

A Comparative Study of Labetalol versus Methyldopa in the Treatment of Preeclampsia

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Abstract

Introduction: A large proportion of antenatal care is devoted to the detection and management of hypertensive disorders of pregnancy because, as a group, they are the second major cause of maternal and perinatal serious illness (e.g. Stroke or preterm birth, respectively) and/or death in both low to middle income and high income countries. Preeclampsia/eclampsia is an unpredictable, multi-organ disorder unique to human pregnancy. With hypertension, the preeclampsia syndrome, either alone or superimposed on chronic hypertension, is the most dangerous. Treatment of this disorder remains a challenge to even the most experienced obstetrician, as the etiology is not known. Preeclampsia is development of hypertension, proteinuria, or both, after 20 weeks in women with previously normal blood pressure. Hypertension during pregnancy is common. It is estimated that preeclampsia complicates 3 to 10% of pregnancies in primigravidae and is variable and comparatively less in multiparas.

Aim: To compare the efficacy and safety of labetalol with methyldopa in the management of preeclampsia

Material and Method: This study included 50 patients of females with the age group of 20-50. In of Faculty of Pharmacology and OBGY Dept. Dr. Ulhas Patil Medical College and Hospital Jalgaon, Maharashtra.

Result: Table: 1 Comparison between labetalol and methyldopa Systolic Blood Pressure (SBP) in first group 0 hours to after taking dose of Labetalol and Methyldopa systolic blood pressure are after 72 hours more reduced to the Labetol groups compared Methyldopa to the values shows that statistically significant p-value are $P < 0.001$

Conclusion: Many drugs have been used in the management of preeclampsia, labetalol is very effective and early onset of control of blood pressure is seen. With effective control of blood pressure, prevention of eclampsia and the pregnancy can be prolonged to achieve fetal maturity. To conclude, labetalol is safe, quicker control of blood pressure, advantageous than methyldopa with fewer side effects, and in prolongation of pregnancy in hypertensive disorder of pregnancy.

Keywords: Pre-eclampsia, Hypertension, SBP, DBP, Methyldopa, Labetol

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Introduction

After 20 weeks of pregnancy, women with previously normal blood pressure develop hypertension, proteinuria, or both. Hypertension is quite frequent during pregnancy. Preeclampsia is thought to affect 3 to 10% of primigravidae pregnancies, while it is more variable and less common in multiparas. [1]

It is the leading cause of maternal morbidity and death, as well as iatrogenic premature births. If left untreated, eclampsia develops, resulting in foetal mortality and a variety of maternal problems. Though hypertension problems in pregnancy are unavoidable, early detection and treatment aid in a better mother and foetal prognosis. Early therapy has been demonstrated to reduce the frequency of hypertensive crises as well as the risk of newborn problems. The most effective treatment for hypertensive problems in pregnancy is to terminate the pregnancy, which is sometimes impossible owing to preterm. [2]

It is therefore advisable to extend the pregnancy until the foetal survival rate is high. During this time, the maternal and foetal conditions are monitored, and antihypertensive medicines are used to manage hypertension. Preeclampsia has been treated with a variety of antihypertensive medications. Because of its efficacy and safety for both mother and foetus, methyldopa was the most often used antihypertensive medicine for the treatment of hypertension during pregnancy. However, it takes longer to work. Labetalol (a + blocker) improves blood pressure regulation. When compared to methyldopa, labetalol has the benefit of being accessible in both injectable and oral forms. It also has a faster start of effect. [3]

Since Hippocrates' day, preeclampsia/eclampsia has been recognised as a clinical entity. Zweifel used the word "toxaemia" to describe the sickness of ideas in 1916. Because hypertensive disorders of pregnancy are the second leading cause of maternal and perinatal serious illness (e.g. stroke or preterm birth, respectively) and/or death in both low and middle income and high income countries, a large portion of antenatal care is devoted to their detection and management. Pre-eclampsia/eclampsia is a multi-organ condition that occurs only during pregnancy. The most deadly kind of hypertension is preeclampsia syndrome, which can occur alone or in combination with persistent hypertension. Even the most competent obstetrician faces a hurdle in treating this disease since the cause is unknown. When compared to multiparas, elderly gravidae, multiple gestations, and previous history of hypertensive disorders of pregnancy, and family history, hypertensive disorders of pregnancy are more prevalent in primigravidae. [4]

Aim

To compare the efficacy and safety of labetalol with methyldopa in the management of preeclampsia

Material and Method

This study included 50 patients of females with the age group of 20-50. In of Faculty of Pharmacology and OBGY Dept. Dr. Ulhas Patil Medical College and Hospital Jalgaon, Maharashtra. A total number of 50 patients of preeclampsia were included in the study, and were randomly assigned, alternatively in Labetalol or methyldopa group with 25 cases in each group. On admission detailed history was taken & patients were examined & investigated.

Blood pressure was recorded using mercury 69 sphygmomanometer with patient in 15 degrees left lateral recumbent position after 20 min rest. Korotkoff V

sound was used for determining diastolic blood pressure. treated with either labetalol or methyldopa.

