

Maternal and Perinatal Outcome in Gestational Hypertension

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Abstract:

Objective: To study the incidence and to analyze the maternal and perinatal outcome in gestational hypertension

Methods: All pregnant women beyond 20 weeks with Blood Pressure $\geq 140/90$ mm Hg without proteinuria admitted to Gandhi Hospital from September 2009 -September 2011 were enrolled in the study. Women with pre existing medical complications like chronic hypertension, renal disease, epilepsy, heart disease, anemia, diabetes, thrombophilias etc. were excluded from the study. Patients were managed as per the existing protocols in the department after proper history taking, examination and investigations. Blood pressure was controlled either by Tablet alpha methyl dopa or nifedipine or both. Injection Magnesium sulphate was the drug of choice to control convulsions.

Results: A total of 174 cases of gestational hypertension were studied. 108 cases (86.52%) were unbooked. 73.56% patients belonged to low socioeconomic status. The most common maternal complication was eclampsia (5.74%) followed by ARF/Oliguria (1.72%). There was no maternal mortality in our study. Perinatal mortality was seen in 10 cases (5.74%). Prematurity was the most common cause.

Conclusion: Gestational hypertension is the milder form of hypertension in pregnancy. It may progress to preeclampsia with its associated complications if proper antenatal care and counseling is not given.

Key words: Gestational Hypertension, maternal mortality, perinatal mortality.

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I. Introduction

Hypertensive disorders of pregnancy complicate 5-10% of all pregnancies.¹ Gestational hypertension complicates about 5.6% of all hypertensive disorders of pregnancies (Martin colleagues 2009)². Gestational hypertension develops in 6-17% of healthy nulliparous women and 2-4% of multiparous women³. This rate is further increased in women with previous preeclampsia and women with multifetal gestation. As per WHO systematically reviewed maternal mortalities 2009, 16% of maternal deaths are due to hypertensive disorders of pregnancies in developed countries. Half of these maternal deaths were preventable (Berg and colleagues 2005)⁴.

The pathophysiology of Gestational Hypertension is not completely understood. Blood pressure is usually elevated in pregnancy due to up regulation of renin-angiotensin-aldosterone system. Whereas in healthy pregnant women this is balanced by a drop in the systemic vascular resistance as well as in cardiac output. In Gestational Hypertension systemic vascular resistance remains low but cardiac output tends to increase. In women destined to develop Gestational hypertension there is abnormal trophoblastic invasion resulting in reduced uteroplacental blood flow. The ensuing placental ischemia and hypoxia leads to aberrant expression of genes which encodes for certain cytokines and vasoactive molecules that contribute to pathophysiology of Gestational Hypertension.

The development of mild gestational hypertension at or near term is associated with minimal maternal and perinatal morbidity and mortality. However if gestational hypertension develops before 34 weeks it may be severe and may progress to preeclampsia resulting in significant maternal and perinatal morbidity and mortality. The rate of progression to preeclampsia depends on gestational age at the time of diagnosis; the rate reaches about 50% if gestational hypertension develops before 30 weeks^{5,6}. Women with diagnosed gestational hypertension require close evaluation of maternal and fetal condition for the duration of pregnancy and those with severe gestational hypertension requires hospital admission. The decision for expectant management depends on fetal gestational age, fetal status and severity of maternal condition at the time of evaluation.

Aims and Objectives

1. To study the incidence of Gestational Hypertension in our hospital.
2. To analyze and evaluate the risk factors and causes of maternal and perinatal outcome in Gestational Hypertension.

II. Methods

The present study is a prospective study carried out on 174 antenatal mothers beyond 20 weeks with Gestational Hypertension admitted to Gandhi hospital , Secunderabad , from September 2009 to September 2011.

Inclusion criteria:

All antenatal mothers meeting the criteria of Gestational Hypertension presenting to antenatal ward, delivery room and high risk unit.

