**Test on the topic:**

DRUGS ACTING ON THE CNS

**A. Self-training questions**

1. Hypnotics. Classification according to structure and duration of action. Mechanism of action. Effects on sleep stages. Indications, contraindications, and adverse reactions. Pharmacokinetics. Acute overdose and its management.
2. Broad-spectrum antiepileptics (symptomatic drugs). Classification. Subgroups and their key features.
3. Ethanol. Peculiarities of pharmacokinetics (with respect to its absorption, distribution, and elimination). Specific effects on the CNS, ANS, as well as on the GI tract. Applications in the medical field. Acute ethanol intoxication and its management. Chronic alcohol consumption and pharmacologic approaches for its management.
4. Antipsychotics (Neuroleptics). Classification. Mechanism and spectrum of action. Pharmacodynamics and pharmacokinetics. Indications, contraindication, and adverse reactions.
5. Anxiolytics (Tranquilizers). Classification. Mechanism and spectrum of action. Indications, contraindication, and adverse reactions. pharmacokinetics.
6. Nootropics. Mechanism of action. Pharmacodynamics and pharmacokinetics. Indications, contraindication, and adverse reactions.
7. Opioid analgesics. Classification. Mechanism of action. Effects on the CNS and internal organs (the respiratory system, ANS, and the GI tract). Indications, contraindication, and adverse reactions. pharmacokinetics.
8. Analgesics with a mixed type of action. Mechanism of action. Indications and adverse reactions.
9. Morphine overdose and its management. Opioid receptor agonists and their mechanism of action. Drug dependence and abuse liability.
10. Centrally acting non-opioid analgesics. Classification. Mechanism of action. Pharmacodynamics. Indications, contraindication, and adverse reactions.
11. Paraaminophenol and its derivatives. Mechanism of action. Pharmacodynamics. Indications and adverse reactions.
12. Peripherally acting non-opioid analgesics. Classification. Mechanism of action. Pharmacodynamics. Indications and adverse reactions.
13. Antidepressants. Classification. Mechanism and spectrum of action. Pharmacodynamics and pharmacokinetics. Indications, contraindication, and adverse reactions.
14. Psychostimulants. Classification. Mechanism and spectrum of action. Pharmacodynamics and pharmacokinetics. Indications, contraindication, and adverse reactions.
15. Tonisants and adaptogens. Classification. Mechanism of action. Pharmacodynamics. Indications, contraindication, and adverse reactions.
16. General anesthetics. Classification.
17. Inhaled anesthetics. Classification. Mechanism of action. Effects on the different stages and levels (depth) of general anesthesia. Indications, contraindication, and adverse reactions. Pharmacokinetics.
18. IV anesthetics. Classification. Mechanism of action. Effects on the different stages and levels (depth) of general anesthesia. Indications, contraindication, and adverse reactions. Pharmacokinetics.
19. Sedatives. Classification. Mechanism of action. Pharmacodynamics. Indications, contraindication, and adverse reactions.
20. Antiepileptics. Classification. Mechanism of action. Pharmacodynamics and pharmacokinetics. Indications, contraindication, and adverse reactions.
21. Antiparkinson drugs. Classification. Mechanism of action. Pharmacodynamics and pharmacokinetics. Indications, contraindication, and adverse reactions.
22. Mood stabilizers (normothymics). Classification. Mechanism of action. Pharmacodynamics and pharmacokinetics. Indications, contraindication, and adverse reactions.

