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Anti Hypertensive Therapy in Hypertensive Disorders of Pregnancy: Lower Threshold Versus Conventional Level Therapy

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ABSTRACT

Worldwide, up to 10% of pregnancies are complicated by hypertensive problems during pregnancy 1. At 50,000-60,000 fatalities annually, it is one of the main causes of maternal and neonatal mortality and morbidity. To reduce maternal and fetal morbidity and mortality due to complications of Hypertensive disorder of pregnancy. To study the effect of HDP in mother and fetus. To study the effect of early medical intervention in the form of lower threshold Anti-hypertensive therapy in hypertensive disorders of pregnancy patients and to compare the feto-maternal outcome of lower threshold AHT with the conventional BP level AHT at BP 150/100 mm Hg. The present study was a Prospective Comparative Observational study. This Study was conducted from February 2020 to July 2021 (18 months) at Department of Obstetrics and Gynaecology of Chittaranjan Seva Sadan College of Obstetrics, Gynaecology and Child Health, Kolkata. The two groups for starting AHT were. Study group A : 100 (with BP > = 140/90 and <150/100). Study group B : 100 (with BP> = 150/100. In our study, level of AST (40.0%) was greater in Group-B than in Group-A. (28.0%) but it wasnot significant (Z = 1.79, p = 0.073) and also proportion of deranged level of ALT (40.0%) was greater in Group-B than in Group-A (29.3%) yet, it was insignificant. (Z = 1.63, p = 0.10). Percentage of maternal outcomes that are not linked to the start of AHT at lower threshold blood pressure, such as eclampsia, disruption, HELLP syndrome and pulmonary oedema. Although Group-B proportion of SNCU admission (18.0%) was higher than Group-A (9.0%), the difference was not statistically significant. (Z = 1.86, p = 0.06). Proportion of APGAR score <7 (18.0%) was greater in Group-B than in Group-A (9.0%) yet, it was insignificant. (Z = 1.86, p = 0.06) In our study the risk of APGAR Score in 5 min being <7 in group B was 1.4 times more than group A (RR-1.40 (1.03,1.91) p = 0.06). The mean birth weight of neonates of Group-A was significantly higher than that of Group-B (t198 = 2.45, p = 0.015). Proportion of LBW (42.0%) was greater in Group-B than in Group-A (24.0%) it is significant (Z = 2.70; p = 0.006). Proportion of IUGR (31.0%) in Group-B was higher than that of Group-A (18.0%) it is significant (Z = 2.13, p = 0.032). There appears to be a lower risk of abnormal LFT, a depressed APGAR score, and SNCU admission in terms of prevention of the progression of severe hypertension, development of IUGR and low birth weight babies, derangement of kidney function and thrombocytopenia. Additionally, starting anti-hypertensive therapy at a lower threshold blood pressure is beneficial. All of these factors include tight blood pressure control in HDP.

INTRODUCTION

Up to 10% of pregnancies globally are complicated by hypertensive problems during pregnancy[1]. It is thought to be the primary cause of perinatal and maternal mortality as well as morbidity, accounting for 50,000-60,000 fatalities annually[1-4]. In India and around the world, hypertensive disorders are a serious health concern for women and infants. Significant dangers arise from either preeclampsia alone or in conjunction with persistent hypertension. While the extent of poor outcomes has decreased, appropriate prenatal care, assessment of significant preeclampsia indicators and eventual delivery to end the illness all remain important.

There is still a significant rate of maternal and fetal illness and death. While there are some preventable negative consequences, there are instances when the prognosis is dire. Preeclampsia is linked to some issues that neonates encounter, while premature birth resulting from an early abortion performed for the mother's sake is linked to certain cases of prematurity. Pregnancy-related hypertension problems and its consequences are among the leading causes of maternal death and morbidity worldwide. Conventionally, Anti-hypertensive therapy (AHT) is started at a BP level of 150/100 mm Hg; however, there is a recent recommendation for starting AHT at a lower level of 140/90 mm Hg. There are very few studies in the literature comparing this anti-hypertensive therapy at a lower level [140/90mmHg] and its effect on the feto-maternal outcome. Therefore, the goal of this study is to determine whether such lower threshold anti-hypertensive medication is safe and effective for hypertensive pregnant women.

