

## LABETALOL VERSUS NIFEDIPINE IN MANAGEMENT OF HYPERTENSIVE DISORDERS OF PREGNANCY

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### Abstract

**Background:** To compare labetalol and nifedipine in management of hypertensive disorders of pregnancy. **Materials and Methods:** One hundred twenty pregnant women with hypertension were divided into two groups of 60 each. Group I received labetalol started at an initial dose of 100 mg twice daily and group II received nifedipine started with an initial dose of 10 mg BD. Patients were monitored daily for blood pressure and fetal well-being. **Result:** Gravida 1 was seen in 30 in group I and 34 group II, gravida 2 seen in 18 in group I and 16 in group II and gravid 3 in 12 in group I and 10 in group II. The mean time required to control blood pressure was 29.4 hours in group I and 33.5 hours in group II and sustained blood pressure control for 3 days was 54.2% in group I and 39.1% in group II. The difference was significant ( $P < 0.05$ ). The mean SBP before treatment was 154.4 mm Hg in group I and 153.4 mm Hg in group II and after treatment was 127.8 mm Hg in group I and 139.2 mm Hg in group II respectively. DBP before treatment was 105.2 mm Hg in group I and 107.4 mm Hg in group II and after treatment was 91.5 mm Hg in group I and 100.2 mm Hg in group II. MAP before treatment was 121.2 mm Hg in group I and 123.6 mm Hg in group I and after treatment was 102.5 mm Hg in group I and 113.8 mm Hg in group II respectively. The difference was non-significant ( $P > 0.05$ ). **Conclusion:** Labetalol found to be better antihypertensive than Nifedipine in terms of control of hypertension and fetal outcome.

## INTRODUCTION

Hypertensive disorder of pregnancy complicates about 5-10% of all pregnancies leading to maternal morbidity and mortality.<sup>[1]</sup> The prevalence of chronic hypertension in pregnancy is estimated at 3%. It comprises of preeclampsia, eclampsia, gestational hypertension, chronic hypertensive and preeclampsia superimposed on chronic hypertensive. Among them preeclampsia and eclampsia are the major causes of maternal and perinatal morbidity and mortality.<sup>[2]</sup>

Hypertension in pregnancy is associated with adverse effects for the mother and baby, including fetal growth restriction, preterm delivery, and maternal, fetal, and neonatal morbidity and mortality. Tight control to a diastolic target of 85 mm Hg did not increase the risk of pregnancy loss or high-level neonatal care in women with non-severe chronic and gestational hypertension, no proteinuria, and a singleton pregnancy.<sup>[3]</sup>

Beta-blockers, especially labetalol, compare favorably with other antihypertensives for use during pregnancy.<sup>[4]</sup> Both Nifedipine & labetalol have demonstrated comparable efficacy & a lower risk of overshoot hypotension & fetal distress when compared with hydralazine in randomized controlled trials.<sup>[5]</sup> It has been expressed that antihypertensive treatment in pregnancy with labetalol may can possibly hinder fetal conduct in lower degree hypertensive malady of pregnancy when contrasted with Nifedipine.<sup>[6]</sup> Considering this, we performed present study to compare labetalol and nifedipine in management of hypertensive disorders of pregnancy.

## MATERIALS AND METHODS

A sum total of one hundred twenty pregnant women with hypertension were selected for the study. The criteria were women whose two blood pressure recordings are  $\geq 140/90$  mm Hg more than 6 hours apart. The consent was obtained from all enrolled

patients after obtaining ethical clearance from institutional ethical committee.

Demographic characteristic was recorded. Patients were divided into two groups of 60 each. Group I received labetalol started at an initial dose of 100 mg twice daily and maximum dose of 200 mg thrice daily and group II received nifedipine started with an initial dose of 10 mg BD and the dose was increased up to 20 mg. Patients were monitored daily for blood pressure and fetal well-being. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

## RESULTS

Gravida 1 was seen in 30 in group I and 34 group II, gravida 2 seen in 18 in group I and 16 in group II and gravida 3 in 12 in group I and 10 in group II. The mean time required to control blood pressure was 29.4 hours in group I and 33.5 hours in group II and sustained blood pressure control for 3 days was 54.2% in group I and 39.1% in group II. The difference was significant (P < 0.05) [Table 1].

The mean SBP before treatment was 154.4 mm Hg in group I and 153.4 mm Hg in group II and after

treatment was 127.8 mm Hg in group I and 139.2 mm Hg in group II respectively. DBP before treatment was 105.2 mm Hg in group I and 107.4 mm Hg in group II and after treatment was 91.5 mm Hg in group I and 100.2 mm Hg in group II. MAP before treatment was 121.2 mm Hg in group I and 123.6 mm Hg in group I and after treatment was 102.5 mm Hg in group I and 113.8 mm Hg in group II respectively. The difference was non-significant (P > 0.05) [Table 2].

