mortality and morbidity. In addition to these factors most of them come with end organ damage like heart failure, liver failure, Jaundice, stroke, coma etc. In that situation there is nothing to do or too little to do for their improvement. So, at the time of treatment, decision and during follow up, attention to other risk factors and target organ damage should be considered.

Preconceptional counseling and caution about antihypertensive drug therapy is reasonable to the females with HTN, previous history of HTN, family H/O HTN and BOH should undergo life style changes, regular ANC.

MATERIALS & METHODS

This cross-sectional study was carried out at the Department of Obstetrics and Gynecology, SZMCH, Bogura during the period of January 2020 to December 2020. Total 100 cases of pregnancy induced hypertension (PIH) patients were selected in this study who fulfilled the inclusion and exclusion criteria, admitted into eclampsia unit of Obstetrics and Gynaecology department of SZMCH. After admission they were diagnosed either by history from the patients or their attendants, or by measurement of blood pressure and estimation of proteinuria and/or by ankle edema.

Inclusion criteria were all patient having hypertensive disease during pregnancy, gestational age more than 20 completed weeks, both primigravida and multipara.

Exclusion criteria were known case of bleeding disorder, ante partum hemorrhage (APH), Covid positive PIH patients and patients with congenital heart disease.

A data sheet was formulated for recording all relevant parameters including history, clinical examinations, investigations, follow up and systemic review. A written informed consent was taken from each patient/her attendants.

Data collected were compiled and relevant statistical calculation was done by using computer-based software (SPSS).

RESULTS

A total of 100 patients of different gestational age admitted during this period were included in this study randomly. [Total admission in obstetrics ward was 7146 out of which 840 (11.75%) was hypertension cases]. Age range of the patients were 19-39 years. Most of the PIH patents belonged to the age group 25-34 years (64%). Majority of the PIH patients (64%) were 2nd and 3rd gravida (equal distribution) and 16% patients were primigravida. A great majority patients (89%) were of lower-middle class and poor socioeconomic condition. (Table-I)

Preterm pregnancy was (80%) and term pregnancy was 8%. A figure of 81% were grouped under unplanned pregnancy and 66% were unbooked. (Table-II)

Most of the PIH cases (60%) having no ANC.(Figure-1).

Table-I: Sociodemographic profile of the patients.

Characteristics	Number	Percentage
Patients' age (Year)		
Up to 19	4	4
20-24	20	20
25-29	32	32
30-34	32	32
35-39	8	8
> 39	4	4
Gravida		
Primi	16	16
2 nd	32	32
3 rd	32	32
4 th	8	8
5 th	12	12
Socioeconomic condition		
Higher	1	1
Upper middle class	10	10
Lower middle class	39	39
Poor	50	50

Table-II: Gestational age, planning before pregnancy (Preconception counseling) and booking.

Characteristics	Number	Percentage
Gestational age (Weeks)		
20-27	8	8
28-32	24	24
33-37	56	56
>37	8	8
Postpartum	4	4
Preconception counseling		
Planned	19	19
Unplanned	81	81
Booking List		
Booked	34	34
Un booked	66	66

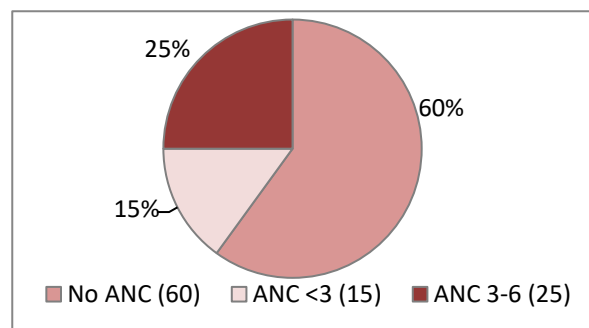


Figure-1: Distribution of PIH patients according to their ANC

Table-III: Distribution of PIH patients according to their presentation (symptoms) on admission.

Presentation	Number of Patients	Percentage
Uncontrolled HTN	22	22
PE without severe symptom	6	6
Epigastria Pain	6	6
Leg swelling (edema)	8	8
Head-ache, Neck pain	7	7
Blurring of vision	4	4
Blindness	1	1
Raised blood pressure	4	4
Convulsion	28	28
HELLP Syndrome	4	4
Oliguria /ARF	2	2
Coma	1	1
DVT	1	1
Respiratory distress	4	4

Among the PIH patients ante-partum convulsion was most common (60.71%); Intrapartum was 25% and postpartum convulsion was 17.29%. (Figure 2)

