Lack of Effective Blood Pressure Control Among an Elder Hypertensive Population in Buenos Aires

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Our purpose was to determine the level of awareness, treatment, and control of hypertension in a population of subjects aged 65 or more. We studied a random sample from the national health care program in Buenos Aires. Letters were mailed to 1000 selected individuals. Among those eligible, 41.4% (n = 414) were enrolled. The mean age was 73.8 years and 68% were women. Prevalence of hypertension in our sample was 77.5% (n = 321). Awareness of hypertension was 60.7% (n = 195). Fifty-four percent (n = 173) of the hypertensive subjects were receiving pharmacologic treatment and only 18.5% (n = 32) of them were controlled. These results show that there is a low level of awareness, pharmacologic treatment, and control of hypertension in the studied elderly subjects.


KEY WORDS: Hypertension, epidemiology, blood pressure control, elderly.

The prevalence of hypertension in occidental countries increases with age. Systolic blood pressure (BP) is continually higher for persons older than 50 years. With aging there is a transition in the predominant form of BP elevation from diastolic to systolic, and consequently an increase in the prevalence of isolated systolic hypertension is observed. On the other hand, there is a strong graded relationship for both systolic and diastolic BP and death due to coronary heart disease.1 Recent studies demonstrated significant efficacy of active antihypertensive drug treatment in preventing stroke and other major cardiac and cardiovascular events in the elderly.2,3 In spite of this evidence, most recent epidemiologic studies show a low proportion of hypertensive elderly individuals properly treated and controlled.

In the city of Buenos Aires epidemiologic studies specifically focused on hypertension in the aged have not been performed. In this article the level of awareness, pharmacologic treatment, and control of hypertension in an elderly population is shown.

MATERIALS AND METHODS

We performed a cross-sectional survey in elderly people (65 years and over) between April and September 1996. This analysis is part of a prospective study designed to assess the health status of a sample of elderly individuals.

The national health care program in Argentina is called PAMI (Programa de Atención Médica Integral). In Buenos Aires, the capital of Argentina, this program is divided in 10 administrative districts, each of them includes elderly persons randomly assigned from ev-
RESULTS

Of the 1000 people who were invited 423 agreed to participate (response rate, 42.3%). Eventually we enrolled 414 elderly persons; 68.6% were women (n = 284). There were no significant differences with regard to sex and age distribution between the enrolled individuals and the studied population (n = 35,365). The study cohort ranged in age from 65 to 94 years with an average age of 73.8 ± 6 years (75 enrolled individuals were older than 80 years). Overall, 90% (n = 373) had a maximum rating in both scores of functional ability assessment. There were no significant differences in annual hospital admission rates between the study population (n = 35,365) and the sample (n = 414), (9.4 ± 0.3% vs 9.7 ± 3.0%, respectively, P = NS). More than 99% of the study population and the enrolled individuals were of European white origin. Geographic distribution of the study population (n = 35,365) was similar to that of sampled individuals (n = 414) and the proportion of individuals living in the immediate area of our hospital was also similar (20.7 ± 0.4% vs 18.8 ± 3.9%, respectively, P = NS).

Mean BP was 147.2 ± 21.3/85.5 ± 10.4 mm Hg with no significant differences between men and women (144.5 ± 19.6/84.7 ± 10.5 mm Hg vs 148.5 ± 22.0/85.9 ± 10.3 mm Hg, respectively). Table 1 shows the distribution of the enrolled individuals according to BP level in the moment of the evaluation. Prevalence of hypertension in our cohort was 77.5% (n = 321). Age, sex, and functional ability were similar between hypertensive and normotensive individuals. Ninety percent (n = 289) of the hypertensive subjects presented BP ≥140/90 mm Hg during the interview.

Awareness of hypertension was 60.7% (n = 195). Mean BP was significantly higher in those aware of having hypertension than in those unaware of their diagnosis (157.8 ± 20.2/90.0 ± 10.9 mm Hg vs 147.7 ± 16.0/85.0 ± 7.3 mm Hg, respectively, P < .01).

From the hypertensive subjects 53.9% (n = 173) were treated. Age, sex, and functional ability were similar between treated and untreated hypertensive individuals. Blood pressure was similar between both groups (154.3 ± 21.7/87.9 ± 11.0 mm Hg vs 153.4 ± 16.0/88.2 ± 8.6 mm Hg, respectively, P = NS). There were 93 (53.8%) treated patients who were receiving angiotensin converting enzyme inhibitors; 68 (39.3%), calcium channel blockers; 39 (22.5%), diuretics; 38 (22.0%), β-blockers; 5 (2.9%), centrally acting α2-agonists; and 1 (0.6%), α1-receptor blockers. Only 32 of the subjects receiving pharmacologic treatment were controlled (18.5% of the treated hypertensive individuals). In the noncontrolled hypertensive individuals, 115 were taking one drug and 26 were taking two or more drugs. In the controlled hypertensive subjects, 25 were taking one drug and 7 were taking two or more drugs.
There was no association between the number of antihypertensive drugs in use and control of hypertension.

