



Recurrent Cardiovascular Disease Events and Diagnosis by Using Antihypertensive Drug Therapy

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Abstract

Hypertension (HTN) is considered one of the leading causes of increased cardiovascular disease. Lowering blood pressure does reduce cardiovascular risks; maintaining systolic blood pressure of less than 130 mm Hg demonstrably prevents complications in patients with heart failure, diabetes, coronary artery disease, stroke, and other cardiovascular diseases.

Keywords: Antihypertensive medications; cardiovascular deaths; angiotensin converting enzyme inhibitors

Introduction

Effective prevention and treatment of hypertension is one of the most potential interventions in terms of preventing cardiovascular deaths and disabilities. However, the treatment control is often poor. This may be partly explained by the impact of hypertension diagnoses and treatment on health-related quality of life. Quality of life is also an important outcome for a hypertensive patient.

The first antihypertensive drug administered to white and other non-black adults younger than 60 years of age with primary hypertension, should be an angiotensin-converting enzyme (ACE) inhibitor or angiotensin receptor blocker. The second drug should be a thiazide diuretic (preferably chlorthalidone) or a calcium channel blocker. If a third antihypertensive drug is needed to control the hypertension, an ACE inhibitor or angiotensin receptor blocker plus a thiazide diuretic plus a calcium channel blocker should be administered. The first antihypertensive drug administered to white and other non-black adults aged 60 years of age and older with primary hypertension should be a thiazide diuretic (preferably chlorthalidone) or a calcium channel blocker. If a third antihypertensive drug is needed to control the hypertension, a thiazide diuretic plus a calcium channel blocker plus an ACE inhibitor or angiotensin receptor blocker should be administered. The first antihypertensive drug administered to adult blacks with primary hypertension should be a thiazide diuretic (preferably chlorthalidone) or a calcium channel blocker.

Adults with hypertension and stable coronary heart disease should be treated with a beta blocker plus an ACE inhibitor or angiotensin receptor blocker. If a third antihypertensive drug is needed to control the hypertension, a beta blocker plus an ACE inhibitor or angiotensin receptor blocker plus a thiazide diuretic or a calcium channel blocker should be administered. If a fourth antihypertensive drug is required to adequately control the hypertension, an aldosterone antagonist should be administered. Patients with hypertension and heart failure with a decreased left ventricular ejection fraction should be treated with carvedilol, metoprolol succinate, or bisoprolol plus an ACE inhibitor or angiotensin receptor blocker or preferably an angiotensin receptor-neprilysin inhibitor plus a diuretic and if needed with an aldosterone antagonist. Nondihydropyridine calcium channel blockers are contraindicated in persons with heart failure and a reduced left ventricular ejection fraction.

Hypertensive patients with a prior stroke or transient ischemic attack should be administered a thiazide diuretic or ACE inhibitor or angiotensin receptor blocker. If a third antihypertensive drug is needed, these patients should be given a thiazide diuretic plus an ACE inhibitor or angiotensin receptor blocker plus a calcium channel blocker.

Hypertensive patients with peripheral arterial disease should receive usual first-line antihypertensive drugs. There are no data showing that any one class of antihypertensive drugs is superior for treating hypertension in patients with peripheral arterial disease.

Thiazide diuretics, ACE inhibitors, angiotensin receptor blockers, and calcium channel blockers may be used as initial therapy in hypertensive diabetics. ACE inhibitors or angiotensin receptor blockers should be administered to hypertensive diabetics with persistent albuminuria. The ALLHAT study found that chlorthalidone was better than lisinopril, amlodipine, and doxazosin in reducing cardiovascular disease and renal outcomes in nondiabetics with hypertension and the metabolic syndrome.

Beta blockers are the preferred antihypertensive drugs in hypertensive patients with a thoracic aortic aneurysm. Beta blockers also improve survival in patients with type A and with type B acute and chronic thoracic aortic dissection. If thoracic aorta dissection develops, beta blockers are the initial drug of choice for decreasing blood pressure, ventricular rate, dP/dt, and stress on the aorta.

Calcium Channel Blockers CCBs

Same as thiazide-type diuretics, CCBs are recommended in JNC8 guidelines to be used as a first-line treatment alone or in combination with other antihypertensives in all patients with HTN regardless of age and race, except for patients with chronic kidney disease where ACE inhibitors or ARBs are the recommended first-line treatment.

CCBs have been shown to decrease all cardiovascular events other than heart failure, similar to thiazide diuretics. They can be used as the best alternative to thiazides when patients do not tolerate thiazides.

Antihypertensives are a broad group of medications, and health care workers are recommended to have special caution in monitoring adherence and possible adverse reactions to these medications. Treatment of HTN is essential in preventing cardiovascular disease, and choosing the precise class of drugs is critical to achieving the appropriate control with fewer side effects.



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An interprofessional team of clinicians, nurses, and pharmacists is required to monitor patients on these medications. The clinician starts the antihypertensive regimen; this should be followed by special attention from the pharmacies to check on the drug-drug interactions, patient adherence to treatment, and perform medication reconciliation. The nurse plays a vital role in monitoring the patient's adherence and determining barriers to good response to the treatment, including monitoring diet and activity levels and evaluating the home environment.

Conclusion

In conclusion, the various mechanisms of action of the pharmacological classes of antihypertensive drugs described in this review show their complementarity for treating hypertension, well known as a mosaic of pathophysiological disturbances. Successful treatment of hypertension is possible with limited side effects.

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