Original Article

Prevalence of Hypertension in Elderly Population of Desert Region of Rajasthan

H. Agarwal*, S. Baweja, K.R. Haldiya***, A. Mathur******

Abstract

Hypertension is the commonest of all cardiovascular diseases and affects many people in developed as well as developing countries. It is recognized as an important public health problem all over the world. The present study to find out the prevalence of hypertension in elderly population of desert region of Rajasthan demonstrated it to be 42.1%. Prevalence of hypertension in rural elderly was 32.6% while it was 54.1% in urban elderly. Out of 549 males, 38.1% were hypertensives and of the 451 females, 47% were hypertensive. Obesity was an important factor associated with hypertensive elderly population. Though hypertension is more prevalent in urban elderly population, it is increasing in rural population also. There is a need to focus attention towards primary prevention of hypertension.

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Introduction

Population analysis suggests that the life span of man is genetically regulated and that differences between the maximum and average life span are largely a reflection of environment [1]. Increasing number of aged population is a global phenomenon. Considering the influence of age on blood pressure, the increase in systolic blood pressure is generally linear from thirty years to old age, whereas the increase in diastolic blood pressure peaks in the mid fifties in men and in the early sixties in women declining slightly thereafter. Prevalence of hypertension is on rise in the elderly patients because of increased survival and early detection. Hypertension has been reported in 40-48% geriatric patients in India[1, 2]. Hypertension is a threat to life at all ages and in both sexes. It is one of the leading cardiovascular disorder and an important risk factor for coronary artery disease, cerebrovascular diseases and cardiac failure in elderly subjects[3].

Early detection and treatment of hypertension can significantly reduce cardiovascular and cerebrovascular related mortality along with improvement in quality of life. The physiologic basis of systolic blood pressure elevation among older persons is arteriosclerosis rather than a hyperdynamic cardiovascular system, as is found in younger individuals. One might expect that nonpharmacologic therapies which are effective in young adults may be ineffective in older patients. However, they should certainly be considered in older patients who are highly motivated[3].

The objectives of this study were to determine prevalence of hypertension in elderly population of desert region of Rajasthan and to find out the range of blood pressure in this population.

Material and Methods

This study was conducted in urban and rural area of desert region of Rajasthan. The urban area was selected from Jodhpur city while rural areas were from Jodhpur and Pali district. The aim of the study was explained to the subjects with the help of local opinion leaders. A house to house survey was carried out in rural area to select elderly persons. The households in coverage were selected systematically with 2-3 random sites taken as the starting point. To cover urban population camp approach was adopted and organized at different residential places in Jodhpur municipality area. A detailed history regarding age, sex, occupation, education, diagnosis and treatment of hypertension was taken and recorded in the pretested proforma. Blood pressure was measured with fully automatic electronic sphygmomanometer in the sitting position after five minutes of rest. Two blood pressure recordings of the subjects were made. Height and weight were also measured. Hypertension was categorized according to 7th report of "Joint National Committee for detection and evaluation of blood pressure"[4]. All the hypertensive were advised to come to the health centre for regular follow-up and were given health education. All the data

* Medical Officer, MDM Hospital, Dr. S. N. Medical College, Jodhpur
** Senior Resident, Nephrology Department, Ram Manohar Lohia Hospital, New Delhi
***Deputy Director(SG),Desert Medicine Research Centre, Jodhpur
****Associate Professor of Medicine, In-charge Geriatric Clinic, MDM Hospital, Dr. S. N. Medical College, Jodhpur
Address for correspondence :
Dr. Harish Agarwal
B-33, Kamla Nehru Nagar, IInd Extension, Jodhpur
Email : drharishji@yahoo.com

was analyzed statistically using Microsoft Excel and Epi-info-2002 computer software.

Results

A total of 1,000 subjects (562 rural and 438 urban) in the age group of 60 years and above were included in this cross sectional community based study. Among rural elderly, 507 (90.2%) were less than 75 years of age and 55 (9.8%) were > 75 years of age while among urban elderly 375 (85.6%) were <75 years of age and 63 (14.4%) were > 75 years of age. The average age of rural elderly was 65.05 ± 5.92 years and 66.61 ± 6.46 years in urban elderly.

Both average systolic blood pressure and average diastolic blood pressure was higher in obese in male and female elderly groups. The average systolic and diastolic blood pressure in males and females were higher in urban population than rural population. The average systolic blood pressure(SBP) and average diastolic blood pressure (DBP) was higher in females than males of rural and urban both populations. The average systolic blood pressure in males and females of rural population was increasing with age ($p<0.001$) while in urban population, it was similar ($p>0.05$) (Table 1).

The average systolic and diastolic blood pressure of rural and urban elderly population was increasing with body mass index which is statistically very significant ($p<0.001$) (Table-2). The prevalence of hypertension was 42.1%. The prevalence of hypertension in urban population was 54.3% which is higher than rural elderly population (32.6%). Among hypertensive population, 65.3% were not aware of their hypertension. The prevalence of hypertension in rural elderly below

Table-1 Age, sex wise average systolic and diastolic blood pressure according to their residence.

