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Narváez I, Iriarte JA, Lafuente PJ, Sáez Y
Sáez de Lafuente JP

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Arterial Hypertension as a Cardiovascular Risk Factor in an Elderly Community of Low Social Condition

I. Narváez, J. P. Sáez de Lafuente, Y. Sáez, P. J. Lafuente, J. A. Iriarte

Hypertension is one of the most important cardiovascular (atherothrombotic) risk factors in the industrialised countries because of its high prevalence. This interest grows even more in the elderly population where the prevalence of hypertension is even higher. The aim of this study was to determine the prevalence of hypertension in an elderly community of low social condition from Vitoria-Gasteiz and to investigate its significance as a risk factor in relation to atherothrombotic disease. We have studied a sample of 302 women older than 65 years from Vitoria-Gasteiz. The examination included among other parameters: two blood pressure measurements following WHO normatives, Cardiovascular Blackburn and Rose questionnaire and ECG. The prevalence of hypertension observed was 47 % which increases to 58.6 % if we consider effective antihypertensive treatment (WHO) and 77.8 % (JNC-V). Isolated systolic hypertension has turned out to be the most frequent type of hypertension. We have found statistical significant differences, comparing the percentage of cardiovascular diseases among hypertensives (33.1 %) and normotensives (10.6 %), being the risk 4.16 (CI: 2.17–8.05) times fold in elderly hypertensives. We can see that the prevalence of hypertension is very high in this group and that there is a clear evidence of cardiovascular risk among elderly hypertensives. If we consider that control of blood pressure is as effective in middle age individuals than in older ones, we consider that interventions are necessary in this population. *J Clin Basic Cardiol* 2001; 4: 225–227.

Key words: hypertension, cardiovascular risk factors

Hypertension is one of the most important and common modifiable cardiovascular risk factors for myocardial infarction, stroke, congestive heart failure and peripheral vascular disease in the industrialised countries because of its high prevalence [1–5]. It accelerates atherogenesis, imparting a 2- to 3-fold increased risk of such events [6].

Hypertension in the elderly is one of the clinical problems in which medical opinion has been most dramatically changed over the last 25 years. Extensive epidemiologic studies, particularly in the United States, published from 1963 onwards, have evidenced both the increase in blood pressure with age, and the increased incidence of cerebral, vascular, and cardiac complications with hypertension [7–11]. After the age of 60, women have a higher blood pressure than men.

The proportion of elderly individuals in the population is on the rise, and hypertension is extremely common in this age group. In addition, the cardiovascular and cerebrovascular risks associated with elevated blood pressure levels are greater in the elderly than in their younger counterparts. Systolic hypertension accounts for > 50 % of hypertensive cases in the elderly, probably as a result of arterial stiffening and loss of arterial compliance that occurs with ageing. Large-scale, controlled, randomised trials have provided conclusive evidence that reduction of elevated blood pressure levels in the elderly safely and effectively decreases cerebrovascular and cardiovascular morbidity and mortality rates. The benefit of antihypertensive therapy in decreasing the incidence of stroke, myocardial infarction and left ventricular failures has also been demonstrated to apply to patients with isolated systolic hypertension. Because the risks associated with untreated hypertension are higher in older than in younger patients, and the relative gains associated with treatment in the two groups are comparable, antihypertensive treatment is actually more cost-effective in the elderly population [12]. Furthermore, a recent analysis of data from the Hypertension Optimal Treatment (HOT) Study shows that intensive therapy produces significantly greater reductions in blood pressure in elderly patients than in younger patients, without increasing the risk of adverse events [13].

The aim of this study is to determine the prevalence of hypertension in an elderly community of low social condition from Vitoria-Gasteiz and to investigate its significance as a risk factor in relation to atherothrombotic disease by comparing between hypertensives and normotensives the prevalence of stroke, ischaemic cardiopathy and peripheral occlusive arterial disease.

