Hypertension Medications

Antihypertensive medications combined with dietary and lifestyle changes are the mainstay of treatment for people with primary hypertension. There are a variety of antihypertensive medications that can be used, including diuretics, angiotensin-converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs), beta-blockers, and calcium channel blockers (CCBs).

PLAY PICMONIC

Diuretics

Die-Rocket

Diuretics lower blood pressure by reducing circulating fluid volume. Among the diuretics are osmotic agents (e.g., mannitol), carbonic anhydrase inhibitors (e.g., acetazolamide), loop diuretics (e.g., furosemide), thiazide diuretics (e.g. hydrochlorthiazide), and potassium-sparing diuretics (e.g., spironolactone). Thiazide diuretics are often used in the first-line treatment of primary hypertension, followed by ACE inhibitors, ARBs, and dihydropyridine CCBs. In addition, in patients with hypertension who also have heart failure, loop diuretics, thiazide diuretics, and potassium-sparing diuretics are all viable treatment options.

ACE Inhibitors

Ace with Inhibiting-chains

ACE inhibitors have several effects. The medication lowers the amount of angiotensin II in the body, preventing constriction of the efferent arterioles in the kidney and, as a result, decreasing the glomerular filtration rate (GFR). Additionally, there is less aldosterone secretion, which lowers sodium reabsorption in the kidney's collecting ducts. Bradykinin breakdown is also impaired. These effects lead to decreased blood pressure. ACE inhibitors also slow the progression of renal damage in patients with diabetes. Examples of ACE inhibitors include captopril, lisinopril, ramipril, and enalapril.

Angiotensin Receptor Blockers (ARBs)

Angel-tennis Player in (2) Tutu with Receptor Blocked

ARBs prevent angiotensin II from binding to the AT1 receptor, also known as the angiotensin II receptor type 1. The result is a reduction in vasoconstriction. Examples of ARBs include losartan, valsartan, and candesartan.

Beta Blockers

Beta-fish with Blocks

Beta-blockers act on sympathetic nerve impulses in the heart, leading to a reduction in the heart rate. This reduction results in a decrease in cardiac output and renin secretion. Examples of beta-blockers include atenolol, propranolol, and metoprolol. Beta-blockers are no longer considered first-line monotherapy in the treatment of essential hypertension since there is no reduction in mortality related to hypertension. However, they are the first choice for patients with stable angina pectoris and are beneficial in acute myocardial infarction if the treatment is initiated early. Due to their antiarrhythmic properties, beta-blockers are effective for treating atrial flutter, atrial fibrillation, and supraventricular tachycardia.

Dihydropyridine Calcium Channel Blockers

Dice-hydra-pyramid Calcium-cow Channel with Blocks

Dihydropyridine CCBs are used in the treatment of primary hypertension by relaxing the vascular smooth muscle and decreasing peripheral vascular resistance. They can also be used for angina pectoris and the Raynaud phenomenon. Examples of dihydropyridine CCBs include amlodipine, nimodipine, nifedipine, clevidipine, and nicardipine.

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