



A COMPARATIVE STUDY ON ORTHOSTATIC HYPOTENSION IN ELDERLY HYPERTENSIVES AND NON HYPERTENSIVES

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ABSTRACT Orthostatic hypotension is defined as a drop in either the systolic or diastolic blood pressure of more than 20 or 10 mm Hg respectively upon standing from a supine position. In this study, a comparison was made between elderly hypertensives and normotensives to find out the prevalence of orthostatic hypotension and other associated factors. 100 subjects aged 60 and above with hypertension under treatment and 100 non-hypertensives of the same age were selected for the study. The prevalence of Orthostatic hypotension was more among hypertensives than non – hypertensives. There was no significant relation between orthostatic hypotension and the symptoms of orthostatic hypotension. Orthostatic hypotension was not related to either the type or number of drugs used in this study.

KEYWORDS :

INTRODUCTION:

Orthostatic hypotension is defined as a drop in either the systolic or diastolic blood pressure of more than 20 or 10 mm Hg respectively upon standing from a supine position.

Epidemiological data suggest that the prevalence in community dwelling elderly populations can vary from 4% to 33%.

In the Systolic Hypertension in the Elderly Project (SHEP), Orthostatic hypotension was noted in 10.4% at 1 minute after standing and 12.0% at 3 minutes, with 17.3% having hypotension at one or both intervals (1,2).

The Cardiovascular Health study reported a prevalence of 16.2% in individuals aged over 65, which increased with age.

This study will make a comparison between elderly hypertensives and normotensives to find out the prevalence of orthostatic hypotension and other associated factors.

AIM:

To find out the prevalence of orthostatic hypotension in elderly hypertensives and non - hypertensives attending the Out - patient clinic.

OBJECTIVES:

1. To assess the gender difference in the prevalence of orthostatic hypotension among hypertensives and non hypertensives
2. To assess the correlation between orthostatic hypotension and orthostatic symptoms among the elderly population.
3. To assess the relationship between anti hypertensives and Orthostatic hypotension.
4. To assess if control of hypertension has a bearing on the prevalence of orthostatic hypotension

MATERIALS AND METHODS:

A convenience sample of 100 subjects aged 60 and above with hypertension under treatment and 100 non - Hypertensives of the same age were selected for the study in the out – patient unit of the department of general medicine, ASRAM medical college, Eluru from November 2015 to September 2017.

Persons included in the study were informed about the aims of the study and consent was obtained.

INCLUSION CRITERIA:

1. Age > 60 years
2. Hypertensives

EXCLUSION CRITERIA:

1. Age < 60 years
2. Newly detected hypertensives

DATA COLLECTION:

Demographic data including age, duration of hypertension, details of drug therapy including drugs used and the dosage were recorded. Patients were enquired about the well known orthostatic symptoms like postural giddiness, unexplained falls or any other features like light headedness, symptoms of cerebral ischemia like syncope, Transient Ischemic Attacks, other symptoms like upper back pain (coat – hanger pain), shoulder pain. Hypertensive patients on life style modifications as their only therapy were excluded.

Patients in both the groups were enquired about presence or absence of Diabetes mellitus along with other diseases.

A sitting blood pressure was measured. Patients were then made to lie down for ten minutes following which the blood pressure was measured again. After this, patients were made to stand and the blood pressure was checked at 1 and 3 minutes. The apparatus used was a manually operated sphygmomanometer. Patients were enquired if they experienced orthostatic symptoms during the examination. A single apparatus was used and the measurements were made by a single investigator.

OBSERVATIONS AND RESULTS:

Table 1: Distribution of cases according to sex

Group	Male	Female	Total
Hypertensives	53	47	100
Anti-hypertensives	52	48	100
	105 (52.5%)	95 (47.5%)	200

Table 2: Frequency distribution of patients according to age

Age group	Hypertensives	Non hypertensives
60-69	55	49
70-79	29	31
>80 years	16	20

The mean age of hypertensives was 70.16 +/- 8.22 years. The mean age of the non Hypertensives was 72.01 +/- 9.25 years.

