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LABETALOL (100 MG TID) AS A BETTER BLOOD PRESSURE MANAGEMENT INTERVENTION FOR THE PREGNANCY INDUCED HYPERTENSION (PIH) CASES THAN THE METHYLDOPA (250 MG TID) MANAGED (PIH) CASES

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Abstract:

Background: *Hypertension in the course of pregnancy is an important healthcare issue causing maternal mortality in the pregnant women. Our research compares the centrally acting methyldopa and α and β-blocker labetalol efficacy in order to control the incidence of blood pressure which causes hypertension during pregnancy.*

Material & Methods: *We completed this research in the time span of July, 2015 to June, 2017 at Mayo Hospital, Lahore on 120 cases of hypertension during pregnancy. Total sample population was divided in to two groups A & B respectively named as labetalol (100mg tid) and (250 mg tid). In both the groups before and after the treatment diastolic and systolic blood pressure was measured on 1st and 7th day of treatment. During the treatment we observed that BP was reduced, medication was required in order to control the BP and associated side effects of the methyldopa and labetalol.*

Results: *There was a significant observable fall in the measurement of the Labetalol treated group systolic/diastolic BP from first day to the seventh day of the treatment. Every group was observed before and after the management systolic/diastolic BP and it was also compared as on the first day and on the seventh day of the management. Labetalol treated cases were observed with systolic/diastolic BP on 1st day as (150 ± 9 mmHg /100 ± 8 mmHg) respectively and after the intervention when controlled on the seventh day it was measured as (123 ± 9 mmHg / 79 ± 7 mmHg); whereas, systolic/diastolic BP in the group of methyldopa on the first day it was measured as (148 ± 8 mmHg /102 ± 9 mmHg) reduced after seventh day with the help of medical intervention to (125 ± 10 mmHg / 82 ± 6 mmHg).*

Conclusion: *Better hypertensive action was observed in the Labetalol treated group having reduced fetal side effects and maternal mortality in comparison to the group treated with methyldopa; which proves the medication intervention choice in the cases of hypertension during pregnancy.*

Key Words: *Labetalol; Antihypertensive; Pregnancy-induced hypertension and Methyldopa.*

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INTRODUCTION:

To control the rate of mortality medical services have been vital and effective in the modern age; whereas, it is also a fact that Pakistani population is largely deprived of these healthcare facilities. Hypertension causes complications in ten percent of the pregnant cases which results in higher rates of mortality and morbidity [1].

BP is observed at decline in the first few weeks of the pregnancy as there is a relaxation act in the vessels of the blood, BP rises as the pregnancy matures and it becomes normal gradually. Various factors can contribute in alteration of the blood pressure such as physical activity, time of the day, different position, diet, anxiety, sleeping habits etc. A rise in BP in the course of pregnancy can be a source of very worst situation that may be harmful for the maternal and fetal health such as pre-eclampsia that may lead to kidneys failure, stroke, liver, stroke, death of baby, still birth and numerous associated clotting system abnormalities [1, 2].

Gestational hypertension refers to high BP development at the end of twentieth week of pregnancy without any protein in urine or any other related pre-eclampsia symptom, it is also known as pregnancy-induced hypertension (PIH). High BP is one of the biggest medical issue all over the globe estimated 6 – 8 percent complications of hypertension in the pregnant women [3]. Eclampsia and Pre-eclampsia is a reason behind a death in every three minute all over the globe [4, 5]. Methyldopa and Labetalol are safe and effective interventions in the pregnant cases in order to normalize the blood pressure [6 – 10]. Ten percent of the pregnancies face the issue of high BP [11]. Medication to control BP in the pregnancy is considered as controversial. In the 3rd trimester there is a little space for the mediation in the hypertensive cases. Mild pregnancy cases reflect reduced perinatal death cases [13]. The treatment of the hypertensive cases is generally for a limited time duration that is focused on the management of BP. Moreover, to manage the pregnancy induced hypertension the major concern is with the gestational age, maternal health and fetal exposure against the antihypertensive medications. The primary objective of these drugs is to the prevention of the severe hypertension.

Pregnancy induced hypertension is also referred to gestational hypertension that can be managed through oral dose of drugs with associated challenges for the physicians. There are numerous drugs that can manage the instance of blood pressure in the fetus and mothers, which can help in the avoidance of the maternal complications [14, 15]. We can treat hypertension through nifedipine, hydralazine, labetalol and methyldopa which are treated orally [16]. Our research compares the centrally acting methyldopa and α and β-blocker labetalol efficacy in order to control the incidence of blood pressure which causes hypertension during pregnancy.

