

**MATERNAL AND PERINATAL OUTCOME OF HYPERTENSIVE DISORDERS IN A TERTIARY CARE CENTRE IN NORTH KERALA**Smitha Sreenivas K<sup>1</sup>, Naseema Beevi A<sup>2</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT: BACKGROUND:** Hypertensive disorder of pregnancy is a major challenge for obstetricians contributing to adverse maternal and perinatal outcome. **AIM:** To assess the maternal demographic characteristics and maternal and perinatal outcome of the different hypertensive disorders of pregnancy including preeclampsia, gestational hypertension and chronic hypertension in a tertiary care hospital so that we can evolve strategies to avoid adverse outcome in our population. **SETTINGS AND DESIGN:** Government Medical College, Kozhikode, Kerala. Descriptive study. **MATERIALS AND METHODS:** We studied 100 cases each of preeclampsia, gestational hypertension and chronic hypertension who were admitted at the Government Medical College, Kozhikode during the study period from January 1, 2013 to April 15 2014. Cases were analyzed for the demographic factors, obstetric outcome and maternal and perinatal outcome. **Statistical analysis:** Data was expressed in percentages. **RESULTS:** Majority of the cases in our study population belonged to the age group of 20 to 34 years. Primipara were more in preeclampsia and gestational hypertension whereas in chronic hypertension 72% were multipara. Only 34% of preeclampsia patients were term gestation. Labor was induced in 60% of Group1, 57% of Group2 and 38% of Group3 patients. 44% of Group 1, 37% of Group 2 and 49% of Group 3 underwent caesarean section. 10% of preeclampsia, 4% of gestational hypertension and 6% of chronic hypertension resulted in still birth. Of the live born babies 43.3% of preeclampsia mothers had asphyxiated babies. In Group 1, only 20% babies had birth weight above 2.5 Kg. 42.2% of Group 1 babies were admitted in neonatal ICU in contrast to only 9.4% of Group 2 and 9.6% of Group 3. In Group1, 14.4% of live born babies died in neonatal period compared to only 1% of Group1 and 3.2% of Group 3. Maternal complications were found more in Group1 with one case of maternal death in Group 3. **CONCLUSIONS:** Women with hypertensive disorders have a high risk of adverse maternal and fetal outcome. It is essential to have quality antenatal care services with good obstetric and neonatal care at delivery for early recognition and management of hypertensive disorders of pregnancy. Preeclampsia either alone or superimposed on chronic hypertension presents the major risk. Formulating guidelines of management of hypertensive disorders will help bring down the associated morbidity and mortality.

**KEYWORDS:** Chronic hypertension, gestational hypertension, pregnancy, preeclampsia.

**INTRODUCTION:** Hypertensive disorders complicate 10% of pregnancies worldwide, constituting one of the greatest causes of maternal and perinatal morbidity and mortality world over. It ranges from preeclampsia/eclampsia, gestational hypertension, chronic hypertension and chronic hypertension with superimposed preeclampsia. Each type has a different pathophysiology and fetomaternal consequences. Preeclampsia either alone or superimposed on chronic hypertension presents the major risk. It is a pregnancy specific hypertensive disease with multisystem involvement. Although regular antenatal care with observation of women for signs of preeclampsia

## ORIGINAL ARTICLE

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and then delivery to terminate the disorder has reduced the extent of poor outcomes, serious maternal and fetal morbidity and mortality still occur. Some of these adverse outcomes are avoidable. A significant proportion of neonatal mortality is related to preterm induced delivery for the maternal sake. Outcome in gestational hypertension is better, although some may have blood pressure elevations to the severe level with outcome similar to preeclampsia. Most women with chronic hypertension have good pregnancy outcome but there is risk of intrauterine growth restriction and fetal demise. The risk of adverse outcome increases with the severity of hypertension and presence of end organ damage. Women with chronic hypertension have an increased risk of preeclampsia of 17 to 25% and they have a poorer prognosis.

**MATERIALS AND METHODS:** We studied 100 cases each of preeclampsia(Group 1), gestational hypertension(Group 2) and chronic hypertension(Group 3) who were admitted at the Government Medical College, Kozhikode during the study period from January 1, 2013 to April 15 2014.Cases were analysed for the demographic factors, obstetric outcome and maternal and perinatal outcome. Data was expressed in percentages.

