

■ clinical contributions

# How Shall We Manage Isolated Systolic Hypertension in Older Adults? Case Example and Suggestions

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## Introduction

Isolated systolic hypertension (ISH) accounts for approximately 70% of hypertension in the population aged 60 years and older.<sup>1</sup> The occurrence of ISH in older adults is believed to reflect decreased arterial compliance observed with advancing age. Epidemiologic studies suggest that systolic blood pressure—or, more specifically, a widened pulse pressure—is a more robust risk factor for myocardial infarction, heart failure, stroke, and cardiovascular mortality than is diastolic blood pressure.<sup>2</sup> Elevated systolic pressure places additional metabolic demands on an already stressed myocardium, whereas decreased diastolic blood pressure reduces coronary artery perfusion.<sup>2</sup> We present a typical case, its diagnosis, and suggested treatment.

## Case Example

A colleague asks your advice on management of blood pressure (170/70 mm Hg) in a 78-year-old woman with a history of stroke. Elevated blood pressure measurements are repeatedly confirmed at examinations done by your colleague and by clinic nurses. The patient is asymptomatic.

## Discussion

### Diagnosis

Because this patient shows evi-

dence of end organ damage caused by hypertension, she is unlikely to have “pseudohypertension,” a condition in which a discrepancy exists between blood pressure measurements obtained using indirect methods (such as with a sphygmomanometer) and direct intraarterial measurements. In addition, this patient is unlikely to have “white coat hypertension” (a condition commonly seen among older patients), because similar blood pressure readings were obtained by different clinical personnel. This patient appears to have ISH.

### Treatment of Isolated Systolic Hypertension in Older Adults

Several large randomized controlled trials have documented that treatment of ISH in older adults results in reduction in incidence of stroke, coronary heart disease events, and vascular causes of deaths.<sup>3</sup> Controversy exists, however, as to what optimal blood pressure should be. Moreover, whether systolic hypertension represents a cardiovascular risk factor among patients aged 80 years and older (ie, patients older than the patient described here) is not clear. Most clinicians would agree that patients with systolic blood pressure above 160 mm Hg and no other comorbid

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conditions should receive treatment.<sup>4</sup> Patients with blood pressure above 140 mm Hg who concurrently have diabetes or other risk factors for atherosclerotic vascular disease also should be treated.<sup>4</sup> In elderly high-risk patients, reduction of diastolic blood pressure to below 65 mm Hg should be avoided, because organ perfusion may decrease, thus leading to symptoms of hypotension, angina, or renal insufficiency.<sup>4</sup>

### Generally Applicable Treatment Suggestion 1: Lifestyle Modification

Because this patient is currently asymptomatic and may be taking other medications, a reasonable initial approach is to advise nondrug lifestyle modifications to lower blood pressure. Recently, the Trial of Nonpharmacologic Interventions



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in the Elderly (TONE) Study<sup>5</sup> showed that rigorous sodium restriction (ie, limiting sodium intake to 80 mEq/day, or 1.8 g of sodium/day) and weight reduction (by about 3.5 kg/week) eliminated both recurrent hypertension and medication use in 44% of obese elderly patients, compared with 16% of the control population at 30 months. This level of sodium restriction may be unrealistic except in a controlled setting; however, a diet in which sodium is moderately restricted (ie, to 100-125 mEq/day, or to 2.3-2.8 g of sodium/day) may reasonably be advocated. In contrast to younger patients, older subjects tend to have a greater decrease in blood pressure in response to sodium restriction, a response suggesting that hypertension in older patients has a clinically significant volume-dependent component. In addition to sodium restriction, moderate and graded aerobic exercise, smoking cessation, and limited alcohol intake all have beneficial effects on blood pressure. Nonsteroidal anti-inflammatory drugs (NSAIDs), commonly used by older adults, induce sodium retention and adversely affect blood pressure. In contrast, postmenopausal hormone replacement therapy rarely influences resting blood pressure.

### Generally Applicable Treatment Suggestion 2: Medical Therapy

Several randomized controlled studies<sup>6</sup> of elderly patients with ISH have shown that compared with placebo, medical treatment reduces rates of stroke, cardiovascular events, and cardiovascular mortality without causing major adverse effects. However, owing to diminished hepatic metabolism, reduced renal excretion, and decreased volume of distribution, elderly patients

are more sensitive to medications than are younger patients.<sup>7</sup> Moreover, incidence of orthostatic hypotension is higher in older patients because of autonomic dysfunction and enhanced venous pooling.

For these reasons, any antihypertensive medical therapy should be initiated cautiously, and the patient must be carefully monitored. For ISH, small doses of diuretics (such as hydrochlorothiazide 12.5 mg a day) or fixed-dose combinations with a potassium-sparing diuretic may be sufficient. Hypokalemia should be avoided. Alternatively, long-acting dihydropyridine calcium channel blockers (eg, nifedipine, felodipine, or amlodipine) have been beneficial.<sup>6</sup> For patients with concurrent illness (eg, previous myocardial infarction, diabetes mellitus, or angina), beta-blockers, angiotensin-converting enzyme (ACE) inhibitors, or nitrates have been successfully used.<sup>6</sup>

### Specific Treatment Suggestions

In this patient, a trial of sodium restriction may be attempted. She should be asked about NSAID use; if she is taking these drugs, she should stop or minimize the dose. If her blood pressure remains elevated despite sodium restriction, a small dose of hydrochlorothiazide (12.5 mg/day) or a fixed-dose combination with a potassium-sparing diuretic would be reasonable treatment. Care should be taken to avoid hypokalemia or thiazide-induced hyponatremia, to which elderly women in particular are prone. A long-acting dihydropyridine calcium channel blocker may be added later. Orthostatic hypotension must be avoided; therefore, to determine therapeutic effect, blood pressure should be measured with the pa-

tient standing instead of sitting. Because of this patient's history of stroke, treatment consisting of lipid management and low-dose aspirin therapy is advised. ♦

**Controversy exists, however, as to what optimal blood pressure should be.**

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