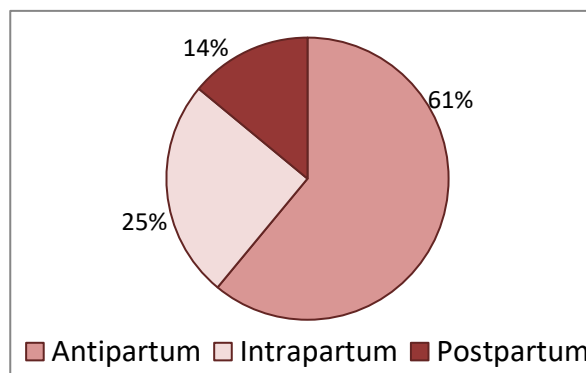


Figure-2: Distribution of PIH patients according to their time of convulsion (n=28)

Among the admitted PIH patients most common variety was PE with severe symptom (39%); next common was eclampsia (28%). (Table-IV)

Table-IV: Distribution of PIH patient of their classical symptom (HTN + Proteinuria) (n=100)

Varieties of PIH	Number	Percentage
Superimposed PE	8	8
Gestational HTN	4	4
PE without sever symptom	21	21
PE with sever symptom	39	39
Eclampsia	28	28

Most of the patients (65%) were mildly anemic and; 4% were severely anemic and 23% cases on anemia was found, 58% patients showed leukocytosis and only 12% patients showed thrombocytopenia. (Figure-3)

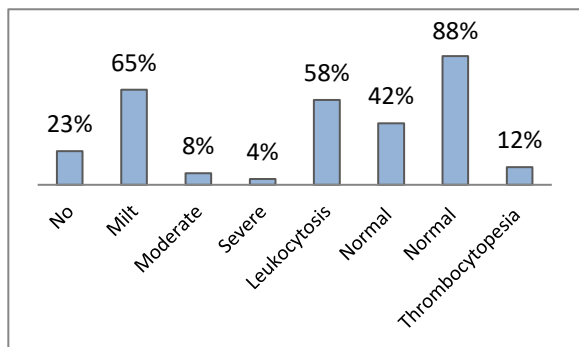


Figure-3: Distribution of PIH patients according to their hematological diversity (Hemoglobin estimation, leucocyte & platelets count) n=100

- # Only LDH raised in 20 cases (20%)
 - # Only SGPT raised in 24 cases (24%)
 - # only alkaline phosphatase raised in 34 cases (34%)
 - # Only serum bilirubin raised in 9 cases (9%)
 - # Only SGPT and ALP raised in 10 cases (10%)
 - # Only S.B+ALP+SGPT raised in 03 cases (3%)
- (Figure-4)

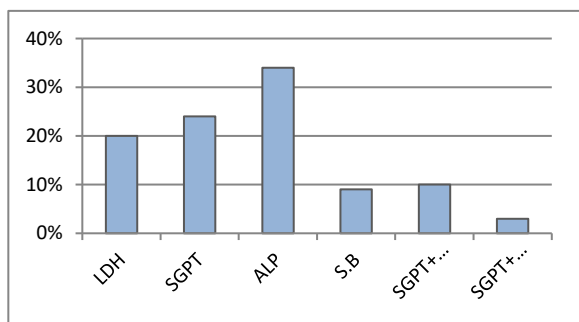


Figure-4: Distribution of PIH patients according to their diversity in liver function (LFT) n=100

Table-V: Distribution of PIH patients regarding their diversity in renal function test (RFT) and serum uric acid level.

	Number of patients	Percentage
Serum creatinine		
Normal	63	63
Raised	37	37
Serum uric acid		
Normal	8	8
Raised	92	92

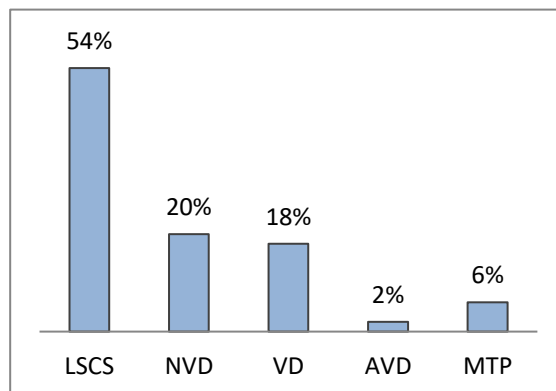


Figure-5: Distribution of PIH patients according to their mode of termination of pregnancy.

