

ORIGINAL RESEARCH

A Clinical Study of Maternal and Perinatal Outcome in Pregnancy Induced Hypertension

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ABSTRACT

Background: Hypertension is a prevalent and serious disorder that can cause or exacerbate many health issues. Blood pressure is directly associated to cardiovascular disease and mortality. Stroke, MI, angina, heart failure, renal failure, and cardiovascular mortality are all linked to BP. As a result, hypertension is often referred to as "the silent killer." The study's aim is to assess maternal morbidity and mortality in pregnant women with pregnancy-induced hypertension. Birth weight, Apgar score, NICU admission, prenatal morbidity and mortality.

Materials and Methods: During two years, pregnant women aged 21 to 40 weeks were studied at Govt Medical College & Hospital Nalgonda (July 2019-July 2021). An 80-patient study. The institutional ethics committee review board approved. Each patient had a comprehensive history, clinical examination, and proforma. In all instances, the length of hospital stay, patient recovery, perinatal outcome (birth weight, Apgar score, NICU admission), and perinatal morbidity and mortality were examined.

Results: The present investigation found that unbooked cases had more severe preeclampsia and eclampsia. Preeclampsia patients who had not had routine prenatal care were 40 percent unbooked. Unbooked cases have increased maternal and perinatal mortality. In this study, 40% of NICU admissions were due to LBW/asphyxia. Overall, 50% of newborns were born underweight. PIH was a prominent cause of iatrogenic premature birth.

Conclusion: 100% registration of pregnant women and good quality antenatal treatment including weight, blood pressure, and urine analysis with adequate referral mechanism to tertiary care centres. All family physicians and medical officers need to be advised to follow a standard management protocol in a case of preeclampsia and eclampsia with an awareness for prompt referral of women who require to be managed by specialist. Every tertiary care centre must have specialised expertise. Though PIH is not preventable, adequate ANC care can slow its progression and timely intervention can significantly improve perinatal outcomes.

Keywords: PIH, apgar score, Preeclampsia, eclampsia, asphyxia, convulsions, perinatal mortality and morbidity.

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INTRODUCTION

Pregnancy complications caused by hypertensive disorders of pregnancy affect 5 to 8% of all pregnancies and are a leading source of maternal and neonatal morbidity and

mortality.^[1] Pregnancy-induced hypertension (PIH) is a type of hypertension that appears after 20 weeks of pregnancy and is not associated with proteinuria. Preeclampsia is a type of pregnancy that is complicated by high blood pressure and proteinuria.^[2] This illness is associated with abnormal placentation, oxidative stress, which results in the release of vasoactive chemicals, and elevated thromboxane and/or cytokines, which result in vascular and organ dysfunction during pregnancy. Although it is generally established that maternal and perinatal outcomes are worse with preeclampsia due to end-organ damage when compared to pregnancy-induced hypertension, there are inadequate comparative studies to support this conclusion.^[3] As a result, it is planned to conduct this study in women who have pregnancy-induced hypertension and preeclampsia against a background of ethnic diversity in the local area. Identifying high-risk women who may require aggressive care and low-risk women who may be spared unnecessary interventions may aid in clinical management by identifying high-risk women who may require aggressive management and low-risk women who may be spared unnecessary procedures.^[3]

Preeclampsia

Preeclampsia and eclampsia are responsible for the death of a pregnant woman every three minutes on average around the world.^[1] In the global, preeclampsia and eclampsia continue to be among the leading causes of mother and foetal morbidity and mortality.^[1,4] Preeclampsia is defined by the American College of Obstetrics and Gynecology (ACOG) as the presence of hypertension and proteinuria (140mmHg/90mmHg), or in the absence of proteinuria, new-onset hypertension with the new onset of any of the following: thrombocytopenia, renal insufficiency, impaired liver function, pulmonary edoema, and unexplained new-onset headache unresponsive to medication. Women with previously normal blood pressure have hypertension on at least two times more than four hours apart after 20 weeks of pregnancy, with the condition completely resolved by the sixth postpartum week.^[3] If left untreated, preeclampsia can progress to eclampsia, which is defined as the occurrence of generalised seizures in the presence of preeclampsia if the tonic-clonic seizures are not attributed to any other factors (e.g., epilepsy or brain tumour).^[4]

