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Original Research Article

Assessment of Efficacy of Drug and Nondrug Treatments in Hypertensive Patients: A Comparative Study

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ABSTRACT

Background: A number of studies have reported that use of antihypertensive drugs in hypertensive patients gradually decreases the morbidity and mortality rates. But, it is quite inappropriate to prescribe anti-hypertensive drugs to one-fifth of young population with mild hypertension for long durations. Several clinical trials investigated the efficacy of non-pharmacological interventions and lifestyle modifications to reduce BP. The present study was planned to assess the efficacy of pharmacological and non-pharmacological management of hypertension.

Materials and Methods: The present study was conducted in the Department of General Medicine, KPC Medical College and Hospital, Jadavpur, Kolkata, West Bengal (India). For the study, selection of 100 patients with mild hypertension was done. Clinical criteria were used for the selection of all patients. Participants were randomly grouped into 2 groups, Group 1 and Group 2. Patients in group 1 were prescribed 50 mg of atenelol drug once a day. On the contrary, no drug was prescribed in Group 2 rather subjects in this group were advised physical exercise such as brisk waking for 50-60 minutes. The blood pressure values were measured before starting the study, at 2 weeks, 4 weeks, 6 weeks and at 8 weeks using sphygmomanometer.

Results: The mean age of the patients that participated in the study was 45.23±12.42 years with age range being 21-60 years. The number of male patients was 68 whereas female patients were 32 in number. The mean age of patients in group 1 was 44.89 ± 12.43 years and in group 2 was 47.64 ± 8.9 years. In group 1, the number of male patients was 38 and female patients were 12. Similarly, in group 2, the number of male patients was 30 and female patients were 20. At 8 weeks there was significant reduction in the blood pressure as compared to baseline values.

Conclusion: From the results of current study, we conclude that pharmacological and non-pharmacological methods, both are effective in lowering blood pressure in hypertensive patient. The pharmacological method is statistically significant as compared to non-pharmacological method.

Keywords: Hypertension, Non-Pharmacological Interventions, Lifestyle Modifications.

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INTRODUCTION

A number of studies have reported that use of antihypertensive drugs in hypertensive patients gradually decreases the morbidity and mortality rates.[1-3] But, it is quite inappropriate to prescribe anti-hypertensive drugs to one-fifth of young population with mild hypertension for long durations because of conceivable unexpected symptoms and the significant individual and open cost of such treatment. Several clinical trials investigated the efficacy of non-pharmacological interventions and lifestyle modifications to reduce BP. Best evidence from randomized controlled trials supports BP-lowering effects of weight loss, the Dietary Approaches to Stop Hypertension (DASH) diet, and dietary sodium (Na^+) reduction in those with pre-hypertension, with more pronounced effects in those with hypertension.[4,5]

In hypertensive participants, the effects on BP of DASH combined with low Na^+ alone or with the addition of weight loss were greater than or equal to those of single-drug therapy. Trials where food was provided to participants were more successful in showing a BP-lowering effect.[6,7] The present study was planned to assess the efficacy of pharmacological and non-pharmacological management of hypertension.

MATERIALS AND METHODS

The present study was conducted in the Department of General Medicine, KPC Medical College and Hospital, Jadavpur, Kolkata, West Bengal (India). The ethical clearance for the study was obtained from the ethical committee of the institute prior to starting

the study procedure. For the study, selection of 100 patients with mild hypertension, that is diastolic blood pressure >90 mmhg and systolic blood pressure >140 mmhg was done. Clinic criteria were used for the selection of all patients. It was made sure that no patient had taken anti-hypertensive drugs before the study. A detailed explanation regarding procedure of study and advantages were given to the patient and an informed written consent was obtained.

Participants were randomly allocated in two groups, Group 1 and Group 2. Patients in group 1 were prescribed 50 mg of atenelol drug once a day. On the contrary, no drug was prescribed in group 2 rather subjects in this group were advised physical exercise like brisk walking for 50-60 mins, 3-4 days per week. It was ensured that each participant completed eight weeks of intervention, irrespective of the time they started. The blood pressure values were measured before starting the study, at 2 weeks, 4 weeks, 6 weeks and at 8 weeks using sphygmomanometer. The blood pressure was measured 3 times and the highest value was used for the assessment. The demographic characteristics of the patients were also recorded.

The statistical analysis of the data was done using SPSS version 11.0 for windows. the statistical significance verification was done using paired – t test and Chi-square test. A p-value of 0.05 and less was predefined as statistical significant.

