Epidemiology of Hypertension in the Elderly

Nora Morgenstern and Richard L. Byyny
Division of Internal Medicine, Section of Geriatric Medicine, University of Colorado Health Sciences Center, Denver, Colorado, USA

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Summary

Epidemiological studies confirm that hypertension, particularly systolic hypertension, is a major cardiovascular and cerebrovascular risk factor in the elderly. Clinical trials convincingly demonstrate the benefits of treating both diastolic hypertension in persons up to age 80 years, and isolated systolic hypertension in persons over age 60. The European Working Party on Hypertension in the Elderly (EWPHE) trial showed that reducing elevated blood pressure resulted in a 27% reduction in overall cardiovascular mortality, as well as significant reductions in severe congestive heart failure, strokes and deaths from myocardial infarction. The Systolic Hypertension in the Elderly Program (SHEP) also reported a 36% reduction in the incidence of stroke and decreases in cardiovascular events, including myocardial infarctions, when hypertension was treated. Additional EWPHE data suggest that the optimal level of systolic blood pressure control is between 146 and 158mm Hg, while patients in the SHEP trial with isolated systolic hypertension derived benefits at an average treated systolic blood pressure of 143mm Hg.

Elderly study populations comply well with antihypertensive treatment, and blood pressure can be safely lowered with simple drug regimens. Nonpharmacological treatment is recommended for initial treatment of mild diastolic hypertension and isolated systolic hypertension, and as
The number of people aged 65 years and older is rapidly increasing worldwide. Hypertension, a widespread and serious problem in the elderly, increases in prevalence with age, and population studies suggest that more than 50% of people over age 65 years may have chronic hypertension (Leaverton et al. 1990; Joint National Committee 1985; Working Group on Hypertension in the Elderly 1986). Hypertension is the single most common, powerful and treatable risk factor for cardiovascular morbidity and mortality in the elderly (Kannel & Gordon 1978) and cardiovascular diseases cause over half of all deaths in persons over 65 in Westernised countries (Leaverton et al. 1990; Kannel & Gordon 1978).

Important questions about hypertension in the elderly remain unanswered for the clinician. Should hypertension always be treated, especially in the very aged? Do the benefits of drug treatment always outweigh the risks, and does the risk/benefit ratio change with advanced age? Should treatment decisions rely on systolic blood pressure (SBP), diastolic blood pressure (DBP) or both? How do other existing cardiovascular risk factors such as hyperlipidaemia or left ventricular hypertrophy influence choice of treatment? Is there an association between clinical outcomes and level of blood pressure control? Is there a level below which blood pressure exerts a negative influence on morbid events and mortality?

In this review, these and other questions are addressed, and information is provided on the epidemiology of hypertension, risks associated with hypertension, pathophysiological factors and treatment decisions.

1. Epidemiology

In industrialised countries, blood pressure increases with advancing age. In the US, systolic blood pressure rises throughout the life span. Diastolic blood pressure increases until age 55 or 60 years and then levels off or declines by age 70 (Master et al. 1958) [fig. 1]. The relatively higher rise in systolic pressure than in diastolic pressure results in a gradual rise in pulse pressure with age for both sexes. Individuals with elevated blood pressure at young ages are likely to have hypertension as they grow older, and the higher the blood pressure initially recorded, the more marked the increase with aging (Robertson 1989; Whelton & Klag 1989). Cross-sectional studies show that women start adulthood with lower blood pressures than men, but subsequently have a slightly higher rate of rise such that their average blood pressure is higher than that in men by the sixth decade (Whelton & Klag 1989). Longitudinal studies, however, support the hypothesis that the higher prevalence of hypertension in elderly women is due to early mortality of male hypertensives (Joint National Committee 1985; Leaverton et al. 1990).

Race is another factor influencing blood pressure. In the US, both systolic and diastolic blood pressures are higher in Blacks than in Whites during each decade after age 30 (Leaverton et al. 1990), and incidence rates are twice as high in Blacks (Coroni-Huntley et al. 1989). Elderly Black women have the highest levels of blood pressure. In the National Health and Nutrition Examination Survey (NHANES), using a blood pressure criterion of >140/90mm Hg, 71% of Black women aged 55 to 74 were hypertensive; follow-up data from the NHANES I Epidemiologic Follow-up Survey (NHEFS) showed 73% of Black women older than 75 to be hypertensive (Leaverton et al. 1990).

Increase in blood pressure with old age is not inevitable, however. Numerous studies of unculturated societies in South America and the South Pacific have demonstrated no significant increase in blood pressure in old age (Lowenstein 1961; Whelton & Klag 1989). Furthermore, residents of these countries lose their protection from hyper-