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Role of Hydralazine 25mg in Treatment of Hypertensive Patients at a Tertiary Care Hospital

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ABSTRACT

Background: Managing blood pressure in patients with hypertension remains a therapeutic issue that frequently necessitates the use of secondary medicines to primary therapy. **Objective:** To determine role of hydralazine 25mg in treatment of hypertensive patients at a tertiary care hospital. **Study Design:** Case-control comparative study. **Settings:** Department of Pharmacology, DHQ Teaching Hospital Kohat and Khaleefa Gul Nawaz Teaching Hospital, Bannu Pakistan. **Duration:** Study duration was six months from January 01, 2021 to June 30, 2021. **Methods:** In this study, 80 patients were enrolled, while 20 patients kept in control and 6o in treatment group. For both groups, one group received Hydralazine 25mg and the other group received a, blood pressure was assessed at baseline and eight weeks later for both groups. For both groups, biochemical safety variables were measured. SPSS 25.0 was used for statistical analysis of all the data. **Results:** Systolic blood pressure was 146.7 + 9.1 at baseline for Hydralazine 25mg and 147.5 + 9.9 for the control. After 8 weeks, the difference between the two treatments (control and Hydralazine 25mg) was 139.9 9.8. For Hydralazine 25mg, the baseline diastolic blood pressure was 98.5 + 5.2, while it was 95.8 + 7.8 for the control. After 8 weeks, the results for the control were 97.1 4.7 and were 87.4 6.1 for Hydralazine 25mg. **Conclusion:** For eight weeks, hydralazine 25mg produced the best results for achieving and maintaining blood pressure. It is the greatest option for BP patients because of its excellent antihypertensive efficacy, and people with metabolic syndrome can use it safely.

Keywords: *Hydralazine, Biochemical effects, Hypertension, Treatment.*

INTRODUCTION

When the force of the blood pumping through the arteries becomes too great, it is called high blood pressure (BP), and it can damage the blood vessels and the organs throughout the body. Untreated high blood pressure increases the risk of cardiovascular disease, stroke, kidney disease, and death.[1,2] Nearly of cases of hypertension have no known etiology, but researchers have identified two subsets: primary hypertension (95%) and secondary hypertension (5%), which is linked to another disease. Treatment aims to reduce systolic blood pressure (SBP) to less than 140 mm Hg and diastolic blood pressure (DBP) to more than 90 mm Hg in order to reduce the risk of complications. When systolic blood pressure (SBP) is 180 or higher and/or diastolic blood pressure (DBP) is 120 or higher, this condition is known as hypertensive crisis and is typically associated with severe organ dysfunction. Evidence suggests that hypertensive disorders are among the leading causes of maternal death during pregnancy.[3,4]

There is a lack of data guiding the management of severe elevations in blood pressure, which is problematic because hospitalized patients have hypertension at rates as high as 50%.[5] Acute elevations in blood pressure can occur for a number of reasons, including unrestrained pain in surgery, anxiety, volume overload, new

treatments that rise BP, or the holding of home antihypertensive medications.[6,7]

The enzyme angiotensin converting enzyme (ACE) also contributes significantly to blood pressure regulation. Renal dysfunction has a major role in the development of macroalbuminuria, and this association is also seen in patients with microalbuminuria.[8] Hypertension and hypertensive urgency/emergency are the most common indications for hydralazine's use. The medication undergoes substantial first-pass metabolism and has a high oral bioavailability. The oral availability of the medicine is said to be anything from 10% to 35%, depending on how much acetylation it has undergone. Hydralazine has a low effective dose (50-100 mg), a short biological half-life, and a high physiochemical stability (2–4 h). As a result of these characteristics, researchers have been able to create a once-daily CR version of the drug.[9] When used during pregnancy, this medication is highly effective as an antihypertensive. Pregnancy is the main indication for its use. Common adverse effects and worsening pre-eclampsia symptoms include headache, nausea, and vomiting. The antihypertensive and safety profiles of Olmesartan are second to none.[10]

To the best of our knowledge no local publish data present on this topic. Therefore, the purpose of current study is to determine the role of hydralazine 25mg in treatment of hypertensive patients at a tertiary care hospital in Quetta. The results of the present study will give an insight into the magnitude of problem and will provide local baseline statistical data for further research in this regard.

METHODS

After approval by the hospital's ethics committee, this multicenter case-control comparative study was conducted at Department of Pharmacology DHQ Teaching Hospital Kohat and Khaleefa Gul Nawaz Teaching Hospital Bannu Pakistan from January 01, 2021 to June 30, 2021. Patients' histories and signed informed consent forms will be received before incitation of study. Patient was randomized to receive optimized Hydralazine 25mg once daily and Control once daily for 8 weeks. Blood pressure was monitored at the start of the study and again 8 weeks later in both the Hydralazine and control groups, and biochemical safety parameters were also examined. We analysed protein composition, enzyme and electrolyte levels, liver and kidney function, and a full blood count as part of these measures. We studied about the breakdown and re-synthesis of glucose and lipids like triglycerides, low-density lipoprotein (LDL), high-density lipoprotein (HDL), and total cholesterol during our time in basic metabolism. Analyses of samples from both groups were performed using a Microlab 300. Analysis of samples was performed using Merck kits. SPSS 25.0 was used for statistical analysis of all the data.