Material and Methods

A randomised sample of 337 women older than 65 years has been selected from Vitoria-Gasteiz. The study persons were all of a low socio-economic class and received an economic grant for this reason from the local administration. Out of 337, 302 attended; response index: 89.6 %. We can see the sample distribution in Table 1. We sent a letter to each of the participants, explaining the main objectives as well as the tests included in the exploration.

The examination included among others the following: a standardised questionnaire; measurement of blood pressure by specially trained technicians; and electrocardiogram. Questionnaire included: general data, previous and proved medical history and current medications. Blackburn and Rose Questionnaire to evidence ischaemic cardiopathy, peripheral occlusive arterial disease (POAD) and stroke was also filled out.

Ischaemic cardiopathy evaluation was based on previous medical history, ECG and questionnaire; POAD according to Rose criteria and previous medical history; and stroke according to questionnaire and previous medical history.

Electrocardiogram was carried out to all of the participants to identify principally rhythm disorders, myocardial infarction

Table 1. Sample distribution

Age	Selected	Attended
65–80	173 (51.33 %)	156 (51.7 %)
≥ 81	164 (48.66 %)	146 (48.3 %)
Total	337	302

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From the Facultad de Medicina de Basurto, FIDEC, Bilbao, Spain

Correspondence to: Dr. Idoia Narváez, FIDEC, Gurtubay s/n, 48012 Bilbao, Spain; e-mail: nfpsachj@lg.ehu.es

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tion, presence of left ventricular hypertrophy and ST segment and T wave changes.

Blood pressure: A standard mercury sphygmomanometer was used. The participant's blood pressure was measured two times with an interval of ten minutes. The cuff was placed on the participant's right arm and inflated in 10 mmHg increments until the cuff pressure was 30 mmHg above the level at which the radial pulse disappeared. Blood pressure was measured following World Health Organisation (WHO) normatives [14] in a comfortable environment and allowing a 2–3 minute period of rest before blood pressure was measured.

Hypertension was defined according to WHO past criteria as mean values of systolic blood pressure ≥ 160 mmHg and/or diastolic blood pressure ≥ 95 mmHg.

Statistical analysis was done by use of the SPSS program-package.

Results

Table 2 shows the mean SBP and DBP values with standard deviation according to age. We can see that mean value of diastolic blood pressure decreases with age ($p < 0.01$).

Table 3 presents the prevalence of Hypertension according to WHO criteria, 47 % which increases up to 58.6 % if we consider antihypertensive effective treatment. According to the Fifth Joint National Committee on Detection and Evaluation and Treatment of Hypertension (JNC-V) [15] criteria (systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg), the prevalence is 77.80 %. Isolated systolic hypertension is the most frequent type of hypertension according to both criteria.

We can observe in Table 4 that the prevalence of isolated systolic hypertension increases with age and that there is no modification in isolated diastolic hypertension ($p = 0.03789$).

About 50.28 % of hypertensives were aware of their condition and 49.71 % were not. From the first ones, only 39.32 % under treatment have their blood pressure under good control against 60.67 % which have not.

To analyse the significance of hypertension as a cardiovascular risk factor, we compare the percentages of cardiovascular disease between hypertensives and normotensives. We have found statistically significant differences in the percentages of cardiovascular diseases among hypertensives (33.1 %) and normotensives (10.6 %), with a 4.16 (CI: 2.17–8.05) increased risk in elderly hypertensives (Table 5).