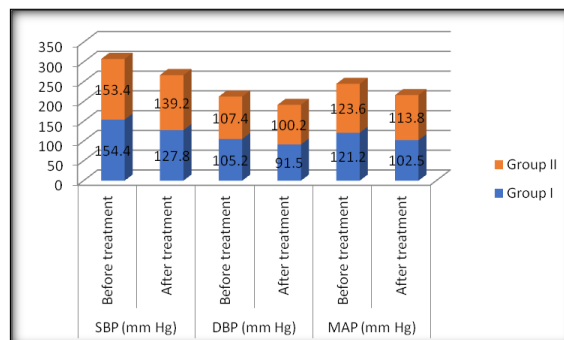


Figure 1: Comparison of parameters

Table 1: Comparison of parameters

Parameters	Variables	Group I	Group II	P value
Gravida	1	30	34	0.91
	2	18	16	
	3	12	10	
Time required to control blood pressure (hours)		29.4	33.5	0.05
Sustained blood pressure control for 3 days (%)		54.2	39.1	0.02

Table 2: Comparison of parameters

Parameters	Variables	Group I	Group II	P value
SBP (mm Hg)	Before treatment	154.4	153.4	0.04
	After treatment	127.8	139.2	
DBP (mm Hg)	Before treatment	105.2	107.4	0.16
	After treatment	91.5	100.2	
MAP (mm Hg)	Before treatment	121.2	123.6	0.21
	After treatment	102.5	113.8	

## DISCUSSION

Hypertension in pregnancy is a special condition because the duration of therapy is shorter, the benefits to the mother may not be obvious during the short time of treatment and the exposure to drugs regards both mother and fetus.<sup>[7]</sup> Even if delivery is the only treatment and it leads to the disappearance of the disease, this is usually problematic below 28 weeks of gestation when the baby can be expected to be extremely immature.<sup>[8]</sup> Recent guidelines also listed hydralazine, Nifedipine and labetalol as first-line alternatives for reducing blood pressure in pregnancy induced hypertension.<sup>[9]</sup> Pregnant women needed severe control on their blood pressure under case of severe pregnancy induced hypertension to avoid life threats like eclampsia, HELLP syndrome, shock etc.<sup>[10,11]</sup> We performed present study to compare labetalol and nifedipine in management of hypertensive disorders of pregnancy.

Group I patients received and group II received nifedipine. Aslam et al,<sup>[12]</sup> included 100 patients (group-A and group-B having 50 in each). In group A, females were given 40 mg oral Nifedipine and in group B, females were given 20 ml intravenous Labetalol. Time at administration was followed in the ward for assessment of blood pressure control. Blood pressure was noted after every 10 min. The total donation time to achieve B.P was noted. Patients were ranged between 20-40 years. Mean age of the patients was calculated as 26.98+4.54 and 27.36+4.43 years in group-A and B respectively. Gestational age shows that 64% (n=32) in Group-A 74% (37%) in Group-B were between 20-30 weeks of gestation while 36% (n=18) in Group-A were between 31-40 weeks of gestation mean±SD was calculated as 28.92+4.91 and 28.94+4.72 weeks in Group-A and B respectively. Mean time to achieve B.P control in group A was 31.24+5.62 and in group B 45.5+4.63.

Our results demonstrated that Gravida 1 was seen in 30 in group I and 34 in group II, gravida 2 seen in 18 in group I and 16 in group II and gravid 3 in 12 in group I and 10 in group II. The mean time required to control blood pressure was 29.4 hours in group I and 33.5 hours in group II and sustained blood pressure control for 3 days was 54.2% in group I and 39.1% in group II. Giannubilo SR et al,<sup>[13]</sup> determined the maternal and fetal outcomes of pregnancies affected by hypertensive disorders treated with nifedipine versus labetalol. The patients were divided in the four groups: gestational hypertension (113 patients); mild preeclampsia (77 patients); severe preeclampsia (31 patients); HELLP syndrome (21 patients). They found that there was higher rate of intrauterine growth restriction infants among women treated with labetalol compared with those treated with nifedipine (38.8 vs. 15.5 %), but only in the subgroup of women affected by gestational hypertension and mild preeclampsia. No neonatal malformations and no differences in the rate of adverse side effects were observed.

The mean SBP before treatment was 154.4 mm Hg in group I and 153.4 mm Hg in group II and after treatment was 127.8 mm Hg in group I and 139.2 mm Hg in group II respectively. DBP before treatment was 105.2 mm Hg in group I and 107.4 mm Hg in group II and after treatment was 91.5 mm Hg in group I and 100.2 mm Hg in group II. MAP before treatment was 121.2 mm Hg in group I and 123.6 mm Hg in group I and after treatment was 102.5 mm Hg in group I and 113.8 mm Hg in group II respectively. Deshmukh et al,<sup>[14]</sup> compared the efficacy and safety of oral labetalol and nifedipine in hypertensive disorder of pregnancy. This study included 60 antenatal women irrespective of parity and gestational age from 20-40 weeks with hypertensive disorder. Chronic hypertension, diabetes, cardiac, renal disease, hemophilia and bronchial asthma were excluded from the study. The efficacy of labetalol and nifedipine were compared. Results: In this study fall in systolic blood pressure (SBP), diastolic blood pressure (DBP) and mean arterial pressure (MAP) in labetalol group was statistically significant when compared to nifedipine. Outcome of fetus was also better with use of oral labetalol.

## CONCLUSION

Labetalol found to be better antihypertensive than Nifedipine in terms of control of hypertension and fetal outcome.

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