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## Original Article

### Comparative Evaluation of Management of Hypertension in Older Patients and Young Patients

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#### ABSTRACT:

**Background:** Hypertension is a multifactorial disorder in which the mix of factors operative may vary according to age. Although there are no sharp dividing lines between age groups, age-associated trends can be recognized. **Aim of the study:** To compare the management of hypertension in older and younger population. **Materials and methods:** The study was conducted in the department of general medicine of the medical institute. We selected patients belonging to the age group 16-30 years and 51-75 years old. The patients in both the groups were prescribed Enalapril – HCTZ 5 mg - 12.5 mg once daily. The patients were recalled for follow up and blood pressure measurement at 7 days, 14 days, 1 month and 3 months. For the evaluation of creatinine levels and sodium levels venous blood was obtained from each patient at each follow up visit. The data was recorded and subjected to statistical analysis. **Results:** A total of 100 patients participated in the study, 50 patients in each group 1 and group 2. No. of male subjects in group 1 was 22 and in group 2 was 29. Mean age of the patients in Group 1 was 25.21 years and in Group 2 was 62.33 years. The mean systolic and diastolic blood pressure was significantly decreased in both the groups. Similarly, proteinuria which was present in the patients at the baseline was present on 14<sup>th</sup> day but absent on 13<sup>th</sup> day in both groups. **Conclusion:** The principles in the treatment of hypertension in the elderly have much in common with those applying to younger age groups.

**Keywords:** Hypertension, older patients, younger patients, anti-hypertensive.

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#### INTRODUCTION:

Hypertension is an important public health issue faced by policymakers in India. The prevalence of hypertension has increased sharply in the Indian population, reaching a rate of 34% in 2010.<sup>1</sup> Hypertension is the biggest contributor to cardiovascular diseases such as stroke and coronary heart diseases.<sup>2, 3</sup> It is estimated that about 50% of deaths in the Indian population are attributable to prehypertension and hypertension.<sup>4</sup> With the complexity of hypertension and the frequent involvement of >1 care provider and institution underlie the importance of primary care.<sup>5, 6</sup> The 2008 World Health Organization report clearly affirmed the central role of primary care in coping with the challenges arising from chronic diseases like hypertension.<sup>7</sup> Hypertension is a multifactorial disorder in which the mix of factors operative may vary according to age. Although there are no sharp dividing lines between age groups, age-associated trends

can be recognized. Recognition of these trends provides a basis for choosing age-specific approaches to clinical management. Sodium sensitivity, defined as the extent of the rise in arterial blood pressure with an increase in sodium chloride intake, is heightened with age. In the elderly, limitation of dietary sodium intake and the use of diuretic agents show more effectiveness in controlling hypertension than in the young.<sup>8, 9</sup> The factors mediating the enhanced relationship between sodium status and change in blood pressure in the elderly are complex. They include an increased responsiveness of volume homeostasis to the level of salt intake, a salt-induced impairment of vascular nitric oxide (NO) production, and an increase in arterial stiffness. The systolic component of blood pressure is affected more than the diastolic.<sup>10</sup> Hence, the present study was conducted to compare the management of hypertension in older and younger population.

**MATERIALS AND METHODS:**

The study was conducted in the department of general medicine of Government RBM Hospital and Medical College, Bharatpur, Rajasthan. The ethical clearance for the study was obtained from the ethical board of the institute prior to commencement of the study. The selection of the subjects for the study was done from the department OPD. We selected patients belonging to the age group 16-30 years and 51-75 years old. The former age group comprised younger patients and was named as Group 1. The latter age group comprised older patients and was named Group 2. There were a total of 100 patients, 50 patients in each group. It was confirmed that the participating patients had history of hypertension for at least 1 year and are not on any medication. According to the guidelines of hypertension management, medication was prescribed to both the groups. The patients in both the groups were prescribed Enalapril – HCTZ 5 mg - 12.5 mg once daily. The patients were recalled for follow up and blood pressure measurement at 7 days, 14 days, 1 month and 3 months. For the evaluation of creatinine levels and sodium levels venous blood was obtained from each patient at each follow up visit. The data was recorded and subjected to statistical analysis.

The statistical analysis of the data was done using SPSS version 20.0 for windows. The Student’s t-test and Chi-square test were used to check the significance of the data. The p-value less than 0.05 was predetermined as statistically significant.