Figure 1 : Frequency distribution of hypertensives according to duration

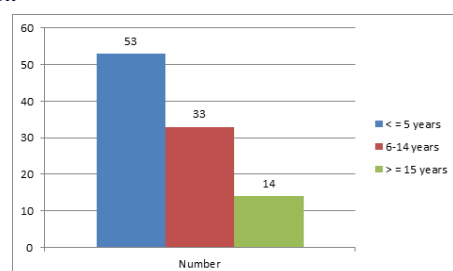


Table 3 : Symptom – wise distribution of groups

Orthostatic symptoms	Hypertensives	Non hypertensives
Yes	39 (8)	34 (3)
No	61 (10)	66 (4)
	P value <.05	P value <.05

Note: Numbers within parentheses denote cases with orthostatic hypotension

There were 18 hypertensives and 7 normotensives with orthostatic hypotension among both the groups put together. Hence the prevalence of orthostatic hypotension is 12.5%. The prevalence in the hypertensive and non – hypertensive groups were 18% and 7% respectively.

Table 4: Distribution of orthostatic hypotension group - wise

Orthostatic hypotension	Hypertensives	Non hypertensives	P value
Present	18	7	P < 0.05
Absent	82	93	P < 0.05

Table 5: Distribution of orthostatic hypotension group - wise according to time of drop

	Hypertensives	Non hypertensives	P value
Drop at 1 min	5 (27.8%)	1 (14.3%)	P < 0.05
Drop at 3 min	13 (72.2%)	6 (85.7%)	P < 0.05

Table 6 : Sex – wise distribution of orthostatic hypotension

	Hypertensives	Non hypertensives
Male	9	4
Female	9	3
	P value < 0.05	P value < 0.05

Table 7: Frequency distribution of orthostatic hypotension according to age

Age	Hypertensives	Non hypertensives
60-69	10 (18.2%)	3 (6.1%)
70-79	4 (13.8%)	1(3.2%)
>80 years	4 (25%)	3 (15%)
	P value < 0.05	P value < 0.05

Table 8: Distribution of cases according to duration of disease

Duration of hypertension	Number of cases
<= 5 years	7 (13.5%)
6-14 years	10 (29.4%)
>= 15 years	1 (7.1%)

Table 9: Distribution of orthostatic hypotension according to no of drugs used

Number of drugs	Orthostatic hypotension	No orthostatic hypotension
1	10	49
2	6	25
3	2	8

There was no significance between the number of drugs used and the prevalence of orthostatic hypotension. (P < 0.05)

Table 10: Distribution of cases according to class of drug when used singly

Class of drug	Cases	P Value
Calcium channel blocker	7 (23.3%)	< 0.05
Beta blocker	1 (7.6%)	< 0.05
Angiotensin converting enzyme inhibitor	1 (7.6%)	< 0.05

Table 11: Diabetes Mellitus and Orthostatic hypotension

Diabetes mellitus	Hypertensives	Non hypertensives
Yes	23 (6)	26 (3)
No	77 (12)	74 (4)

Note : Numbers within Parenthesis denote Orthostatic hypotension

Table 12: Distribution of orthostatic hypotension according to BP control

Orthostatic hypotension	Well controlled	Not controlled
Yes	12 (18.75%)	6 (16.66%)
No	52	30

P value < 0.05

DISCUSSION:

The population of aged in India is about 7%. This number is bound to increase with better medical facilities offered to the people. Hypertension is more prevalent in the elderly. Age related changes in the neurological and vasomotor systems make the elderly population more prone to develop Orthostatic hypotension. Hypertension, by itself impairs the regulatory mechanisms and antihypertensives used to treat hypertension are important causes of Orthostatic hypotension.

Orthostatic hypotension is an easily identifiable disorder that does not require sophisticated equipment for identification. It is important to identify Orthostatic hypotension as it is associated with many consequences. Orthostatic hypotension can lead to cerebral hypoperfusive states like Transient ischemic attacks, Cerebrovascular accidents, seizures and syncope. It can lead to decreased quality of life by causing falls, fractures, increased hospitalizations and death.