MATERIAL AND METHODS:

We completed this research in the time span of July, 2015 to June, 2017 at Mayo Hospital, Lahore on 120 cases of hypertension during pregnancy. Total sample population was divided in to two groups A & B respectively named as labetalol (100mg tid) and (250 mg tid). In both the groups before and after the treatment diastolic and systolic blood pressure was measured on 1st and 7th day of treatment. During the treatment we observed that BP was reduced, medication was required in order to control the BP and associated side effects of the methyldopa and labetalol. In the BP fall we monitored blood pressure with the management of methyldopa and labetalol, time elapsed in order to control BP with both interventions, both the interventions dose, spontaneous labor onset / induced, drugs associated side effects.

RESULTS:

There was a significant observable fall in the measurement of the Labetalol treated group systolic/diastolic BP from first day to the seventh day of the treatment. Every group was observed before and after the management systolic/diastolic BP and it was also compared as on the first day and on the seventh day of the management. Labetalol treated cases were observed with systolic/diastolic BP on 1st day as (150 ± 9 mmHg /100 ± 8 mmHg) respectively and after the intervention when controlled on the seventh day it was measured as (123 ± 9 mmHg / 79 ± 7 mmHg); whereas, systolic/diastolic BP in the group of methyldopa on the first day it was measured as (148 ± 8 mmHg /102 ± 9 mmHg) reduced after seventh day with the help of medical intervention to (125 ± 10 mmHg / 82 ± 6 mmHg). In the research sample 18 – 25 years age group had 62 cases (51.66%). Research had group A & B respective 33 cases (53.23%) and 29 cases (46.77 %) with a mean age factor of 25.64 & 25.19 respectively. Non-significant statistical mean age was observed in both A and B groups.

First time pregnancy was observed in the 76 women, 41 cases in the methyldopa group (53.94%) and 35

cases in the labetalol group (46.06%). Both the groups were non-significant statistically.

Table – I: Systolic Blood Pressure before and after treatment value as on 1st & 7th day in A and B group respectively managed by Labetalol & Methyldopa

S No	Group	Systolic BP (mmHg) (Before-treatment)	Systolic BP (mmHg) (After-treatment)	T-Value
1	Labetalol (60)	150 ± 9	123 ± 9	11.21
2	Methyldopa (60)	148 ± 8	125 ± 10	14.02

Table – II: Diastolic Blood Pressure before and after treatment value as on 1st & 7th day in A & B group respectively managed by Labetalol & Methyldopa

S No	Group	Diastolic BP (mmHg) (Before-treatment)	Diastolic BP (mmHg) (After-treatment)	T-Value
1	Labetalol (60)	100 ± 8	79 ±7	11.81
2	Methyldopa (60)	102 ± 9	82 ± 6	15.63

Table – III: Distribution of patients according to side effect of labetalol

Labetalol Group	
Symptoms	**Patient's Percentage**
Postural Hypotension	0
Drowsiness	6.31
Headache	16.36
Nausea	13.34
Vomiting	9.93
Weakness	10.43
Myalgia	9.05
Bradycardia	7.58

