#### MINISTRY OF HEALTH OF UKRAINE

#### **ODESA NATIONAL MEDICAL UNIVERSITY**

Departments of Pediatrics №2

#### **CONFIRMED** by

Vice-rector for research and educational work

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#### METHODOLOGICAL RECOMMENDATIONS ON PRACTICAL CLASSES FOR STUDENTS

International Medical Faculty, course 6

Educational discipline "PEDIATRICS"

#### Approved

at the meeting of the department of Pediatrics №2 Protocol No. 11 dated 28/08/2022

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# 1. Topic # 20.

Differential diagnosis of functional and organic intestinal diseases in children. Leading clinical symptoms and syndromes in functional and organic intestinal diseases in children (functional diarrhea, disaccharidase deficiency, exudative enteropathy, celiac disease, cystic fibrosis, Crohn's disease, nonspecific ulcerative colitis). Differential diagnosis of functional and organic intestinal diseases in children. Clinical and instrumental examination and differential diagnosis of functional and organic intestinal diseases in children. Clinical diseases in children. Clinical variants of the course of functional and organic intestinal diseases in children. Tactics of managing children with functional and organic intestinal diseases. Prevention and dispensary monitoring of functional and organic intestinal diseases in children.

# 2. Relevance of the topic.

Digestive diseases in children, taking into account their prevalence, features of the clinical course, early manifestation and high risk of early disability create a serious medical and social problem. In recent years, diseases of the gastrointestinal tract came in second place among the most common diseases of childhood. Intestinal diseases remain a serious medical and social problem, which is associated with diagnostic difficulties and the negative impact of these diseases on the growth and development of the child.

Among the chronic diseases of the digestive tract in children, the main place is occupied by lesions of the gastroduodenal area. As a result, pediatric gastroenterology has become one of the most important areas of pediatrics.

# 3. Objectives of the topic

3.1. General and goals

- Improve knowledge of anatomical and physiological features of the digestive system in children
- Learn to differentiate between organic and functional diseases

• Improve understanding of the mechanisms of different types of digestion and the pathogenesis of their disorders

- Know the classification and clinical syndromes of diseases with chronic diarrhea
- Know modern methods of diagnosing diseases with chronic diarrhea
- Improve the ability to differentially diagnose the above diseases
- Be able to prescribe differentiated treatment depending on the type of digestive disorders in children
- Be able to timely recognize and prescribe treatment for complicated peptic ulcer disease

# 3.2. Educational and goals:

Get acquainted with modern recommendations and protocols for the treatment of gastrointestinal diseases, reduce mortality, incidence and severity of gastrointestinal diseases and disabilities, as well as contribute to improving the physical development of the child.

# 3.3. Specific goals:

- identify different clinical variants and complications of the most common diseases of the digestive system in children
- to determine the tactics of the patient with the most common diseases of the digestive system in children
- demonstrate the ability to keep medical records of sick children with pathology of the digestive system
- plan the examination of a sick child and interpret the results of the most common diseases of the digestive system
- make a differential diagnosis and make a preliminary clinical diagnosis of the most common diseases of the digestive system
- diagnose and provide emergency care in emergencies caused by diseases of the digestive system in children
- *3 .4. On the basis of theoretical knowledge on the topic* : Be able to:

- to conduct a quality history in the case of gastrointestinal diseases

- physical examination followed by interpretation of the obtained data
- prescribe diagnostic procedures
- to make diagnoses according to modern classifications
- prescribe modern therapy and further prevention of gastrointestinal diseases
- in case of complicated gastrointestinal diseases to be able to recognize it in time and provide quality care.

#### Master practical skills:

diagnosis and provision of necessary assistance in case of complicated gastrointestinal diseases
to demonstrate mastery of moral and deontological principles of a medical specialist and the principles of professional subordination in pediatrics.

