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Original Research Article

Comparative study of labetalol and nifedipine in management of hypertensive disorders in pregnancy

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ABSTRACT

Background: Hypertensive disorders complicate 5 to 10 percent of all pregnancies, and together they are one member of the deadly triad, of haemorrhage and infection.

Methods: The Present study was conducted at Navodaya Medical College, Hospital and Research Centre, Raichur from January 2014 to December 2015. The efficacy of labetalol verses nifedipine in management of hypertensive disorders of pregnancy was studied. The study consisted of 100 antenatal patients irrespective of parity and gestational age from 20-40weeks patients, with severe PIH with imminent eclampsia. Heart diseases, Hematological disorders, Liver diseases renal diseases and Bronchial asthma were excluded from the study.

Results: In the study, fall in mean arterial pressure of >20mm Hg was noted 6hrs after initiation of treatment in nifedipine group which is statistically significant; no statistical significance was observed in both groups at 12hrs. A fall of mean arterial pressure to normal was noted at 48hrs and 72 hrs in labetalol, which is statistically highly significant.

Conclusions: The present study indicates labetalol to be a better anti-hypertensive in terms of control of hypertension, mode of vaginal delivery and fetal outcome.

Keywords: Nifedipine, Labetalol, Hypertension mean arterial pressure, PIH, Pre-eclampsia

INTRODUCTION

Hypertensive disorders complicate 5 to 10 percent of all pregnancies, and together they are one member of the deadly triad, of haemorrhage and infection. Contributes greatly to maternal mortality and morbidity.¹ The impact due to hypertensive disorders in pregnancy on maternal and neonatal mortality and morbidity is very high in India.

The hypertensive disorders of pregnancy constitute the most widely studied, discussed and analysed condition, because of the fact that they adversely affect both the mother and fetus. They predispose to progression to severe forms of pre-eclampsia, eclampsia, HELLP syndrome, abruption placenta, haemorrhage, disseminated intravascular coagulation, acute renal

failure and death, acute or chronic uteroplacental insufficiency resulting in ante or intrapartum anoxia that may lead to, intrauterine growth restriction.

The effectiveness of oral labetalol and oral nifedipine in terms of the change in mean arterial pressure, maximum dose of anti-hypertensive required, prolongation of pregnancy, perinatal outcome and adverse effect associated with drugs.

METHODS

The Present study was conducted at Navodaya Medical College, Hospital and Research Centre, Raichur from January 2014 to December 2015. The efficacy of labetalol verses nifedipine in management of hypertensive disorders of pregnancy was studied.

The study consisted of 100 antenatal patients irrespective of parity and gestational age from 20-40weeks patients. Severe PIH with imminent eclampsia, Heart diseases, Haematological disorders, Liver diseases renal diseases and were excluded from the study.

The patients in group A received nifedipine 10-60mg per day

Group B labetalol received 100-200mg Bd/day.

Brachial artery blood pressure was checked with the patient in lateral recumbent position using calibrated mercury sphygmometer and appropriate cuff size. Korotkoff V was used to determine diastolic blood pressure. The blood pressure was monitored at 0,6,12,24,48,72 hours. The initial dosage of antihypertensive drug was observed; side effects if any associated with drug intake was noted.

RESULTS

The majority of the pregnant women belong to age group of 20-25years and many of them are primigravidas in this series.

The mean arterial pressure before stating the treatment in group A is 132.34 and group B is 132.07and after 6hrs of antihypertension treatment the mean arterial pressure in group A is 118.59 and group B is 123.89. Mean arterial

pressure after 72hrs treatment MAP in group A is 96.72 and in group B is 93.51 which highly significant.²

Table 1: Age wise distribution of cases.

Age group	Nifedipine		Labetalol	
	Frequency	Percent	Frequency	Percent
20-25	41	82	39	78
25-30	8	16	8	16
>30	1	2	3	6
Total	50	100	50	100

Most of the pregnant women are belonged to gestational age of 35-40wks.

Table 2: Gestational age wise distribution of cases.

Gestational weeks	Nifedipine		Labetalol	
	Frequency	Percent	Frequency	Percent
20-25	1	2.0	0	0
25-30	5	10.0	4	8.0
30-35	10	20.0	6	12.0
35-40	31	62.0	38	76.0
>40	3	6.0	2	4.0
Total	50	100.0	50	100.0

Table 3: Mean arterial pressure before and after treatment.