Pregnancy-related hypertension is the primary cause of IUGR, preterm birth and a risk factor for the mother's subsequent metabolic and cardiovascular illnesses. After the diagnosis of preeclampsia is made, the best course of therapy entails monitoring the patient's vital signs closely, implementing the right intervention and delivering the baby at the best possible time for both the mother and the fetus. The most recent clinical data is now available to help determine this timing. Fetal development restriction and maternal morbidity in the form of elevated blood pressure are linked to chronic hypertension. But still There was a significant increase in both maternal and fetal morbidity when persistent hypertension was added[5].

A physiological phenomena is pregnancy. Some, though, experience issues as they mature, endangering the fetus as well as the mother. All women want to a successful pregnancy, which results in a healthy child and mother. Regretfully, some women have dreaded difficulties during pregnancy that could have a negative impact on the outcome. Pregnancy-related hypertension is one of the mother diseases that has the greatest negative impact on both the mother and the fetus.

At Kolkata's Chittaranjan Seva Sadan College of Obstetrics and Gynecology, a prospective comparative study will determine the effectiveness and feto-maternal outcome of lower threshold anti-hypertensive therapy in hypertensive disorders of pregnancy (HDP) when compared to conventional level anti-hypertensive therapy. Our hospital sees about 11,000 deliveries a year, with a 6-8% incidence of hypertensive problems during pregnancy. In addition, there are sporadic instances of maternal and newborn mortality and a high risk of NICU admission due to prematurity, intrauterine growth restriction and other causes.

MATERIAL AND METHODS

Type of study: Prospective Comparative Observational study.

Sample size: Study group A 100 [with BP >=140/90 and <150/100] Study group B 100 [with BP>=150/100].

Period of study: February 2020 to July 2021 [18 months].

Place of study: Chittaranjan Seva Sadan College of Obstetrics, Gynaecology and Child Health, Kolkata.

Inclusion criteria: Singleton pregnancy after 20wk of pregnancy with HDP.

Exclusion criteria:

- Pre-existing renal disease,
- Pre-existing liver disease,
- Medication causing liver damage,
- Pre-existing hypertension,
- Gestational diabetes mellius,
- Active urinary tract infections
- Multiple Pregnancy,
- Eclampsia

Methodology: Over the course of 18 months, the study was conducted in pregnant women with hypertensive disorders of pregnancy of >20 weeks with Study group A with blood pressure >=140/90 150/100 and Study group B with blood pressure>=150/100 in Chittaranjan Seva Sadan. A thorough history was taken and examination has been conducted. Investigations such as a liver function test, a renal function test, a complete blood count, and a urine protein creatinine ratio have been carried out. Obstetric treatment was carried out according to departmental protocol. Anti-hypertensive treatment was started in two study groups [the first line anti-hypertensive was Labetalol,

and the second line drug was Nifedipine], and they were followed up on by routine antenatal checkups and sending investigations (blood investigations+ ultrasonography) to detect end-organ damage in the mother and for foetal surveillance up to 5 days after delivery. Statistical analysis was used to compare the results.

RESULTS

The primary goal of this prospective comparative study at Kolkata's Chittaranjan Seva Sadan College of Obstetrics and Gynecology and Child Health was to determine the effectiveness and feto-maternal outcome of lower threshold anti-hypertensive therapy (HDP) in comparison to conventional level anti-hypertensive therapy. So long, Anti-hypertensive therapy used to be started at blood pressure 150/100 mmHg in HDP. In this study anti-hypertensive therapy was started at a lower threshold of 140/90 mmHg instead of 150/100 mmhg as per the guidelines issued by NICE in June 2019.

Out of the 200 patients attended this hospital seed randomly attended at OPD of the mentioned place of study 100 (50.0%) patients were treated with lower threshold anti-hypertensive therapy (Group-A) and rest 100 (50.0%) were treated with conventional level anti-hypertensive therapy (Group-B). 200 were randomized and split into two groups. Thus the patients of the two groups were in the ratio 1:1. t-test showed that The patient's mean gestational age did not significantly differ between the two groups. (t198 = 1.17, p = 0.08). As a result, the patient's gestational ages were similar between the two groups.

Proportion of deranged level of AST (40.0%) in Group-B was higher than that of Group-A (28.0%) but it was not significant (Z = 1.79, p = 0.073). The risk of deranged level of AST was 1.29 times more among the mothers of Group-B as compared to the mothers of Group-A but the risk was not significant (RR-1.29 (0.98, 1.70) p = 0.07). Proportion of deranged level of ALT (40.0%) in Group-B was higher than that of Group-A (29.3%) but it was not significant (Z = 1.63, p = 0.10). The risk of deranged level of ALT was 1.25 times more among the mothers of Group-B as compared to the mothers of Group-A but the risk was not significant [RR-1.25 (0.95, 1.65) p = 0.11].