N⁰	Disciplines	Know	Be able
1	Previous disciplines (normal physiology, propaedeutics of children's diseases, faculty pediatrics, hospital pediatrics)	Mechanisms of different types of digestion, anatomical and physiological features of the digestive system in children, pathogenetic mechanisms of digestive disorders in young children, clinical picture, modern methods of diagnosis and treatment of gastrointestinal enzymopathy in children and diseases with malabsorption syndrome	Carry out differential diagnosis of diseases that occur with chronic diarrhea syndrome and prescribe differentiated treatment depending on the type of digestive disorders in children
2	Intra-subject integration (topics: "Acute digestive disorders in young children", "Functional diseases of the gastrointestinal tract in children", "Chronic nonspecific enteritis and colitis in children")	Criteria for the diagnosis of functional and organic diseases of the gastrointestinal tract in children of different ages.	Conduct a clinical examination of a child with chronic diseases of the gastrointestinal tract. Be able to compose an algorithm for differential diagnosis diseases with malabsorption syndrome. Assess the severity of the sick child.

# 4. Materials of pre-classroom independent training ( interdisciplinary integration )

# 5. Content of the topic

# 6. Gastroesophageal reflux disease

Gastroesophageal reflux disease (GERD) is a chronic recurrent disease with the development of characteristic symptoms (heartburn, belching, etc.) and / or inflammatory lesions of the distal esophagus due to periodic regurgitation of gastric and / or duodenal contents into the esophagus.

# Gastroesophageal reflux disease

# A. 2 Code according to ICD-10: K 21

- K21.0 GERD, accompanied by GERD, with esophagitis
- K21.9 GERD, supplemented with GERD, without esophagitis.

# Etiology

It is believed that GERD is a polyetiological disease. The immediate cause of GERD is prolonged contact of gastric or duodenal contents with the mucous membrane of the esophagus.

The main factors that contribute to the symptoms of GERD are:

- axial hernia of the esophageal orifice of the diaphragm;

- intense physical activity;

- psycho-emotional overstrain;

- pathology of the gastroduodenal zone (peptic ulcer disease, duodenostasis, duodenogastric reflux);

- irrational nutrition;

- taking medications that reduce the tone of the esophageal sphincter (prolonged nitrates, calcium antagonists, theophylline, sedatives);

- alcohol abuse and smoking, consumption of coffee and mineral drinks, mayonnaise, ketchup, spicy foods and condiments;

- increase in intra-abdominal pressure (pregnancy, use of corsets and bandages, flatulence, obesity);

- other causes ( scleroderma, diabetes).

GERD occurs in 8.7 - 17% of children with gastrointestinal diseases, according to Shcherbakov PL esophageal lesions are found in 15% of patients with gastritis, in 38.1% - in patients with gastroduodenitis, in 100% - with peptic ulcer disease 12 -paid intestine.

#### Pathogenesis

GERD develops due to a decrease in the function of the antireflux barrier, which can occur in three ways: 1) primary decrease in pressure in the lower esophageal sphincter, 2) increase in the number of episodes of its relaxation, 3) complete or partial destructuring, for example, hernia of the esophageal diaphragm. Important in the development of GERD is an imbalance between factors of aggression (gastroesophageal reflux with the release into the esophagus of hydrochloric acid, pepsin, bile, pancreatic enzymes; increased intragastric and intra-abdominal pressure, etc.) and protective factors and antireflux, esophagus).

# CLINICAL MANIFESTATIONS OF GERD

Clinical manifestations of GERD are divided into esophageal and extraesophageal.

Esophageal symptoms include:

- heartburn,
- regurgitation,
- dysphagia,
- belching,
- "wet pillow symptom".

• Heartburn (a burning sensation that occurs near the xiphoid process and spreads to the top) occurs due to the irritating effect of reflux on the CO of the esophagus; is considered one of the most important symptoms of GERD and usually appears in the case of lowering the pH to 4.0 and below, the manifestations of which depend on the position of the body (occurs or worsens when leaning or lying down at night), intake of foods that reduce tone of the lower esophageal sphincter (fats, chocolate, coffee, citrus fruits, tomatoes), use of drugs (anticholinergic drugs,

calcium antagonists, beta-blockers, sleeping pills, nitrates, progesterone, etc.). In the presence of duodenogastroesophageal reflux, sick children may experience a feeling of bitterness due to the dumping of the contents of the duodenum, which contains bile.

• Regurgitation (esophageal vomiting) is felt without previous nausea during meals, sometimes at night, which is especially dangerous due to the occurrence of microaspiration, which leads to irritation of the effector cells of the bronchi and lungs.

