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A SYSTEMIC REVIEW ON ORAL NIFEDIPINE VERSUS INJECTION LABETALOL FOR HYPERTENSION DURING PREGNANCY

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ABSTRACT

Backround: Most of the authorities reccomend oral nifedipine, injection labetalol for treating the hypertension during pregnancy. Health care professionals prefer labetalol due to lack of evidence for the nifedipine although it is cheap and easily administered. **Objective:** To compare efficacy of oral nifedipine versus injection labetalol for hypertension during pregnancy. **Search Strategy:** We systemically searched for articles comparing oral nifedipine versus injection labetalol for the treatment of hypertension during pregnancy. **Conclusion:** This study showed that oral nifedipine is as efficacious as injection labetalol in treating pre-eclampsia.

KEYWORDS: Meta analysis Nifedipine, Injection Labetalol, Pre-eclampsia.

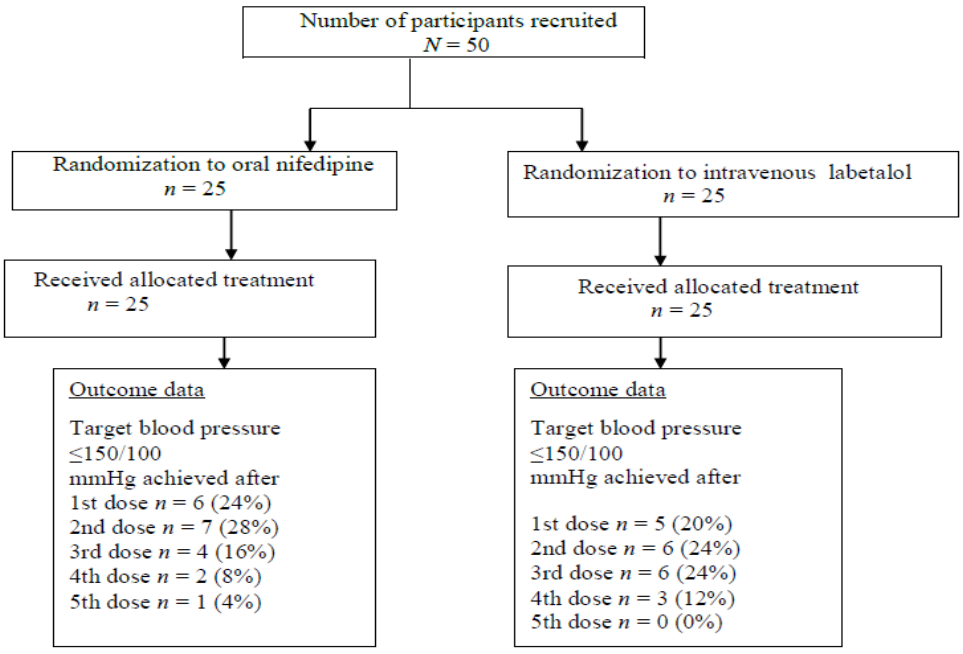
INTRODUCTION

Pre-eclampsia is a serious disorder and is one of the leading causes of the maternal and perinatal mortality and morbidity.[1] Approximately 50,000 deaths of women were reported from the hypertensive disorders of pregnancy. In these women blood pressure can rise to dangerous levels producing end organ damage and cardiovascular accidents and often cerebral hemorrhage and also increases the risk of complication to the fetus like prematurity and low birth weights.[2] Various medications have been used to control the BP during hypertensive emergencies of pregnancy.[3] oral Nifedipine has a rapid onset and long duration of action and it is also cost-effective but causes severe hypotension which are less for labetelol although neonatal hypotension and bradycardia are observed.[4]

MATERIALS AND METHODS

The study was conducted in a total of 50 patients diagnosed with pre-eclampsia having blood pressure ≥160/110mmHg. Out of 50 patients, 25 were treated with intravenous labetalol [study group A] and the other 25 were treated with oral nifedipine [Control group B]. In both the groups, the patients are selected according to the following criteria. Inclusion criteria were the patients with blood pressure ≥160/110mm Hg and with severe pre-eclampsia. Exclusion criteria include the patients with essential hypertension, haematological disorders, H/o-cardiac diseases, allergy to labetalol nifedipine, bronchial asthma, diabetes,liver disorders, and maternal heart rate <60 or >120 beats/ minute. Patients that are enrolled will be randomized to receive intravenous labetalol or oral nifedipine. Increasing doses of 20,40,80 to the maximum of 220mg of injection labetalol were given to the study group A over 10 minutes repeated every 20 minutes. Nifedipine 10 mg stat was given and the repeated at 45 minutes interval till B.P was measured.

