ORIGINAL ARTICLE

A Comparision of Tablet Nifedipine with Tablet Methyldopa in Controlling Mild to Moderate Pregnancy induced Hypertension (PIH)

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ABSTRACT

Objective: To compare the efficacy of tablet nifedipine and tablet methyldopa in controlling mild to moderate pregnancy induced hypertension.

Study Design: Randomized control trial.

Place and Duration of Study: Department of Obstetrics & Gynaecology Benazir Bhutto Hospital Rawalpindi Pakistan from 01 May 2019 to October 2019.

Methodology: Two hundred and thirty six patients with mild to moderate pregnancy induced hypertension were selected and randomized based on lottery method to either group A or group B. Group A received tablet Methyldopa 250mg TDS while Group B received tablet Nifedipine 10mg bd. BP was checked 4 hourly for 24 hours and then decided which medicine control the BP best.

Results: The mean age of the study group was 30.39±5.087 years. There was no statistically significant difference in the age of both groups. The majority of the patient in our study was multigravida, in the last trimester of pregnancy and had a history of hypertension in previous pregnancy. There were eight treatment failure in Methyldopa group while two treatment failure in Nifedipine group. Thus Methyldopa and Nifedipine had comparable efficacy in controlling blood pressure.

Conclusion: Nifedipine is equally effective as compare to Methyldopa in controlling mild to moderate hypertension in pregnancy and can be considered as effective alternative to Methyldopa.

Keywords: Hypertension, Pregnancy, Methyldopa, Nifedipine.

INTRODUCTION

Hypertension is the most prevalent medical condition in Pregnancy.[1] This triggers a significant number of maternal and foetal morbide and mortality.[2,3] More generally, hypertension is obese, primigravidic, diabetes and prior history of PIH.[4] Hypertension-induced pregnancy occurs after 20 weeks of gestation, is not proteinuric and is normally resolved after 6 weeks after pregnancy.[2]. Pre-eclampsia, characterised by hypertension, proteinuria and oedema, can take the form of pregnancy induced hypertension. If the blood pressure is 160-170 mmHg and the blood pressure diastolic is 110 mm or higher on more than 2 occasions 6 hours apart. Other features such as proteinuria, edoema and oliguria may be present.[2] There are general consensus that maternal and foetal morbidity and mortality are reduced with anti-hypertensive care. Hypertension events are 10 to 15 percent, while pre-eclampsia complicates 5 to 8 percent of pregnancies.[2] A number of PIH therapies have been approved but Methyldopa, Labetalol and Nifedipine are recommended for mild to moderate hypertension.[5]

In the first quarter, especially 3rd-11th week, when antihypertensive medication has to be used, it is possible to produce teratogenic effects. Treatment of PIH is primarily the termination of pregnancy, which is in many cases not possible due to the gestational age of pre-term pregnancy. The continuation of pregnancy is thus careful until the point of foetal survival, which is good for mother and foetus.[7]

Methyldopa is a centrally acting agent and it is an alpha adrenergic receptor blocker. Although considered by most clinicians to be the drug of choice, is increasingly being noticed that it is a weak antihypertensive drug that need to be given three or four times a day and frequently requires use of additional medication.[8] Moreover reactive hepatitis, though not much frequent, is a known side effect of it.[9] While Nifedipine, a calcium channel blocker, though considered to be a second line agent, has been found to be equally effective in controlling Postpartum hypertension when compared with methyldopa.[7] In one recent study 51.2% of patient taking methyldopa did not need another antihypertensive drug while 69% of those taking nifedipine did not need another additional medication. Furthermore tab nifedipine has also been found to be equally effective in controlling mild to moderate PIH when compared with methyldopa.[11]

Present study conducted aimed to evaluate which drug is better antihypertensive in controlling mild to moderate hypertension so patient would not have to be used multiple regimen of drugs.

MATERIAL AND METHODS

This randomized control trial was conducted at Department of Obstetrics & Gynaecology Benazir Bhutto Hospital Rawalpindi Pakistan from 01 May 2019 to October 2019. A total of 236 pregnant patients with systolic BP of more than 140mm Hg and Diastolic BP of more than 90mm Hg on two occasions four hours apart after 20 weeks of gestations were included in this study. Patients with Severe PIH with imminent eclampsia, heart disease including ischaemic heart disease, hematological disorder, patients with chronic

liver disease and history of intolerance/hypersensitivity to tablet Nifedipine or tablet Methyldopa were excluded from this study. After taking informed consent, these patients were randomized, based on lottery method to either Group A (Methyldopa Group] or Group B [Nifedipine Group]. BP was recorded using mercury sphygmomanometer with patient in sitting position[two readings were taken four hours apart] by same doctor or by specifically deputed doctor. Korotkoff 1 sound was used for Systolic BP and Korotkoff V sound was used for Diastolic BP. Group A received tablet Methyldopa 250mg TDS. Group B received tablet Nefidipine 10mg,bd.BP was checked 4 hourly for 24 hours and then decided which medicine control the BP best, by evaluating the measurement of BP. Data was collected in form of variables and was stored and analyzed on SPSS ver.24.0. Mean and standard deviation was calculated for quantitative data including variable as maternal age. Frequency and percentage were calculated for qualitative data including efficacy of drug, parity, gestation and history of PIH in previous pregnancy. Chi–square test was applied to compare efficacy of both drugs. P value of <0.05 was taken as significant.

