Isolated Systolic Hypertension: a Fading Myth

Nemat O. Borhani, MD, Professor and Chairman, Department of Community Health, University of California, Davis School of Medicine, Davis, CA 95615 (USA)

Slowly but surely the mythical concept of isolated systolic hypertension is fading away, as it must. Clinicians have come to recognize, and accept the challenge of isolated systolic hypertension. The term ‘benign’ hypertension in the elderly is a misnomer; it needs to be revised. There is nothing ‘benign’ about an isolated systolic hypertension, be it in the elderly or in the young.

The final results of the Hypertension Detection and Follow-up Program (HDFP), the largest randomized clinical trial ever conducted on the efficacy of treatment of hypertension, followed by the report of the Australian Study of Treatment of Mild Hypertension, demonstrated clearly the efficacy of judicious treatment of hypertension [1–3]. It is therefore of more than academic interest to pause and reflect on the full implication of the impressive findings of these studies in the management of patients with isolated systolic hypertension.

Hemodynamically, for too long the traditional concept of systolic hypertension has been to classify it into two etiologic groups due either to increased stroke volume (mostly occurring in the young) or diminished arterial distensibility (mostly occurring in the elderly). This is a simplistic view of a significant clinical problem; this concept should be abandoned, because hemodynamic mechanism of isolated systolic hypertension should not always be related to age (i.e., aortic rigidity) or other clinical characteristics of the patient such as stroke volume [4]. Nor should the isolated systolic hypertension be treated clinically with neglect because of the mistaken assumption that systolic hypertension is more variable than the diastolic and hence less significant. This assumption is not true, as has been demonstrated in studies of the variability of measurements of casual blood pressure in which replicate readings produce no significant change in systolic blood pressure, whereas they show a consistent, progressive and significant fall in diastolic blood pressure [5].

To appreciate the clinical significance of isolated systolic hypertension, it is perhaps useful to recall at least four important epidemiological aspects of essential hypertension.

First, arterial blood pressure (systolic and diastolic) is a biological quantity distributed in every population subgroup as a continuum. This means that the adverse effects of elevated blood pressure (systolic or diastolic) are related numerically to the level of blood pressure. There is no dividing line (cut-off point) above which an individual patient is at risk of mortality and below which he is free from it.

Second, within specified ranges of either systolic or diastolic blood pressure there is a rise in mortality, in every age-group, as the other component of blood pressure (systolic or diastolic) increases. Each of the measured components of blood pressure (systolic or diastolic) contributes independently to the risk of death, even in the range not generally considered extreme by accepted clinical criteria. Both components of blood pressure interact positively with each other in that a given diastolic blood pressure (e.g., 90 mm Hg) carries a greater risk of mortality at a
higher level of systolic blood pressure (e.g., 190 mm Hg) than the same diastolic blood pressure at a lower level of systolic blood pressure (e.g., 140 mm Hg).

Third, the adverse clinical effects of hypertension manifest themselves even with the mildest elevation of systolic or diastolic blood pressure. Results of prospective epidemiological studies in the United States and elsewhere indicate a consistent and graded positive association between the level of systolic blood pressure (beginning at 120 mm Hg or even less than that). Indeed, systolic blood pressure is a better predictor of risk of death than diastolic blood pressure.

Fourth, there is an extensive interaction between systolic blood pressure and other risk factors such as diabetes and hyperlipidemia [6]. A systolic blood pressure of 130

Commentary

160 mm Hg is not as innocuous in the presence of elevated serum cholesterol, electrocardiographic evidence of left ventricular hypertrophy or the habit of cigarette smoking, as it may be without the presence of these risk factors. Thus, the clinical significance of isolated systolic hypertension must be viewed not only in its own right, in terms of numerical value of the pressure, but in the context of total clinical profile of the patient and the presence or absence of other risk factors. Isolated systolic hypertension is abnormal regardless of the age of the patient; it carries with it a devastating risk of mortality and morbidity.

With regard to the need for treatment of isolated systolic hypertension, unfortunately the HDFP by design limited the upper boundaries of age for inclusion into the study to 69 years. Therefore, the HDFP results do not provide the ‘final proof’ some of us may demand as the evidence on the efficacy of treatment of isolated systolic hypertension among those older than 70 years of age. Certainly, a clinical trial to test the efficacy of treatment of isolated systolic hypertension in the elderly is required to provide the needed evidence. A pilot study is currently underway to demonstrate the feasibility of such a study [7], which hopefully will lead to the conduct of such studies. Until then, and based on the available clinical and epidemiological evidence, however, it seems prudent to lower elevated systolic blood pressure in all cases, including in the elderly, by the application of judicious, hygienic and therapeutic regimen. Such a therapy may be initiated with counseling on low salt diet and weight reduction, augmented with thiazide diuretics, in less than ordinary dose; and, if needed, the addition of a small daily dose of hydralazine in combination with beta-adrenergic Mockers. In the final analysis, the decision to use drug therapy to lower isolated systolic hypertension should be an individualized decision based on the clinical profile of the patient and the clinical circumstances surrounding each case.

Nemat O. Borhani, MD Davis, California

References


Smith, W.M.; et al.: Systolic hypertension in the elderly program (SHEP) pilot study (personal commun.).