• A rare but very characteristic feature of GERD is fluid belching (regurgitation due to hypersalivation), known as a "wet pillow symptom".

• In case of esophageal dysphagia in GERD, peptic esophagitis, benign esophageal strictures, esophageal dyskinesia, esophageal cancer should be considered. Because the cause of organic dysphagia is a significant narrowing of the esophagus (less than 13 mm), this symptom is quite rare in GERD.

• Extraesophageal symptoms of GERD:

• otolaryngological, associated with the direct effect of aggressive reflux on the pharynx and larynx, which leads to laryngitis, pharyngitis, dryness and itching in the throat, hoarseness, otitis and other symptoms;

• bronchopulmonary, which include: persistent whooping cough, coughing, hoarseness. The development of aspiration pneumonia and bronchial asthma is possible, which are poorly amenable to traditional treatment and, as a consequence, there is a persistent recurrent course. In both cases, nocturnal aspiration with persistent bronchospasm is observed, with regurgitation penetrating deep into the trachea and bronchi.

• cardiac - pain in the heart, arrhythmia, tachycardia, reflex central apnea and other cardiac symptoms by analogy with the "bronchopulmonary mask", can also occur due to the esophagocardial reflex, provoked by acid entering the esophagus;

• dental - thinning of tooth enamel mainly on the inner surface, recurrent caries, in severe cases - aphthous stomatitis. Thinning of the inner surface of tooth enamel may be the only manifestation of GER. Most esophageal symptoms are combined with esophageal. However, there are cases when GERD has only extraesophageal symptoms that can mask the main course of GERD and lead to misdiagnosis and ineffective treatment.

• All children have astheno-autonomic disorders (fatigue, emotional lability, weather sensitivity, headache).

• For young children are characterized by frequent vomiting, regurgitation, for school-age children - pain in the chest or epigastrium during exercise. Pediatricians should keep in mind that some children do not have any clinical manifestations of GERD, so the diagnosis is made only on the basis of special research methods conducted on other pathologies of the digestive system (for example, endoscopy, which was performed to diagnose gastric diseases and duodenum).

# Diagnosis

Required research:

• clinical blood test,

- analysis of feces for occult blood,
- daily monitoring of esophageal pH (Level of evidence A),
- endoscopy of the esophagus.

Additional research (according to the indications):

• X-ray examination of the esophagus and

stomach,

- esophageal manometry,
- scintigraphy of the esophagus,
- bilimetry

*The "gold standard" for the* definition of pathological gastroesophageal reflux is daily pH monitoring of the esophagus (Level of evidence A), which provides early diagnosis of GERD long before the onset of clinical manifestations of esophagitis

Using this method of research it is possible not only to record acidification of a gullet, but also to estimate its duration. PH monitoring in the lower part of the esophagus is performed in a sitting position with the torso tilted forward by  $45^{\circ}$  (in order to provoke gastroesophageal reflux) or regardless of body position while maintaining the daily routine. It is recommended to monitor for at least 16 hours. The indicator of acid exposure is estimated - the time of contact of the esophagus with acidic (pH <4) gastric contents. Normally, the sum of esophageal pH values <4.0 obtained during monitoring is not more than 4.2% of the total study time (up to 6.3% in the upright position and up to 1.2% in the supine position). Esophageal reflux is considered pathological if in standing and lying positions the acid exposure exceeds the norm by more than 95%. Reflux lasting less than 5 minutes is not considered pathological.

*Endoscopic examination of the* esophagus can confirm the presence of reflux esophagitis and assess its severity. Depending on the prevalence and severity of the process there are 4 degrees of esophagitis (according to G. Tytgat in the modification of VF Privorotsky):

1. Moderate focal erythema, inflammatory edema of the mucous membrane of the abdominal esophagus. Rise of the Z-line to 1 cm, short-term provoked subtotal (on one of the walls) prolapse to a height of 1-2 cm, decrease in the tone of the lower esophageal opening.

2. Similarly + total hyperemia of the abdominal esophagus with focal fibrinous plaque, superficial defects of the mucous membrane, not penetrating into the muscular layer, single, linear. Total or subtotal provoked prolapse to a height of more than 3 cm with partial fixation in the esophagus.