Eclampsia

In pregnancy or the postpartum period, eclampsia is described as the development of convulsions and/or an inexplicable coma that occurs without a known cause. It is one of the most important factors contributing to high maternal mortality and morbidity, as well as high perinatal mortality. Eclampsia is estimated to be the cause of 12 percent of all maternal deaths worldwide, according to the World Health Organization.^[4] Eclampsia is estimated to be responsible for 50,000 maternal fatalities each year worldwide. Pregnancy complications such as eclampsia have been documented in India at rates ranging from 0.179 to 3.7 percent.^[3,4,6] Furthermore, maternal mortality ranges from 2.2 to 23 percent among all pregnancies resulting in preeclampsia. In Western countries, the incidence of pre-eclampsia is estimated to be 1 in every 2000–3448 deliveries.^[6] The care of prenatal hypertension, pre-eclampsia, and eclampsia has undergone numerous improvements, with positive outcomes being gained with the advent of newer anti-hypertensives, alternative anticonvulsant regimens, and more public knowledge of the conditions.

PIH is unpredictable in its onset and can only be cured by delivering the baby and placenta at the end of the pregnancy. The first and most important step is to identify PIH as soon as possible.^[2-4] Pregnancy-induced hypertension (PIH) is a very varied disease that is unique to a pregnancy and is the second most common medical problem reported in pregnant women. This, in addition to bleeding and infection, is a significant contributor to maternal morbidity and mortality.^[7] PIH has an unknown cause, and its management is dependent on early

detection, antihypertensive therapy, seizure prophylaxis, and prompt delivery of life-saving medications in severe cases. The majority of deaths associated with PIH are caused by its consequences rather than by hypertension itself.^[8] As a result, we can lower the rate of maternal morbidity and mortality by preventing complications and providing effective care when they occur. Our hospital is a tertiary care facility, and the purpose of the current study was to examine the maternal and perinatal outcomes in patients with PIH who were admitted to our hospital.

Aim & Objectives

- To study the maternal outcome in pregnant women with pregnancy-induced hypertension between 21 to 40 weeks with references to age, parity, severity, mode of delivery, use of antihypertensive, resolution of PIH, maternal complications both intrapartum and postpartum and to study the maternal morbidity mortality.
- To study the perinatal outcome concerning birth weight, Apgar score, NICU admission, perinatal morbidity and mortality.

MATERIALS & METHODS

Source of Data: The study will be a prospective study conducted on pregnant women between 21 to 40 weeks admitted to Govt Medical College, Nalgonda during the period of 2 years. During the period of July 2019 to July 2021.

Method of Collection of Data

Sample size 80 pregnant women. The study will include 80 patients attending OPD as well as admitted patients.

Inclusion Criteria:

- Pregnant women between 21-40 weeks of gestation.
- Blood pressure >140/90mm of Hg.
- Primigravida and multigravida.
- Single intrauterine pregnancy.
- APH [Abruptio placenta]

Exclusion Criteria:

- Pregnant women <20 weeks of gestation.
- Chronic hypertension.
- APH [Placenta previa]
- Presence of Diabetes mellitus.
- Heart disease.
- Renal disease.

Selection of Cases

All patients who were diagnosed with preeclampsia and admitted to Govt Medical College, Nalgonda were included in the study, both those who were booked and those who were not. All of the patients were between the ages of 21 and 40 weeks pregnant.

The patients were chosen on the basis of their parity, consanguinity, and socio-economic status, with no distinction made. The proforma included a detailed history, including the period of gestation, the last menstrual cycle and the projected date of delivery, the history of previous pregnancies, and the outcomes of the current study.

Diastolic blood pressure more than 90 to 100 mmHg Observation, urine albumin daily urine output, and blood pressure chart every 4 hours or so. If your diastolic blood pressure is greater than 100 mmHg, you should begin taking an antihypertensive medication. Tab Labetalol 100- 200mg TID is a prescription medication. Once the patient's blood pressure is under control, release him or her.

Follow up:

Every week with NST, USG

Check Blood pressure, Urine Albumin

RESULTS

Table 1: Age Group

Age (in years)	No. of Patients	Percent
<20	1	1.25
20-24	31	38.75
25-29	33	41.25
30-34	12	15
>35	3	3.75
Total	80	100.0

41.25 % of the patients belonged to age group of 25-29 and 38.75% belonged to 20-24 years of age.

Table 2: Number to booked and unbooked cases

Booked/ unbooked	No. of Patients	Percent
Booked	50	62.5
Unbooked	30	37.5
Total	80	100.0

Unbooked cases were 37.5% and 62.5% among these had irregular ANC's.

Table 3: Socio Economic Status

SES	No. of Patients	Percent
Low	27	33.75
Low middle	3	3.75
Middle	39	48.75
Upper Middle	5	6.25
UpperMiddle	6	7.5
Total	80	100.0

Majority of patient with PIH belonged to middle class and lower-class group.

