



## COMPARE THE FETOMATERNAL OUTCOME OF ORAL LABETALOL VERSUS LABETALOL WITH ORAL EATING MURRAYA KOENIGII/CURRY LEAVES (KADI PATTI) IN PREGNANCY INDUCED HYPERTENSION PATIENTS.

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### Abstract:

**Objective:** To compare the fetomaternal outcome of oral labetalol versus Labetalol with oral eating murraya koengii/curry leaves (Kadi Patti) in pregnancy induced hypertension patients.

**Material & Method:** This cohort study was conducted from March 2019 to February 2022 at the Department of Obstetrics & Gynecology, Lyari General Hospital Karachi. All pregnant patients who were diagnosed with pregnancy induced hypertension, such systolic BP of  $\leq 160$ mmHg or diastolic BP of  $\leq 110$ mmHg admitted and case entry after written informed consent has been done. Chronic hypertension, history of cardiac abnormality, and intrauterine death were excluded before 28th week from this study. Preliminary results were measured for BP control and the number of doses needed. Secondary outcome measures were maternal complications of placental abruption, HELLP, and eclampsia.

**Results:** A total of 1000 patients were recruited in this randomized controlled study. The mean age was  $29.2 \pm 7.33$  years in group A and  $29.58 \pm 7.90$  years in Group B. Most of the patients with a primigravida,  $29.58 \pm 7.90$  and 362(72.4%) were Group A and B respectively. Common maternal side effects encountered were palpitation seen in 66(13.2%) patients of Group-A and 44(8.8%) patients in Group-B ( $p=0.021$ ). Followed by headache were seen in 42(8.4%) patients of Group-A, 33(6.6%) patients of Group B. Placental Abruption in 42(8.4%) patients were observed in Group A, while in 25(5%) patients in Group B ( $p=0.213$ ). Eclampsia was seen in 28(5.6%) patients in Group-A and

22(4.4%) patients developed eclampsia in Group B ( $p=0.011$ ). In Labetalol Group, 67(13.4%) babies had APGAR Score  $\leq 7$  and 131(26.2%) babies required admission to NICU. In In labetalol with curry leaves group-B 56(11.2%) babies had Apgar score  $\leq 7$  & 106(21.2%) babies were admitted to NICU ( $p= 0.003$ ). Early Neonatal Deaths and Intrauterine Death was observed 39(7.8%) in labetalol with curry leaves group-B, followed by still birth in 8(1.6%) babies. While in group A 51(10.2%) babies were early neonatal deaths and 12(2.4%) babies still birth .

**Conclusion:** Oral labetalol with Curry Leaves (Kadi Patta) is efficacious in controlling BP in patients with induced hypertension patients without any significant side effects.

**Key Words:** Oral Labetalol, Curry Leaves (Kadi Patta), Pregnancy induced hypertension.

## **INTRODUCTION:**

Pregnancy induced hypertension (PIH) is a multisystem pregnancy disorder that affects placental perfusion (1). Pregnancy induced hypertension is one of the high blood pressure disorders of pregnancy that can lead to dire consequences for both mother and fetus. Its morbidity and mortality rates are significantly high in developed and developing countries (2). In Nigeria, preeclampsia is a top three causes of maternal deaths (3,4). Hypertension disorder in pregnancy is stated as Diastolic blood pressure (DBP) of 90 mmHg or higher or systolic blood pressure (SBP) of 140 mmHg or higher after 20 weeks of gestation in previously normal blood pressure women (5).

Prevalence of Pregnancy-induced hypertension is estimated to affect 7% to 10% of all pregnancies (6). Secondary analysis has been done by World Health Organization (WHO) in several different countries as a survey on maternal and newborn health showed that preeclampsia and eclampsia cases increase 2.16% and 0.28% respectively (7). The utmost cure for both pregnancy-induced hypertension and preeclampsia is delivery of baby. However maternal and fetal mortality can be significantly reduced by appropriate treatment (2). Various treatment strategies have been used for pregnancy-induced hypertension. Labetalol is an alpha as well as beta adrenergic antagonist. The role of alpha blocking action is primarily on alpha-1 receptors while beta antagonist has non-selective beta action. By blocking alpha-1 and beta receptor, it decreases systemic arterial blood pressure and systemic vascular resistance without altering resting heart rate, cardiac output, and stroke volume. Side effect profile is better but only concern is related to neonatal bradycardia (8). The purpose of this study was to compare the role of labetalol versus eating murraya koenigii/curry leaves (kadipatta) in maternal outcome in patients with pregnancy induced hypertension.

## **Material and Methods**

This cohort controlled study was conducted from March 2019 to February 2022 at the Department of Obstetrics & Gynecology, Lyari General Hospital Karachi. The study was ethically approved by the Institutional Review Board (IRB) Hospital Karachi. All pregnant booked patients are diagnosed with mild pre-eclampsia at 28 weeks of gestation such as systolic BP of  $\leq 160$  mmHg or diastolic BP of  $\leq 110$  mmHg with proteinuria admitted and entered the case after written informed consent. Chronic hypertension, severe pre-eclampsia systolic BP of  $\geq 160$  mmHg or diastolic BP of  $\geq 110$  mmHg, history of cardiac abnormality, intrauterine death before 28<sup>th</sup> weeks was excluded from this study. Detailed demographic history was taken and sent relative investigations to laboratory.