**RESULTS:**

Table 1 shows the demographic data of the patients participating in the study. A total of 100 patients participated in the study, 50 patients in each group 1 and group 2. No. of male subjects in group 1 was 22 and in group 2 was 29. Mean age of the patients in Group 1 was 25.21 years and in Group 2 was 62.33 years. Mean systolic blood pressure in group 1 was 133.21 mmHg and in group 2 was 138.8 mmHg. Mean diastolic blood pressure in group 1 was 89.21 mmHg and in group 2 was 95.12 mmHg [Fig 1]. Table 2 shows the post treatment variables at follow up visit on 14<sup>th</sup> and 30<sup>th</sup> day. The mean systolic and diastolic blood pressure was significantly decreased in both the groups. Similarly, proteinuria which was present in the patients at the baseline was present on 14<sup>th</sup> day but absent on 30<sup>th</sup> day in both groups. On comparing the results we observed statistically non-significant results. (p>0.05)

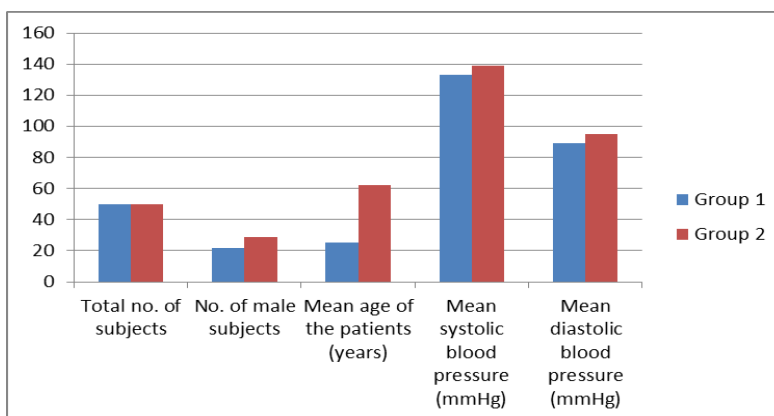
**Table 1:** Demographic data of the patients participating in the study

Variables	Group 1	Group 2
Total no. of subjects	50	50
No. of male subjects	22	29
Mean age of the patients (years)	25.21	62.33
Mean systolic blood pressure (mmHg)	133.21	138.8
Mean diastolic blood pressure (mm Hg)	89.21	95.12

**Table 2:** post treatment variables at follow up visit on 14<sup>th</sup> and 30<sup>th</sup> day

Variables	Group 1		Group 2	
	At 14 <sup>th</sup> day	At 30 <sup>th</sup> day	At 14 <sup>th</sup> day	At 30 <sup>th</sup> day
Mean systolic blood pressure (mmHg)	128.21	121.12	132.31	125.21
Mean diastolic blood pressure (mmHg)	88.21	81.28	90.21	83.21
Proteinuria	Present	Negative	Present	Negative

**Figure 1:** Demographic data of the patients participating in the study



**DISCUSSION:**

In the present study we compared hypertension in elderly and younger. We prescribed Enalapril/HCTZ 5mg-12.5 mg to the both the groups. We observed that in both the groups the systolic and diastolic blood pressure significantly reduced at 14th and 30th follow up day. But the results were statistically non-significant. The results were compared with previous studies and results were consistent with previous studies. Li H et al compared the quality of hypertensive care delivered by community health centers (CHCs) in Shanghai and Shenzhen. Multistage random sampling method was used to select 4 CHCs in each city as study settings. A cohort of hypertensive patients under the hypertensive management program in the CHCs was selected from the electronic information system by using a systematic random sampling method. Binary logistic regression models were constructed for comparison between the 2 cities. A total of 3196 patients' records were assessed. The proportions of hypertensive patients who received advice on smoking cessation (33.8 vs 7.7%,  $P < 0.001$ ), increasing physical activity (52.4 vs 16.8%,  $P < 0.001$ ), low-sodium diet (72.0 vs 64.1%,  $P < 0.001$ ), and regular follow-up (37.8 vs 8.6%,  $P < 0.001$ ) were higher in Shenzhen than in Shanghai. However, the drug treatment rate in Shenzhen was lower than that in Shanghai (74.2 vs 95.2%,  $P < 0.001$ ). The hypertension control rate in Shenzhen was lower than that in Shanghai (76.3 vs 83.2%,  $P < 0.001$ ). Better performance in the process of hypertensive care in terms of increasing physical activity advice, low-sodium diet advice, regular follow-up, and drug prescription was associated with a higher rate of hypertension control. The study indicated that primary care is effective in managing hypertension irrespective of management and operation models of CHCs in urban China. Our study suggests that improvements in the process of hypertensive care may lead to better hypertension control. Wong ND et al compared the efficacy of Chinese traditional treatment for mild hypertension with that of a standard Western medical regimen in a group of 50 well-matched patients (24 allocated to Western medicine and 26 to Chinese traditional medicine) with mild hypertension (diastolic blood pressure 90-104 mmHg). Those receiving Western therapy were treated in a stepped-care fashion with dihydrochlorothiazide and atenolol. Those in the Chinese traditional therapy group received one of two mixtures of nine herbs and other ingredients, depending on symptoms at initial evaluation. Blood pressure dropped significantly in both groups after only a few days on therapy. After 19 days on treatment, the group receiving Western therapy had a fall in blood pressure from 168.2/96.3 mmHg to 137.3/76.7 mmHg ( $p$  less than 0.01), while those on Chinese traditional therapy fell from 168.2/95.9 mmHg to 146.4/80.5 mmHg ( $p$  less than 0.01). The fall in blood pressure was significantly greater, however, in those given Western therapy. The relief of existing symptoms or development of possible drug side effects was similar in both groups, except for nocturia,