Table 2. Mean values distribution with standard deviation of systolic blood pressure (SBP) and diastolic blood pressure (DBP) according to age

Age	SBP (X $\pm$ SD mmHg)	DBP (X $\pm$ SD mmHg)*
65–80	153.43 $\pm$ 21.65	85.83 $\pm$ 12.18
≥ 81	154.15 $\pm$ 20.24	80.17 $\pm$ 12.94
Total	153.61 $\pm$ 21.02	82.6 $\pm$ 12.95

* $p < 0.01$

Table 3. Prevalence of hypertension according to WHO and JNC-VI normatives

Type of hypertension	WHO	JNC-VI
ISH	27.5 %	46.68 %
SDH	15.2 %	28.47 %
IDH	4.3 %	2.65 %
Hypertension	47.0 %	77.80 %

ISH: Isolated systolic hypertension; SDH: Systolic and diastolic hypertension; IDH: Isolated diastolic hypertension

Discussion

The prevalence of hypertension in our sample is 47 %, and increases to 58.6 %, if we include those with effective antihypertensive treatment. A similar value was found by Anderson in 1959 with a prevalence close to 60 % [16].

In the majority of the epidemiological studies the prevalence of hypertension in the elderly is higher in women than in men, between 38–46 % for men and 48–66 % for women (WHO) according to an international review made by Bots [17]. In Spain, using the same criteria, the prevalence of hypertension among elderly women ranges from 50 to 56 % [18–23].

If we follow JNC-V criteria, we found that the prevalence of hypertension published by other authors [18, 24, 25] is between 61.3 % and 74.2 % in elderly women. In our study we found a higher prevalence: 77.8 %.

Among elderly hypertensives, isolated systolic hypertension (ISH) is the most frequent type of hypertension. In the Framingham study, ISH accounted for approximately two-thirds of all cases of hypertension among individuals 65 years of age or older [26]. In our sample, ISH occurs in 58.45 % (WHO) and 62.11 % (JNC-V) of all hypertensives and in 27.50 % (WHO) and 46.68 % (JNC-V) of the sample. An epidemiologic review found that estimates of the prevalence of ISH range from 1 to 41 % [27]. This large variability is the result of several factors, including the diagnostic criteria used of ISH, ie, age, gender, race, geography, social class, and number of blood pressure determinations.

In our study, we see, as other authors, that the prevalence of ISH increases with age [18, 26, 28]. The degree of knowledge of their hypertensive condition in our sample was lower than in other studies made in Spain, where that prevalence rate ranges between 79–89 % [18, 20, 22].

It has been demonstrated in the literature that the risk of complications by hypertension is proportional to the levels of blood pressure and that the reduction of this high levels reduces the frequency of these events.

Our data show that the risk of IC, POAD and stroke is higher in the elderly hypertensives than in the normotensives. We find similar results in other studies, for instance Framingham and ECEHA [18, 29].

We can see that the prevalence of hypertension is specially higher in this group, probably due to their low socio-eco-

Table 4. Prevalence of hypertension according to age

Age	65–80	≥ 81
ISH	21.8 %	33.6 %
SDH	19.9 %	10.3 %
IDH	4.5 %	4.1 %
Normotensives	53.8 %	52.1 %

$\chi^2 = 8.43110$, $p = 0.03789$

ISH: Isolated systolic hypertension; SDH: Systolic and diastolic hypertension; IDH: Isolated diastolic hypertension

Table 5. Prevalence of cardiovascular disease by hypertension

BP CVD	HT	NT	p	OR	CI
IC	21.83 %	8.12 %	< 0.01	3.16	1.51–6.70
POAD	5.63 %	0.62 %	< 0.05	9.49	1.24–423.79
STROKE	11.26 %	2.50 %	< 0.01	4.95	1.54–20.77
CVD	33.10 %	10.60 %	< 0.01	4.16	2.17–8.05

BP: Blood pressure; HT: Hypertensives; NT: Normotensives; IC: Ischaemic cardiopathy; POAD: Peripheral occlusive arterial disease; CVD: Cardiovascular disease, OR: Odds ratio; CI: Confidence interval

nostic class and that there is a clear evidence of cardiovascular risk among elderly hypertensives. If we bear in mind that control of blood pressure is as effective in middle-aged individuals as it is in older ones, we consider it necessary to take preventive interventions measures in this population.

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