3. Similarly + the spread of inflammation to the thoracic esophagus. Numerous erosions with and without signs of bleeding. Motor disorders: the same + spontaneous or provoked prolapse over the leg of the diaphragm with partial fixation.

4. Esophageal ulcer. Barrett's syndrome. Esophageal stenosis. Changes in the mucous membrane of the esophagus in children in the absence of treatment tend to progress. Over time, the deeper layers of the esophagus are affected and the risk of complications increases. The most severe of them is Barrett's syndrome or esophagus, which is a clinical picture of severe GERD, cylindrical metaplasia of the mucous membrane of the distal esophagus (replacement of multilayered squamous epithelium). It is considered a precancerous disease of the esophagus. Among the methods of Barrett's syndrome, the most important is the endoscopic burn with targeted biopsy.

Well-known endoscopic markers of Barrett's esophagus:

1. "Islands" of foreign cylindrical epithelium.

2. The so-called high crevice erosions.

3. Various papillomas located at a distance of more than 2 cm. from the Z-line.

4. "Tongues" of the hearth as a continuation of the gastric mucosa in the lower third of the esophagus.

5. Circular cuff with Z-line offset.

Great importance is attached to the length of metaplased areas. It is known that in long segments (length over 3 cm) the risk of esophageal adenocarcinoma is more than 10 times higher than short (length less than 3 cm).

• X-ray examination determines the anatomical condition of the esophagus and stomach, detects hernias of the esophageal orifice of the diaphragm, strictures of the esophagus. The main criterion is the retrograde intake of barium from the stomach into the esophagus in a horizontal position. At a reflux esophagitis inequality of contours and reliefs of a mucous membrane, expansion of a gleam of a gullet, weakening of peristalsis are appreciable.

• Esophageal manometry allows you to assess the condition of the lower esophageal sphincter, its ability to relax when swallowing, contractile function of the esophagus. It is diagnostically important to reduce the pressure in the area of the lower esophageal sphincter less than 10 mm Hg.

• Scintigraphy of the esophagus is performed with radioactive technetium to assess esophageal clearance (cleansing). Delay of the isotope in the esophagus for more than 10 minutes indicates a slowing of esophageal clearance.

• Bimetry allows to detect bile acids from the scraping of the tongue, which confirms the pathological duodenogastroesophageal reflux.

• ultrasound examination of the abdominal cavity - to exclude organic pathology and differential diagnosis,

• ECG, Holter monitoring - to detect episodes of arrhythmia, exclusion of coronary heart disease,

• test with proton pump inhibitors (is to eliminate clinical symptoms on the background of taking a standard dose of proton pump inhibitors for 7 days).

# Differential diagnosis

With a typical clinical picture of GERD, the differential diagnosis is not difficult. In thoracic pain, the differential diagnosis should be made with angina, in dysphagia - with benign and malignant tumors of the esophagus (EGDS with targeted biopsy and histological examination of biopsies), with GERD complicated by bleeding - with Mallory-Weiss syndrome, hemorrhage, bleeding gastric ulcer, duodenal ulcer (EGDS). With bronchoobstructive syndrome - with bronchial asthma, chronic bronchitis.

Example of diagnosis formulation

Gastroesophageal reflux disease without esophagitis.

Gastroesophageal reflux disease with esophagitis grade A.

Gastroesophageal reflux disease with grade D esophagitis complicated by Barrett's esophagus.

# Treatment

Treatment of GERD includes:

- recommendations on the regime,
- correction of the patient's diet,
- treatment with prokinetics, which normalize the motility of the esophagus and stomach,
- appointment of antisecretory drugs and antacids,

• use of cytoprotectors to increase the protective properties of the mucous membrane of the esophagus and stomach.

# General recommendations for children on lifestyle:

• avoid horizontal position after eating, during sleep (raising the head end of the bed by 15 cm), exercise with abdominal tension;

• restriction of drugs that reduce the tone of NSO: calcium channel inhibitors, beta-blockers, theophylline, tranquilizers, etc.

• weight loss;

• refusal to wear corsets, tight belts that increase intra-abdominal pressure;

• exclusion of lifting more than 5 kg; restriction of the works connected with an inclination of a trunk, with an overstrain of abdominal muscles.