**RESULTS:** In our study we included 100 cases each of preeclampsia, gestational hypertension and chronic hypertension, based on the National High Blood Pressure Education Program Working Group classification(2000)<sup>1,2</sup>. 20 cases of chronic hypertension were complicated by superimposed preeclampsia. Most of the cases in our study population belonged to the age group of 20 to 34 years, 85% of Group 1, 91% of Group 2 and 85% of Group 3.Regarding maternal age 35 years and above, 13% of Group 3 patients and only 6% of Group1 and 3% of Group 2 belonged to the same age group. In our study in preeclampsia group, 51% were primipara, 45% multipara and only 4% were grand multipara. In gestational hypertension, 64% were primipara, 34% multipara and 2% grandmultipara and in chronic hypertension 72% were multipara and only 24% were primipara. Referred cases included 66% of preeclampsia, 30% of gestational hypertension and 23% of chronic hypertension. When gestational age was taken into consideration, 79% of gestational hypertension and 60% of chronic hypertension were term gestation whereas only 34% of preeclampsia patients were term.44% of Group1, 37% of Group 2 and 49% of Group 3 underwent caesarean section. Labour was induced in 60% of Group1, 57% of Group2 and 38% of Group3 patients.10% of preeclampsia, 4% of gestational hypertension and 6% of chronic hypertension resulted in still birth. Of the live born babies, only 8.3% of Group2 and 14.9% of Group3 had low Apgar score whereas 43.3% of preeclampsia mothers had asphyxiated babies. Majority of Group 2 (68%) and Group 3 (56%) babies had birth weight more than 2.5 kilograms. In Group 1, only 20% babies had birth weight above 2.5 Kg.42.2% of Group 1 babies were admitted in neonatal ICU in contrast to only 9.4% of Group 2 and 9.6% of Group3.In Group1, 14.4% of live born babies died in neonatal period compared to only 1% of Group1 and 3.2% of Group3.

Maternal complications were more in Group1 with 5 cases of eclampsia, 9 cases of HELLP syndrome, 3 cases of eclampsia with HELLP syndrome and 1 case of acute renal failure. In Group 2, there was one case of acute renal failure, 3 cases of antepartum hemorrhage and 1 case of postpartum hemorrhage. There was one maternal death, a case of chronic hypertension with superimposed preeclampsia, which also had HELLP syndrome and acute hepatorenal failure and required mechanical ventilation.

## ORIGINAL ARTICLE

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Of the 20 cases of chronic hypertension with superimposed preeclampsia, 70% were multipara and 60% had preterm birth. 50% had caesarean section and there were 2 cases of still birth. 50% of babies had birth weight less than 2.5Kg with 1 case of NICU admission and no case of neonatal death.

**DISCUSSION:** Majority of the cases in our study population belonged to the age group of 20 to 34 years, 85% of Group 1, 91% of Group 2 and 85% of Group 3 similar to the study by Fatemeh T where the mean maternal age was  $22.4 \pm 4.62^1$ , and the study by Wolde Z where 83% belonged to age group of 25 to 34 years<sup>2</sup> and study by Familoni OB where the mean age was 27.3 years<sup>3</sup>. 13% of Group 3 patients were 35 years and above whereas only 6% of Group 1 and 3% of Group 2 belonged to the same age group. In preeclampsia group, 51% were primipara and in gestational hypertension, 64% were primipara as seen in study by Wolde Z where primigravida constituted most of the patients with gestational hypertension and preeclampsia. In study by Ebeigbe PN, about two fifth of the patients were nullipara<sup>4</sup>. In chronic hypertension majority (72%) were multipara similar to study by Prakash J<sup>5</sup>. Chronic hypertension tends to be more common in older age group and hence more in multipara. Referred cases contributed to 66% of preeclampsia, 30% of gestational hypertension and 23% of chronic hypertension, which indicated the higher incidence of referral to our tertiary centre in preeclampsia cases. In study by Mbachu majority of the women were unbooked (57.2%). 79% of gestational hypertension and 60% of chronic hypertension were term gestation. The gestational age was significantly lower in preeclampsia patients, due to higher need for labour inductions even before term. In study by Riaz S, 53% were term pregnancies<sup>6</sup>. 44% of Group 1, 37% of Group 2 and 49% of Group 3 underwent caesarean section, suggesting an earlier decision for operative delivery in high risk cases of hypertension in pregnancy. This was similar to the study by Fatemeh T where 42.1% in mild preeclampsia and 47.1% in severe preeclampsia underwent caesarean section<sup>1</sup>. Caesarean section was the mode of delivery in 58.7% of cases in study by Ebeigbe PN. Labor was induced in 60% of Group 1, 57% of Group 2 and 38% of Group 3 patients. Labour was induced in 52.2% of early onset hypertension and 32.5% of late onset hypertension in study by Ebeigbe PN. 10% of preeclampsia, 4% of gestational hypertension and 6% of chronic hypertension resulted in still birth. In study by Mbachu II, still birth rate was 17.4%<sup>7</sup>. Of the live born babies, only 8.3% of Group 2 and 14.9% of Group 3 had low Apgar score whereas 43.3% of preeclampsia mothers had asphyxiated babies, probably related to more cases of preterm babies. Majority of Group 2 (68%) and Group 3 (56%) babies had birth weight more than 2.5 kilograms. In Group 1, only 20% babies had birth weight above 2.5 Kg may be related to more preterm and growth restricted babies similar to study by Robert CL<sup>8</sup>. Low birth weight was seen in 66.66% (48) of births in study by Prakash J. Probably due to more preterm babies, 42.2% of Group 1 babies were admitted in neonatal ICU in contrast to only 9.4% of Group 2 and 9.6% of Group 3. In the study by Fatemeh T, there was need for NICU admission in 15.8% in mild preeclampsia and 17.6% in severe preeclampsia<sup>1</sup>. In Group 1, 14.4% of live born babies died in neonatal period compared to only 1% of Group 1 and 3.2% of Group 3. Perinatal mortality rate in preeclampsia was 23%, 5% in gestational hypertension and 6% in chronic hypertension. In the study by Mbachu where preeclampsia was the most common type of hypertensive disorder, the perinatal mortality rate was 20.9%<sup>7</sup> similar to our study. Perinatal death occurred in 37.5% (27) of deliveries in study by Prakash J. Maternal complications were more in Group 1 with 5 cases of eclampsia, 9 cases of HELLP syndrome, 3 cases of eclampsia with HELLP