The patients in Group-A were given oral labetalol 100 mg and Group-B were given Labetalol with orally eating **murraya koenigii** / curry leaves (Kadi Patta). Blood pressure was recorded every 15 minutes until the target blood pressure was obtained between  $\leq 130/90$  mmHg. Fetal heart rate monitoring was done every 15 minutes. Preliminary results were measured for BP control and the number of doses needed. Secondary outcome measurements were maternal complications of placental abruption, HELLP and eclampsia. Data was entered and analyzed using SPSS version 23.

### Preparation of dried *Murrayakoenigii* powder

A large number of *Murraya* leaves were collected. The leaflets were separated from stems, washed and rinsed in tap water and dried under room temperature. After drying, the leaves were grind into powderform under hygienic condition.35 grams of curry leaves powder were made from approximately 100 grams of leaves. 35 grams of each was packaged and distributed in a food grade plastic bottle to the patient after consent and explanation. The patient was instructed to consume 5 gm of curry leaves powder added to half a glass of soft drink (Roohafza Sharbat) during the lunch. After every seven days, the powder should be made fresh and given to the patients. Control group did not receivecurry leaves powder.

### RESULTS

A total of 1000 patients were recruited in this randomized controlled study. Group-A with 500 patients was given oral labetalol, Group B with 500 patients was given oral Curry Leaves with oral labetalol. Patient demographic characteristics are shown in Table-I. The mean age was  $29.2\pm 7.33$  years in group A and  $29.58\pm 7.90$  years in Group B, (Table No.1). In our study, most patients were primigravida,  $29.58\pm 7.90$  and 362(72.4%) in Group A and B respectively. While most patients belonged to middle-class families (Table No.1).

All patients had their BP controlled within 60 minutes. Common maternal side effects were palpitation seen in 66(13.2%) patients of Group-A and 44(8.8%) patients in Group-B ( $p=0.021$ ). Followed by headache were seen in 42(8.4%) patients of Group-A, 33(6.6%) patients of Group B (Table No.2). Maternal complications were slightly high observed in Labetalol Group A as compared to Group B. Placental Abruption in 42(8.4%) patients were observed in Group A, while in 25(5%) patients in Group B ( $p=0.213$ ). Eclampsia was seen in 12(2.4%) patients in Group-A and 6(1.2%) patients developed eclampsia in Group B ( $p=0.011$ )( Table No.2).In Labetalol Group, 67(13.4%) babies had APGAR Score  $\leq 7$  and 131(26.2%) babies required admission to NICU. In Labetalol with Curry Leaves group-B 56(11.2%) babies had Apgar score  $\leq 7$  & 106(21.2%) babies were admitted to NICU ( $p= 0.003$ ). Early Neonatal Death and IUDs was observed 39(7.8%) in labetalol with Curry Leaves Group-B, followed by still birth in 8(1.6%) babies. While in group A 51(10.2%) babies were early neonatal deaths/IUDs and 12(2.4%) babies still birth (Table No.3).

**TABLE # 1** Maternal demographic variables  
n=1000

VARIABLE	Group-A Labetalol N=500	Group-B Labetalol+Curry Leaves N=500
Age	29.2±7.33	29.58±7.90
• 15-30 years	289(57.8%)	302(60.4%)
• 31-45 years	211(42.2%)	198(39.6%)
Parity		
• Primigravida	298(59.6%)	362(72.4%)
• Multigravida	202(40.4%)	138(27.6%)
Socioeconomic Status		
• Poor Class	379(75.8%)	402(80.4%)
• Middle Class	96(19.2%)	68(13.6%)
• High Class	25(5%)	30(%)
Mean Gestational age Weeks	35.66±1.512	35.11±1.341

**TABLE # 2 Maternal Outcome**  
n=1000

VARIABLE	Group-A Labetalol N=500	Group-B Labetalol+Curry Leaves N=500	P-VALUE
<b>Mode of delivery</b>			
• Vaginal	227(45.4%)	345(69%)	<0.001
• Assisted	63(12.6%)	30(6%)	
• Caesarean	210(42%)	125(25%)	
<b>Maternal Side effects</b>			
• Palpitation	66(13.2%)	44(8.8%)	0.012
• Headache	42(8.4%)	33(6.6%)	
• Dizziness	5(1%)	1(0.2%)	
• Hypotension	10(2%)	4(0.8%)	
<b>Maternal Complications</b>			
• Eclampsia	12(2.4%)	6(1.2%)	0.013
• Placental Abruption	42(8.4%)	25(5%)	
• HELLP	3(0.6%)	0	
• DIC	11(2.2%)	5(1%)	