Result

Table 1: Comparison between labetalol and methyldopa Systolic Blood Pressure (SBP)

Drugs	0hr (n-25)	72hr(n-25)	P -valve
Labetalol	148.40±4.58	137.36±7.30	P < 0.0001
Methyldopa	148.20±4.71	140.44±7.90	P < 0.0001

Table: 1 Comparison between labetalol and methyldopa Systolic Blood Pressure (SBP) in first group 0 hours to after taking dose of Labetalol and Methyldopa systolic blood pressure are after 72 hours more reduced to the Labetol groups compared Methyldopa to the values shows that statistically significant p-valve are P < 0.001

Table 2: Comparison between labetalol and methyldopa Diastolic Blood Pressure (DBP)

Drugs	0hr (n-25)	72hr (n-25)	P -valve
Labetalol	98.72±4.49	88.92±6.83	P < 0.0001
Methyldopa	97.80±4.43	90.97±6.04	P < 0.0001

Table: 1 Comparison between labetalol and methyldopa Diastolic Blood Pressure (DBP) in first group 0 hours to after taking dose of Labetalol and Methyldopa systolic blood pressure are after 72 hours more reduced to the both groups to the values shows that statistically significant p-valve are P < 0.001

Discussion

The effectiveness and safety of the antihypertensives Labetalol and Methyldopa were compared in this study. Patients ranged in age from 20 to 39 years old. 42 percent of patients in the Labetalol group were 20-24 years old, whereas 42 percent of patients in the M-dopa group were 25-29 years old. In the Labetalol group, 30% of the patients were over 30 years old, whereas in the M-dopa group, 20% of the patients were over 30 years old. The age distribution did not alter much. In both groups, the youngest was 20 years old. In the Labetalol group, the oldest was 38 years old, whereas in the M-dopa group, it was 36. Both groups had a mean age of 26.4 years. The Labetalol and M-dopa groups had significant systolic and

diastolic blood pressure control. However, when comparing the two groups, the Labetalol group has better blood pressure management. This is equivalent to Reena Verma et al's study.⁵

When comparing Labetalol to M-dopa, there was a significant (0.008) decrease in MAP in the Labetalol group. When compared to Reena Verma et al. [5] (2012), both groups had a substantial decrease in MAP. G D Lamming et al. [6] found an extremely significant decrease in MAP in the group treated with labetalol (P 0.001) when compared to the group treated with methyldopa.

The need for extra medicines for blood pressure management was higher in the M-dopa group (32%) than in the Labetalol group (16%). This is similar to the findings of P F Plouin et al. [7], who found that extra medicines were required in 13% of the labetalol group and 26% of the methyldopa group. Both medications have recognised forms of side effects, and labetalol had none when compared to methyldopa, which is equivalent to the studies of A.M. El-Qarmalawi et al., [8] G

D Lamming et al (1979). In the current research, no patients complained of dyspnea, as in the other two trials described. 92 Patients in the Labetalol group delivered at 37-40 weeks of pregnancy, compared to 70% in the M-dopa group. 70% of Labetalol patients who were less than 36 weeks + 6 days pregnant at the time of presentation were continued to term, whereas 60% of M-dopa patients were continued to term. Pregnancy prolongation was more likely in the labetalol group than in the methyldopa group, but the difference was not statistically significant, which is similar to the research of A.M. El-Qarmalawi et al. [8]

In both groups, there was no significant difference in the type of delivery. However, spontaneous vaginal delivery was higher in the Labetalol group (28%) than in the M-dopa group (14%). This is because labetalol improved Bishop's score. A significantly higher incidence of induction of labour was found in M-dopa group i.e., 32% a finding which is similar to the results of G D Lamming et al., 6 A.M. El-Qarmalawi et al. 8 Frequency of LSCS similar in both the groups, a similar finding of P F Plouin et al., 7 Magee et al. [9]

However, in a research by Pasker-de Jong PCM et al, spontaneous delivery was 10 times higher in the methyldopa group than in the labetalol group, while induced delivery was 10 times higher in the labetalol group. One of the leading causes of maternal and foetal death and morbidity is hypertensive disorders of pregnancy. However, prophylaxis will be difficult to determine as long as the cause is unclear. Many medicines have been tried to treat preeclampsia, but labetalol is one of the most successful, with early beginning of blood pressure reduction. [10] Preventing eclampsia and extending the pregnancy to foetal maturity is possible with appropriate blood pressure control. When compared to

methyldopa, labetalol has less negative effects. Labetalol has no negative effects on the foetus. When compared to the methyldopa group, the chances of spontaneous commencement of labour were higher in the labetalol group, and those who had to have induction of labour had a higher Bishop score. In terms of obstetric intervention, there was no difference between the groups. [11]

Conclusion

Many medicines have been tried to treat preeclampsia, but labetalol is one of the most successful, with early beginning of blood pressure reduction. Preventing eclampsia and extending the pregnancy to foetal maturity is possible with appropriate blood pressure control. To summarise, labetalol is safe, provides faster blood pressure management than methyldopa, has fewer side effects, and aids in pregnancy prolongation in hypertensive disorders of pregnancy.

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