

Department of anesthesia

Practical pharmacology

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Antihypertensive drugs

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Type of antihypertensive drug

- DIURETICS (Thiazide diuretics , Loop diuretics and Potassium-sparing diuretics)
- **Thiazide diuretics** : such as hydrochlorothiazide and chlorthalidone lower blood pressure initially by increasing sodium and water excretion.
- This causes a decrease in extracellular volume, resulting in a decrease in cardiac output and renal blood flow
- Can cause hypokalemia
- Decrease the calcium content of urine

Thiazide diuretics

↓ Sodium, water retention

↓ Blood volume

↓ Peripheral resistance

↓ Cardiac output

Decrease in blood pressure

- **Loop diuretics:** (furosemide, torsemide, bumetanide)
- act by blocking sodium and chloride reabsorption in the kidneys
- Increased renal blood flow so , if patients with poor renal function or those who have not responded to thiazide diuretics.
- can cause hypokalemia
- increase the calcium content of urine
- commonly used to manage symptoms of heart failure and edema

- **Potassium-sparing diuretics:** Amiloride and spironolactone
- reduce potassium loss in the urine.
- Aldosterone antagonists have the additional benefit of diminishing the cardiac remodeling that occurs in heart failure

B-blocker

- treatment option for hypertensive patients with concomitant heart disease or heart failure
- propranolol acts at both b1 and b2 receptors (non selective)
- Selective blockers of B1 receptors, such as metoprolol , atenolol and Nebivolol)
- The nonselective B-blockers are contraindicated in patients with asthma

ACE inhibitors

- Captopril, enalapril and lisinopril
- recommended as first-line treatment of hypertension in PT. with a variety of compelling indications (high coronary disease risk , history of diabetes, stroke, heart failure, myocardial infarction, chronic kidney disease)
- ACE inhibitors achieves sustained blood pressure reduction, regression of left ventricular hypertrophy, and prevention of ventricular **remodeling** after a myocardial infarction
- common adverse effects of ACE inhibitors. **The dry cough**, which occurs in up to 10% of patients
- should not be used by pregnant women

ANGIOTENSIN II RECEPTOR BLOCKERS (ARBs)

- Valsartan, Losartan and candesartan
- Their pharmacologic effects are similar to those of ACE inhibitors
- This group not increase dry cough

CALCIUM CHANNEL BLOCKERS

- Amlodipine, nifedipine (Dihydropyridines)
- Diltiazem and Verapamil (non Dihydropyridines)
- first-line treatment option in **black patients**.
- **High doses of short-acting** calcium channel blockers should be avoided because of increased risk of myocardial infarction due to excessive vasodilation and marked reflex cardiac stimulation.
- useful in the treatment of hypertensive patients who also have asthma
- useful in the treatment of angina
- Verapamil and diltiazem should be avoided in patients with heart failure

α -Adrenergic blockers

- Prazosin and terazosin
- Reflex tachycardia and postural hypotension often occur at the onset of treatment and with dose increases α -blockers are no longer recommended as initial treatment
- α_1 -blockers with greater selectivity for the prostate are used in the treatment of **benign prostatic hyperplasia**