

Sympatholytic drug (adrenergic antagonist) :

α – receptor blocker:

blockade of α -R \rightarrow \downarrow sympathetic tone on BV \rightarrow \downarrow peripheral resistance \rightarrow \uparrow BP \quad \downarrow HR

1) non selective α -blockers:

*** Phenoxybenzamine**

-produce covalent bond with α -1 post synaptic and α -2 pre-synaptic R

Effect:

CVS:

- increase HR
- used in treatment of pheochromocytoma (catecholamine-secreting tumor in adrenal medulla)
- in pre-operation to prevent hypertensive crises
- Raynaud's diseases

SE:

- postural hypotension
- nasal congestion
- tachycardia & arrhythmia
- male sexual dysfunction

***Phentolamine:**

- used to terminate local anesthesia
- cause postural hypotension
- cause tachycardia by blocking α -2 of cardiac sympathetic nerve.

2) selective α -blocker

Include;

Prazosin , Terazosin , Doxazosin & Tamsulosin

- competitive blocker of α -1 R
- used in treatment of hypertension (because relax sm of artery and veins)
- treatment of benign prostatic hyperplasia
- used in combination with diuretics (return Na & H₂O)
- Doxazosin longest duration , excreted by intestine

SE:

- nasal congestion
- orthostatic hypotension

β - adrenergic blocker

-these drug are selective or non selective antagonist
-they differ in intrinsic sympathomimetic activity (ISA)(in CNS effects)
& in kinetics.

- β - blocker not induce postural hypotension (although it lower BP)
because α -R stay active.

-these drug used in treatment of angina , C. arrhythmia , myocardial infarction (MI) , glaucoma , prophylaxis of migraine headache and in hyperthyroidism.

-

1) β - blocker without ISA(pure antagonist)

A- non-selective β - blocker:

* Propranolol(anderal)

-prototype , given orally , iv

-(-ve inotropic & chronotropic effect. } Bradycardia & decrease CO and
-depress AV & SA node } O₂ demand decrease

- decrease BP so decrease blood flow then increase Na⁺ retention

- prevent β ₂mediated vasodilatation

-blocking β ₂ in lung leading to bronchial sm contraction

-decrease glycogenolysis

-decrease glucagons secretion

CI:

Asthma and COPD

SE:

Insomnia , bradycardia , bronchospasm , sexual impairment , arrhythmia
in sudden stop of drug.

DIA:

Cimetidine , furosemide , chlorpromazine , they interfere with its
metabolism so with its antihypertensive effect.

Barbiturate , phenytoin , rifampin are enzyme inducer so decrease its
effect

I:

-MI

-Angina pectoris

-hyperthyroidism

-glaucoma

-migraine

-hypertension

***Timolol and Nadolol**

- they potent than propranolol

-Timolol orally and ophthalmic , Nadolol given orally

- Timolol reduce aqueous humor in eye

-used in treatment of open angle glaucoma

-in systemic treatment of hypertension.

B- Selective β - blocker:

Atenolol (tenormine), Metoprolol , Esmolol , Betaxolol

- all are cardio selective β_1 blockers

-block β_1 R at dose 50 time less than needs for blocking β_2 R

-Esmolol short acting , iv , used in acute arrhythmia during surgery

Uses:

- hypertension are useful in :

*hypertensive patients with impaired pulmonary function

*diabetic hypertensive patients who are receiving insuline or oral hypoglycemic agents.

-Ischemic heart diseases

2) β - blocker with ISA(partial agonist)

*** selective :**

Acebutolol

- β_1 selective blocker , partial agonist

-used in hypertension and ventricular arrhythmia

***non selective :**

Pindolol

-partial agonist

- both used in hypertension

-both drug decrease disturbances of lipid and carbohydrate metabolism

β - blocker with α_1 -blocking effect.

Labetalol and carvedilol

-produce prepheral vasodilation so decrease BP

-used in treatment of emergency hypertension