During the study period, blood pressure of mother were recorded every 15 minutes interval upto first 30 minutes until the blood pressure of less than or equal to 150/100 mm Hg was acheived, then every 30 minutes for next 2 hrs and then BP is recorded every hourly. Maternal vital parameters and foetal electronic monitoring was done was done continuously. Treatment was considered failure even after the dose is increased to maximum. Maternal complications and foetal complications were noted. This type of method was followed in many trials and was reviewed under metaanalysis.



RESULTS

Table 1: Comparison of No. of doses of drugs required to control BP between two groups.

VARIABLE	GROUP	N	MINIMUM	MAXIMUM	MEAN	S.D	POWER
No. of Doses To Achieve Target Bp	Intravenous Labetalol	25	1	3	2.16	.473	0.3
	Nifedipine	25	1	3	2.04	.371	

Mean number of doses required to control to B.P by I.V labetalol group was 2.16 and by nifedipine group was 2.04.

Table 2: Comparison of time taken in minutes to control BP between two groups.

VARIABLE	GROUP	N	MINIMUM	MAXIMUM	MEAN	S.D	POWER
Time In Minutes To Achieve Target Bp	Intravenous Labetalol	25	30	80	50.40	10.985	2.9
	Nifedipine	25	40	60	37.00	5.774	

Comparision of the above variable showed no difference between the two groups with a P value 2.9.

Table 3: Comparison Of Birth Weight Between Two Groups.

VARIABLE	GROUP	N	MINIMUM	MAXIMUM	MEAN	S.D	POWER
Wt.Of Baby In Kgs	Intravenous Labetalol	25	1.5	4.0	2.836	.6441	0.07
	Nifedipine	25	1.0	3.5	2.460	.6837	

There is no statistically significant difference between 2 groups on comparing the birth weights.

Table: 4 Comparison of complications of preeclampsia in both the groups.

Outcome	INTRAVENOUS LABETALOL		NIFEDIPINE		TOTAL	
	COUNT	%	COUNT	%	COUNT	%
No complications	19	76	17	68	36	72
Abruption	2	8	1	4	3	6
Eclampsia	3	12	3	12	5	12
Hellp	0	0	1	4	1	2
Iugr	1	4	3	12	4	8
Total	25	100	25	100	50	100

Incidence of HELLP syndrome was 4% in nifedipine group and nil in labetolol group. Incidence of abruption and IUGR was more in labetolol group, when compared to nifedipine group.

DISCUSSION

The data suggests that oral nifedipine and injection labetalol are the best suitable first line antihypertensive agents Targeted blood Pressure was acheived in 80% of cases within 5 five doses or within 75minutes after commencing treatment with these two regimens. From the data the mean number of doses required to control to B.P in I.V labetolol group was 2.16 and in nifedipine group was 2.04.Mean time in minutes required to acheive target B.P was found to be 50minutes with injection labetalol and 37min with oral nefidipine but there is no significant difference with power of 2.9. There were no maternal adverse effects with the agents which will lead to the discontinuation of treatment. The adverse events that are reported after labetalol use are headache, fatigue, weakness and also severe headache was reported with use of nifedipine. The data also suggests that there is decreased risk of persistent hypertension and also neonatal death rate and maternal side effects with the use of nifedipine. So nifedipine consistently demonstrated a favourable trend. The treatment of high blood pressure depends on choice of anti hypertensive agent, and also clinicians experience and familiarity with particular agent and adverse effects of the drug until the best evidence is avaiable. The data concludes that both injection labetalol and oral nifedipine are equally effective in treating hypertensive emergency of pregnancy with minimal side effects.

CONCLUSION

There is a need for conducting adequate research studies comparing the efficacy and safety of the oral nifedipine and injection labetalol. Researchers should carefully measure the differences in clinical outcomes of efficacy and safety. Both oral nifedipine and injection labetalol are equally efficacious and safe in treatment of hypertension in pregnancy, but nifedipine is cheap and convenient and has importance in low resource settings and injection labetalol can be useful in patients who are unable take medication orally. This metaanalysis provides a useful and comparative analysis of safety and efficacy outcomes until more evidence is generated from the trials.

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