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ORIGINAL ARTICLE

Oral Labetalol in Comparison with Methyldopa in Treatment of Gestational Hypertension as a First Line Drug

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ABSTRACT

Background: Defining hypertension in pregnancy, it is taken as systolic blood pressure of 140 or more and diastolic blood pressure of 90mg or more. Presence of proteinurea differentiates chronic hypertension and gestational hypertension from pre eclampsia .Prevalence and incidence of hypertension in pregnancy along with its complications like end-organ damage, preeclampsia, eclampsia, and postpartum eclampsia are increasing. Gestational hypertension and its sequels are major causes of fetal and maternal morbidity and mortality and affect almost 8% of pregnancies. Labetalol and methyldopa were effective in reducing systolic and diastolic BP significantly but labetalol was found to control BP more rapidly and efficiently. Safety profile of both drugs was similar. The rationale of this study is Labetalol is more effective in comparison with Methyldopa in pregnancy induced hypertensive females in terms of control of blood pressure within 48hours of drug intake, in pregnant patients between POG of 28 to 32 weeks.

Design: Randomized control trial.

Place and Duration of Study: Department of Gynaecology Unit 2 Bahawal Victoria Hospital, Bahawalpur from 1st January 2022 to 31st December 2022.

Methodology: One hundred 100 patients having gestational hypertension between periods of gestation from 28to 32 weeks were enrolled. They were divided into 2 groups; group A treated with labetalol and B treated with methyldopa respectively.

Results: Statistical no significant difference in systolic and diastolic blood pressure was observed before starting treatment in both groups but a significant fall in diastolic blood pressure was observed in group A after 48 hrs of initiation of treatment i.e., with labetalol (P = 0.007)

Conclusion: Both labetalol and methyldopa reduce blood pressure in women with gestational hypertension but labetalol is more effective than methyldopa as proved by our study.

Keywords: Gestational hypertension, Diastolic blood pressure, Labetalol, Methyldopa

INTRODUCTION

Defining hypertension in pregnancy, it is taken as systolic blood pressure of 140 or more and diastolic blood pressure of 90 mg or more. Presence of proteinurea differentiates chronic hypertension and gestational hypertension from pre eclampsia.[1] Prevalence and incidence of hypertension in pregnancy along with its complications like end-organ damage, preeclampsia, eclampsia and postpartum eclampsia are increasing.[2] Gestational hypertension and its sequels are major causes of fetal and maternal morbidity and mortality and affect almost 8 % of pregnancies. Proper technique should be observed while recording blood pressure in outpatient setting i.e. patient be seated with well supported back ,uncrossed legs and no caffeine/tobacco within 30 minutes of BP recording. In hospitalized patients pressure on inferior vena cava from gravid uterus should b avoided by placing the patient in left lateral position.[3] Labetalol and hydralazine by IV route have always been first choice for severe hypertension in pregnant and post partum women.[4]

Many trials have been conducted comparing pregnancy outcomes in women treated with labetalol and methyldopa. One such non–randomized trial CHIPS trial compared light as compared to strict control of gestational hypertension. These trials faced residual confounding though showed methyldopa treated women to have better pregnancy outcomes as compared to labetalol treated group.[5] Labetalol and methyldopa were effective in reducing systolic and diastolic BP significantly but labetalol was found to control BP more rapidly and efficiently. Safety profile of both drugs was similar.[6]

In a study comparing labetalol and methyldopa labetalol receiving women showed significant drop on mean arterial pressure and showed that labetalol is safe and efficient drug of choice while treating gestational hypertension.[7] Another study declared more hypotension observed with labetalol use irrespective of dosage and use. Moreover more neonatal admissions were observe in labetalol treated women's infants.[8] Effects on the neonate thus demanded more frequent blood sugar and blood pressure monitoring in initial days of infant's life especially in preterm and intubated infants.[9] Labetalol was found to decrease maternal morbidity to a significant extent but a study showed higher rates of small for gestational age infants, neonatal hyperbilirubenemia and neonatal hypotension and thus more NICU admissions in neonates of women treated with labetalol.[10] Labetalol when compared to methyldopa or no treatment was found to lower fetal and maternal morbidity in another study. Women showed increase in platelet count and reduced proteinurea after treatment initiation.[11]

The rationale of this study is labetalol is more effective in comparison with methyldopa in pregnancy induced hypertensive females in terms of control of blood pressure within 48hours of drug intake, in pregnant patients between POG of 28 to 32 weeks. Here, the major concern is to prevent complications of pregnancy induced hypertension leading to iatrogenic premature delivery. At local centres, lack of literature indicated that there is a need for the interventions and better strategies to treat pregnancy induced hypertension by recently approved first line drug Labetalol with old tested Methyl Dopa. It is required to educate medical practitioners about the first line antihypertensive therapy for pregnant females. Furthermore, this study may help in improving the maternal and infant care, mortality, morbidity rates and to prevent pre-eclampsia and eclampsia.