According to their mode of delivery - delivered by LSCS was 54%, normal vaginal delivery (NVD) was 20%, vaginal delivery (VD) 18%, assisted delivery (AVD) was 2% and medical termination of pregnancy (MTP) was 6%. (Figure-5)

Morbidity was found in 50 cases of PIH patients; among the morbidities most common was puerperal sepsis (42%), wound infection was 20%, PPH was 18%, heart failure 14% and ARF was 6%. (Figure-6)

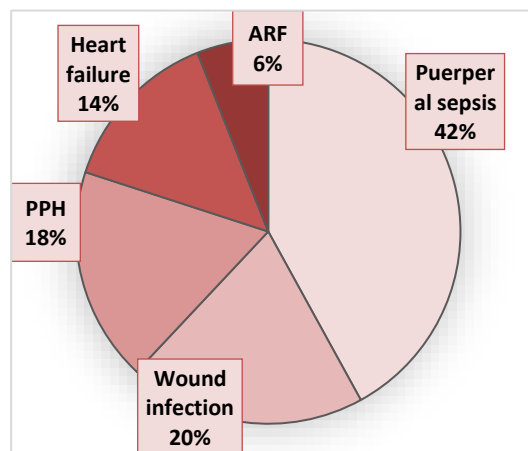


Figure-6: Shows Complications of the cases.

Most of babies of PIH patients (61.85%) birth-weight was 1.6-2.5 kg, and only 7.89% babies' birth-weight was 3-3.5 kg. Regarding APGAR score: 50% babies' APGAR score was within 3-7 of >7; 20% cases were either IUD or still-born or termination before the age of viability and 26% babies needed resuscitation. (Table-VI)

Table -VI: Regarding, (Birth weight and APGAR score of the baby)

Characteristics	Number	Percentage
Birth weight of the baby (Mortality 24) n=76		
Weight in kg	Number	Percentage
1-1.5 kg	9	11.84
1.6-2 kg	22	28.94
2.1-2.5 kg	25	32.89
2.6-3 kg	14	18.42
3-3.5 kg	6	7.89
APGAR score	Number	Percentage
>7	17	17
3-7	33	33
<3	26	26
0	24	24

Regarding fetal outcome - Healthy (35%); Mortality (24%); Morbidity (41%); most common morbidity was IUGR (11%). (Table-VII)

Table-VII: Distribution of the PIH patients according to diversity of fetal outcome (n=100)

Fetal outcome	No. of Patients
Healthy	35 (35%)
Mortality	24 (24%)
Morbidity	41 (41%)
IUGR	11(11 %)
Respiratory Infection	7 (7%)
Asphyxia Neonatorum	5 (5%)
Neonatal sepsis	5 (5%)
Neonatal Jaundice	4 (4%)
Hypoglycemia	5 (5%)
Convulsion	2 (2%)
Transient tachypnea of newborn (TTN)	1 (1%)

DISCUSSION

The purpose of this study was to identify different varieties (diversity) of presentation in respect to their clinical features, investigations, management and outcome (maternal and fetal) of PIH patients at Shaheed Ziaur Rahman Medical College Hospital (SZMCH) - a tertiary care Hospital, at Bogura, Bangladesh and to establish an improved plan for the prevention as well as management of PIH patients. Incidence of PIH is very difficult to precise - it is variable from country to country, area to area, society to society. And, a small member of population does not reflect total scenario of a country. As per hospital record of SZMCH, Bogura the incidence of PIH was

11.75%. High prevalence of PIH was noted among 25-34 years of age group which is similar to other study.⁷ The incidence of PIH was more among 2nd and 3rd gravida (64%); having previous history of one or two abortions. Most of the PIH patients (81%) became pregnant unplanned, without any ANC (60%), Unbooked (66%), belong to the lower-middle class and poor socio-economic condition (89%), admitted to the hospital preterm (33-37) weeks of pregnancy (80%), which are similar to the other study.³ Another study showed PIH was more common in primigravida (6-15%) than in multigravida (2-4%)⁸. In this study it was we found that it is more common in 2nd and 3rd gravida (64%) but other relevant factors like age, socio-economic condition similar to other study except ANC.