occurring more often in the group treated with Western therapy. We conclude that Western therapy is more effective in reducing blood pressure as compared with Chinese traditional therapy, but effective control of blood pressure in mild hypertensives is possible with either form of treatment.<sup>11, 12</sup>

Lithell H et al conducted study on three hundred and fifteen patients randomly allocated to treatment for six months with bisoprolol 5 or 10 mg day<sup>-1</sup> or atenolol, 50 mg day<sup>-1</sup>, in a double-blind, double-dummy parallel group, international multicentre study. Two hundred and ninety-two (175 men and 117 women) were eligible for statistical follow-up. Their mean age was 52.6 years (range 28-70). All patients had a supine diastolic blood pressure of 95-120 mmHg on two occasions during the four weeks of placebo treatment. Twenty-four patients ended the study prematurely and a further 19 had their regimes changed because of an insufficient effect. The reasons for drop-out were similar in the three treatment groups. Thus, 249 patients continued to receive the treatment they were allocated to, with 80, 83 and 86 patients in the three respective groups. The sex and age distributions and the number of previously treated hypertensives were similar in the three groups. At the end of placebo treatment the supine blood pressures in the three groups (bisoprolol 5 or 10 mg day<sup>-1</sup> or atenolol 50 mg day<sup>-1</sup>, respectively) were 163.9/102.5, 157.4/101.8 and 160.0/102.2 mmHg, respectively. The systolic blood pressure was higher ( $P$  less than 0.05) in the group receiving bisoprolol 5 mg day<sup>-1</sup> than in the 10 mg day<sup>-1</sup> group. After 26 weeks of treatment the supine blood pressures in the three groups were 150.6/90.8, 142.0/89.1 and 148.6/91.7 mmHg, respectively. The largest estimated difference in blood pressure reduction was 4.6/2.3 mmHg between the group receiving bisoprolol 10 mg day<sup>-1</sup> and the group receiving atenolol 50 mg day<sup>-1</sup>. A reduction in mean blood pressure of greater than or equal to 10 mmHg was noted in 66% of the patients in the bisoprolol group (10 mg day<sup>-1</sup>), in the other groups 66 and 59%, n.s. Bisoprolol is effective, well-tolerated and safe in the treatment of hypertension. A daily dose of 5 mg seems recommendable for the majority of hypertensive patients and seems equipotent with 50 mg day<sup>-1</sup> of atenolol in the present study. DAUGHERTY SL et al compared rates of hypertension control between women and men as a function of age. Within 3 integrated healthcare systems in the Cardiovascular Research Network, we studied all patients seen from 2001–2007 with incident hypertension. Within 1-year of cohort entry, patient's hypertension was categorized as: 1) controlled based upon achieving guideline-recommended BP levels, 2) recognized if hypertension was diagnosed or a hypertension medication dispensed, and 3) treated based on hypertension medications dispensed. Multivariable logistic regression models assessed the association between gender and 1-year hypertension outcomes, adjusted for patient characteristics. Among the 152,561 patients with incident hypertension, 55.6% were women. Compared to men, women were older, had more

kidney disease and more blood pressure measures during follow-up. Overall, men tended to have lower rates of hypertension control compared to women (41.2% vs. 45.7%, adjusted OR 0.93, 96% CI 0.91–0.95). A significant gender by age interaction was found with men aged 18–49 having 17% lower odds of hypertension control and men aged  $\geq 65$  having 12% higher odds of hypertension control compared to women of similar ages ( $p < 0.001$ ). In this incident hypertension cohort, younger men and older women had lower rates of hypertension control compared to similarly aged peers. Future studies should investigate why gender differences vary by age in order to plan appropriate means of improving hypertension management regardless of gender or age.<sup>13, 14</sup>

### CONCLUSION:

Within the limitations of the study we conclude that principles in the treatment of hypertension in the elderly have much in common with those applying to younger age groups.

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