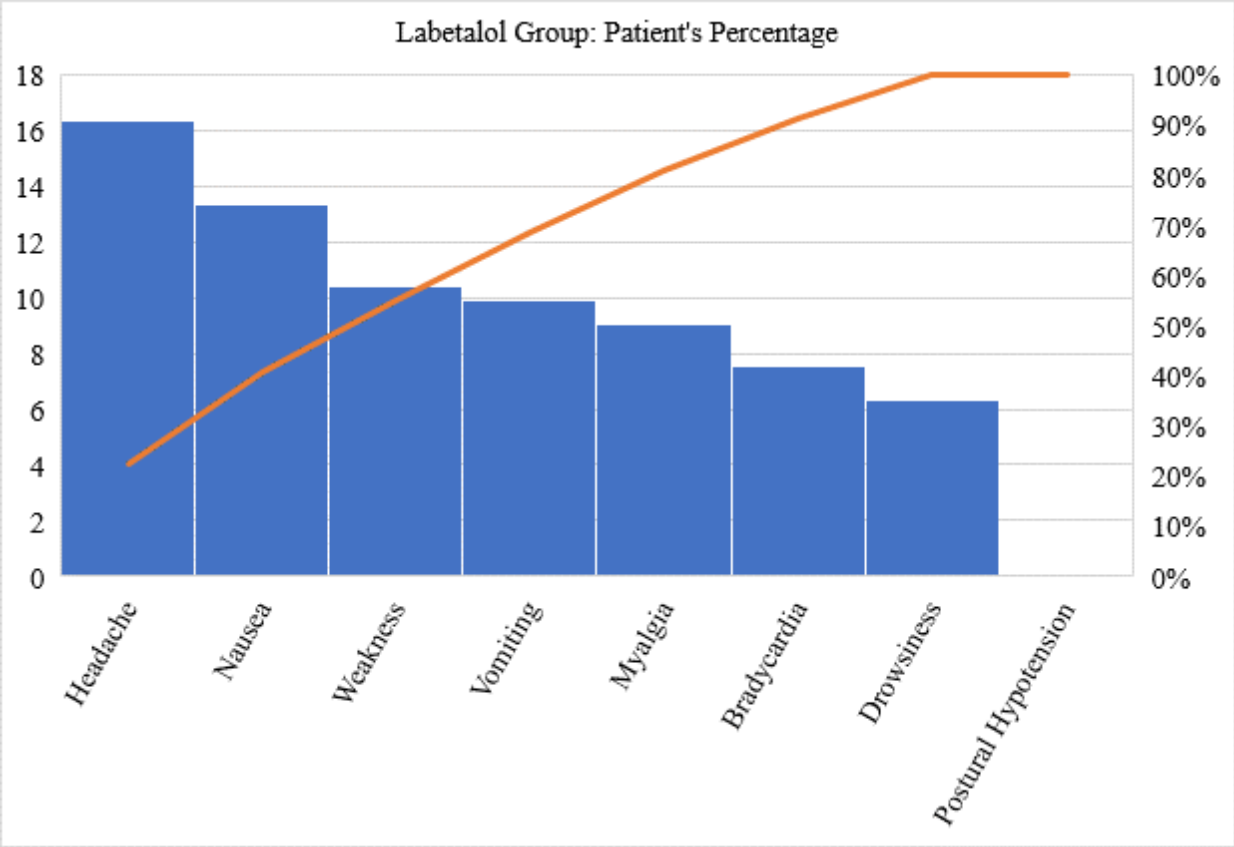
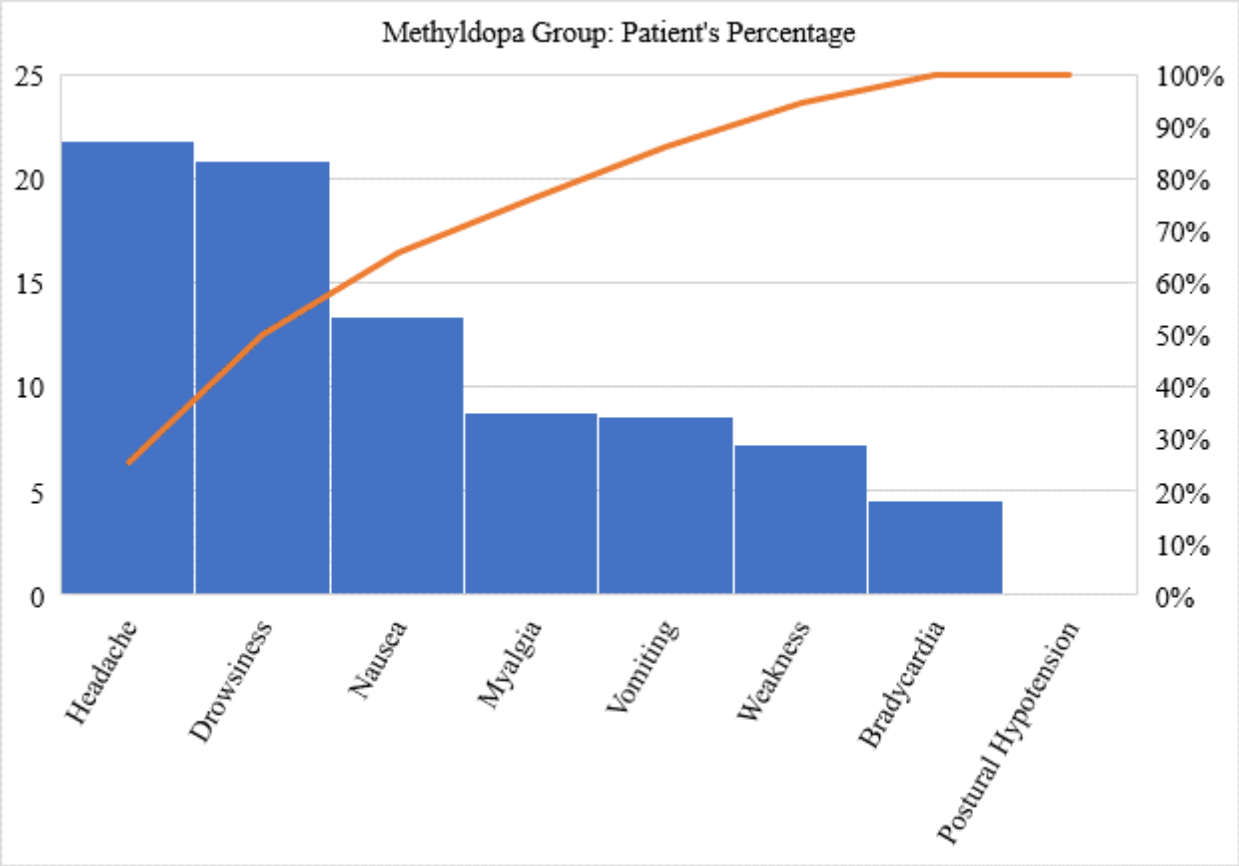