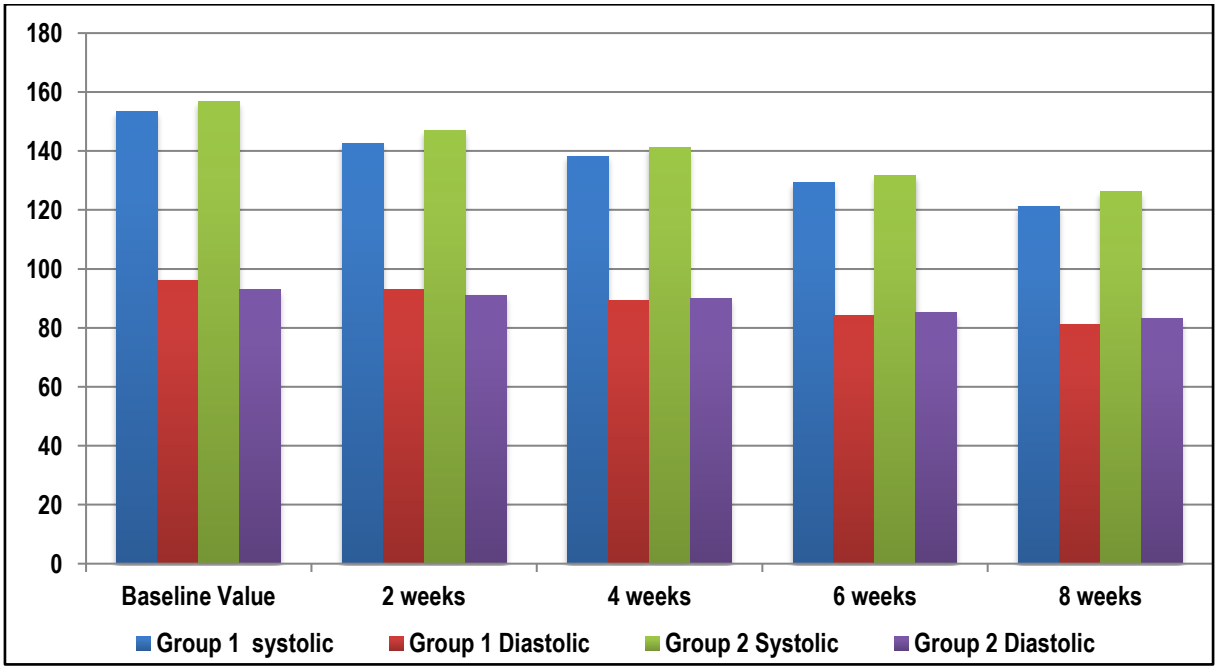
Table 1: Demographic characteristics of patients

Variables		Group 1	Group 2	P-Value
No. of patients (n)		50	50	
Mean age (years)		44.89 ± 12.43	47.64 ± 8.9	0.32
Sex	Male	38	30	0.12
	Female	12	20	

Table 2: Comparison of Mean blood pressure of both groups at different intervals

Blood pressure (mmHg)	Group 1		Group 2		p-value
	Systolic	Diastolic	Systolic	Diastolic	
Baseline value (mean ± SD)	153.43± 6.3	96.23 ± 3.32	156.9±12.2	93.03±4.2	0.03
At 2 weeks (mean ± SD)	142.52±9.3	92.87±4.1	147.43±8.3	91.15±2.9	
At 4 weeks (mean ± SD)	138.28±10.2	89.21±3.2	141.13±9.8	90.02±3.8	
At 6 weeks (mean ± SD)	129.23±12.4	84.31±4.4	131.83±10.8	85.24±4.2	
At 8 weeks (mean + SD)	121.25±11.8	81.02±2.8	126.22±8.9	83.05±5.1	

Fig 1: Showing comparison of mean blood pressure of both groups at different intervals



RESULTS

Table 1 shows demographic characteristics of the patients. The mean age of the patients that participated in the study was 45.23±12.42 years with age range being 21-60 years. The number of male patients was 68 whereas female patients were 32 in number. The mean age of patients in group 1 was 44.89 ± 12.43 years and in group 2 was 47.64 ± 8.9 years. In group 1, the number of male patients was 38 and female patients were 12. Similarly, in group 2, the number of male patients was 30 and female patients were 20. Table 2 shows comparison of mean blood pressure of both groups at different intervals. Baseline values of blood pressure for group 1 and group 2 was

153.43/96.23 mmHg and 156.9/93.03 mmHg respectively. At 2 weeks there was reduction in mean blood pressure. The blood pressure was 142.52/92.87 mmHg and 147.43/91.15 mmHg for group 1 and group 2 respectively. At 8 weeks there was significant reduction in the blood pressure as compared to baseline values. The reduced blood pressure at 8 weeks was 121.25/81.02mmHg and 126.22/83.05 mmHg for group 1 and group 2 respectively (fig 1). The results were statistically significant with p value <0.05.