Exclusive criteria

Preexisting renal disease

chronic hypertension

anemia

heart disease

epilepsy

thrombophilias, hemolytic disease

preexisting liver disease such as viral hepatitis.

National Institute of Health (NIH) Working Group on High Blood Pressure for the definitions of Gestational Hypertension⁷.

Gestational Hypertension is defined as Blood Pressure \geq 140/90 mm Hg on two occasions 6 hours apart after 20 weeks of gestation without proteinuria . All the antenatal mothers fulfilling the above criteria were enrolled for the study after taking written informed consent. On admission patients detailed demographic , obstetric ,medical ,personal , past and family history were taken. General examination , systemic , abdominal and pelvic examinations were carried out for all patients. Investigations like complete blood picture , liver function tests, renal function tests ,coagulation profile ,fundoscopy and urine examination were done . Ultrasound with doppler was done. Blood pressure was measured using auscultatory method with a standard callibrated instrument. An appropriate sized cuff was used to ensure accuracy. Koratkoff sound 5 was taken to measure diastolic BP. These. patients were then followed up to study the maternal and perinatal outcome. Magnesium sulphate was the drug of choice to control convulsions. Blood pressure was controlled by either tablet alpha methyl dopa or nifedipine or both. Corticosteroids were given if the gestational age was less than 34 weeks. Obstetric management was done (spontaneous /induced labor) as per unit protocol and patients were delivered either vaginally or by caesarian section .Neonatal care was provided by pediatrician if necessary from delivery onwards . Uncontrolled hypertension was managed by physician. Maternal and perinatal complications were noted down. At the end of study the data was compiled and analyzed.

III. Results

A total number of 11,992 deliveries were conducted at Gandhi Hospital from September 2009 - September 2011.Out of these 174 women had developed Gestational Hypertension. The incidence of Gestational Hypertension during this period was 1.45 %.

Table 1: Distribution of sociodemographic factors (n=174)

Factor	No. of patients	Percentage (%)
Antenatal visits		
Booked	66	37.93
Unbooked	108	62.06
Socio-economic status		
Lower	128	73.56
Upper	46	26.44
Age (years)		
<20	06	3.45
20-25	126	72.41
26-30	36	20.69
31 and above	06	3.45
Parity		
Primi	98	56.32
Multi	76	43.67

In the present study out of 174 cases of Gestational Hypertension 108 cases (62.06 %) were unbooked and 128 (73.56 %) women belonging to low socioeconomic status.72.41 % cases were in the age group Of 20 - 25 years. Primigravida constituted 56.32 % of study population while 43.67 % were multigravida.

Table 2: Gestational age at presentation

Gestational age (weeks)	No of patients	Percentage (%)
33 - 36	28	16.09
>36	146	83.91

83.91 % (146) women developed Gestational Hypertension >36 weeks of gestation whereas 16.09 % (28) presented at 33 -36 weeks.

Table 3: Investigations

RFT (mg/dl)	No Of Patients	LFT	No Of Patients	HEMOGLO BIN (gm/dl)	No Of Patients	PLATELET Count (lacs/mm ³)	No Of Patients
BU >18	39 (22.41 %)	TSB(mg/dl) > 1	18(10.34 %)	> 10	88 (50.57%)	>1.5	154 (88.50 %)
S.Cr > 0.8	73 (41.95 %)	ALT,AST >40 IU/ml	02 (1.14 %)	8 -10	68 (39.08%)	1 - 1.5	18 (10.34 %)
S.Ur > 4.5	92 (52.87%)			6 -8	16 (9.19 %)	0.5 - 1	02 (1.14 %)
				< 6	02 (1.14%)	< 0.5	-

Blood Urea >18mg/dl , Serum Creatinine >0.8mg/dl & serum uric acid >4.5 mg/dl was seen in 22.41 % ,41.95 % and 52.87 % cases of Gestational Hypertension. Liver parameters were deranged in 11.48 % of cases of which 10.34 % cases had Total serum bilirubin >1mg/dl and 1.14 % cases had ALT/AST >40 IU/ml.