Table – IV: Patient's Distribution according methyldopa side effects

Methyldopa Group	
Symptoms	**Patient's Percentage**
Postural Hypotension	0
Drowsiness	20.91
Headache	21.82
Nausea	13.34
Vomiting	8.57
Weakness	7.22
Myalgia	8.81
Bradycardia	4.52



A detailed outcomes analysis has been made in Table I, II, III & IV.

Spontaneous labor cases were 29 as observed in the labetalol group; whereas, 31 cases were in the in-methyldopa group (51.66%) with 19 spontaneous labor (31.66%) and 41 induced labor cases (68.33%). P-value was significantly considered as (< 0.05). In labetalol treated patients spontaneous labor cases were increased which reflects cervix ripening effect of the labetalol.

Nausea, myalgia, vomiting, weakness, headache, bradycardia and drowsiness were among the common side effects. Headache was observed in A and B group respectively as 18 and 24 cases. Most of the patients who were treated with labetalol complained about weakness; whereas in the B group drowsiness was mostly complained by the methyldopa managed patients. Table III and IV also reflects the side effects.

DISCUSSION:

We included total 120 cases and divided them in two groups 60 each to be treated with labetalol and methyldopa respectively for the management of the PIH in the age limit of 18 – 25 years. Most of the cases experienced first pregnancy which have been shown in the pregnancy distribution. Labetalol group was measured a systolic/diastolic BP respectively (150 ± 9 mmHg /100 ± 8mmHg) when the patients were brought to clinics but after the interventional drug administration it was controlled to (123 ± 9 mmHg / 79 ± 7 mmHg) on the 7th day of admission (p-value < 0.05). On the other hand, the patients in the group B were managed by methyldopa and their systolic/diastolic BP was observed as (148 ± 8 mmHg / 102 ± 9mmHg) on the 1st day which was restricted on the 7th day to a limit of (125 ± 10 mmHg / 82 ± 6 mmHg). These values clearly show the efficacy of both drugs in order to control the BP in the PIH patients from first day to the seventh day. It was observed in our research that systolic/diastolic Blood Pressure was almost same in both A and B groups before treatment but at the seventh day after the intervention of drugs the outcomes were same as observed b another author lamming [17]. It has been reported in another research that systolic/diastolic Blood Pressure fall is significant in the labetalol treated group when compared to the group managed by methyldopa [18]. Same author also reports that (81.4%) labetalol treated patients reflected significant systolic/diastolic Blood Pressure fall when compared to the group managed by methyldopa (68.5%). Better control on the systolic/diastolic Blood Pressure was

reflected by group A (labetalol) when compared to the control of the B group (methyldopa), which clears that methyldopa is less effective than the labetalol to manage the hypertension cases and vice versa. Same has been observed about the rapid control of the BP in the hypertensive patients that 45 patients (88%) in the total of 51 were managed by oral dose of labetalol [18]. Michal and Lardoux report 92 percent and 82 percent respectively [17, 18]. Outcomes of this particular research also comply with the outcomes of other authors who show that a minimum fetal and maternal incidence with better peri-natal results through the stabilization of the labetalol when it was administered to the PIH cases; whereas another research describes that alpha (α) and beta (β) blocker labetalol also effectively control the blood pressure [17, 18].

CONCLUSION:

Better hypertensive action was observed in the Labetalol treated group having reduced fetal side effects and maternal mortality in comparison to the group treated with methyldopa; which proves the medication intervention choice in the cases of hypertension during pregnancy.

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