The recurrence of PIH in one pregnancy is a strong predictor of recurrence in the next pregnancy and recurrent hypertensive disorders are associated with substantially higher risk of adverse perinatal outcome⁹. The underscores need to early booking in pregnancy for early identification and prompt management of the problem. Regarding the comorbidity which was present in 52% cases in this study and among them common cause is DM (17%). A study showed that potential outcomes associated with DM with maternal complication like PIH and preeclampsia¹⁰. Women with GDM were at increased risk of developing PIH (19.1%) and PE (1.3%). Similar result has been reported in previous studies that PIH (17.9%) higher in women with GDM¹¹. Another study also indicated similar maternal complication among GDM¹². They also showed diversity in their presentation like confusion (28%), uncontrolled HTN (22%), PE with severe feature (6%), Epigastric pain (8%), Chronic HTN with leg swelling (8%), Headache (7%), Blurring of vision (4%), Gestational HTN (4%), HELLP syndrome (4%), ARF (2%), Jaundice 2%, Coma (1%), and DVT (1%). Examination and investigations were done after admission and they were classified as eclampsia (28%), PE with severe feature (39%), PE without severe feature (21%), superimposed PE (8%), and gestational HTN (4%)¹³. Another study in UK found that major maternal complication including placental abruption (7-10%), DIC (7-11%) HELLP syndrome (9.76-20%), ARF (5-9%), Pulmonary edema (3-5%), aspiration pneumonia (2-3%), cerebral hemorrhage and cardio-pulmonary arrest (2.5%). The frequency of timing of eclampsia reported in literature ranges from (38-53%) antepartum, (15-20%) intrapartum and (11-44%) in the postpartum period¹⁴. This study showed antepartum convulsion (60.71%), intrapartum convulsion (25%), & postpartum convulsion (14.29%) slight dissimilarity to the previous study.

Diversity was also present in the investigations - Renal function was impaired in 37% cases. Regarding Liver function SGPT was raised in 24% cases, Alkaline Phosphatase was raised in 32% cases, LDH was raised in 20% cases, Serum bilirubin was raised only in 5% cases, Serum Albumin decreased in 28% cases, Most of the PIH patients (65%) were mildly anaemic, 8% moderately anaemic and 4% severely anaemic. Leukocytosis was found in 58% cases and 92% having raised serum uric acid. Another study shows that raised serum uric acid is the single most predictor of PIH⁹. Regarding maternal outcome, most of the PIH patients (54%) delivered by Cesarean Section. 2% mother died due to heart failure and ARF (acute renal failure). 50% of the PIH patients shows morbidity and most common morbidity was puerperal sepsis (42%), wound infection (10%), Postpartum haemorrhage (9%), Heart failure or pulmonary edema (14%) and acute renal failure (ARF) (6%), which are similar to the other study¹³. A population based retrospective cohort Study conducted in Zhejiang province in China in 1993-2000 demonstrates the importance of Cesarean section during delivery among women with PIH. It was found that moderate and severe PIH early developed during pregnancy increases the risk of perinatal mortality while the cesarean delivery could decrease the risks in women with PIH¹⁵. Literature suggests that cesarean section rate higher than the proposed 15% (WHO) upper threshold are associated with increased mortality and morbidity for both mothers and babies¹⁶.

Regarding fetal outcome 50% had APGAR score 3-7 or > 7, 26% babies APGAR score <3, they are mainly premature, IUGR and still birth babies. High perinatal mortality rate was either due to intrauterine Death (IUD) or premature termination of pregnancy to save the Life of the mother. Regarding birth weight - (61.83%) baby's birth weight 1.6 to 2.5 kg and (11.84%) babies birth weight more than 2.5 kg. Healthy babies were 35% and morbidity was found to 41% cases; among them IUGR was most common (11%). A study of Harare, Zimbabwe showed that PIH is associated with the delivery of a low-birth-weight baby. The cost of low birth weight in the health-delivery system has also been documented¹⁷. Another study shows that the risk of a still birth in women with PIH was significantly higher than in normotensive pregnancies¹⁸. This study also shows the risk is 2.32% in case of chronic hypertensions; 6.6% in cases of superimposed PE, 4.15% in PE with several symptoms or eclampsia, 1.21% in gestational hypertension¹⁸.

Results from our study repeated that diversity of presentation of PIH patients regarding their sign-

symptom, investigation, clinical reports as well as their outcome. Some of which are avoidable. Sometimes patients having no awareness about ANC, pre-conceptional counseling and communication with the facility as well as health workers, especially midwives. Most important factor is poverty which is a common barrier to take the decision timely. Scarcity of health workers, their experiences and quality service also play an important role. The aim of this study was to identify these causes and take remedy.

Conclusion

This study focuses on the impact of PIH on the maternal and neonatal morbidity and mortality as well as the benefits of ANC, pre-conceptional counseling, proper antihypertensive medication. In conclusion we may say that patients of comparatively younger age and low family income remain undiagnosed due to poverty and lack of knowledge. So, keeping in mind the diversities of presentation of PIH, we are to pay attention to diagnose these cases early in order to prevent maternal and neonatal complications and thereby to achieve the targets of maternal mortality up to 70 / Lakh Live births and perinatal mortality up to 12/1000 live births by the year 2030.

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