Table 4: Education System

Education	No. of Patients	Percent
Primary	10	12.5
Higher Primary	15	18.75
Highschool	30	37.5
PUC	14	17.5
Degree	11	13.75
Total	80	100.0

Majority of the patients were educated upto High School.

Table 5: Comparison of Parity Index

Parity	No. of Patients	Percent
Multi	39	48.75
Primi	41	51.25
Total	80	100.0

It was observed that 51.25% of women were primi gravida and 48.75% multigravida.

Table 6: Gestational Age

GA	No. of Patients	Percent
30-32	5	6.25
33-36	38	47.5
37-40	37	46.25
Total	80	100.0

47.5% of women had preterm delivery. Majority were iatrogenic PIH was one of the main causes of iatrogenic pre term deliveries.

Table 7a: Haemoglobin Levels

Hb (%)	No. of Patients	Percent
≥11	51	63.75
10-10.9	16	20
7-9.9	12	15
<7	1	1.25
Total	80	100.0

PIH leads to Haemoconcentration, majority of women that is 63.75% had $Hb\% > 11$.

Table 7b: Severity of PIH

Pre-Eclampsia	No. of Patients	Percent
Gestational Hypertension	30	37.5
Mild	28	35
Severe	16	20
Eclampsia	6	7.5
Total	80	100.0

30% of women had gestational hypertension 28% has mild PE.

Table 8: Renal Impairment

Renal Impairment	No. of Patients	Percent
Yes	2	2.5
No	78	97.5
Total	80	100.0

2.5% of women has renal impairment that is deranged serum urea and creatinine.

Table 9: HELLP Syndrome

HELLP	No. of Patients	Percent
Yes	8	10
No	72	90

Total	80	100.0
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In this study 10% of patients had HELLP Syndrome, Hemolysis, elevated liver enzymes and low platelet counts.

Table 10: Number of Impending Eclampsia Cases

Impending eclampsia	No. of Patients	Percent
Yes	22	27.5
No	58	72.5
Total	80	100.0

32% patients had impending Eclampsia.

Table 11: Antihypertensives Used

Antihypertensives	No. of Patients	Percent
LABET	52	65
LABET/NICARDIA	22	27.5
No	6	7.5
Total	80	100.0

65% of patients required only labetalol as antihypertensives, whereas 27.5% of women required both labetalol and nicardia.

Table 12a: $MgSO_4$ Requirement

$MgSO_4$	No. of Patients	Percent
Yes	31	38.75
No	49	61.25
Total	80	100.0

38.75% of patient were given $MgSO_4$.

Table 12b: Reason for Induction

Reason for induction	No. Of patients	Percent
GHTN	24	30
MILDOLIGO	4	5
MILDPE	13	16.25
IMPENDINGECLAMSIA	1	1.25
SEVEREPE	6	7.5

GHTN was the main indications for induction of labour for termination of pregnancy.

Table 13: Mode of Induction

Mode of induction	No. of Patients	Percent
ARM/OXYTOCIN	1	1.25
CERVIPRIME	15	18.75
MISOPROSTOL	30	37.5
No	3	3.75

Table 14: Mode of Delivery

Mode of delivery	No. of Patients	Percent
ELLSCS	2	2.5
EMLSCS	39	48.75
FTVD	28	35
PTVD	8	10
vaccum+ftvd	3	3.75

Total	80	100.0
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The majority of the patient had emergency LSCS (48.75%) and a total of 51.25% had LSCS.

Table 15: USG Doppler Changes

USG/DOPPLER	No. of Patients	Percent
Normal	48	60
Abnormal	32	40
Total	80	100.00

USG / Doppler Changes were seen in 40% of patients.

Table 16: Complication During Delivery

Complications during delivery	No. of Patients	Percent
NONE	68	85
PPH	11	13.75
PPH/CXTEAR	1	1.25
Total	80	100.0

15% of patients have complications like PPH or PPH with Cervical Tear.