**TABLE # 3 Fetal Outcome**  
n=1000

VARIABLE	Group-A Labetalol N=500	Group-B Labetalol+Curry Leaves N=500	P-VALUE
<b>Birth Weight (kg)</b>			
• Mean	2.81±0.21	3.21±0.33	0.412
<b>APGAR score</b>			
• ≤7	67(13.4%)	56(11.2%)	0.290
• >7	433(86.6%)	444(88.8%)	
<b>Neonatal Outcome</b>			
• Normal Birth	209(41.8%)	275(55%)	0.003
• Neontal Deaths With Intrauterine death	51(10.2%)	39(7.8%)	
• Still birth	12(2.4%)	8(1.6%)	
• Low Birth weight	46(9.2%)	30(6%)	
• Preterm delivery	51(10.2%)	42(8.4%)	
• Need NICU	131(26.2%)	106(21.2%)	

## DISCUSSION

Incidence of pregnancy induced hypertension is increasing across wide range of obstetric care settings. Among different medical condition occurring in pregnancy, hypertensive disorder is the most prominent one<sup>10</sup>. Hypertension in pregnancy causes significant morbidity and mortality in developing as well as in developed countries. Severe hypertension has dreaded consequences<sup>11</sup>. Risk factors that increases the chances of preeclampsia include pre-existing hypertension, diabetes, obesity, increase age at childbearing, multiple pregnancies, and artificial technology used for conception<sup>12,13,14</sup>. There is acquiescence that persistent hypertension in pregnancy should get treated as it contain high risk of maternal end organ complications such as cerebral stroke. The time at which treatment is instituted is very crucial. The rate of blood pressure control should not be too fast as it can lead to fetal placental hypoperfusion<sup>11</sup>. A confidential analysis into Maternal and Child Health ascribed that inadequate treatment of severe preeclampsia causes fetal intracranial hemorrhage<sup>15</sup>. Pre-eclampsia complicates around 5% to 15% of pregnancies and accounts for approximately a quarter of all antenatal

admissions<sup>9</sup>. The history of use of the *murraya koenigii* /curry leaves dates from the first time from fourteenth century.

It has been updated to use the word 'kari' in Tamil and Kundu literature. The word is now popularly used for *Murraya koenigii*, the Kerry leaf derived from the Tamil word curry which means 'spicy sauce'<sup>16</sup>. Labetolol is considered as a first line drug using for the treatment of hypertension leading to preeclampsia<sup>17</sup>. Labetolol has both alpha-1 receptors blocking effect specifically post synaptic alpha-1 and non-selective beta receptors blocking effect. It is considered as a first line drug for controlling blood pressure during pregnancy, but it has risk of causing fetal bradycardia. Trivedi Swati et al. and Numba both also found out labetalol as rapid acting and most effective blood pressure controlling drug for severe preeclampsia in their study<sup>18,19</sup>.

Mean age of our patients was comparable in groups (A=29.2±7.33 years and B=29.58±7.90 years. 298(59.6%) and 362(60.4%) patients in group A and B respectively were primigravida, as is the case observed worldwide that majority of primigravida suffered from pregnancy induced hypertension and study of Tayyiba Wasim also reported that most of the patients were primigravida<sup>20</sup>. In this study mean age of gestation was 35.66±1.512 weeks and 35.11±1.341 weeks in group A and B respectively. This is contradict to studies by Raheem et al and Yogita et al. demonstrated majority of female delivered at 37-39 weeks of gestational age<sup>15,21</sup>. The justification could be because quite lot females in our study were unbooked and were not receiving any prenatal care. Proper prenatal care has a tremendous role in controlling blood pressure and maintain pregnancy for long duration.

The study conducted by Shi D-D et al demonstrated that intravenous labetalol is effective in achieving the blood pressure control in 42 minutes<sup>22</sup>. This is similar to our study where blood pressure control occurred in 60 minutes. In our study observed the good results of curry leave with labetalol in controlling the blood pressure during the fertile period.

The side effects profile commonly observed in our study is comparable to other studies conducted<sup>23-25</sup>, these were palpitation seen in 66(13.2%) patients of oral labetalol group and in labetalol with curry patta group also found good results 44(8.8%) patients (p=0.012). Followed by headaches were seen in 42(8.4%) patients of Group-A and 33(6.6%) patients of Group B. Regarding maternal complication it had been observed that oral labetalol group demonstrated slightly higher complication profile than labetalol with curry patta group. Placental Abruption in 42(8.4%) patients were observed in oral labetalol Group, while in 22(4.4%) patients in labetalol with curry patta group (p=0.022). Eclampsia was seen in 12(2.4%) patients in Group-A and 6(1.2%) patients developed eclampsia in Group B (p=0.022). This is in contrast to study conducted by Tayyiba et al. where placental abruption was seen in 4 (3.92%) of labetalol group patients and eclampsia was seen in 4 (3.92%) of labetalol group of patients<sup>26</sup>. Another study conducted by B Sathyaet. al. demonstrated maternal complications eclampsia of about 8% in labetalol group<sup>27</sup>. In our study the oral labetalol with curry patta was found good results in pregnancy induced hypertension patients.

## CONCLUSION

Oral labetalol with curry leaves (KadiPatta) is effective in controlling BP in patients with pregnancy induced hypertension without significant side effects. Oral labetalol and curry leaves can be recommended for the control of pregnancy induced hypertension due to ease of oral administration, cost-effectiveness and easy availability.

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