## ORIGINAL ARTICLE

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syndrome and 1 case of Acute renal failure. In Group 2, there was one case of acute renal failure, 3 cases of antepartum hemorrhage and 1 case of postpartum hemorrhage. In Group 3, there was one case of maternal death which had HELLP syndrome and acute hepatorenal failure and required mechanical ventilation. In study by Buga GA maternal complications of hypertension included, pulmonary oedema (3.9%), abruptio placentae (1.7%), HELLP syndrome (1.2%), maternal death (1.0%), acute renal failure (0.9%), coma with cerebral pathology (0.5%), and DIC (0.5%)<sup>9</sup>. Women with preeclampsia had higher risk of maternal morbidity and had adverse perinatal consequences as compared to the women with gestational hypertension or chronic hypertension in this study.

**CONCLUSION:** Hypertensive disorder of pregnancy is a major challenge to obstetricians contributing to adverse maternal and perinatal outcome. Preeclampsia had poorer outcome when compared to gestational hypertension and chronic hypertension pregnancies. This study supports the importance of increased antenatal surveillance for women with hypertension to enable early identification of evolving complications and referral to well-equipped hospitals for further management.

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## ORIGINAL ARTICLE

		Preeclampsia		Gestational hypertension		Chronic hypertension	
		No	%	No	%	No	%
Age in years	<20	9	9	6	6	2	2
	20-34	85	85	91	91	85	85
	≥ 35	6	6	3	3	13	13
Parity	Primipara	51	51	64	64	24	24
	Multipara	45	45	34	34	72	72
	Grandmultipara	4	4	2	2	4	4
Booking status	Booked	34	34	70	70	77	77
	Referred	66	66	30	30	23	23

**Table 1: Demographic characteristics**

		Preeclampsia		Gestational hypertension		Chronic hypertension	
		No	%	No	%	No	%
Gestational age in weeks	<30	8	8	0	0	2	2
	30-36	58	58	21	21	38	38
	≥ 37	34	34	79	79	60	60

**Table 2: Gestational age at delivery**

		Preeclampsia		Gestational hypertension		Chronic hypertension	
		No	%	No	%	No	%
Onset of labour	Spontaneous	7	7	17	17	18	18
	Induced	60	60	57	57	38	38
	Caesarean section	33	33	26	26	44	44
Mode of delivery	Spontaneous vaginal	55	55	61	61	50	50
	Instrumental	1	1	2	2	1	1
	Caesarean section	44	44	37	37	49	49

**Table 3: Obstetric outcome**

## ORIGINAL ARTICLE

		Preeclampsia		Gestational hypertension		Chronic hypertension	
		No	%	No	%	No	%
Still birth		10	10	4	4	6	6
Apgar at I minute	<5	39	43.3	8	8.3	14	14.9
	>5	51	56.7	88	91.7	80	85.1
Birth weight in kg	<1.5	32	32	4	4	13	13
	1.5-2.5	48	48	28	28	31	31
	>2.5	20	20	68	68	56	56
NICU admissions		38	42.2	9	9.4	9	9.6
Neonatal death		13	14.4	1	1	3	3.2

**Table 4: Perinatal outcome**

Maternal complications	Preeclampsia	Gestational hypertension	Chronic hypertension
Eclampsia	5		
HELLP syndrome	9		
Eclampsia +HELLP	3		
HELLP +Acute renal failure	1		
Acute Renal Failure		1	
Hepatorenal failure	1		
Antepartum hemorrhage		3	
Postpartum hemorrhage		1	1
Hepato renal failure +Mechanical ventilation			1

**Table 5: Maternal outcome**

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