RESULTS

Systolic blood pressure was 146.7 ± 9.1 at baseline for Hydralazine 25mg and 147.5 ± 9.9 at baseline for the control. After 8 weeks, it was 148.5 ± 11.3 for the control and 139.9 ± 9.8 for Hydralazine 25mg as shown in table 1.

Table 1: Baseline physical characteristics of the enrolled patients (Hydralazine=60, control=20)

Parameters	Hydralazine	Control (n=20)
Age	50.3±8.2	50.5±8.6
SBP	148.8±10.1	148.3±10.2
DBP	97.5±6.2	96.7±6.4

Due to the fact that both lipid and glucose metabolisms are unaffected by the medicine and remain unchanged, the optimized product was shown to be most effective in both areas. Mean values of ambulatory blood pressure checking and baseline biochemical profile of the enrolled patients are presented in table 2 & 3 respectively.

Table 2: Mean values of ambulatory blood pressure checking (Hydralazine=60, control=20)

Parameters	Time	Hydralazine	Control	*P-value*
Systolic BP (mmHg) after 24 h	At Baseline	146.7 ± 9.1	147.5 ± 9.9	>0.05
	After Week 8	139.9 ± 9.8	148.5 ± 11.3	0.0027
Diastolic BP (mmHg) after 24 h	At Baseline	98.5 + 5.2	95.8 + 7.8	>0.05
	After Week 8	87.4 ± 6.1	97.1 ± 4.7	0.0001

Table 3: Baseline Biochemical profile of the enrolled patients (Hydralazine=60, control=20)

Lab Parameters	Time	Hydralazine	Control
Blood Glucose at Fasting	At Baseline	99.7 ± 11.1	98.3 ± 8.3
	At Week 8	97.6 ± 9.9	98.7 ± 8.4
Overall Cholesterol	At Baseline	195.7 ± 43.7	194.6 ± 33.2
	At Week 8	195.7 ± 41.5	194.7 ± 32.6
LDL	At Baseline	113.8 ± 31.4	118.4± 25.4
	At Week 8	113.5 ± 33.7	117.6 + 26.2
HDL	At Baseline	53.5 ± 11.9	47.4 ± 11.1
	At Week 8	54.4 ± 12.8	47.7 ± 10.2
Triglycerides	At Baseline	137.4 ± 88.4	147.1 ± 88.3
	At Week 8	138.1 ± 87.2	145.6 ± 89.4

DISCUSSION

One of the risk factors for stroke is high blood pressure. Patients with hypertension often suffer from the cognitive impairment and dementia that come with metabolic syndrome. Table 1 contains generalized characteristics. We enrolled 80 patients from two hospitals in Banu Pakistan, with 20 serving as controls. We took blood pressure readings before and after 8 weeks of treatment with either 25 mg of Hydralazine or a control. Both groups also underwent testing for a biochemical safety parameter. We analyzed protein composition, enzyme and electrolyte levels, liver and kidney functions, and a full blood count among these variables.[11]

Treatment with antihypertensives once hypertension is detected in a hospital setting has been the subject of another research. When it comes to treating high blood pressure (BP) while hospitalized, hydralazine given intravenously (IV) as-needed basis have been the most studied antihypertensives.[12,13,14] Our study showed that the majority of patients were not kept on their home antihypertensives and that IV antihypertensives were given to those who did not have acute BP rise (BP160/110). In addition, the effectiveness of "as needed" administrations of hydralazine in treating asymptomatic hypertension was evaluated in a recent trial of 250 medical patients. It was found that oral hydralazine was the most generally provided antihypertensive,[15] with 36% of patients receiving it for non-acute blood pressure. Similarly, our research showed that hydralazine was frequently administered after a severe BP increase (SBP>180 or DBP>110 mmHg).

Researchers in India compared the efficacy of hydrazaline and labetalol in treating hypertension brought on by pregnancy. Results from a study comparing the two groups showed no statistically significant differences.[16] A research by Nombur and colleagues in Nigeria found no statistically significant difference in the effectiveness of hydralazine and labetalol treatment groups.[17] Verma *et al*. also conducted a study comparable to this one, with a total of 130 patients.[18]

There are a few limitations to our study. To begin, there is a lack of information regarding blood pressure (BP) drugs taken at home and how the type of hypertension treatment taken at home might influence a doctor's decision making. We were, however, able to determine which antihypertensives were part of the patient's regular treatment regimen and which were given for the first time in response to a crisis in blood pressure. Second, we only took one reading of blood pressure to determine what constituted a high reading. It's possible that this would induce bias, leading us to underestimate the actual frequency of hypertension.

CONCLUSION

For eight weeks, hydralazine 25mg produced the best results for achieving and maintaining blood pressure. It is the greatest option for BP patients because of its excellent antihypertensive efficacy, and people with metabolic syndrome can use it safely.

LIMITATIONS

The sample size was very small in our study.

SUGGESTIONS / RECOMMENDATIONS

Larger sample sizes should be used in future research.

CONFLICT OF INTEREST / DISCLOSURE

There is no conflict of interest.

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