**PSYCHOTROPIC DRUGS**

**I. CNS DEPRESSANTS: Antipsychotics (neuroleptics).Anxiolytics (tranquilizers). sedatives.Mood stabilizers (normothymics).**

1. **Actuality.** CNS depressants (also called psycholeptics) represent a diverse group of drugs, serving to achieve various pharmacodynamic effects e.g. reduce psychotic behaviors (neuroleptics), dose-dependent CNS depression (sedative-hypnotics), reduce symptomes of anxiety (anxiolytics), bring about a stable state of mind (mood stabilizers), etc. These drugs represent a remarkable breakthrough in the field of psychiatry, attracting in turn the attention of other, and not so related, disciplines, including anesthesiology and neurology among others.
2. **The purpose of the training is** to familiarize the students with the current topic (CNS depressants).
3. **Learning objectives:**

1) The student must **know:** the general characteristicts of the different CNS depressants as a whole, to know both their chemical origin and structure, to classify them into distinct groups, all the while getting familiarized with their different nomenclatures, mechanisms of action, specific/common indications, contraindications, and adverse-reactions, as well as with their various dosage forms and ways of administation, finally including special peculiarities allowing to spot their overdose, followed by conventional methods of management.

2) The student must **be able to** write out medical prescriptions of the relevant drugs in all their clinically approved dosage forms, as well as to be able to select the optimal pharmacologic aproach(es) in order to treat and/or manage a given disorder.

1. **Initial level of knowledge required for interdisciplinary integration:**

**Human physiology.** Basic principles of reflex-mediated actions and their significance within the CNS. Structural and functional peculiarities of the typical CNS neuron. The role of the thalamus and hypothalamus in the regulation of the ANS. The limbic system and its means of regulating the activity of internal organs. The various neurotransmitters utilized in the CNS (Acetylcholine, norepinephrine, serotonin, glutamine, GABA, and glycine).

**Histology.** Histologic characteristics of the cerebral cortex. Peculiarities of the myelin sheaths within the CNS. The different tasks performed by the brain (analytic and non-analytic). The grey matter of the brainstem. The structure of the reticular formation.

**Biochemisty.** Chemical homeostasis of nerve tissues. Key features of neuronal metabolism and the significance of aerobic glycolysis. The main mediators used in neurotransmission (Acetylcholine, epinephrine, and norepinephrine). Notable structural modifications involving glutamine, glutamate, and GABA, and their importance, occuring within and performed by various neurons.

**Pathophysiology.** Clinically relevant disorders of subcortical centers located within the brainstem. Limbic system abnormalities and their clinical manifestations.

1. **Self-training questions:**
   1. Psychotropic medications. Classification. Psycholeptics, psychoanaleptics, psychodysleptics.
   2. Antipsychotics (neuroleptics). Classification. Mechanism of action, effects. Indications, contraindications, and adverse reactions. Pharmacokinetics. Particularities in pediatric use.
   3. Anxiolytics (tranquilizers). Definition. Classification. Pharmacokinetic and pharmacodynamic characteristics. Indications, contraindications, and adverse reactions. Particularities in pediatric use
   4. Sedatives. Definition. Classification. Pharmacokinetic and pharmacodynamic characteristics. Indications, contraindications, and adverse reactions.
   5. Mood stabilizers. Classification. Pharmacokinetic characteristics. Mechanism and spectrum of their action. Indications, contraindications, and adverse reactions.

**F. Independent work**(is done in written form while preparing for the lesson)

**1 ) Brief characteristics of compulsory drugs:**

**Down:** Drug nomenclature. 1. Chlorpromazine. 2. Levomepromazine. 3. Perphenazine. 4. Droperidol. 5. Haloperidol. 6. Clozapine. 7. Sulpiride. 8. Diazepam. 9. Phenazepam. 10. Flumazenil. 11. Buspirone. 12. Sodium Bromide. 13. Valerian. 14. Lithium Carbonate.

**Across:**1. Dosage forms. 2. Ways of administration. 3. Dosages (the upper limit for a single administration and along the course of 24 hours, as well as the maximum therapeutic dose). 4. Mechanism of action. 5. Indications. 6. Contraindications. 7. Adverse reactions.

# 2) . Questions on medical prescriptions.

**To prescribe**the following drugs in all the possible medicinal forms:

1. Chlorpromazine. 2. Levomepromazine. 3. Perphenazine. 4. Droperidol. 5. Haloperidol. 6. Clozapine. 7. Sulpiride. 8. Diazepam. 9. Phenazepam. 10. Flumazenil. 11. Buspirone. 12. Sodium bromide. 13. Valerian. 14. Lithium carbonate.

**Drugs used in (for):** schizophrenia, psychomotor excitation, psychosis with hallucinations and mania, neuroleptanalgesia, neuro-vegetative dystonia, emesis, premedication, convulsions, spasticity, insomnia, neurotic disorder, potentiation of analgesia, hypertensive emergency, maniaco – depressive psychosis.

**3.) Tests** (Guidelines for Laboratory Work in Pharmacology).

**4.) Clinical case** (Guidelines for Laboratory Work in Pharmacology).

**5.) Virtual situations** (Guidelines for Laboratory Work in Pharmacology).

**6.) Virtual didactic movie.**

**7.) Tables**

*Table 1*

**Comparative characteristic of neuroleptics from various chemical groups**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Group  Effect | Chlorproma-zine | Perphenazine | Chlorprothi-xene | Haloperidol | Clozapine | Sulpiri-de |
| Antipsychotic |  |  |  |  |  |  |
| Sedation |  |  |  |  |  |  |
| CNS stimulation |  |  |  |  |  |  |
| Antiemesis |  |  |  |  |  |  |
| α receptor blockade |  |  |  |  |  |  |
| Muscarinic receptor blockade |  |  |  |  |  |  |
| Extrapyramidal disorders |  |  |  |  |  |  |
| Prokinetic |  |  |  |  |  |  |

Please fill the table using the following signs:

“++” Strong effect, “+” Moderate effect, “-“ No effect.

*Table 2*

**Comparative characteristics of antipsychotics and tranquilizers**

|  |  |  |
| --- | --- | --- |
| Group  Effect | Antipsychotics | Tranquilizers |
| Antipsychotic |  |  |
| Tranquilizing |  |  |
| Antiemetic |  |  |
| Additive effect with other CNS depressants |  |  |
| Extrapyramidal disorders |  |  |
| Potential for dependence |  |  |

Please express the presence of a pharmacologic effect with a “+” sign.

**8.) Case study**

As a result of prolonged use of a drug to remove the increased irritability, to the patient, on the background of the therapeutic effect, appeared rhinitis, coughing, conjunctivitis, and skin rash. Additionally, the general weakness and the slowing down of the memorization process were determined.

Which drug the patient used?

Wich are the measures to remove the complications that have appeared?