

CLINICAL PHARMACOLOGY OF DRUGS WITH ACTION ON CNS: ANTIPSYCHOTICS, ANXIOLYTICS, SEDATIVES, ANTIDEPRESSANTS, NOOTROPICS, CNS STIMULANTS

A. Actuality

Psychotropic medication regulates various functions of the CNS, being used in the treatment of various diseases and psycho-pathological conditions. Drugs with activity on CNS are used in the treatment of a wide range of specific diseases in psychiatric practice, as well as some psychosomatic illnesses and conditions in the practice of doctors of various specialties. Most of the drugs from these groups have additional pharmacodynamic effects (antihypertensive, anticonvulsant, antihistaminic, M-cholinoblocker, antiemetic, etc.), which are often neglected in the pharmacotherapy process and increase the incidence of drug adverse reactions or are the cause of treatment failure. Knowledge and appropriate use of all the properties of drugs with influence on CNS can improve the results of treatment of patients with CNS pathologies, including mental pathology, associated with some diseases of internal organs.

B. Training aim:

Learning and applying the principles of pharmacokinetics and clinical pharmacodynamics to the individualization and optimization of the administration of drugs with action on CNS

C. Teaching objectives:

The student must have the skills to:

- a. characterize the groups of pdrugs with action on CNS according to their pharmacokinetic and pharmacodynamic peculiarities;
- b. know the pharmacological effects and clinical manifestations of psychotropic drugs;
- c. select the drugs with action on CNS depending on the disease, the pathological condition and the particularities of age;
- d. predict the occurrence of adverse reactions depending on the administration and dosage regimen;
- e. apply contemporary methods of prophylaxis and treatment of adverse reactions produced by psychotropic drugs;
- f. predict the interaction of psychotropic agents with each other and with other drugs.

D. Knowledge of the medico-biological and clinical disciplines necessary for interdisciplinary integration:

Medical-biological disciplines: Principles of central and peripheral nervous system functioning. Peculiarities of the vegetative and somatic nervous system. Physiology of the cerebral cortex. Excitation and inhibition processes in the CNS. Anatomical-physiological peculiarities of: neuron, receptors, synapse. The thalamus. the hypothalamus, the limbic system: the anatomicalphysiological particularities. Characteristics of the cognitive processes. Personality as a result of psycho-physiological and social factors. Sleep and its structure, the implications of different structures of the CNS in achieving sleep.

Clinical disciplines: Pathogenesis of central and peripheral nervous system diseases. Neuroses: general characteristic; the role of biological and social factors in the occurrence of neuroses; clinical manifestations. Somato-neurological and psycho-somatic manifestations in different pathological states. Psychovegetative syndrome. Principles of treatment.

Pharmacology: Classifications according to group membership and mechanism of action of psychotropic drugs (sedatives, anxiolytics, antipsychotics, thymoisoleptics, antidepressants, nootropics, CNS stimulants, analeptics). Mechanisms of action, effects, indications and adverse reactions of sedatives, anxiolytics, antipsychotics, thymoisoleptics, antidepressants, nootropics, psychostimulants.

E. Questions for self-training:

1. Clinical pharmacology of sedatives. Classification. The particularities of the sedative effect, indications and principles of use and dosage of herbal agents, benzodiazepines, H1- antihistamine drugs.
2. Clinical pharmacology of anxiolytics (tranquilizers): classification according to clinical use and duration of action, peculiarities of the mechanism of action, pharmacological effects and clinical manifestations, indications and principles of selection, use and dosage, contraindications, adverse reactions and their prophylaxis, pharmacokinetics, drug interactions.
3. Clinical pharmacology of antipsychotics (neuroleptics): classification according to clinical effect, pharmacological effects (mechanisms and manifestations), pharmacokinetic peculiarities, indications and principles of selection, use and dosage, contraindications, adverse reactions and clinical manifestations, drug interactions.
4. Clinical pharmacology of antidepressants: classification according to clinical use, pharmacological effects, mechanisms and clinical manifestations, indications and principles of use and dosage, pharmacokinetics, adverse reactions and clinical manifestations, interactions with other drugs. Peculiarities of the use of antidepressants in the elderly.
5. Clinical pharmacology of nootropics: classification, particularities of the mechanism of action, pharmacological effects and clinical manifestations, indications and aspects of clinical use, dosing principles, adverse reactions, drug interactions.
6. Clinical pharmacology of CNS stimulants: classification, peculiarities of the mechanism of action, pharmacological effects and clinical manifestations, indications and aspects of clinical use, dosing principles, adverse reactions and their manifestations, drug interactions.
7. The particularities of the administration of psychotropic drugs during pregnancy and breastfeeding, as well as the pharmacokinetic, pharmacodynamic and pharmacogenetic principles in the individualization and optimization of the administration of psychotropic agents in children and the elderly.

