**Original research article**

# Labetalol versus M-Lope in Treatment of Hypertensive Disorders of Injury – A Comparative Study

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**Abstract**

**Hypertensive** disorders are one of the commonest medical conditions complicating pregnancy. It complicates 5 to 10 percent of all pregnancy and accounts for approximately 16 percent of overall maternal deaths. In this study conducted at Patna Medical College Hospital, it was concluded that Labetalol is better antihypertensive that Methyl Dopa for use in pregnancy induced hypertension.

**Key words:** Pregnancy induced hypertension, Labetalol, Methyl Dopa.

## Introduction

Hypertensive disorders of pregnancy constitute the commonest medical disorder diagnosed by obstetricians in clinical practice and remain an important cause of maternal and fetal, morbidity and mortality. Hypertensive disorders complicate 5 to 10 percent of all pregnancies, accounting for approximately a quarter of all antenatal admissions, and together they form one member of the deadly triad, along with hemorrhage and infection, that contribute greatly to maternal morbidity and mortality rates.

According to WHO report (Khan and colleagues, 2006) in developed countries, 16 percent of maternal deaths were due to hypertensive disorders. In the United States from 1991 to 1997, Berg and colleagues (2003) reported that almost 16 percent of 3201 maternal deaths were from complications of pregnancy related to hypertension.

**Methyldopa,** a time honoured antihypertensive against which efficacy of other drugs is being compared, is a centrally acting $\alpha_2$ agonist which lowers blood pressure by decreasing total peripheral vascular resistance with variable reduction in heart rate and cardiac output. It is widely used in the treatment of hypertensive disorders of pregnancy. But it has certain disadvantages, such as slow onset of action. It takes 12-24 hours for adequate therapeutic response.

**Labetalol** is a selective $\alpha_2$ blocker with nonselective β blocking action with some β2 agonistic action. It is a racemic mixture of isomers having 3:1 ratio of β : α antagonism after oral dosing. It lowers blood pressure by reduction of systemic vascular resistance (via a blockade) without significant alteration in heart rate and cardiac output (Protects the heart from reflex sympathetic drive via β blockade).

## Aims and Objectives

1. This study was conducted in the Patna Medical College & Hospital, Patna to compare the efficacy and safety of Labetalol with methyldopa in cases of hypertensive disorders of pregnancy.

2. A comparative study was done of both the drugs on pregnancy prolongation, type of labour, mode of delivery, birth weight, apgar score at birth and maternal side effects.

## MATERIALS AND METHODS

100 patients attending antenatal clinic and labour room of Patna Medical College & Hospital, Patna Bihar, were enrolled for study from March 2018 to August 2019.

**Selection of Cases:**

Pregnant patients who met the eligibility criteria at the initial examination were randomly assigned to treatment with either Labetalol or Methyl dopa. They were divided into two groups.

**Group I (Study Group):** Comprised of 50 patients who were treated with Labetalol.
**Group II (Control Group) :** Comparised of 50 patients who were treated with methyl dopa.

**Examination :**

General physical examination including weight, height, degree of anaemia, oedema was noted. Peripheral pulse were palpated. Blood pressure was recorded as already mentioned. Mean arterial pressure (MAP) was calculated by Burton's formula as advocated by Page.

$$\frac{\text{Systolic B.P.} + 2\,(\text{Diastolic B.P})}{3}$$

Systemic examination was done to exclude other concomitant diseases like heart disease and asthma. Renal angles were palpated for tenderness, bruit or renal lump.

**Statistical Analysis:**

Findings were statistically analysed level of significance was taken as $p<0.05$.

## RESULTS AND DISCUSSION

In this study 100 patients with blood pressure 140/90 mm. Hg with or without proteinuria and/or edema, between 28 to 37 weeks of gestation were taken up. They were randomly divided into two groups.

**Group I:** (Study Group): consisted of 50 patients who were treated with Labetalol.
**Group II:** (Control Group): consisted of 50 patients who were treated with methydopa.
The dose of labetalol and methyldopa was titrated in terms of blood pressure control. Parameters which were evaluated included their efficacy in controlling blood pressure, effect on biochemical parameters, perinatal outcome, maternal side effects and blood pressure at 6 weeks after delivery.

In this study, maximum number of patients (80%) were of 21 to 30 years of age. Only 20% i.e. 20 patients were below 20 years of age. None of the patients in our study was above 30 years of age. This age distribution could be because of early age of marriage and early child bearing in our society.

Patients in this study was distributed according to socioeconomic status. Most of the patients (66%) belonged to class III and class IV i.e. lower middle and upper lower socioeconomic status. This could be because most of the patients attending our hospital belong to lower socioeconomic status. Some investigations have concluded that socioeconomically advantaged women have lesser incidence of preeclampsia but Baird et al (1969) found that incidence of preeclampsia was not different among the five social classes.

Patients in group I and group II were divided according to their height and weight. Maximum patients were of average height (150-160cm) and weight (50-60 kg) in both the groups. Relationship between maternal weight and risk of preeclampsia is progressive. It increases from 4.3 percent for women with body mass index less than 19.8kg/$m^2$ to 13.3 percent for those greater than or equal to 35kg/$m^2$ (Williams, 2010). All patients in this study had BMI more than 19.8 kg/$m^2$.

Parity distribution of cases (Table 5), in both groups most patients were primigravidas i.e. 48% in group I and 52% in group II.
Hypertensive disorders of pregnancy is considered a disease of primigravids and they are 6-8 times more susceptible than multiparous women (consensus report: high blood pressure in pregnancy, Nov, 1990. Incidence of preeclampsia in primigravida is 10% and in multigravida 5% (Dutta, 2011). Our study also showed more cases of hypertensive disorders in primigravidas.

In this study patients between 28 weeks to 37 weeks of gestation were taken up for study. 60% patients in group I and 56% patients in group II were of 3235 weeks of gestation. Our study group is similar to study group of E1Qamalawi AM et al 1995, they studied 104 primigravidas with PIH after 26 weeks of gestation. Mean gestation age at enrolment was 31.3±0.7 weeks in labetalol group and 32.3±0.6 in methyldopa group. Pickles CJ, Symonds EM et al, 1992 also studied the effect of labetalol in 70 patients with mean gestational age at admission of 34.0±2.7 weeks.

## CONCLUSION

Pregnancy induced hypertension is one of the major causes of maternal and fetal mortality and morbidity. Yet as long as its cause remains unknown its prophylaxis will be uncertain. The use of antihypertensive agents, though controversial, does have a beneficial effect. This study showed that in comparison to the most commonly used drug methyldopa, labetalol gives better and quicker control of blood pressure. It also improves renal function and decreases proteinuria. The chances of spontaneous onset of labour are more in labetalol treated group and those who required induction had better Bishop score. Side effects of labetalol were less as compared to met dopa.
So this study clearly shows that labetalol is a better antihypertensive than methyl dopa for use in pregnancy induced hypertension.

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