This was a descriptive study of a comparative nature. A convenience sample of 100 was selected for each group. Consecutive cases were selected in both the groups. This study was done to assess the prevalence of orthostatic hypotension among the elderly population attending the out patient unit of a tertiary care hospital in ASRAMS, Eluru.

The overall prevalence of orthostatic hypotension was 12.5%. Among the hypertensive and non – hypertensive groups, the prevalence was 18 % and 7 % respectively. There was a statistically significant difference (p < 0.05) in the prevalence of orthostatic hypotension among the hypertensives and non hypertensives.

Shin C et al. showed that the prevalence of Orthostatic hypotension at 0 and 3 min after standing was 12.3 and 2.9%, respectively. After adjustment for age and other characteristics, hypertension was associated with a 1.7-fold excess in the odds of Orthostatic Hypotension in men and a 1.6-fold excess in women (P < 0.001).

A study done by Saez et al. showed the overall prevalence of OH was 6.8% among elderly, 8.1% and 3.4% in hypertensives and normotensives patients respectively (p < 0.05).

Shimada et al. have proved that elderly hypertensives have a higher chance of developing orthostatic hypotension owing to changes accompanying the disease process itself, drugs used to treat hypertension and age – related changes in related systems. Hence elderly, especially hypertensives need to be followed up regularly.

A study by Lorenzini on 1010 patients showed that orthostatic hypotension was very common(35%) among community dwelling elderly, and the prevalence was higher among elderly aged > 80 years and hypertensive subjects.

There was no statistically significant difference (P value > .05) in the prevalence of orthostatic hypotension among males and females in both the groups of patients.

A study done by Robertson et al showed that Orthostatic Hypotension was unassociated with age, race, sex, body mass, time since eating, symptoms, or other factors.

A study done by Raiha et al showed abnormal postural systolic blood pressure drop (-20 mm Hg or less) after standing for 3 minutes in 28.0% of subjects. There were no sex or age differences between the subjects with postural hypotension. No predisposing factors for postural hypotension other than elevated blood pressure were found. Chronic cardiovascular diseases, disability, body mass index, medication. Diastolic blood pressure drop, in particular after standing for 1 minute, was associated with increased vascular mortality. In the multivariate analysis, however, this association disappeared.

Among both hypertensives and non hypertensives, a higher proportion of patients aged 80 and above had orthostatic hypotension. However, this was statistically insignificant (P value > .05). The number of patients in this age group was probably insufficient.

There was no relation of patient's complaints to the prevalence of orthostatic hypotension. Many patients who did complain of symptoms actually failed to show a postural drop while many asymptomatic patients had a significant drop. Studies done previously have shown that few symptomatic patients without a significant drop eventually showed orthostatic hypotension. High frequency of symptoms without a significant drop could also be explained by the increased likelihood of non-specific giddiness, neck pain, shoulder pain among the elderly population. It becomes imperative that all patients be checked for orthostatic hypotension, regardless of symptoms. Moreover, symptomatic patients without orthostatic hypotension should be checked repeatedly.

A review by Brian Olshansky states that Orthostatic Hypotension may be symptomatic or asymptomatic. They may include lightheadedness, dizziness, blurred vision, weakness, fatigue, cognitive impairment, nausea, palpitations, tremulousness, headache, and neck ache. If the patient has symptoms suggestive of, but does not have documented orthostatic hypotension, repeated measurements of blood pressure should be performed. Occasional patients may not manifest significant falls in blood pressure until they stand for at least 10 minutes.

Diabetes Mellitus and Hypertension are common in the elderly. Hypertensive patients with Diabetes have been shown to have a higher prevalence of orthostatic hypotension. Diabetics alone also have a higher chance of orthostatic hypotension. In this study, Diabetes was apparently not associated with an increased prevalence in both the groups.