F. Individual work (p. 1.1 and 1.2. are done in writing during the preparation process):

1.1 Indicate the pharmacological groups and drugs used in (for):

Psychomotor excitement in mental illnesses; psychomotor excitement in alcohol withdrawal syndrome; vegetoneuroses in somatic illnesses; febrile states; manic-depressive psychosis; rebellious delusional psychoses; excessive irritability; schizophrenia; psychoses with delirium and hallucinations; vomit of central origin; vegetoneurosis in neuro-circulatory dystonias; neuroses; pre-anesthetic and preoperative premedication; preparation for manipulations and diagnostic procedures; seizures of unknown origin; induction and maintenance of general anesthesia; somatic conditions with psycho-vegetative syndrome; potentiation of analgesia; agitated depression; inhibited depression; depression with anxiety; endogenous depressions; psychotic depression; obsessive-phobic depression; astheno-depressive states; mental overwork; rehabilitation after trauma, infections, poisoning; nocturnal enuresis; hypertensive crises; chronic cerebrovascular insufficiency; encephalopathy; behavioral and adjustment disorders in children; migraine and headache of vascular origin; consequences of brain trauma; traumatic and toxic coma; attention deficit syndrome.

1.2 For each indication, write the prescription(s) for the drug(s) of choice (from the list of mandatory drugs); the form of delivery and the dosage regimen should be appropriate for the respective pathology:

1	Name of the drug	Pharmaceutical form/dose
1	Phenobarbital	Tablets 0.1 Sol.20%-1ml in ampoules
2	Diazepam	Tablets 0.005 Sol.0.5%-2ml in ampoules
3	Phenazepam	Tablets 0.00025; 0.0005; 0.001
4	Oxazepam	Tablets 0.01

5	Flumazenil	Sol. 0.01%-5ml in ampoules
6	Chlorpromazine	Tablets 0.025 Sol. 2.5%-2ml in ampoules
7	Levomepromazine	Tablets 0.025
8	Haloperidol	Tablets 0.005 Sol.0.5%-1ml in ampoules
9	Clozapine	Tablets 0.025; 0.1
10	Sulpiride	Tablets 0.05; 0.1; 0.2 Capsules 0.05 Sol. 5%-2ml in ampoules
11	Amitriptyline	Tablets 0.025 Sol. 1%-2ml in ampoules
12	Imipramine	Tablets 0.025
13	Fluoxetine	Capsules 0.02
14	Piracetam	Capsules 0.4; 0.8; 1.2 Sol. 20%-5ml; 15ml in ampoules
15	Caffeine	Sol. 2%-1ml; 3ml in ampoules
16	Clonazepam	Tablets 0.0005; 0.002
17	Lorazepam	Dragees 0.001; 0.0025
18	Alprazolam	Tablets 0.00025; 0.0005; 0.001
19	sertraline	Tablets 0.05; 0.1
20	risperidone	Tablets 0.001; 0.002; 0.003; 0.004 Powder 0.025; 0.0375; 0.05 in vials Oral solution 0.1%-30ml
21	Escitalopram	Tablets 0.01; 0.02

2. Tests (Clinical pharmacology, self-assessment tests), Chisinau-2000, page 37.

Clinical pharmacology (Tests for self-preparation), Chisinau-2014., page 20.

G. The interactive activity:

1. The instructive-didactic work and the patient's discussion

2. Selection and clinical-pharmacological use of drugs used in some clinical states and conditions:

- The principles of selecting and using antipsychotic drugs in psychiatric practice and in the treatment of somatic diseases.
- Principles of selection and use of benzodiazepines as sedatives, anxiolytics and hypnotics.
- Principles of selection and use of nootropic preparations in acute and chronic pathologies
- The principles of selecting and using CNS stimulants as stimulants of work performance and somatic pathologies
- The principles of selecting and using antidepressant preparations according to the types of depression and the depressive syndrome of somatic pathologies.

3. Clinical cases (Clinical case guide), Chisinau-2017, page 149.

4. Selection of P-personal drugs and P-personal treatment according to the criteria of effective