Table 4 : Maternal complications

Complications	No. of patients	Percentage (%)
Eclampsia	10	5.74
Imminent eclampsia	02	1.46
Abruption	01	0.57
ARF/Oliguria	03	1.72

10 patients (5.74 %) developed eclampsia. 2 cases had imminent eclampsia and another 3 patients developed ARF/Oliguria . Abruption was seen in 1 case. There was no maternal mortality in our study.

Table 5 : Mode of Delivery

Mode of delivery	No. of patients	Percentage (%)
Spontaneous vaginal delivery	84	48.27
Induced vaginal delivery	26	14.94
Instrumental vaginal delivery	10	5.74
Caesarian section	54	31.03

The mode of delivery in these patients were determined on the basis of fetal condition , gestational age and bishops score . Labor induction was done after assessing the above factors .total number of women who delivered vaginally were 120(68.95 %) of which 84 (48.27 %) women went into spontaneous labor. Induction of labor was done in 26 women (14.95 %)Instrumental delivery either by outlet forceps or vacuum was done in 10 patients. Caesarian section was done in 54 women (31.03 %) .

Table 6 : Causes for Caeserian Section

Cause	No of patients	Percentage (%)
Eclampsia	05	2.87
Imminent eclampsia	02	1.14
Prev. LSCS	13	7.47
Twins	07	4.02
Severe oligo	06	3.44
Failed induction	07	4.02
Fetal distress	08	4.59
IUGR/Doppler changes	06	3.44

The most common cause for caeserian section in our study was previous LSCS which accounted for 7.47 % followed by fetal distress (4.59 %) followed by failed induction (4.02 %) and twins (4.02 %). IUGR and severe oligohydramnios accounted for 3.44 % .

Table 7 : Perinatal Outcome

Cause	No. of babies	Percentage (%)
Normal APGAR	146	83.90
NICU admissions	24	13.79
IUD	04	2.29
NICU deaths	06	3.44

Total perinatal deaths	10	5.74
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Out of 174 deliveries 146 babies had normal APGAR at 1min. and 5 min. There were 4 IUD's in our study. 24 babies were admitted to NICU of which 6 deaths occurred in NICU. There were 10 (5.74 %) cases of perinatal mortality. Prematurity was the most common cause for perinatal mortality.

Table 8 : Causes For NICU Admissions

Cause	NO. of babies
Severe birth asphyxia	03
Preterm (AGA)	19
Meconium aspiration syndrome	02

The most common cause for NICU admissions was prematurity (19) followed by severe birth asphyxia (03).

IV. Discussion

Gestational hypertension is a reversible multiorgan disorder for which delivery is the cure. Gestational Hypertension may be mild or severe depending on the gestational age at presentation . A total of 174 cases of Gestational Hypertension were analyzed in Gandhi hospital ,Secunderabad from September 2009 -September 2011. The incidence of Gestational Hypertension in our study was 1.45 %. In a national cohort of all hospital deliveries in Canada in all provinces except Quebec (2003–2010), the incidence of gestational hypertension was 1.1%.

In the present study 62.06 % cases were unbooked and were referred from peripheral centers and 73.56 % cases belonged to low socioeconomic status. 56.23 % cases who developed Gestational Hypertension were primigravida and 43.6 % were multigravida. 126 cases (72.41 %) were in the age group 20 -25 years ,36 cases (20.69 %) in 26 -30 years , 6 cases each (3.45 %) in age group <20 years and >31 years. Bangal et al⁸ 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%) .

In the present study 146 women (83.91 %) developed Gestational Hypertension >36 weeks and 28 women (16.09 %) at 33 -36 weeks of gestation.