MATERIALS AND METHODS

This randomized control trial was conducted at Department of Gynecology Unit 2 Bahawal Victoria Hospital, Bahawalpur from 1st January 2022 to 31st December 2022. A of total 100 cases divided into 2 groups is calculated by the WHO sample size calculator for hypothesis testing of population of females having gestational hypertension between periods of gestation from 28 weeks to 32 weeks recommended value of 1.96 (95%) was taken as level of confidence measure. Recommended value 0.05 was taken as margin of error. 0.5 is considered as recommended value for baseline levels of indicators. A value of 1.0 is taken as design effect. Pregnant females between 28 to 32 weeks of gestation, BMI between 25 to 35 kg/m^2 and giving consent were included. Patients who are already hypertensive before 28 weeks or after 32 weeks of pregnancy (B.P ≥140/90 mm Hg) or already taking treatment,

any co-morbid diseases like cardiac, renal diseases, or autoimmune disorder, BMI<25 kg/m2 or >35 kg/m^2, age below 20 years and over 40 years and history of allergy to any of the study medications were excluded.

After explaining her procedure, 100 (50 in each group) patients of pregnancy induced gestational hypertension were included. Written informed consent and detailed history was taken from each patient. These patients were divided into following two groups depending on the drug given; Group A: these patients were given Labetalol for Gestational Hypertension 100 mg twice daily and Group B: These patients were given Methyl Dopa for gestational hypertension 250 mg three times a day They were asked about the history of hypertension and other complications occurring in pregnancy along with lifestyle habits that includes smoking and exercise. After fulfilling criteria for gestational hypertension, patients were given either of the drugs and were monitored for control of blood pressure in pregnancy. Patients were evaluated for hypertension at admission in ward and after 48 hours of admission. The laboratory tests including urinary proteins, serum uric acid, serum LDH were measured. All the data was entered and analyzed by SPSS-25. Independent sample t test was applied to compare the variations of blood pressures by usage of one of above-mentioned drugs taking p value ≤0.05 as statistically significant.

RESULTS

In both groups the age was 20-28 mostly. In group A, 56% of the patients and in group B, 58% of patients were 21-28 years. In group A, 52% patients were primigravida and in group B, 48% patients were primigravida. Mean body mass index in Group A, 27±3.28 and group B, 27.30±3.76 (P = 0.671) [Table 1]. No statistical difference in systolic and diastolic blood pressure was observed before starting treatment in both groups but a significant fall in diastolic blood pressure was observed in group A after 48 hrs of initiation of treatment i.e., with labetalol (P = 0.007) [Table 2]

Table 1: Comparison of confounding variables

Variable	Group A	Group B	Total
Age (years)			
20-28	28 (56%)	29 (58%)	57
29-40	22 (44%)	21 (42%)	43
Primigravida	26 (52%)	21 (48%)	47
Multigravida	24 (48%)	29 (58%)	53
BMI	27.3±3.28	27.30±3.76	-

Table 2: Comparison of blood pressures

BP	Group A	Group B	P value
Before administrating drug			
Systolic BP	150.6±8.6	150.2±8.2	0.813
Diastolic BP	103.40±4.78	102.40±4.78	0.275
After 48 hrs			
Systolic BP	146.20±8.3	144.60±8.62	0.347
Diastolic BP	95±7.35	91.20±6.27	0.007

DISCUSSION

In our country although there is steady improvement in the health care system and thus reduction in maternal mortality to some extent but still there is a set of population with a persistently raised maternal mortality rate .among causes of maternal mortality hypertensive disorders remain a main cause and contribute up to 10% of maternal and fetal mortality and morbidity.[12] 6-8% worldwide hypertension is affecting the pregnancies and remains a high cause of maternal mortality.[13,14] Antihypertensive play a vital role but not all are safe during pregnancy. When given methyldopa, labetalol, hydralazine and nifedepine a calcium channel blocker are safe options.[15]

Advanced maternal age and subsequent pregnancies are a risk factor for gestational hypertension.[16,17] In our study average age in group A was 26 years and in group B it was 27 years. In group A 52% and in group B 42% of patients were primigravida.

Regarding blood pressure control in our study in group A, there was a significant difference in reduction in diastolic blood pressure after 48 hrs of initiation of drug. Our study was supported by the results of yet another study in which significant reduction in MAP was observed in labetalol user group.[12] El Qarmalawi et al[18] concluded almost 80% of women using labetalol showed reduction in MAP as compared to a little above 65 % women taking methyldopa.[18] Similarly Cruickshank et al found that labetalol reduced blood pressure in almost 90% women within 24 hours of starting the treatment. In a study by Brunton et al[19] comparable results were published where labetalol was found to be more effective than methyldopa in treatment of gestational hypertension.

CONCLUSION

Labetalol and methyldopa reduce blood pressure in women with gestational hypertension significantly but labetalol is more effective than methyldopa.

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