DISCUSSION

Whether or not non-pharmacological interventions in hypertension produce appreciable reductions in blood pressure is an important question. The present study was conducted to compare the efficacy of pharmacological and non-pharmacological methods in hypertension. We observed that both methods are effective in reducing the blood pressure for the defined period of time but pharmacological method is more effective in obtaining blood pressure to normal range as compared to non-pharmacological method. The non-pharmacological method is more effective in long term course. The similar results were observed by studies conducted by other authors. Subramanian H et al[8] conducted a group based investigation to test the viability of non-pharmacological intercessions in counteracting/controlling hypertension. This was a cross-over randomized controlled trial (RCT) of the prior RCT (2007) of non-pharmacological mediations in hypertension, directed in the urban administration region of same Institute. The subjects, pre-hypertensive and hypertensive young adults (98 subjects: 25, 23, 25, 25 of every four groups) were arbitrarily assigned into a group that he/she had not had a place with in the prior RCT: Control (New Group I), Physical Exercise (NG II)- brisk walking for 50 min to one hour, three to four days/week, Salt Intake Reduction (NG III) to in any event half of their past admission, Yoga (NG IV) for 30 to 45 minutes/day, five days/week. Pulse was measured prior and then afterward two months of intercession. Ninety-four members (25, 23, 21, 25) finished the investigation. Every one of the three intercession bunches demonstrated noteworthy decrease in BP (SBP/DBP mmHg: 5.3/6.0 in NG II, 2.5/2.0 in NG III, and 2.3/2.4 in NG IV, separately), while the Control Group demonstrated no huge contrast. The authors presumed that physical exercise, salt admission decrease, and yoga are compelling non-pharmacological strategies for diminishing pulse in young pre-hypertensive and hypertensive grown-ups. Saptharishi L et al[9] measured the effectiveness of physical exercise, decrease in salt admission, and yoga, in bringing down BP among youthful (20-25) pre-hypertensives and hypertensives, and to look at their relative effectiveness. A sum of 113 subjects: 30, 28, 28 and 27 out of four groups separately taken part for two months: control (I), physical exercise (II) – briskly walking for one hour four days/week, salt admission cutback (III) - to in any event half of their past admission, and routine with regards to yoga (IV) - for 30-45 minutes/day on no less than five days/week. Every one of the three intervention groups demonstrated a critical diminishment in BP (SBP/DBP: 5.3/6.0 in aggregate II, 2.6/3.7 in III, and 2.0/2.6 mm Hg in IV individually). There was no critical change (SBP/DBP: 0.2/0.5 mmHg) of BP in control group (I). Physical exercise was best (considered exclusively); salt admission lessening and yoga were additionally compelling. The authors presumed that physical exercise, salt admission decrease, and yoga are very effective non-pharmacological mediations in essentially lessening BP among youthful hypertensives and pre-hypertensives. Andrews G et al[10] conducted study in which thirty-seven reports of the treatment of hypertension by non-pharmacological means were compared with the results of treatment by standard drug regimens. Treatment by drugs produced the greatest lowering of blood pressure. Treatment by weight reduction, yoga, and muscle relaxation each produced smaller, but appreciable, changes in blood pressure biofeedback, and salt restriction were inferior to those of the other regimens and were not significantly different to the effects of placebo treatment. Chrysant SG et al[11] conducted a randomized, double-blind parallel study to compare the effects of atenolol, captopril, enalapril and propranolol in 360 men with mild-to-moderate essential hypertension. Patients were titrated until diastolic blood pressure (Korotkoff phase V) decreased by at least 10 mmHg or to 90 mmHg or less. Quality of life assessments, based on validated psychometric questionnaires and objective measurements of cognitive function, occurred after three study phases: placebo run-in (3-5 weeks), titration (1-4 weeks), and maintenance (4 weeks). After four weeks of maintenance therapy, atenolol, captopril and enalapril generally had equivalent effects on quality of life, as measured by psychometric questionnaires, whereas propranolol consistently evidenced worsening or less improvement. Global scores of distressing psychological symptoms differed as a function of specific treatment with improvements significantly better for the atenolol, captopril and enalapril groups as compared with the propranolol group. There were no statistically significant differences among treatments for changes in cognitive function at maintenance. Thus, the quality of life questionnaires differentiated among drugs of the same class, indicating that selection among antihypertensive drugs should be based on their specific qualities, not on general class characteristics.[10,11]

CONCLUSION

From the results of current study, we conclude that pharmacological and non-pharmacological methods, both are effective in lowering blood pressure in hypertensive patient. The pharmacological method is statistically significant as compared to non-pharmacological method.

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