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Review Article

Hypertension in elderly



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ABSTRACT

Hypertension is a common problem encountered in day to day practice by physicians and often termed as “silent killer” because patients with mild to moderate disease are often asymptomatic. By the time symptoms appear due to organ damage, therapeutic options remain limited.

A clinical diagnosis of hypertension is established by demonstrating a systolic blood pressure (SBP) >140 mmHg and/or a diastolic blood pressure (DBP) >90 mmHg on at least 2 occasions as summarized in “The Seventh Report of Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure”.¹ However the usual definition of hypertension and target BP levels might not be applicable to the elderly hypertensive population. Also criteria for categorizing BP vary and have not been further characterized for the elderly.

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1. Introduction

Traditional demographic definition defines elderly as individuals >65 years of age.

Worldwide population of individuals aged 65 and older is increasing. According to the Framingham Heart study,² by the age 60 approximately 60% of the population develops hypertension and by 70 years about 65% of the men and 75% of women have the disease. In the same study, 90% of those who were normotensive at age 55 went on to develop hypertension. The elderly also are more likely to suffer from the complication of hypertension and are more likely to have uncontrolled disease.

Most elderly patients have multiple co-morbidities. They tend to have more resistant hypertension and require multiple drugs to control their blood pressure thus exposing these frail patients to a host of drug-related adverse effects. Thus, it is relevant to ask the question whether treating hypertension in elderly is beneficial?

Insua et al in his meta-analysis of randomized controlled trials (RCTs) published from January 1980 to February 1992, concluded that treatment of hypertension in elderly patients produces a significant benefit in total mortality (12% reduction in all – cause mortality), cardiovascular (CV) morbidity and mortality. However, this benefit may be reduced in the oldest age group.³ Another meta-analysis (of more than 15,000 patients between ages 62 and 76 years) of RCTs, performed a decade ago by Staessen et al showed that treating isolated systolic hypertension substantially reduced morbidity and mortality rates.⁴ A more recent meta-analysis by Schall et al conducted in the year 2011 of RCTs in hypertensive patients age 75 and older also concluded that treatment reduced cardiovascular morbidity and mortality rates and incidence of heart failure, even though the total mortality rate was not affected.⁵

Since aging is associated with progressive increase in aortic stiffness systolic blood pressure (SBP) rises gradually throughout adult life, while diastolic blood pressure (DBP)

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peaks and plateaus in late middle age, declining slightly thereafter. So the proportion of hypertensive patients with isolated systolic hypertension (ISH) increases with age – 65% of patients >60 years and over 90% >70 years of age.⁶ There is enough evidence to show that SBP is a strong independent risk factor for incident cardiovascular (CV) events in all decades of life. After age 70 years, diastolic hypertension accounts for <10% of all patients with hypertension.⁶ Pulse pressure (i.e. difference between SBP and DBP), increases with age and is a potent risk factor for coronary arteries (CAD) events in older individuals.

Evaluation for secondary causes of hypertension is of utmost importance before initiating treatment. Further workup should be pursued in those who appear to have “inappropriate” hypertension. This could present as refractory hypertension, abrupt-onset hypertension, hypertension that is first diagnosed after age 60, or loss of control over previously well-controlled blood pressure. Important causes of secondary hypertension include:

1.1. Renal artery stenosis (RAS)

Incidence of RAS increases with age and RAS is a risk factor for poor kidney function.

RAS occurs in ostial segments extending from adjacent aortic plaque resulting in significant reduction of renal blood flow, activation of renin–angiotensin–aldosterone system (RAAS) leading to increased BP and decreased kidney size. The functional significance of RAS in older adults is unclear. The ASTRAL trial of 806 patients found substantial risks, but no evidence of meaningful clinical benefit from revascularization in patients with atherosclerotic RAS.⁷ Additional information should come from the ongoing CORAL (Cardiovascular Outcome in Renal Atherosclerotic Lesions) trial (www.coralclinicaltrial.org).

The risks of RAS are related both to declining kidney function and to accelerated cardiovascular disease (CVD), with increased morbidity and mortality. Clinically significant RAS should be suspected if patient has symptomatic vascular disease, dyslipidemia, presence of abdominal bruit, or presents with flash pulmonary edema. An increase in S. Creatinine more than 50% within the first month of starting RAAS blockers signify bilateral RAS or in those with solitary kidney.

1.2. Obstructive sleep apnea

Approximately 30% of adults with hypertension have obstructive sleep apnea and its prevalence more than doubles for each 10 years increase in age in both sexes. Obstructive sleep apnea has been found to be associated with high prevalence of hypertension especially isolated diastolic hypertension.⁸

1.3. Primary aldosteronism

Although incidence of primary aldosteronism is more in younger patients, rare cases have been reported in elderly patients. Most cases are due to adrenal adenomas, but rarely are caused by adrenal carcinoma or hyperplasia.

Adrenal hyperplasia is more prevalent among older men. Diagnosis should be suspected if patient is having persistent hypokalemia and confirmed by elevated plasma aldosterone level and low plasma rennin activity without drugs that affect RAAS (e.g. angiotensin converting enzyme inhibitors (ACEIs), angiotensin receptor blockers (ARBs), beta blockers, even thiazide diuretics).

Surgical removal is recommended for treating adrenal tumors after which hypertension remission is seen in 50%–70% of patients, however, for adrenal hyperplasia surgery is not generally recommended and medical management preferred in form of mineralocorticoid receptor antagonists.

2. Thyroid status and hypertension

Subclinical hyperthyroidism, defined as reduced TSH levels in presence of normal serum thyroid hormone levels is seen in 1%–5% of patients older than 60 years.⁹ The link between risks of hypertension in such patients remains controversial. A study by Walsh et al, found higher prevalence of hypertension in patients with subclinical hyperthyroidism than in euthyroid subjects.¹⁰

Several studies have shown an association of hypothyroidism with diastolic hypertension which may return to normal after thyroxine treatment.^{11,12} However, the literature does not show consistent and clinically significant association between hypertension and subclinical and asymptomatic hypothyroidism.

3. Lifestyle, substances and medication that affect the blood pressure

Alcohol: Drinking is shown to be significantly associated with hypertension and there is no difference in risk between beer, wine and liquor.

Tobacco: There are complex interaction between hypertension and smoking that increase the risk for CVD, peripheral arterial disease (PAD), cerebrovascular disease and kidney disease at all BP levels. Smoking increases SBP, especially in those more than 60 years of age¹³ and smoking cessation reduces SBP. For every increment of 10 cigarettes smoked per day, CV mortality increases by 18% in men and 31% in women.¹⁴

Non-steroidal anti-inflammatory drugs (NSAIDs): NSAIDs are used frequently to provide analgesia and anti-inflammatory benefits. Compared with nonusers, NSAIDs use significantly increased risk for initiation of antihypertensive therapy.¹⁵ They also interfere with BP control in the elderly through partial reversal of antihypertensive effects of diuretics,¹⁶ beta blockers and ACEIs and ARBS, but not CAs. Caution must be taken when prescribing NSAIDs to elderly patients with hypertension. Close monitoring for BP changes, weight gain, fluid retention and kidney dysfunction are required.

Glucocorticoids: Glucocorticoids induced hypertension occurs more often in the elderly compared with younger patients. Oral steroids can increase SBP as much as 15 mmHg within 24 h.¹⁷

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