	Group	N	Mean	Std. deviation	t	df	P	Inference
0hr	Nifedipine	50	132.34	5.11	0.273	98	0.786 (>0.05)	Not significant
	Labetalol	50	132.07	4.48				
6hr	Nifedipine	50	118.59	6.59	-4.679	98	0.0001 (<0.001)	Highly significant
	Labetalol	50	123.89	4.56				
12hr	Nifedipine	50	113.30	6.82	-0.277	98	0.782 (>0.05)	Not significant
	Labetalol	50	113.62	4.88				
24hr	Nifedipine	50	108.61	5.90	0.502	98	0.040 (<0.05)	Significant
	Labetalol	50	107.02	4.11				
48hr	Nifedipine	50	102.84	5.25	1.984	98	0.043 (<0.05)	Significant
	Labetalol	50	100.93	4.32				
72hr	Nifedipine	50	96.72	3.46	3.795	98	0.0001 (<0.001)	Highly significant
	Labetalol	50	93.51	4.88				

38 patients (76%) in group A maximum dose was 30mgs and in group B 4 cases (8%) needed 300 mgs of labetalol. In group A 42 cases (84%) and 45 patient (90%) have had no side effect, only 8 cases (16%) group A had a headache and 5 cases in (10%) in group B had a giddiness.

It was observed in the study, that fetal outcome in terms of live birth (96% vs 84%) was higher in labetalol group and need for NICU admission and preterm births (18% vs 10%) was more in nifedipine group.

The mode of delivery in groups A out of 50 patients 25 (50%) had a LSCS and another 25 patient had a normal

delivery. In labetalol group 21 patient (42%) had a LSCS and 29 patients (58%) had a normal delivery.

In group A 41 cases (82%) were full term and 9 cases (18%) were preterm in labetalol group 45 (90%) were full term and 5 cases were full term.

The neonatal outcome of nifedipine group 42 were (84%) live babies and 8 were dead and in labetalol group 48 were alive (96%) and 2 (4%) were dead.

Table 4: Distribution of cases according to maximum dose of drug given.

Nifedipine			Labetalol		
Dose (mg)	Frequency	Percent	Dose(mg)	Frequency	Percent
10	0	0	100	0	0
20	12	24	200	46	92
30	38	76	300	4	8
Total	50	100		50	100

Table 5: Distribution according to mode of delivery.

Delivery mode	Nifedipine		Labetalol	
	Frequency	Percent	Frequency	Percent
LSCS	25	50	21	42
Spontaneous	25	50	29	58
Total	50	100	50	100

Table 6: Neonatal outcome.

Outcome of pregnancy	Nifedipine		Labetalol	
	Frequency	Percent	Frequency	Percent
Alive	42	84	48	96
Dead	8	16	2	4
Total	50	100	50	100

DISCUSSION

The maximum patients are belong to the age group of 22-25 years, in others studies done by Harshini et al and Pickles CJ³ et al shows maximum age incidence was 47%. In our study may of them are primi gravids with early marriage.

The selection of cases for treatment with nifedipine the mean arterial pressure before stating treatment was 130 and after treatment the mean arterial blood pressure was 96 which comparable with other studies.⁵

In labetalol group mean arterial blood pressure in our study group was 132 before treatment. After stating the treatment mean arterial blood pressure was 93 it very well correlates with studies of Harshini et al and Lindhemer.⁴

The present study had adverse effects of 16% in group A and 10% Group B.

The commonest adverse effects were occipital headache postural hypotension tachycardia and depression. The tachycardia and occipital headache more common in nifedipine group comparative labetalol.

In similar study done by Rajeshwaramma et al⁶ concluded that both nifedipine and labetalol were effective in controlling mild to moderate hypertension in pregnancy. But after treatment mean arterial pressure was well controlled with labetalol compared to nifedipine.

Among the cases studied, there was slightly higher incidence of caesarian section, it nifedipine group (50%). Fetal distress was the most common indication, it was not statistically significant.

CONCLUSION

The present study indicates labetalol to be a better anti-hypertensive in terms of control of hypertension, mode of vaginal delivery and fetal outcome.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee of Navodaya Medical College, Raichur, Karnataka, India

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