DRUGS INFLUENCING THE GASTROINTESTINAL TRACT (PART I)

**A. Actuality.** The pathologies of the digestive tract are commonly encountered in medical practice. Drug therapy of those requires the usage of a wide range of drugs and a great knowledge in order to prescribe them rationally.

**B. The purpose of the training is** to familiarize students with basic drugs affecting the functions of gastrointestinal tract and the principles of choice of the necessary drug in each specific diseases.

**C. Learning objectives:**

1. The students must **know**: drugs affecting the functions of gastrointestinal tract, their classification, mechanism of action, indications, contraindications, side effects.
2. The students must **be able to:** prescribe the drugs; choose the drugs in the specific pathologies.

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

**Histology.** Morphological and functional characteristics of gastrointestinal tract. General principles of gastrointestinal tract structure: mucosa, submucosa and serous membranes. General characteristics of mucosa, its structure. Peculiarities of mucosa in different gastrointestinal tract regions. The pancreas: morphofunctional characteristics. Exocrine and endocrine pancreas, vascularization and innervation.

**Human physiology.** The importance of digestion for the organism. Physiological bases of hunger, appetite and satiety. Digestion in the oral cavity. Composition and properties of saliva, its enzymes. Digestion in stomach. Composition and properties of the gastric juice, its importance. Mechanism of gastric secretion, its regulation. Phases of gastric juice secretion. The influence of humoral factors on the gastric glands. Enterogastrine, enterogastrone. Digestion in duodenum. The role of duodenum in digestion. Composition and properties of pancreatic juice, its effect on proteins, carbohydrates, lipids, nucleic acids. Enterokinase. v

**Biochemistry.** The main nutritive substances. Decomposition of carbohydrates, proteins, lipids. Absorption. Fermentation in the intestine. Biochemical regulatory mechanisms of digestion. Parenteral feeding.

**Pathophysiology.** Gastrointestinal insufficiency, its causes. Disturbance of appetite, gastric digestion (secretion and excretion, motility, absorption). Disturbance of duodenal digestion in pancreatic juice and bile deficiency.

**E. Self-training questions:**

1. Classification of drugs affecting the functions of gastrointestinal tract.
2. Appetite-stimulating drugs (orexigenic). Classification, mechanism of action, indications.
3. Appetite suppressing drugs (anorexigenic). Classification, mechanism of action, indications, contraindications, side effects.
4. Gastric juice secretion stimulants. Classification. Comparative characteristics of gastric juice, pepsin, acidin-pepsin, abomine, panzynorm, festal, orase, mexase.
5. Drugs for replacement in pancreas hypofunction. Classification, mechanism of action, effects, indications and side effects.
6. Drugs that inhibit gastric secretion. Classification.
7. Comparative characteristics of M-cholinoblockers and H2-histaminoblockers in gastric hypersecretion.
8. Characteristics of drugs with antigastrine action, proton pump inhibitors, prostaglandin analogs and their synthetic derivatives.
9. Antacids. Classification, mechanism of action, effects, indications and side effects.
10. Gastroduodenoprotectors and cytoprotectors. Classification, mechanism of action, effects and indications of the sucralfate, bismuth drugs, prostaglandins, vegetable drugs, synthetic drugs, vitamins and anabolics.
11. The classification of antiulcer drugs.
12. Drugs that inhibit the pancreas excretoric function. Classification.

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

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

**Down:** drug name. 1. Ciproheptadine. 2. Amfepramone. 3.Ranitidine. 4. Famotidine. 5. Almagel. 6. Magnesium hydroxide. 7. Omeprazol. 8. Sucralfate. 9. Bismuth subcitrate. 10. Regesan. 11. Panzinorm. 12. Pancreatine. 13. Creon. 14. Aprotinine.

***Drugs that also refer to the task, which need to be repeated:*** 1. Atropine sulphate. 2. Pirenzepine.

**Across:** 1. Medicinal form. 2. Ways of administration. 3. Doses (therapeutic, maximumal for one intake and for 24 hours). 4. Mechanism of action. 5. Indications and contraindications. 6. Side effects.

**2) Questions on medical prescriptions.**

**To prescribe** the following drugs in all possible medicinal forms**:** 1. Ciproheptadine. 2. Amfepramone. 3. Atropine sulphate. 4. Pirenzepine. 5. Ranitidine. 6. Famotidine. 7. Almagel. 8. Magnesium hydroxide. 9. Omeprazol. 10. 7. Sucralfate. 11. Bismuth subcitrate. 12. Regesan. 13. Panzinorm. 14. Pancreatine. 15. Creon. 16. Aprotinine.

**Drugs used in (for):** anorexia, alimentary obesity, hypotrophy in children, hypoacid gastritis, reflux esophagitis (esophageal reflux disease), Zollinger-Elison syndrome, gastric ulcer, duodenal ulcer, acute pancreatitis, chronic pancreatitis,

gastroprotectors in gastric ulcer, antisecretory in duodenal ulcer.

**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 N1*

**The comparative characteristics of H2-hystaminoblockers**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Drugs | Duration of action (hours) | Medium therapeutic dose (mg) | Blocking of microsomal enzymes (+/-) | Blocking of the androgen receptors (+/-) |
| Cimetidine |  |  |  |  |
| Ranitidine |  |  |  |  |
| Famotidine |  |  |  |  |
| Nizatidine |  |  |  |  |

*Table N2*

**The comparative characteristics of gastroprotector drugs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pharmacological effects | | Sucralfate | Bismuth subcitrate | Misoprostol |
| Gastroduodenoprotective  action | mechanical protection of the gastric mucosa |  |  |  |
| increase in gastric mucosal resistance to harmful factors |  |  |  |
| Additional effects | the influence on HCl secretion |  |  |  |
| antibacterial action on *Helicobacter pylori* |  |  |  |

The presence of effect mark with “+”

**8.) Solve the case:**

Pacient X, 61 y.o., was hospitalized with the following complaints: heartburn, nausea, pain in epigastric region that appeared in 1,5 hour after meal, frequent “night” pain. From anamnesis: approximate 15 years is suffering from gastric ulcer with frequent exacerbations. *Helicobacter pylori* was detected during the biopsy of the gastric mucosa.

***Name the possible schemes of treatment and explain them.***