Blood pressure in controlled hypertensive individuals was similar to BP in normotensives (126.9 ± 6.7/76.4 ± 7.8 mm Hg vs 124.3 ± 8.1/76.8 ± 6.2 mm Hg, respectively, P = NS). Blood pressure in noncontrolled hypertensive individuals, in spite of the treatment, was significantly higher than BP in untreated hypertensive elders (160.5 ± 18.8/90.6 ± 10.0 mm Hg vs 153.4 ± 16.1/82.2 ± 8.6 mm Hg, respectively, P < .0001).

**DISCUSSION**

This analysis is part of a study designed to assess the general health status of an elderly group in Buenos Aires. We show the awareness, pharmacologic treatment, and control of hypertension in the analyzed cohort.

In our sample, hypertension prevalence was high. It is true, however, based on one-occasion measurement BP levels and hypertension prevalence are overestimated. In spite of this, it is clear that a high level of casually obtained BP, systolic or diastolic, is a good predictor of the risk of coronary heart disease and that this risk is proportional to the height of the elevation. Trends in awareness, treatment, and control status have been used as a way of measuring progress made in hypertension control efforts. Our data are similar to that obtained in other countries for the same age group. In the present analysis the only treatment considered was the pharmacologic. This implies that probably some hypertensive individuals controlled with nonpharmacologic measures were classified as normotensive, which may have diminished the hypertension control found.

The widespread prevalence of hypertension at older age and the increasing proportion of elderly in the population make the issue of hypertension control one of central importance for the health of this segment of the population. Epidemiologic data have shown that elevations in systolic BP, as well as diastolic BP, after the age of 65 years continue to contribute to the risk of such disease end points as stroke, heart attack, congestive heart failure, and renal failure. The weight of the evidence from clinical drug trials indicates that hypertension can be treated successfully, with good compliance at older ages and with few side effects if dose levels are properly monitored, and that successful treatment reduces the incidence of cardiovascular morbidity and mortality in the elderly as it does in those at younger ages. The excellent functional ability of the subjects from our cohort makes them ideal candidates for hypertension treatment. In spite of this, there is a high proportion of unaware hypertensive people and a low proportion of controlled hypertensive individuals. We were amazed to find that more than one-third of the hypertensive patients were ignorant of the fact that they were hypertensives, as two-thirds of these patients had been examined by a physician and had had a BP reading taken within the previous year (data not shown). Possible explanations include misclassification of hypertension in the elderly by primary care physicians, probably due to ignorance on the level of BP at which a diagnosis of hypertension should be made and the underestimation of the increased cardiovascular risk associated with mild hypertension. The finding of lower BP levels in untreated hypertensive patients compared to those treated noncontrolled, suggests that primary care physicians make the diagnosis of hypertension and start prescrib-

**TABLE 1. DISTRIBUTION OF BLOOD PRESSURE LEVELS**

<table>
<thead>
<tr>
<th>BP Category†</th>
<th>Subjects</th>
<th>SBP‡</th>
<th>DBP‡</th>
<th>Treated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>(mm Hg)</td>
<td>(mm Hg)</td>
</tr>
<tr>
<td>Optimal</td>
<td>18</td>
<td>4.3</td>
<td>110.6 ± 4.2</td>
<td>70.3 ± 3.6</td>
</tr>
<tr>
<td>Normal but not optimal</td>
<td>42</td>
<td>10.1</td>
<td>121.5 ± 2.4</td>
<td>74.2 ± 5.0</td>
</tr>
<tr>
<td>High normal</td>
<td>65</td>
<td>15.7</td>
<td>131.2 ± 3.5</td>
<td>80.1 ± 5.9</td>
</tr>
<tr>
<td>HT stage 1</td>
<td>160</td>
<td>38.6</td>
<td>144.5 ± 6.6</td>
<td>84.9 ± 6.5</td>
</tr>
<tr>
<td>HT stage 2</td>
<td>90</td>
<td>21.7</td>
<td>164.2 ± 7.1</td>
<td>93.2 ± 8.4</td>
</tr>
<tr>
<td>HT stage 3</td>
<td>35</td>
<td>8.4</td>
<td>187.1 ± 8.2</td>
<td>97.8 ± 9.1</td>
</tr>
<tr>
<td>HT stage 4</td>
<td>4</td>
<td>1.0</td>
<td>220.0 ± 11.5</td>
<td>104.3 ± 21.6</td>
</tr>
</tbody>
</table>

* Based on categories established in the Fifth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure.
† When systolic and diastolic pressures decreased in the different categories, the higher category is selected to classify the individual’s blood pressure status.
‡ Data are mean ± SD from all subjects in each category.
§ “Treated” refers to treatment with an antihypertensive medication.
DBP, diastolic blood pressure; HT, hypertension; SBP, systolic blood pressure.
In summary, although the majority of individuals with hypertension of our cohort are treated with antihypertensive drugs, less than 25% are controlled and more than one-third remain unaware of their disease. Although Buenos Aires had no official program designed for diagnosis, treatment, and control of high BP, after this study was finished the national health care program started an effort for hypertension control. The finding of a high proportion of uncontrolled individuals may reveal a true lack of daily life BP control. Implementation of educational programs for patients and physicians might improve the current situation.

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REFERENCES