1. Classify β blockers describe mechanism (with rationale) and adverse effect Add a note on pharmacological actions and uses of adrenaline

→ β blockers

First generation. [Non selective β adrenergic blockers]

→ propranolol
timolol
Dinelerol.

Second generation. [β, selective adrenergic blockers]

→ Atenolol
Acebutolol
Bisoprolol

Third generation. [β blockers with additional vasodilatory effect].

→ Non selective
Labetalol
Carvedilol

β selective
Nebivolol
Nebivolol

Uses

① Hypertension: β blockers are given
Preferred especially in hypertensive
patients with coexisting angina, MI,
cardiac arrhythmias.

② Angina prophylaxis. CMI → β blocker reduce myocardial O_2 demand

③ cardiac arrhythmias → β blocker

④ Chronic cardiac failure — metoprolol, nebivolol ↓ morbidity rate in cer-.

⑤ Pheochromocytoma — used to control cardiac manifestation of disease.

⑥ Glaucoma — timolol, betaxolol.

⑦ Prophylaxis of migraine metoprolol ↓ freq of headache

⑧ essential tremor — oral propranolol.

⑨ Hyperthyroidism — symptoms like tachycardia, palpitation, tremor.

⑩ Acute anxiety ~~attack~~ state.

Adverse effects

CNS → Bradycardia, heart block,

Respiratory system → Blockage of β_2 receptor in bronchial smooth muscle → severe bronchospasm. (COPD & asthma)

CNS → sleep disturbances → hallucinations

Muscular weakness and tiredness → due to ↓ blood flow to muscles

withdrawal symptoms → angina / MI

Pharmacological actions of adrenaline.

Adrenaline acts on α_1 α_2 β_1 β_2 β_3 receptors.

① CVS.

Heart , ↑ HR, ↑ myocardial contractility
↑ conduction velocity, CO, automaticity

BV & BP.

② Respiratory System: Inhibits the release of inflammatory mediators from mast cells

③ GIT → Relaxes the smooth muscle of the gut.

④ Bladder — relaxes the detrusor (m) and contracts sphincter.

⑤ CNS - Does not cross BBB

Therapeutic Uses.

× Anaphylactic shock.

β_1 mediated cardiac stimulation

↳ α_1 mediated vasoconstriction → PPR.

↓ BP → α_1 mediated constriction → ↓ mucosal edema.

β_2 stimulation → bronchodilation

↓

release of mediator of mast cell

× Glaucoma