DISCUSSION

The current study included 80 mothers who were admitted with PIH during the study period, with the incidence of gestational hypertension (as determined by inclusion and exclusion criteria) being 37.5 percent. Preeclampsia was diagnosed in 28 percent of women, severe preeclampsia in 16 percent, and eclampsia in 6 percent. The incidence of PIH in primigravida was 1.3 percent, and the incidence in multigravida was 1.5 percent. This could be due to a lack of proper invasion of trophoblastic cells, as demonstrated by the research of Sibai et al and Cunningham, which results in maladaptation of the spiral arterioles, the researchers suggest.^[7] Abadi Kidanemariam Berhe et al 2020 study found that 37.7 and 40.8 percent of mothers with PIH gave birth to kids who were born low birth weight (LBW) or prematurely (premature delivery). Compared to studies conducted in Ghana (24.7 percent LBW and 21.7 percent preterm), India (22.2 percent LBW and 24.6 percent preterm), and So Paulo city (21.0 percent LBW and 10.6 percent preterm), these findings were greater in Ghana.^[9]

Sociodemographic Profile

In the current study, the majority of patients were in the age range of 25-29 years, accounting for 33 percent of the total, followed by 31 percent in the age range of 20-24 years. According to the findings of the Vidhyadhar et al,^[6] study the incidence of pre-eclampsia and pre-implantation haemorrhage (PIH) was highest in the age range of 15-20 years, followed by the age group of 21- 25 years. Audrey et al., concluded that maternal age less than 20 years was the most significant risk factor for both preeclampsia and eclampsia during pregnancy.^[10] Jiménez et al came to the conclusion that eclampsia was more common (54.5 percent) in people under the age of 19 years. In the current study, about 78.2 percent of patients were referred by their doctors. The vast majority of patients had already visited primary health care centres (PHCs) before being admitted to the facility.^[11] Only 40% of patients were unbooked in the current study, indicating an improvement in peripheral health care services as well as early referral by health care practitioners from the periphery, which is most likely owing to health care initiatives introduced by the government in recent years.

According to Berhe et al, about 66.4 percent of mothers with PIH and 22.2 percent of women with normotensive blood pressure experienced unfavourable perinatal outcomes in their

newborns, respectively. The incidence of delivery as phyxia was greater among newborn babies delivered from women with PIH than among newborn babies delivered from women with normal blood pressure (46.5 percent vs 11.3 percent). In a similar vein, low birth weight babies were more common among mothers with PIH than among women with no PIH (37.7 percent vs 6.1 percent). The mean birth weight of infants born to mothers with PIH was 2647.2 g, while the mean birth weight of newborns born to normotensive pregnant women was 3176 g (t test = 11.66, p-value 0.001). Furthermore, 36.7 percent of babies born to women with PIH and 10.7 percent of newborns born to women with normal blood pressure were tiny for their gestational age.^[9]

Clinical Presentation

The most prevalent complaint of patients with severe pre-eclampsia was edoema, which was experienced by 84.7 percent of women. Other common complaints included headache in 26 percent of women, vomiting in 12.5 percent of women, and blurred vision in 8.1 percent of women. In a study conducted by Ahadi et al., edoema was observed in 24.8 percent of preeclampsia patients. Prematurity seemed to be the most common factor contributing to significant perinatal death in severe preeclampsia. 43.4 percent of patients in the current study developed severe pre-eclampsia before 34 weeks of pregnancy, according to the findings.^[12] In the Khosravi et al., study, more over half of the women' (52.6 percent) gestational age at delivery was less than 37 weeks, resulting in preterm births.^[13]

Investigation:

The signs and symptoms of preeclampsia were assessed at each prenatal visit after 20 weeks of pregnancy in pregnant women who had previously been diagnosed with the disease. Regular prenatal care includes this as a crucial part. Ultimately, delivery was the most effective method of treating patients. Delivery was timed according to the mother's gestational age, the severity of the disease, and the status of the mother and foetus. Pregnancy termination was decided in the best interests of both the mother and the unborn child.

Perinatal mortality was found to be 35% in this study. Early-onset preeclampsia is associated with a low perinatal survival rate, according to Sibai et al, regardless of whether the patient receives aggressive or conservative treatment for the condition.^[7] The onset of severe gestational hypertension and/or severe preeclampsia before 35 weeks' gestation is associated with significant maternal and perinatal complications, whereas the corrected neonatal survival was 94 percent for gestation between 29 and 32 weeks and 100 percent for gestation beyond 32 weeks' gestation. Delivery or expectant management is determined based on the foetal gestational age, foetal state, and severity of the mother's condition at the time of the evaluation. In a small number of women with severe preeclampsia who are less than 32 weeks pregnant, expectant management may be an option to consider. When delivered to women with severe illness between 24 and 34 weeks of pregnancy, steroids are useful in lowering newborn mortality and morbidity. In order to prevent seizures in all women with severe illness, magnesium sulphate should be administered throughout labour and for at least 24 hours after birth.

Management

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This means that in these individuals, expectant management should not be considered as a standard therapeutic strategy. The optimum method when the gestational age is greater than 34 weeks is to treat with anti-hypertensives to regulate the blood pressure, magnesium sulphate was administered when prodromal signs of eclampsia developed, and delivery was accomplished either induction of labour or caesarean section.