Proportion of deranged level of platelet count (10.0%) in Group-B was significantly higher than that of Group-A (2.0%) (Z = 2.38, p = 0.017). The risk of deranged level of platelet count was 1.74 times more among the mothers of Group-B as compared to the mothers of Group-A and the risk was significant [RR-1.74 (1.29, 2.33) p = 0.017]. Proportion of deranged level of hemoglobin (50.0%) in Group-B was higher than that of Group-A (49.0%) but it was not significant (Z = 0.14, p = 0.88). The risk of deranged level of hemoglobin was 1.02 times more among the mothers of Group-B as compared to the mothers of Group-A but the risk was not significant [RR-1.02 (0.77, 1.34) p = 0.88]. Proportion of deranged level of urea (23.0%) in Group-B was higher than that of Group-A (15.0%) but it was not significant (Z = 1.44, p = 0.14). The risk of deranged level of urea was 1.02 times more among the mothers of Group-B as compared to the mothers of Group-A but the risk was not significant [RR-1.02 (0.77, 1.34), p = 0.14].

Proportion of deranged level of creatinine (16.0%) in Group-B was significantly higher than that of Group-A (1.0%) (Z = 3.80, p<0.001). The risk of deranged level of creatinine was 2.05 times more among the mothers of Group-B as compared to the mothers of Group-A and the risk was significant [RR-2.05(1.68, 2.49) p<0.001]. Proportion of deranged level of urine dip stick (42.0%) in Group-B was higher than that of Group-A (33.0%) but it was not significant (Z = 1.31, p = 0.19). The risk of deranged level of urine dip stick was 1.20 times more among the mothers of Group-B as compared to the mothers of Group-A but the risk was not significant [RR-1.20 (0.91, 1.58) p = 0.18].

Proportion of LSCS as mode of termination (38.0%) in Group-A was higher than that of Group-B (30.0%) but it was not significant (Z = 1.19, p = 0.23). Proportion of pre-term (22.0%) in Group-B was higher than that of Group-A (15.0%) but it was not significant (Z = 1.27, p = 0.20). The risk of Pre-term was 1.24 times more among the mothers of Group-B as compared to the mothers of Group-A but the risk was not significant [RR-1.24 (0.91, 1.69) p = 0.21].The risk of preterm reduced 0.77 times with early initiation of anti-hypertensive therapy [RR-0.77(0.51,1.17) p = 0.20] Chi-square ( ) test showed that there was significant association between severe hypertension and the patients of the two groups (p<0.001).Proportion of severe hypertension (35.0%) in Group-B was significantly higher than that of Group-A (6.0%)(Z = 5.07, p<0.001).

Proportion of eclampsia (2.0%) in Group-B was higher than that of Group-A (1.0%) but it was not significant (Z = 0.58, p = 0.56). Since one of the cell frequencies was zero Chi-square (?2) test could not be applied. Fisher Exact test showed that there was no significant difference between proportion of HELLP syndrome among the patients of the two groups (p<0.50). Proportion of abruption (2.0%) in Group-B was higher than that of Group-A (1.0%) but it was not significant (Z = 0.58, p = 0.56). Since one of the cell frequencies was zero Chi-square (?2) test could not be applied. Fisher Exact test showed that there was no significant difference between proportion of pulmonary edema among the patients of the two groups (p = 0.50). Since one of the cell frequencies was zero Chi-square (?2) test could not be applied. Fisher Exact test showed that there was no significant

Table 1: Level of AST, Level of ALT, Level of platelet count, Level of hemoglobin, Level of urea, Level of creatinine and the patients of the two groups