RESULTS

No significant difference was observed regarding age of patients between both groups A and B (mean 28.76±6.24 years Vs 29.02±6.18 years) with p-value >0.05. There was no significant difference in the parity status between two study groups, in group A 18 (15.3%), 62 (52.5%) and 38 (32.2%) patients were grand multi para, mutipara and primipara respectively and in group B 16 (13.6%), 63 (53.4%) and 39 (33.1%) patients were grand multipara, multipara and primipara. In group A 25 (21.2%) and 93 (78.8%) patients were in 2nd and 3rd trimester of gestational age and in group B 32 (27.1%) patients were in 2nd trimester and 86 (72.9%) were in 3rd trimester, no significant difference was found regarding gestational age between both groups (Table 1) There were 8 (6.8%) treatment failures in Methyldopa group while 2 (1.7%) treatment failure in Nifedipine group. No significant difference was observed regarding effectiveness of medication between both groups (p-value >0.05) (Table 2).

Table 1: Baseline characteristics of all the patients

Characteristics	Group A	Group B	P-value
Age (Yrs)	28.76±6.24	29.02±6.18	0.08
Parity			
Grand Multipara	18 (15.3%)	16 (13.6%)	0.62
Myltipara	62 (52.5%)	63 (53.4%)	
Primipara	38 (32.2%)	39 (33.1%)	
Gestational age			
2nd Trimester	25 (21.2%)	32 (27.1%)	>0.05
3rd Trimester	93 (78.8%)	86 (72.9%)	
History of hypertension			
Yes	78 (66.1%)	75 (63.6%)	>0.05
No	40 (33.9%)	43 (36.4%)	

Table 2: Effectiveness of medication between both groups

Effectiveness	Group A	Group B	P-value
Yes	110(93.2%)	116(98.3%)	N/S
No	8 (6.8%)	2 (1.7%)	

DISCUSSION

Pregnancy hypertension is an significant cause of motherhood and mortality in the world. Around one maternal death occurs per 100,000 Live Births due to preeclampsia-Eclampsia with a mortality rate of 6.4 per 10,000 cases.[12] Not unexpectedly, several factors influence the outcome of hypertension in pregnancy. This involves (but does not restrict itself to) pregnancy, seriousness of the disorder and involvement of comorbid conditions such as diabetes mellitus, kidney disease, thrombophilic disease or prior hypertension.[13] Adverse effects of hypertension can be classified into short-term and long-term complications during pregnancies. Although caused by maternal and foetal complications in the short term may be further subgrouped, in the longer term the findings are predominantly mothers. The risk factor of foetal disease and death is mainly hypertensive diseases, particularly marked preeclampsia hypertension.[14]

In order to better diagnose category and severity of hypertension, the first concept of hypertension control is during pregnancy. The second and perhaps most important idea is to consider the foetus' possible therapeutic vulnerability.

All medicinal products with an antihypertension cross the placenta in different degrees and most are "Category C" agents. There are no data from large randomised studies that are well designed to require one product over another. There are drugs like Centrally Acting Agents (Methyldopa), Peripherally Acting Agents including B-blockers, nonselective beta- and alpha-blocker (Labetalol), alpha-adrenergic antagonists in patients suspected to have pheochromocytoma, Calcium Channel Blockers, Diuretics, Direct Vasodilators like Hydralazine and ACE Inhibitors.[15]

Metyhldopa has long been the preferred drug for treating mild to moderate pregnancy induced hypertension, but is now increasingly being noticed to be a weak antihypertensive drug which frequently requires use of an additional medication.The second option is Nifedipine,considered to be a second line agent, has been found to be equally effective in controlling postpartum hypertension.

In our study Methyldopa and Nifedipine both were equally effective in controlling hypertension in pregnant females. In one study conducted in 2010 by Ozsvar[9] the authors have evaluated the role of Methyldopa in causing acute reactive hepatitis. In this study, oral Methyldopa therapy was introduced at 21 wks gestation, to a 35 years old pregnant woman having gestational hypertension. On 23rd gestation week, patient developed acute hepatitis. Then therapy was changed from Methyldopa to Nifedipine and blood pressure was successfully under control. The gestation hepatotoxicity of alpha Methyldopa was reported first in 1969 by Elkington Smith, who suggested the monitoring of serum aminotransferases during alpha Methyldopa treatment in pregnancy in their case report. A subsequently published trial by Sayin et al[11], the role of alpha Methyldopa and Nifedipine was evaluated in controlling postpartum hypertension. The conclusion was that both had similar effectiveness on postpartum hypertension in women with various hypertensive disorders of pregnancy.

CONCLUSION

Pregnancies complicated by Hypertension need prompt diagnosis and urgent intervention because of high risk of maternal and fetal complications. Alpha Methyldopa, thought to be very effective in the management of mild to moderate hypertension but frequently requires use of additional medication. Nifedipine has comparable efficacy to Methyldopa, when used for management of mild to moderate hypertension in Pregnancy. We concluded that Nifedipine appears to be an effective alternative to methyldopa for treating mild to moderate pregnancy induced hypertension.

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