The most commonly used drug to treat hypertension was a Calcium channel blocker. 6 out of 23 (26%) cases using a calcium channel blocker only, 1 out of 13 (7.6%) using a beta blocker and 1 out of 13 (7.6%) using a Angiotensin converting enzyme inhibitor had orthostatic hypotension. There was no statistically significant difference ($P > .05$) in the prevalence of orthostatic hypotension among the various single drug users.

A study done by Saez T et al showed no significant difference was found in the prevalence of OH between those receiving (7.7%) or not (8.6% antihypertensive medication. No association was found either between the prevalence of OH and the type or number of antihypertensive drugs used.

Control of blood pressure was not related to the development of orthostatic hypotension (P Value $> .05$). 64% of hypertensives reached optimum Blood pressure control while 36% were uncontrolled.

The study mentioned above showed that only 17.6% of the patients reached hypertension optimal control (SBP < 140 and DBP < 90 mmHg). The prevalence of OH in the optimally controlled patients was 5.3%, among the uncontrolled the prevalence was 8.9% ($p < 0.05$).

Another study by Burke et al showed Orthostatic hypotension was not significantly related to treatment for hypertension, age, sex, or the diagnosis of diabetes mellitus.

CONCLUSIONS:

- 1) Orthostatic hypotension is a common clinical disorder in the elderly. There is no sex difference in the prevalence of orthostatic hypotension.
- 2) The prevalence of Orthostatic hypotension is more among hypertensives than non-hypertensives.
- 3) There is no significant relation between orthostatic hypotension and the symptoms of orthostatic hypotension.
- 4) Orthostatic hypotension is not related to either the type or number of drugs used in this study.
- 5) Development of Orthostatic hypotension has no relation to control of hypertension.

REFERENCES:

1. Robbins AS, Rubenstein LZ: Postural hypotension in the elderly. *J Am Geriatr Soc.* 1984 Oct;32(10):769-74
2. H Krum, E L Conway: Postural hypotension in elderly patients given carvedilol. *BMJ* 1994;309:775-776
3. Wu J-S, Lu F-H, Yang Y-C, Chang C-J. Postural hypotension and postural dizziness in patients with non-insulin-dependent diabetes. *Arch Intern Med* 1999; 159(6): 1350-6
4. UK Prospective Diabetes Study Group. Tight blood pressure control and risk of macrovascular and microvascular complications in type 2 diabetes: UKPDS 38. *Br Med J* 1998; 317: 703-13
5. Applegate WB. Hypertension in elderly patients. *Ann Intern Med* 1989;110:901-915.
6. The Systolic Hypertension in the Elderly Program (SHEP) Cooperative Research Group. Prevention of stroke by antihypertensive drug treatment in older persons with isolated systolic hypertension: final results of SHEP. *JAMA* 1991;265: 3255-3264.

7. Dahlsf B, Lindholm LH, Hansson H, et al. Morbidity and Mortality in the Swedish Trial in Old Patients with Hypertension (STOPHypertension). *Lancet* 1991;338:1281-1285.
8. Applegate WB, Phillips HL, Schnaper H, et al. A randomized controlled trial of the effects of three antihypertensive agents on blood pressure control and quality of life in older females. *Arch Intern Med* 1991;151:1817-1823.
9. Bertel O, Buhler FR, Kiowski W, Lutold BE. Decreased betaadrenoreceptor responsiveness as related to age, blood pressure, and plasma catecholamine in patients with essential hypertension. *Hypertension* 1980;2:130-138.
10. Morton A, Diamond, Raymond H, Murray. Idiopathic postural hypotension: physiologic observations and report of a new mode of therapy. *J Clin Invest.* 1970 July; 49(7): 1341-1348
11. Purewal TS, Watkins PJ. Postural hypotension in diabetic autonomic neuropathy: a review. *Diabetic Med* 1995; 12: 192-200.
12. Lipsitz LA. Orthostatic hypotension in the elderly. *N Engl J Med* 1989;321:952-7.