		Group-A (n = 100)	Group-B (n = 100)	Total
Level of AST	Deranged Row % Col %	28, 41.2, 28.0	40, 58.8, 40.0	68, 100.0, 34.0
	Normal Row % Col %	72, 54.5, 72.0	60, 45.5, 60.0	132, 100.0, 66.0
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
Level of ALT	Deranged Row % Col %	29, 42.0, 29.3	40, 58.0, 40.0	69, 100.0, 34.7
	Normal Row % Col %	70, 53.8, 70.7	60, 46.2, 60.0	130, 100.0, 65.3
	Total Row % Col %	99, 49.7, 100.0	100, 50.3, 100.0	199, 100.0, 100.0
Level of platelet count	Deranged Row % Col %	2, 16.7, 2.0	10, 83.3, 10.0	12, 100.0, 6.0
	Normal Row % Col %	98, 52.1, 98.0	90, 47.9, 90.0	188, 100.0, 94.0
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
Level of hemoglobin	Deranged Row % Col %	49, 49.5, 49.0	50, 50.5, 50.0	99, 100.0, 49.5
	Normal Row % Col %	51, 50.5, 51.0	50, 49.5, 50.0	101, 100.0, 50.5
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
Level of urea	Deranged Row % Col %	15, 39.5, 15.0	23, 60.5, 23.0	38, 100.0, 19.0
	Normal Row % Col %	85, 52.5, 85.0	77, 47.5, 77.0	162, 100.0, 81.0
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
Level of creatinine	Deranged Row % Col %	1, 5.9, 1.0	16, 94.1, 16.0	17, 100.0, 8.5
	Normal Row % Col %	99, 54.1, 99.0	84, 45.9, 84.0	183, 100.0, 91.5
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0

Table 2: Urine dipstick, Mode of termination, Pre-term, Severe hypertension, Eclampsia, HELLP Syndrome, Abruption, Pulmonary edema, Maternal death and the patients of the two groups

		Group-A (n = 100)	Group-B (n = 100)	Total
Urine dipstick	Deranged Row % Col %	33, 44.0, 33.0	42, 56.0, 42.0	75, 100.0, 37.5
	Normal Row % Col %	67, 53.6, 67.0	58, 46.4, 58.0	125, 100.0, 62.5
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
Mode of termination	VD Row % Col %	62, 47.0, 62.0	70, 53.0, 70.0	132, 100.0, 66.0
	LSCS Row % Col %	38, 55.9, 38.0	30, 44.1, 30.0	68, 100.0, 34.0
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
Pre-termq	Yes Row % Col %	15, 40.5, 15.0	22, 59.5, 22.0	37, 100.0, 18.5
	No Row % Col %	85, 52.1, 85.0	78, 47.9, 78.0	163, 100.0, 81.5
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
Severe hypertension	Yes Row % Col %	6, 14.6, 6.0	35, 85.4, 35.0	41, 100.0, 20.5
	No Row % Col %	94, 59.1, 94.0	65, 40.9, 65.0	159, 100.0, 79.5
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
Eclampsia	Yes Row % Col %	1, 33.3, 1.0	2, 66.7, 2.0	3, 100.0, 1.5
	No Row % Col %	99, 50.3, 99.0	98, 49.7, 98.0	197, 100.0, 98.5
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
HELLP syndrome	Yes	0	1	1
	No	100	99	199
Abruption	Yes Row % Col %	1, 33.3, 1.0	2, 66.7, 2.0	3, 100.0, 1.5
	No Row % Col %	99, 50.3, 99.0	98, 49.7, 98.0	197, 100.0, 98.5
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
Pulmonary edema	Yes Row % Col %	1, 100.0, 1.0	0, 0.0, 0.0	1, 100.0, 0.5
	No Row % Col %	99, 49.7, 99.0	100, 50.3, 100.0	199, 100.0, 99.5
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 00.0
Maternal death	Yes Row % Col %	1, 100.0, 1.0	0, 0.0, 0.0	1, 100.0, 0.5
	No Row % Col %	99, 49.7, 99.0	100, 50.3, 100.0	199, 100.0, 99.5
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0

Table-3: IUFD, SNCU admission, APGAR SCORE and the patients of the two groups

		Group-A (n = 100)	Group-B (n = 100)	Total
IUFD	Yes Row % Col %	5, 50.0, 5.0	5, 50.0, 5.0	10, 100.0, 5.0
	No Row % Col %	95, 50.0, 95.0	95, 50.0, 95.0	190, 100.0, 95.0
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
SNCU admission	Yes Row % Col %	9, 33.3, 9.0	18, 66.7, 18.0	27, 100.0, 13.5
	No Row % Col %	91, 52.6, 91.0	82, 47.4, 82.0	173, 100.0, 86.5
	Total Row % Col %	100, 50.0, 100.0	100, 50.0, 100.0	200, 100.0, 100.0
APGAR score	<7	9	18	27
	>=7	91	82	173

