



Association between Hypertension and Coronary Artery Disease

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DESCRIPTION

The link between hypertension and coronary heart disease is well-known. Both illnesses are linked by a number of pathophysiologic pathways. Hypertension causes endothelial dysfunction, aggravates the atherosclerotic process, and leads to the plaque becoming more unstable. Left ventricular hypertrophy, a common consequence of hypertension, causes a reduction in "coronary reserve" and an increase in myocardial oxygen demand, both of which contribute to ischemia. Hypertensive patients should undergo a full examination of atherosclerotic risk factors, damage to arterial areas other than the coronary, and the extent and severity of coronary artery involvement from a clinical standpoint. It's vital to note that hypertensive people have a higher risk of complications and death after a myocardial infarction. Treatment should seek to reach ideal blood pressure levels, and all treatment options for coronary heart disease should be addressed individually.

In view of the J-curve phenomenon, which indicates a rise in coronary events with lower diastolic blood pressures, blood pressure goals in patients with established CAD have caused discussion. One reason for this finding is that left ventricular perfusion occurs mostly during diastole, and coronary autoregulation may be depleted with low diastolic blood pressure in the presence of left ventricular hypertrophy and atherosclerotic constriction of the epicardial coronaries. The worst case scenario is having a high systolic blood pressure and a low diastolic blood pressure, both of which are signs of increasing aortic stiffness. In this case, however, decreasing systolic blood pressure is definitely advantageous, even if it comes at the expense of further lowering diastolic blood pressure. In individuals with established CAD, the primary blood pressure aim is to keep it below 140/90 mmHg. Recent research suggests that a lower systolic blood pressure may be reasonable, although diastolic blood pressure below 60 mmHg should be treated with caution.

DBP elevation predominates in young hypertensive persons, but systolic hypertension, typically in isolation (isolated systolic

hypertension), emerges as individuals age. Hypertension is therefore directly related to population age, with more than half of Americans aged 65 and up having high blood pressure. According to the Framingham Heart Study, men and women who are not yet hypertensive by middle age have a 90% lifetime probability of developing hypertension. Elevated blood pressure is also the most important driver of stroke risk, according to epidemiological research. The danger begins at relatively low levels of SBP and DBP, and decreasing high BP was a significant contributor in the dramatic drop in stroke death rates over the final half of the twentieth century and the early part of the twenty-first century.

In the primary prevention of hypertension complications, such as IHD, meta-analyses of antihypertensive studies have shown that decreasing blood pressure is more important than the specific medication class utilized. Antihypertensive medication therapy in combination is usually required to establish and maintain successful long-term blood pressure management. As a result, there is no evidence to advise starting antihypertensive medication therapy with one class over another for the main prevention of IHD. In contrast, not all pharmacological classes have been proved to give optimum or even the same degree of benefit in persons with underlying comorbid conditions such as IHD, CKD, or recurrent stroke for secondary protection. It's unclear if antihypertensive medicines have class effects or whether each treatment should be evaluated separately based on trial outcomes. For thiazide and thiazide-type diuretics, ACE inhibitors, and ARBs, which have a high degree of uniformity in both their modes of action and side effects, it is plausible to presume that there are class effects. Within more varied groups of medicines, such as β -blockers and CCBs, there are significant pharmacological variances across medications. Finally, recent studies demonstrate that combining ACE inhibitors and ARBs for secondary prevention of cardiovascular events is ineffective, although combining renin-angiotensin blocking medications with thiazide diuretics or CCBs has significant therapeutic advantages.

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