



Mini Review

Current approach to isolated diastolic hypertension

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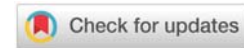
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Abstract

In various guidelines, isolated diastolic hypertension is defined as diastolic blood pressure >80 or >90mmHg in individuals with normal systolic blood pressure. While isolated diastolic hypertension was associated with adverse cardiovascular events in observational studies, this relationship is not clear in epidemiological studies. Increased arterial stiffness, increased central hemodynamics, vasoconstriction, increased adrenergic activity, increased renin angiotensin aldosterone activity play a role in the pathophysiology. Isolated diastolic hypertension is associated with male gender, young age, increased body mass index, increased glucose level, increased alcohol consumption and high triglyceride levels. Although treatment is not recommended in young people in isolated diastolic hypertension, treatment should be individualized according to the underlying cardiovascular disease in the elderly.

Introduction

Hypertension (HT) is one of the most common chronic diseases that increase cardiovascular morbidity and mortality [1]. HT is seen in 32% of women, 19% of men, 36% of blacks and 21% of whites [2]. Although systolic HT is frequently mentioned in various articles, the number of articles on isolated diastolic HT (IDHT) is not sufficient. IDHT is seen in <20% of hypertensive patients [3]. The prevalence of IDHT has increased from 1.3% to 6.5% [4]. This rise has led attention to IDHT. Therefore, in this article, we present the current approach to isolated diastolic hypertension.

Diastolic blood pressure and cardiovascular risk

Although Systolic Blood Pressure (SBP) is more associated with adverse cardiovascular events, diastolic hypertension has also been found to affect adverse cardiovascular events [4]. Observational studies have found a relationship between the degree of Diastolic Blood Pressure (DBP) and cardiovascular events [5]. In a meta-analysis of 61 prospective studies, the risk of cardiovascular disease increased in a log-linear fashion with DBP <75mmHg or >115mmHg [6]. In observational study with 1 million adult patients aged 30 years and older found an association between elevated DBP and increased risk of cardiovascular disease, angina, myocardial infarction, heart

failure, stroke, peripheral artery disease, and abdominal aortic aneurysm [7]. There is a relationship between increased risk of cardiovascular disease and high diastolic blood pressure in a wide age range from 30 years to over 80 years [6]. A 10 mmHg increase in DBP has been associated with a doubling risk of death from stroke, heart disease, and other vascular diseases [7]. In epidemiological studies, unlike SBP, no relationship was found between DBP and cardiovascular risk [7]. Pulse pressure and mean blood pressure, independent of DBP, have been associated with cardiovascular risk in some studies [8,9]. In the NHANES (National Health and Nutrition Examination Survey) study [10], which included 23272 participants, more than 50% of those who died from stroke and coronary artery disease were hypertensive patients. Even at the high thresholds recommended in The Joint National Committee-7 blood pressure management guidelines, a rare association was found between IDHT and adverse cardiovascular events in elderly patients [5].

Definition

Ideal blood pressure value is <120/80. According to the 2017 American guideline, the SBP value is <130 mmHg; A DBP value of >80mmHg is defined as IDHT [5]. According to the 2018 European guideline, SBP is <140mmHg; DBP >90 mmHg is defined as IDHT [11].



Risk factors

Family history of hypertension, alcohol consumption, young age, male gender, increased blood glucose, increased body mass index, high triglyceride levels and previous cardiovascular events were found to be associated with IDHT [12].

Mechanisms

While diastolic hypertension is common in people under 50 years of age, systolic hypertension is more common in people over 50 years of age due to increased atherosclerosis and arterial stiffness [13–15]. Increased arterial stiffness, increased central hemodynamics, vasoconstriction, increased adrenergic activity, excessive volume load and increased renin angiotensin aldosterone system activity are associated with IDHT [16,17].

Treatment

The prevalence of IDHT is more common in younger than 50 years of age. IDHT is not generally seen in the elderly. Reducing DBP is associated with adverse cardiovascular events, especially in young people with normal SBP [18]. In the SPRINT study [13], a reduction in DBP <68mmHg was associated with adverse cardiovascular outcomes due to the J curve. Although rare in elderly patients, a conservative approach is generally recommended in IDHT. Because, in normal SBP, lowering DBP may impair cerebral blood flow autoregulation. Therefore, cerebral ischemia and stroke may develop. Some authors did not recommend treatment in young people as IDHT at normal systolic blood pressure levels is not associated with adverse cardiovascular events. However, lowering DBP in elderly individuals with coronary artery disease leads to an increase in morbidity and mortality as it impairs coronary blood flow autoregulation. Myocardial perfusion is maintained especially during diastole and when DBP is 70 mmHg and above [19]. Based on our clinical experience, we recommend individualizing the treatment in IDHT so that the DBP target is between 70 and 80 mmHg. Therefore, we do not recommend treatment for IDHT in young people, but we think that the treatment should be individualized according to the underlying cardiovascular disease in elderly patients. In a study on IDHT, it was determined that calcium channel blockers are frequently used. Calcium channel blockers were followed by angiotensin converting enzyme inhibitors, angiotensin receptor blockers and diuretics [20].

Conclusion

Since the risk of cardiovascular events is low in young patients with IDHT, no treatment is required. However, elderly patients should be individualized in such a way that the underlying cardiovascular disease and target diastolic blood pressure does not fall below 70 mmHg.

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