difference between proportion of maternal death among the patients of the two groups (p = 0.50). Proportion of IUFD were equal (5.0%) among the patients in the two groups (Z = 0.01, p = 0.99). Proportion of SNCU admission (18.0%) in Group-B was higher than that of Group-A (9.0%) but it was not significant (Z = 1.86, p = 0.06). Proportion of APGAR score <7 is (18.0%) in Group-B was higher than that of Group-A (9.0%) but it was not significant (Z = 1.86, p = 0.06). Risk of APGAR Score in 5 min being <7 in group B is 1.4 times more than group A[RR-1.40(1.03,1.91) p = 0.06]

DISCUSSION

The primary goal of this prospective comparative study at Chittaranjan Seva Sadan College of Obstetrics and Gynecology and Child Health in Kolkata was to determine the effectiveness and feto-maternal outcomes of lower threshold anti-hypertensive therapy in hypertensive disorders of pregnancy (HDP) when compared to conventional level anti-hypertensive therapy. Anti-hypertensive therapy used to be started at blood pressure 150/100 mmHg in HDP in earlier days. In this study anti-hypertensive therapy was started at a lower threshold of 140/90 mmHg in the

study group instead of 150/100mmhg as per the guidelines issued by NICE in June 2019[6]. Out of the 200 patients who attended this hospital seed randomly attended at OPD of the mentioned place of study 100 (50.0%) patients were treated with lower threshold anti-hypertensive therapy (Test group: Group-A) and rest 100 (Control Group: Group B: 50.0%) were treated with conventional level anti-hypertensive therapy. Two groups were randomly selected from among the 200. Consequently, the two group's patients were in the ratio 1:1. Demonstrated that both groups have a similar age range, with the median age being 26 years. The two group's mean ages did not differ significantly, according to a t-test. (t198 = 0.63, p = 0.53). The patient's ages in the two groups were therefore matched.

The parity of the patients in the two groups was comparable, according to Table 3. With a p value of 0.14, the Chi-square (?) test revealed that there was no significant association between parity and the patients of the two groups. In our study, 54% are primigravida (60% in group A and 40% in group B), which is similar to Riaz *et al*[7] study, which found that 60% were primigravida. With regard to the gestational period, the patients in the two groups were similar. The t-test revealed that there was no discernible difference between the two group's mean gestational ages for the patients. (t198 = 1.17, p = 0.08). In our study level of AST (40.0%) was greater in Group-B than in Group-A. (28.0%) yet, it was insignificant. (Z = 1.79, p = 0.073) and also proportion of deranged level of ALT (40.0%) in Group-B was higher than that of Group-A (29.3%) (Z = 1.63, p = 0.10). The risk of deranged level of AST was 1.29 times more among the mothers of Group-B as compared to the mothers of Group-A but the risk was not significant [RR-1.29 (0.98, 1.70) p = 0.07]. The risk of deranged level of ALT was 1.25 times more among the mothers of Group-B as compared to the mothers of Group-A which are similar to lo other studies. Girling *et al*[8] found that The pre-eclampsia group had a considerably greater rate of increased liver function tests (54%), Sudha Patil *et al*[9], Bibi Munazza *et al*[10] further showed an increase in liver enzymes in preeclampsia. The mechanism underlying elevated liver enzymes is caused by the liver's hyper-vascularization and vaso-constriction, which damages hepatocytes and causes cell injury and changes in membrane permeability.

The proportion of disordered platelet count (10.0%) was significantly greater in Group-B than it was in Group-A. (2.0%) (Z = 2.38 p = 0.017). In our study, the risk of an abnormal platelet count was 1.74 times higher among the mothers of Group-B than among the mothers of Group-A and the risk was significant [RR-1.74 (1.29, 2.33) p = 0.017]. The platelet counts of patients in groups A and B are almost identical to those found in Hazari *et al*[11]. According to McCrae *et al*[12], Up to 50% of women with preeclampsia experience thrombocytopenia, a percentage that is much higher than our findings. Pregnancy-related anemia is a serious public health issue, particularly in underdeveloped nations. It affects 41.8% of pregnant women globally, with the highest prevalence in India. In the current study, 50% patients were anaemic in group B and 49% in group A, which is similar to the study done by Ali *et al*[13] As per Table 10 ,Chi-square () test showed that there was no significant association between level of hemoglobin and the patients of the two groups (p = 0.88). Proportion of deranged level of creatinine (16.0%) was noticeably greater in Group-B than in Group-A. (1.0%) (Z = 3.80, p<0.001).