Average Blood Pressure (mm of Hg)	Residence						Total
	Rural			Urban			
	< 75	>=75	Total	< 75	>= 75	Total	
Males (N)	263	31	294	217	38	255	549
SBP	123.3±21.8	136.8±26.6	124.7±22.8	137.5±20.9	137.7±26.9	137.6±21.9	130.7±23.3
DBP	78.5±13.4	78.4±16.0	78.5±13.6	83.7±11.8	80.2±15.7	83.2±12.5	80.7±13.3
Females (N)	244	24	268	158	25	183	451
SBP	127.9±23.7	145.5±30.8	129.4±25.0	144.2±24.9	145.3±27.3	144.3±25.2	135.5±26.1
DBP	81.6±13.9	81.4±16.3	81.5±14.1	87.0±11.7	79.9±11.2	86.1±11.9	83.4±13.4

Table-2: Sex wise average systolic & diastolic blood pressure with standard deviation according to body mass index.

Average Blood Pressure (mm of Hg)	Residence					
	Rural - BMI			Urban - BMI		
	< 18	18-25	> 25	< 18	18-25	> 25
Male (n)	158	116	20	21	136	98
SBP	119.9±21.9	129.5±23.0	135.7±19.6	122.1±26.9	138.0±21.8	140.3±19.8
DBP	75.4±13.2	81.4±12.6	86.2±16.9	75.1±15.7	83.1±12.7	85.0±10.9
Female (n)	97	138	33	14	73	96
SBP	120.3±23.9	133.7±24.1	138.6±24.2	140.3±22.9	141.5±25.5	147.1±25.4
DBP	77.9±15.3	82.8±12.7	86.7±13.7	78.1±13.8	85.0±12.5	88.1±10.6

75 years of age was 31.5% which was lower than elderly of 75 years and above (44.4%). The prevalence of hypertension in rural elderly was increasing with age whereas in urban elderly it was almost similar. The prevalence of hypertension in males was 38.1% and in females was 47.0% (p< 0.001). In rural male group prevalence was 27.9% while in urban group it was 49.8% (p< 0.01). In rural females group, it was 37.7% where as in urban group it was 60.7% (p<0.001). The prevalence of hypertension was more in obese (BMI> 25.0) (57.1 %) than that in elderly population having BMI< 18.0 (23.1%) which is statistically significant (Table-3).

Table-3 Prevalence of hypertension in elderly population of desert region according to various characteristics.

	Rural		Urban			
	N	HT	N	HT	N Total	HT Total
N	562	183(32.6)	438	238(54.3)	1000	421(42.1)
<75	517	163(31.5)	375	203(54.1)	892	366(41.0)
>75	45	20(44.4)	62	35(56.5)	108	55(50.9)
Male	294	82(27.9)	255	127(49.8)	549	209(38.1)
Female	268	101(37.7)	183	111(60.7)	451	212(47.0)
BMI <18	255	53(20.8)	35	14(40.0)	290	67(23.1)
18-25	254	103(40.6)	209	110(52.6)	463	213(46.0)
>25	53	27(50.9)	194	114(58.8)	247	141(57.1)

N = number, HT = hypertension, Figure in ( ) shows percentage

Discussion

Hypertension is an important cause of morbidity and mortality in the elderly population and is a risk factor for many other diseases. The systolic blood pressure rises with age in both sexes of rural population in conformity with other studies[5,6,7,8,11]. Another important observation in rural population was that diastolic blood pressure decreased after 75 years of age[8,9]. In urban population there was no significant difference in blood pressure in both age groups which may be because of the fact that urban population becomes hypertensive in early ages and after 60 yrs there is no more increase in blood pressure. It has been observed that average systolic and diastolic blood pressure was significant higher in urban population than rural population (p = <0.01) [10, 12].

The prevalence of hypertension was 42.1%. Among hypertensive elderly population, 65.3% were not aware of their hypertension. The prevalence of hypertension varied in different studies due to different criteria use in selection of age, diagnosis of hypertension and regional variation [13-17, 19, 20] .

The prevalence of hypertension in urban population was higher than rural population.The females have higher prevalence of hypertension than males in urban as well as rural area of region of Rajasthan [8,12, 18]. The prevalence of hyperension also increased with BMI and was highest in obese compared to non-obese subjects [21].

This study concludes that hypertension is more prevalent in urban elderly population and it is increasing in rural population also. Hypertension is more common in the elderly females then males. Obesity is the risk factor for the hypertension in both sexes. Therefore there is need to focus attention towards primary prevention of hypertension and reduction of its complications.

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Address for correspondence

Dr. (Lt Col) Pratap Sanchetee
Organising Secretary
Sanchetee Hospital, 429, Pal Link Road, Jodhpur 342 008
Phones: 0291-2757610, 093147-45610 E-mail: pratapsanchetee@yahoo.co.in