Resistant Hypertension in the Elderly

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KEYWORDS

• Hypertension • Elderly • Pseudoresistant hypertension
• True resistant hypertension • Secondary hypertension
• Blood pressure control

Resistant hypertension is defined as "blood pressure that remains above goal in spite of the concurrent use of three antihypertensive agents of different classes. Ideally, one of the three agents should be a diuretic and all agents should be prescribed at optimal dose amounts." Recent American Heart Association guidelines also include patients who are well controlled but require four or more medications as having resistant hypertension.[1]

The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) recommends a goal blood pressure (BP) of less than 140/90 mm Hg in the general population, and in patients with diabetes mellitus and chronic kidney disease (CKD), a lower goal of less than 130/80 mm Hg is recommended.[2] The issue of goal BP for patients with isolated systolic hypertension, which is common in the elderly, remains a matter of debate. Clinical trials in the treatment of isolated systolic hypertension have thus far not achieved a BP goal of less than 140 mm Hg. The best evidence to date in lowering BP to less than 150 mm Hg in elderly patients is the Systolic Hypertension in the Elderly study, which showed a 38% reduction in strokes at a 10-year follow-up period.[3] However, the current consensus is a BP goal of less than 140/90 mm Hg.[2]

Resistant hypertension is prevalent across all ages but is more prevalent in elderly patients. In the Framingham study, the patient characteristic that was most strongly predictive of uncontrolled hypertension was older age; less than 25% of those older than 75 years had BP controlled to goal.[4] Data from the National Health and Nutritional Examination Survey (NHANES) also demonstrate similar results, with a much higher prevalence of uncontrolled hypertension in the older age group when compared with that in younger individuals.[5]

Although most of the data about the prevalence of resistant hypertension are derived from uncontrolled hypertension in population-based studies, the prevalence of true resistance remains uncertain. Similarly, the prognosis of true resistant hypertension remains uncertain as well, because there are no follow-up studies in this patient population.

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FACTORS CAUSING RESISTANT HYPERTENSION IN THE ELDERLY

In evaluating elderly patients with resistant hypertension, it is important to first evaluate if they are truly resistant. There are several contributory reasons for the higher prevalence of uncontrolled hypertension in older individuals, including suboptimal treatment. Physician attitude toward treating elderly patients may have been influenced by the fact that the majority of hypertension trials excluded this patient group. Recently published, the Hypertension in the Very Elderly Trial (HYVET) is the first randomized, controlled trial conducted in elder hypertensive patients, and it demonstrated the benefits of antihypertensive therapy.[6] Other factors leading to inadequate therapy in the elderly include frequent side effects due to antihypertensive medications, physician fear of excessively lowering diastolic BP,[7] and patient factors, including age-related vascular hypertrophy and remodeling[8] and increased levels of sympathetic tone.[9]

Successful management of elderly patients, therefore, includes awareness, screening, and identification of contributory factors to resistant hypertension, as listed in **Table 1**.

Resistant hypertension in the elderly can thus be broadly divided into (a) false positive or Pseudoresistant hypertension and (b) true resistant hypertension.

FALSE POSITIVES OR PSEUDORESISTANT HYPERTENSION

The prevalence of false positive or pseudoresistant hypertension is higher in elderly hypertensive patients, and the most common underlying cause is pseudohypertension.

Pseudoresistance Due to Incorrect Technique in Measuring BP

Several physician- and patient-related factors have been identified that may lead to elevated BP readings in patients who are, in fact, normotensive or well controlled on antihypertensive medications. A smaller BP cuff size, rapid deflation rate of the BP cuff (a deflation rate of 2–3 mm Hg/s is generally recommended), and recent ingestion of caffeine or pressor agents are among factors that may elevate BP reading acutely at the time of measurement. The recommended method for accurate BP measurement has been described in detail in hypertension guidelines as well as in the recently released guidelines for home BP measurement.[2,10,11]

Table 1
Causes of resistant hypertension

False Positive or Pseudoresistance
• Incorrect technique in measuring BP
• Pseudohypertension
• Lack of adherence to lifestyle interventions
• Foods and over-the-counter medications
• Suboptimal therapy
• Lack of patient adherence to antihypertensive therapy
• White coat hypertension
True Resistant Hypertension
• Sleep apnea
• Paroxysmal hypertension
• Hypertension related to secondary etiology

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