**Elaborated by Borş Eleonora**

**Pathophysiology of digestive system**

**Clinical case 1**

**Patient B., 45** years old, underwent subtotal resection of the stomach (antrectomy with vagotomy).

**Complaints:** general weakness, lack of appetite, diarrhea, impaired motility and sensitivity in the lower extremities. Over the past year, she has lost 5 kg.

**Objectively***:* pale skin, tachycardia, shortness of breath, atrophy of the oral mucosa.

**Blood test: erythrocytes** 1.7x1012/l; leukocytes – 3x109/l; platelets 100x109/l. MCV and MCH are increased. Blood smear – *megaloblasts, megalocytes, erythrocytes with basophilic granularity; Jolly bodies and Cabot rings; neutrophils with a hypersegmented nucleus.*

**Questions**

1. **What changes in gastric secretion occurred in the patient after subtotal resection of the stomach and what is the pathogenesis?**
2. **How does the motor, evacuation, absorption, reservoir functions of the stomach change under conditions of hyposecretion and achlorhydria?**
3. **What metabolic disorders occur in gastric hyposecretion and achlorhydria?**
4. **What are the consequences of the rapid evacuation of a alimentary bolus with hyposecretion of the stomach?**
5. **Explain the pathogenesis of weight loss in this patient.**
6. **To remove the pathogenic chain of consequences of protein digestion and malabsorption in case of increased stomach acidity.**
7. **What is the pathogenesis of diarrhea and its consequences in gastric hyposecretion?**
8. **What is the pathogenesis of changes in the cytological picture of the patient's blood?**
9. **Explain the pathogenesis of motor and sensory disorders in the patient?**

**Clinical case 2**

**Patient A., 40 years old,** complains of pain in the epigastric region, heartburn, belching of acidic stomach contents, frequent constipation. The symptoms augmented in the last 2 years, when some problems appeared at work, but they became more pronounced in the last six months, when she lost 8 kg in weight.

**Objectively**: asthenic physique.

**Gastric secretion indicators:**

1. The volume of gastric juice collected on an empty stomach is 60 ml (N-up to 50);

2. Total acidity -50 UT (N-up to 40);

3. Free fraction HCl – 15 UT (N-up to 20)

4. Conjugate fraction HCl-30 (N- up to 25)

5. Gastric secretion under submaximal stimulation with histamine 110 (N-up to 100)

**Questions:**

1. **What changes in the secretion of gastric juice are indicated in this patient?**
2. **What paracrine mechanisms regulate gastric secretion and how?**
3. **What endocrine mechanisms** **regulate gastric secretion and how?**
4. **How does the motor, evacuation, absorption, reservoir function of the stomach change under conditions of gastric hypersecretion?**
5. **What is the mechanism of (pyrosis) heartburn and belching in the patient?**
6. **What is the pathogenesis of constipation and intestinal autointoxication in hyperchlorhydria?**
7. **How does the functionality of the gastrointestinal mucosa change under chronic stress?**

**Clinical case 3**

**Patient D., 60 years old,** complains of heartburn, constant epigastric pain, aggravated after meals, associated with nausea and periodic vomiting. Indicates weight loss (about 6 kg in the last 2 months). The patient regularly takes non-steroidal anti-inflammatory drugs for chronic back pain, smokes about 15 cigarettes a day, occasionally drinks alcohol

**Objectively:** epigastric tenderness is pronounced, but without signs of peritonitis.

**Endoscopy of the upper digestive tract** indicates the detection of an ulcerative lesion on the anterior wall of the stomach.

**Тест на Helicobacter pylori +++**

**Questions:**

1. **Explain the pathogenesis of the ulcerogenesis due to administration of nonsteroidal anti-inflammatory drugs (NSAIDs).**
2. **How does Helicobacter pylori contribute to the pathogenesis of gastric ulcers?**
3. **What are the mechanisms by which Helicobacter pylori changes the functionality of the gastric mucosa?**
4. **List and explain the protective mechanisms of the gastric mucosa that resist the aggressive action of gastric juice.**
5. **What is the role of nicotine in ulcerogenesis?**
6. **What is the ulcerogenic mechanism of duadeno-gastric reflux?**

**Clinical case 4**

**Patient A., 55 years old,** complains of general weakness, nausea, vomiting, diarrhea, shingles pain that occurs after a large meal, frequent pain in the epigastric region. In 8 months, he lost 10 kg. He consumes a lot of fluids (6 l/24 hours), and also indicates polyuria.

**Anamnesis:** Alcohol abuse for 15 years. 8 years ago he suffered an attack of acute alcoholic pancreatitis.

**Laboratory tests***:* blood glucose level - 12 mmol/l; glucose -4% (diuresis 6 l/24 hours), low glucose tolerance; hypoalbuminemia, hypomagnesaemia and hypocalcemia.

**Pancreatic juice**: low trypsin activity; low concentration of bicarbonates.

**Urine** – creatinine increase

**Coprogram**: amylorrhea, steatorrhea.

**Questions**

1. **Clinical manifestations, data of laboratory and paraclinical studies indicate chronic exocrine and endocrine insufficiency of the pancreas**. **What is the pathogenesis of weight loss in pancreatic insufficiency?**
2. **What is the pathogenesis of general weakness in the patient?**
3. **What changes in carbohydrate metabolism indicate pancreatic insufficiency and what are the specific symptoms of the patient?**
4. **What is the pathogenesis of steatorrhea and amylorrhea in the patient?**
5. **What is the role of alcohol in the pathogenesis of exocrine pancreatic insufficiency?**
6. **What is the pathogenesis of hypocalcemia in exocrine pancreatic insufficiency?**
7. **What enzyme consequences accompany exocrine pancreatic insufficiency and which of these are seen in the patient?**
8. **One of the causes of B12-deficient anemia may be exocrine pancreatic insufficiency. Explain the pathogenesis**.
9. **What is the mechanism of vomiting and nausea in a patient with exocrine pancreatic insufficiency?**