

Learning unit: Drugs acting on the heart

Relevant terms

Drugs with negative chronotropic effect on the heart

- beta blockers
 - indications
 - contraindications
 - adverse effects

 - drugs
 - cardioselective (beta1) blockers
 - metoprolol
 - atenolol
 - bisoprolol
 - esmolol
 - betaxolol
 - cardioselective (beta1) blockers with ISA (partial agonists)
 - acebutolol
 - celiprolol
 - with combined mode of action (nonselective beta blocker, selective alfa1 blockers)
 - labetalol
 - carvedilol

- bradines
 - ivabradine

- calcium channel blockers: non-dihydropyridines
 - diltiazem
 - verapamil

Drugs with positive inotropic effect on the heart

- cardiac glycosides – cardiotonics
 - digoxin
- nonselective and cardioselective betamimetics
 - adrenaline, dobutamine (inodilators)
 - noradrenaline, dopamine (inoconstrictors)
- PDE3 inhibitors
 - milrinone
- calcium sensitizers
 - levosimendan

Drugs with antiarrhythmic influence on the myocardium

- class 1 - sodium channel inhibiting antiarrhythmics

- 1a – quinidine
- 1b – lidocaine
- 1c – propafenone
- class 2 – beta-adrenoceptor inhibiting antiarrhythmics
 - bisoprolol
 - metoprolol
 - esmolol
- class 3 – potassium channel inhibiting antiarrhythmics
 - amiodarone

thyroid disorders
pulmonary fibrosis

 - sotalol
- class 4 – calcium channel inhibiting antiarrhythmics
 - verapamil
- antiarrhythmics not classified in Vaughan-Williams classification
 - adenosine
 - atropine
 - digoxin

risk of arrhythmogenic effect of antiarrhythmics

Drugs acting on the coronary vessels

- nitrates
 - rescue therapy/fast onset of action
 - glycerol trinitrate (nitro-glycerine)

tachyphylaxis

 - isosorbide dinitrate (ISDN)
 - slow onset of action
 - isosorbide mononitrate (ISMN)
- NO donors
 - molsidomine
- calcium channel blockers: non-dihydropyridines
 - diltiazem
 - verapamil

Learning outcomes

Student knows basic pharmacological profile (mechanism of action, side effects, indications and contraindications) of drugs acting on the heart. Student knows typical indications, in which are these drugs used.

Study literature

Rang & Dale's Pharmacology, 9th edition, 2020, chapter 22, pp. 271-290

Study materials of the courses aVLFA0822c and aVLFA0822p

Exam questions

Special pharmacology:

50. Nitrates and other vasodilators

53. Beta blockers + central antihypertensives

54. Calcium channel blockers, α 1-lytics

55. Antiarrhythmic

56. Positive inotropic drugs

“Essential drugs”: 6. amiodaron, 23. digoxin, 51. isosorbide dinitrate, 75. metoprolol, 110. verapamil