Anti-hypertensive treatment:

The objective of anti-hypertensive is to prevent intracranial bleeding and left ventricular failure. As a seizure preventative, it lowers perfusion pressure, prevents vasogenic edema, and inhibits cerebral artery vasospasm, which results in tissue ischemia and peri capillary haemorrhage.

The calcium channel blocker nifedepin (tab.) and the beta blocker labetalol were used in the current investigation. In our investigation, labetalol was taken alone in 62 patients, but nicardia and labetalol were used together in 32 patients [Table 1].

Obstetric Management

Despite the risk of having a preterm baby, the primary solution to the problem of severe preeclampsia is to terminate the pregnancy because it improves the prognosis of the mother. It has been demonstrated that the obstetric care of severe preeclampsia can be extreme cautious on one side and rapid intervention in the form of a caesarean section on the other. According to Sibai et al, caesarean section is required in 43 percent of women, with foetal distress being the most common reason in 37 percent of cases. It was anticipated that earlier use of caesarean section would reduce perinatal mortality by a large amount, as would prompt management of hypertension. It is feared that significant surgery and anaesthesia in an already debilitated patient will exacerbate maternal morbidity.

The caesarean rate in the current study is 51.25 percent, which is significantly higher than the rate in other studios. The most prevalent reason for this procedure is severe preeclampsia and an unfavourable cervix. Fetal distress may be caused by a hypoxic state caused by placental insufficiency, preterm, or a protracted induction delivery interval, which were all found to be common in our study.

Maternal Morbidity

In the current study, 16 individuals suffered morbidity, and as a result, they were admitted to the intensive care unit. It was possible to save these women's lives because of the availability of a well-equipped obstetric intensive care unit administered by a team of physicians with

specialised knowledge. Severe preeclampsia is connected with the most hazardous and frequent consequences, which are antepartum haemorrhage and eclampsia, respectively.

Nankali et al, investigated 349 cases of severe preeclampsia, of which 22 cases (6.3 percent) suffered from eclamptic seizures, and one case (0.3 percent) was found to have HELLP syndrome, according to the results of the study. Placental abruption was the most common obstetric complication, occurring in 7.7 percent of cases (27 cases). Al Muhim et al,^[14] revealed that abruptio placenta was the most common maternal problem encountered, with 37 instances (10.6 percent) reported. Coagulationopathy was the second most common maternal complication identified, with 13 cases (10.6 percent).^[14]

Three incidences of abruption were observed in this investigation. Preventing eclampsia to a significant extent can be accomplished through early detection of suspected cases of pregnancy-induced hypertension and close monitoring of hypertensive disorders in pregnancy. However, despite all efforts, it has not been completely eradicated. According to the incidence recorded by Donald (1979) and the Indian statistics reported by Dawn, the incidence of pre-eclampsia in patients with PIH is 4 percent in total.

CONCLUSION

This study found 16% of women with severe preeclampsia and only 6% with eclampsia. Younger people (25-29 years old) were more likely to present (33%) than older people (31%) and the mean age was 25. (see chart below). Maternal and perinatal morbidity rose with age. The current study found that primigravida were affected 51.25 percent of the time and multigravida were affected 48.75 percent of the time. 91 percent of women with severe preeclampsia had prenatal care, while 62.5 percent were unbooked and had no antenatal treatment. Unregistered cases had significant rates of maternal sickness and mortality, as well as perinatal mortality. When they arrived at the clinic, 51% of them were under 36 weeks pregnant. The most common complaint was edoema foot, followed by headache. Prophylactic intravenous MgSO₄ (4gm) injections were given to 32% of patients at risk of eclampsia. Antihypertensives controlled blood pressure well (nicardia and labetalol). The C-section rate was 51%. Prostaglandins were successful in inducing labour in 45 individuals. The most common reasons for caesarean sections were severe preeclampsia and an unfavourable cervix, followed by foetal distress. This study found a 3% maternal case fatality rate. The current study found a 2% perinatal death rate. 58 percent of all neonates had low birth weight. LBW/asphyxia accounted for 45 percent of all NICU admissions in this research. Healthcare workers must be qualified. Expectant women must be registered in full and receive high-quality prenatal care, which includes all key components such as weight and blood pressure monitoring as well as urine analysis. There must also be a procedure for referring women to tertiary care centres. Patients with preeclampsia or eclampsia should be immediately referred to specialists by all family physicians and medical officers. Every tertiary care hospital should have an obstetric and neonatal critical care unit staffed by professionals.

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