In our study spontaneous vaginal delivery was more common in the less-tight-control group (group B) which is similar to study done by Magee *et al*[14]. There is no significant difference in proportion of pre-term birth in both the group (22.0%) in Group B and (15.0%) in Group-A which is similar to the finding in the study of Abalos *et al*[15]. The risk of Pre-term was 1.24 times more among the mothers of Group-B as compared to the mothers of Group-A, The risk of preterm reduced by 0.77 times with early initiation of anti-hpertensive therapy [RR-0.77(0.51,1.17), P = 0.20]which is similar to study done by Ogura *et al*[16], there was no significant difference in preterm birth with antihypertensive therapy. (RR 0.86, 95% CI 0.53-1.39), But a systematic review by Fitton *et al*[17] and a cohort study by Fitton *et al*[18] found that there is increased risk of preterm birth in exposure to anti-hypertensive medication, In our study more patients from less-tight control group (group B) developed severe hypertension. As per Table 16 proportion of severe hypertension (35.0%) was noticeably greater in Group-B than in Group-A. (6.0%) (Z = 5.07, p<0.001) which is similar to other studies. In a study done by Magee *et al*[14] proportion of severe hypertension developed in 40.6% of the women in the less tight control group and 27.5% of the women in the tight control group (p<0.001). Study done by Guindy *et al*[19] found that relative risk of development of severe hypertension in less-tight control group is 3.17.

Thrombocytopenia is well recognized when preeclampsia is complicated by the haemolysis, elevated liver tests, low platelet count (HELLP) syndrome. In our study proportion of patient developed HELLP syndrome was 0.5%(only one case in group B) In our study group proporion of eclampsia was 1.5% (1% in group A 2% in group B), Abruption was 1.5% (1% in group A, 2% in group B),only one case in group A developed Pulmoary edema. There was no significant association of maternal complications like Eclampsia, HELLP syndrome, Abruption, Pulmonary

oedema, Maternal death with treatment of hypertension which is similar to the study done by Ogura *et al*[16]. In our study proportion of IUFD and still birth were equal (5.0%) among the patients in the two groups (Z = 0.01, p = 0.99) and there was no significant association between SNCU admission of both the group (18% in group A 9% in group B) which is similar to findings in CHIPS trial.

The Apgar score at 5 min is considered a better predictor of neonatal long-term outcome 96,97. In our study the risk of depressed APGAR Score(<7) in 5 min in group B was 1.4times more than group A[RR-1.40(1.03,1.91), p = 0.06]. The proportion of depressed APGAR score in group B (18%), group A (9%). Total case of depressed APGAR score was 13.5% which is similar to the study done by Mengistu *et al*[20] where 16.7% of neonates born to mothers with hypertensive disorders had depressed APGAR score at 5 min. The mean birth weight of neonates of Group-A was significantly higher than that of Group-B (t198 = 2.45, p = 0.015). As per Table 26 proportion of LBW (42.0%) was greater in Group-B than in Group-A. (24.0%) it is significant (Z = 2.70, p = 0.006). In our study there was 24.5% of total IUGR babies' .As per Table 27 Proportion of IUGR (31.0%) was noticeably greater in Group-B than in Group-A. (18.0%) (Z = 2.13, p = 0.032) but this is different than the finding of CHIPS trial, There was no discernible correlation between the two groups, with 17.9% of newborns overall being IUGR, 19.8% of babies in the tight control group and 16.1% of babies in the less strict control group.

CONCLUSION

In terms of prevention of progression to severe hypertension, development of IUGR and low birth weight babies, derangement of kidney function and thrombocytopenia, starting anti-hypertensive therapy at a lower threshold BP is beneficial. With tight blood pressure control in HDP, there seems to be a lower risk of abnormal LFT, depressed APGAR score and SNCU admission. One case of maternal death due to pulmonary edema was noted in group A. (Elaborate analysis on level of BP, investigation results, therapy etc in this particular case show that lower threshold anti-hypertensive was not directly responsible for death). But there is little or no effect on Eclampsia, HELLP syndrome, pulmonary oedema, placental abruption, maternal mortality, Pre-term birth with lower threshold Anti-hypertensive therapy.

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