CLINICAL PHARMACOLOGY OF ANTIARRHYTHMIC DRUGS

A.Actuality

Cardiac arrhythmias are a common complication of cardiovascular disease. Isolated arrhythmias or arrhythmias in the context of heart disease, can cause pulmonary edema, cardiogenic shock and sudden death.

The possibilities of curative and preventive treatment of arrhythmias have increased lately, due to the use of new antiarrhythmic preparations. Knowing this compartment of clinical pharmacology will allow the optimization of the pharmacotherapy of rhythm disorders, improving the vital prognosis of cardiac patients.

B. Purpose of training:

Assimilation of the clinico-pharmacological principles of argumentation of the prescription, the use, the dosage modalities of the antiarrhythmic drugs and of evaluation of their effectiveness.

C. Teaching purposes:

The student must have the ability to:

a) choose a minimal complex of investigations, in order to assess the pharmacodynamic effect of antiarrhythmics;

b) analyze and appreciate the results of the study of the pharmacodynamics of antiarrhythmic drugs, obtained by laboratory and instrumental methods:

c) predict the possible complications and adverse reactions of the drugs used;

d) predict the dependence of adverse reactions on the dosage regimen of the drugs and the functional state of the heart and other organs and systems;

e) apply the contemporary methods of pharmacological correction of the adverse reactions, caused by antiarrhythmics;

f) draw up the personal form (P-medicines).

D. Knowledge from the subjects studied previously and those of tangency

Histology, morphopathology, physiology and pathophysiology. Anatomy of the heart management system. Histophysiology of excito-conductive tissue. The role of sodium, potassium, calcium ions in the cardiac cycle. Coupling excitation with cardiac contraction. Notions about alpha - and beta-receptors, the adenylatcyclase mechanism. The role of the sympathetic and parasympathetic system in regulating heart activity and hemodynamics;

Clinical disciplines. Ethiopathogenic and clinical features of myocardial excitability, conductivity and contractility disorders in different diseases. Mechanisms of rhythm disturbances. Clinical and electrocardiographic significance of rhythm and conductive disorders. Clinical, laboratory and electrocardiographic criteria for hypo- and hyperkalaemia.

Pharmacology. Classification of antiarrhythmics. Classification of medications used in conductive disorders. Mechanisms of action of antiarrhythmics, beta-adrenomimetics and parasympatholytics. Adverse reactions of antiarrhythmics.

E. Questions for self-instruction:

I. Clinico-pharmacological characteristic of the drugs used in the diseases of the cardiovascular system.

1. Clinical pharmacology of drugs with influence on heart rate (Vaughan-Williams classification).
2. The clinical pharmacology of antiarrhythmic Na channel blockers (IA, IB, IC): mechanism of action, particularities of antiarrhythmic effect, influence on heart parameters and hemodynamics, indications, contraindications, adverse reactions, pharmacokinetics, drugs interactions.
3. Clinical pharmacology of β-blockers: mechanism of action, particularities of antiarrhythmic effect, influence on heart parameters and hemodynamics, indications, contraindications, adverse reactions, pharmacokinetics, drugs interactions.
4. Clinical pharmacology of class III antiarrhythmics - K-channel blockers: mechanism of action, particularities of antiarrhythmic effect, influence on heart parameters and hemodynamics, indications, contraindications, adverse reactions, pharmacokinetics, drugs interactions.
5. Clinical pharmacology of class IV antiarrhythmics - Ca channel blockers: mechanism of action, particularities of antiarrhythmic effect, influence on heart parameters and hemodynamics, indications, contraindications, adverse reactions, pharmacokinetics, drugs interactions.
6. Particularities of the mechanism of action and anti-arrhythmic effect, indications of potassium, magnesium medications, cardiac glycosides, nucleoside analogues.
7. The principles of selection and dosage of antiarrhythmics according to the arrhythmia type and severity, the pharmacodynamic and pharmacokinetic particularities of the antiarrhythmic agent.
8. Medications used in the treatment of bradyarrhythmias, conduction disorders (sympathomimetics, M-cholinoblocks, glucocorticoids): particularities of mechanism of action and antiarrhythmic effect, indications and principles of use, adverse reactions, pharmacokinetics, drugs interactions.
9.Particularities of the use of antiarrhythmics in patients with hepatic and renal failure. and in children.
Particularities of the use of antiarrhythmics in geriatric patients and children.

II. Clinico-pharmacological selection and use of SM in someclinical conditions of the cardiovascular system.

- Principles of drug selection and use in tachyarrhythmias (supraventricular, ventricular) and bradyarrhythmias.

F. Individual work:

1. Short description of the main drugs:

Vertically: name of the medications (in Romanian);

Horizontally: synonyms, delivery forms, mode of administration, doses (therapeutic, maximal), indications, contraindications, adverse reactions.

Chinidine, procainamide, lidocaine, mexiletine, flecainide, propafenone atenolol, metoprolol, verapamil, diltiazem, amiodarone, sotalol, bretylium tosylate, adenosine, digoxin.

2. Medical prescription exercises:

Chinidine, procainamide, lidocaine, mexiletine, flecainide, propafenone atenolol, metoprolol, verapamil, diltiazem, amiodarone, sotalol, bretylium tosylate, adenosine, digoxin.

3. Indicate the preparations used in:

arrhythmias in cardiac glycoside poisoning; atrial extrasystoles; paroxysms of ventricular tachycardia; supraventricular paroxysmal tachycardia; ventricular extrasystoles; arrhythmias with sympathoadrenal genesis; ventricular arrhythmias in patients with acute myocardial infarction; paroxysms of atrial fibrillation, atrial flutter; chronic tachysystolic atrial fibrillation; ventricular fibrillation; atrio-ventricular block; sinus bradycardia.

4. Tests. "Farmacologia clinică" (self-assessment tests), Chisinau, 2000, pages 116-14

5. Клиническая фармакология (тесты для самоподготовки. Кишинэу 2014, стр. 31 и 51)

6. Clinical cases. Ghid cazuri clinice, Chisinau, 2017, page 66

7. Virtual situations: Indrumar pentru lucrări de laborator la farmacologie. Chisinau, 2016, page 165

8. Selection of antihypertensive and antihypotensive drugs according to the criteria of effectiveness, harmlessness, acceptability and cost, for inclusion in the personal form (P drugs).