In the present study blood urea , serum creatinine and serum uric acid were abnormally elevated in 21.84% .41.38% &52.87 % respectively. This is comparable to study conducted by Berhe Hailemarium et al⁹ at Namibia from January 2003 to December 2004 where the values of blood urea, .serum creatinine & serum uric acid were 18.14% , 28.60 % and 24.6 % respectively . The liver function s were deranged in 25.64 % of cases .

In the present study 02 out of 174 Gestational Hypertension cases (1.14 %) had platelets 0.5 -1.0 lakhs/mm³. and none had platelets < 0.5 lakhs/mm³. This is comparable with the findings of J.R. Patnaik¹⁰ showing 02/130 patients with Gestational Hypertension (1.53 %) had platelets 0.5 -1.0 lakhs/mm³ and none had platelets < 0.5 lakhs/mm³.

The most common complication of Gestational Hypertension in the present study was eclampsia (10 - 5.74 %). 3 women developed ARF (Acute Renal Failure)/Oliguria requiring dialysis. Imminent eclampsia was seen in 2 women and 1 woman had abruption. Similar studies conducted by Hauth et al¹¹ in 2003 showed abruption in 0.3 % ,eclampsia in 1.2 % women who had Gestational Hypertension. Another study conducted by Haddad & Colleagues¹² showed eclampsia in 0.61 % ,HELLP in 1.2 % & abruption in 0.82 % women who had Gestational Hypertension.

In the present study spontaneous vaginal delivery was 48.27 % ,induced vaginal delivery was 14.94 % and caesarian section was 31.03 % . In a study conducted by P.N Ebeigbe¹³ from 1.3 2000 -28 .5. 2005 induced vaginal delivery was 32.8% and caesarian section was 43% . In another study conducted by Ching Ming Liu¹⁴ in Taiwan at Chang Gunj memorial hospital caesarian section was 26.42 % .This showed that intervention in the form of induction or caesarian section was required to terminate pregnancy to prevent maternal and fetal complications. The most common indication for caesarian section in the present study was previous LSCS (7.42 %) followed by fetal distress (4.59 %) and then failed induction (4.02 %) .

Main factors affecting perinatal mortality and morbidity were prematurity and irregular antenatal visits. Being a tertiary care centre we have an efficient team of neonatologists and neonatal intensive care unit (NICU) back up. The perinatal mortality in our study was 5.74 % i.e.10 cases of which IUD's were 04 (2.29 %),NICU deaths were 06 (3.44 %) & no fresh still births . The most common cause for NICU admissions were pre maturity 19 (10.92 %) , severe birth asphyxia were 03 (1.72 %). . The high incidence of preterm delivery could be attributed to the early intervention and induction of labor or LSCS done to avert further maternal and perinatal complications. The study of Hauth et al¹¹. supports the concept that the risk of adverse outcome is related to the severity of Gestational Hypertension. However, it is unclear whether there is a critical threshold of HTN above which the risk of adverse pregnancy outcome is incurred, or if there is a continuous relation between the severity of HTN and the risk of pregnancy complications. A study conducted by Hauth et al

showed that 7 % of mild Gestational Hypertension women delivered <37 weeks of gestation and only 1 % delivered < 34 weeks of gestation and 7.7 % cases of IUGR. were seen, Study conducted at Imam Reza Hospital , Iran by Tavassoli Fatemeh¹⁵ showed 6.1 % cases of IUGR 3 % cases of NICU admission.

V. Conclusion

Gestational hypertension at or near term is associated with minimal maternal and perinatal morbidity and mortalities. However onset of Gestational hypertension at <34 weeks is associated with significant maternal and perinatal complications. Women with diagnosed Gestational Hypertension remote from term requires close evaluation of maternal and fetal condition for the duration of pregnancy as the chance of progression to preeclampsia and its allied complications is high. Provision of quality antenatal health care services, increasing patient awareness about warning symptoms, investigations, timely delivery have the potential to improve maternal and perinatal outcome. Education and empowerment of women and accessible health care especially to the socioeconomically deprived and rural population is the need of the hour.

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