**B. Independent work** (is done in written form while preparing for the concluding sesion)

**Brief characteristics of compulsory drugs:**

**1. Questions on medical prescriptions**

**To prescribe** the following drugs in all possible medicinal forms 11. Acetylsalicylic acid. 2. Hopantenic acid. 3. Ethyl alcohol. 4. Alprazolam. 5. Amantadine. 6. Amitriptyline. 7. Baralginine. 8. Bromocriptine. 9. Sodium bromide. 10. Buspiron. 11. Caffeine. 12. Carbamazepine. 13. Chlorpromazine. 14. Clozapine. 15. Dexketoprofen trometamol. 16. Diazepam. 17. Disulfiram. 18. Droperidol. 19. Ethosuximide. 20. Valerian extract. 21. Fenazepam. 22. Phenelzine. 23. Phenytoin. 24. Phenobarbital. 25. Fentanyl. 26. Flumazenil. 27. Fluoxetine. 28. Ginseng. 29. Haloperidol. 30. Imipramine. 31. Ketamine. 32. Ketorolac. 33. Lamotrigine. 34. Levodopa. 35. Levomepromazine. 36. Lithium carbonate. 37. Maprotillin. 38. Methylphenidate. 39. Moclobemide. 40. Morphine hydrochloride. 41. Naloxone 42. Naltrexone. 43. Niketamide. 44. Nitrazepam. 45. Omnopone. 46. Oxazepam. 47. Sodium oxybutyrate. 48. Pantocrine. 49. Paracetamol. 50. Pentazocine. 51. Perfenazine. 52. Piracetam. 53. Pyritinol. 54. Pirlindol. 55. Selegiline. 56. Sulpirid. 57. Tilidine. 58. Sodium thiopental. 59. Tizanidine. 60. Tolperison 61. Tramadol. 62. Trihexyphenidyl. 63. Trimeperidine. 64. Sodium valproate. 65. Zopiclone.

**2.Drugs used in (for):** Major epileptic seizures; minor epileptic seizures; psychomotor agitation; alcoholism; algodysmenorrhea; birth analgesia; the benzodiazepine antagonist; asthenia; Parkinson's disease; relieving acute dental pain; inoperable cancer; headache; biliary and renal colic; consequences of brain trauma; convulsions; for increasing work performance; myoclonic seizures; early (initial) hyposomnia; neuro-vegetative imbalance; postoperative pain; nocturnal enuresis; fever; partial (focal) forms of epilepsy; chronic hypotension; acute myocardial infarction; induction of anesthesia; insomnia; chronic cerebrovascular insufficiency; short-term surgery; long-term major surgical interventions; intoxication with opioid analgesics; acute intoxication with ethyl alcohol; intoxication with hypnotics; acute mania; in decreased sleep duration; migraine; myositis; neuralgia; neuroleptanalgesia; neurosis; oligophrenia; drug induced parkinson disese; potentiation of analgesics; premedication; mental retardation in children; schizophrenia; superficial sleep; grand mal epilepsy; anxiety states; depressive states; spastic states of the striated muscles; physical extenuation; trauma; early awakening (late or terminal hyposomnia); frequent nightly awakening (intermittent hyposomnia); acute brain disorders; vomiting

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

**4. Clinical case** (Guideline for laboratory work in pharmacology).

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

**6. Virtual didactic movie.** (Guidelines for Laboratory Work in Pharmacology).

**7. Tables** (to revise and test one’s knowledge).

*Table 1*

**Determine antiparkinson drugs and their key features**

|  |  |  |  |
| --- | --- | --- | --- |
| **Drug** | **Phamacologic effect** | **Mechanism of action** | **Dosages and their forms** |
|  | **Restores normal DA levels** |  | **Tablets 0,25; 0,5** |
|  |  | **Blocks COMT** | **200 mg adjunct to Levodopa** |
|  | **Increases the bioavailability of L-DOPA** |  | **25 mg or 50 mg as a component of SINEMENT®** |
|  | **Glutamate antagonist; Increases the release of DA and blocks its reuptake** |  | **Tablets and capsules 100 mg;**  **Phials 1%-5ml (as a solution for injection)** |
|  | **Centrally acting muscarinic blocker** |  |  |
|  |  | **Selectively inhibits MAO-B isoform** |  |

*Table 2*

**Efficacy of drugs A-D when used in the different subtypes of epilepsy following PO tablet administration (ethosuximide, phenytoin, lithium carbonate, phenobarbital)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Drug** | **Major epileptic seizures** | **Minor epileptic seizures** | **Acute mania** |
| **A** | **+++** | **–** | **–** |
| **B** | **+++** | **–** | **++** |
| **C** | **–** | **–** | **+++** |
| **D** | **–** | **+++** | **–** |

**8.) Solve the case:**

During the surgical intervention, on the background of pentobarbital anesthesia, the patient developed symptoms of slight respiratory depression.

Which agent can be used in order to restore normal respiratory function?