Dietary recommendations:

- 4-5 regular meals in small portions are recommended;
- exclusion of overeating;

• eating at least 3 hours before bedtime; after eating it is desirable not to lie down for at least 1.5 hours;

- refusal to "eat" at night, horizontal position immediately after eating;
- avoiding hasty eating;

• restriction of products that reduce the tone of the esophageal sphincter (coffee, strong tea, chocolate, mint, milk, fatty meat and fish);

• avoidance of products that irritate the CO of the esophagus (citrus, onions, garlic, tomatoes, fried foods);

• restriction of products that increase intragastric pressure, stimulate the acid-forming function of the stomach (carbonated drinks, legumes, beer); preferably increased protein intake, which, unlike fat, increases sphincter tone.

Pathogenetic drug therapy should be carried out taking into account the stage of development of GERD

1. GERD without esophagitis (there are symptoms of the disease, but no endoscopic changes in the mucous membrane of the esophagus) and GERD with reflux esophagitis I severity:

- Antacids and / or alginates (aluminum phosphate, aluminum compounds, magnesium, calcium, etc.) are prescribed 4-5 times a day for one hour after meals and at bedtime for 2-3 weeks.

- Prokinetics (domperidone suspension, etc.) 0.25 mg per 1 kg of body weight 15-20 minutes before meals three times a day, the last time at night, 2-3 weeks).

It is often advisable to repeat this course of treatment after 1 month.

2. GERD with reflux esophagitis of 2 degrees of severity: prescribe H2-histamine receptor blockers (2-nd generation - ranitidine group - 150-300 mg per day; 3rd generation - famotidine group - 20-40 mg per day) or proton pump inhibitors (omeprazole group), pantoprazole and other analogues), mainly in children older than 12 years and alginates in combination with prokinetics for 3-4 weeks.

3. GERD with reflux esophagitis 3-4 degrees of severity: for 3-4 weeks prescribe prokinetics, proton pump inhibitors (omeprazole, pantoprazole and other analogues), alginates and cytoprotectors (smectite, hydrogelmethylsilicic acid, sucralfate 30) three times a day and at night for 4 weeks.

In case of ineffectiveness of conservative therapy (complicated course of GERD (3-4 degrees of esophagitis), hernia of the esophageal orifice of the diaphragm, pronounced extraesophageal manifestations), a consultation with a surgeon is indicated.

#### Criteria for the quality of treatment

- Ensuring remission of the disease,
- prevention of progression and development of complications.

#### Dispensary supervision

The minimum term of dispensary supervision is 3 years.

It should be borne in mind that GERD is rarely presented in the "monovariant" and is more common in combination with other organic diseases of the gastroduodenal area, so the frequency of antirelapse therapy is usually similar to that in these diseases.

Frequency of examination - once a year (assessment of complaints, FGDS according to the indications), examination by a general practitioner-family medicine or pediatrician, pediatric gastroenterologist - once a year. It is possible to prescribe "on-demand therapy" in case of symptoms such as heartburn, belching bitter or sour, a feeling of heat behind the chest. This therapy involves the use of antacids and alginates, possibly prokinetics for up to 10-14 days.

The scope and duration of such courses should be decided (depending on the treatment of previous exacerbations) individually.

Sanatorium treatment is indicated in remission of GERD

#### Scope of diagnosis:

Mandatory laboratory tests: general blood test, general urine test. Additional laboratory tests: total protein and protein fractions of blood, fecal analysis for occult blood, fecal analysis for worm eggs, the simplest; co-program (if necessary).

Mandatory instrumental studies: intragastric pH-metry (if necessary), ultrasound of the abdominal cavity.

• Dietary tables No1a, 1b, 1c, and 1 consecutively, food should be small, mechanically and chemically gentle on the stomach and duodenum with restriction of carbohydrates and relative increase in protein.

• Drinking mineral water is prescribed based on the state of acid-forming function of the stomach:

chloride-sulphate, sodium chloride, sodium bicarbonate, magnesium-potassium-sodium chloride, sulphate-chloride mineral waters of small and medium mineralization (method depending on gastric secretion, single dose of 5 ml / kg of body weight of the child). At the increased secretory function of a stomach mineral water is appointed in a warm kind (38 ° C) for 1-1,5 hours before meal three times a day. At the lowered acid-forming function mineral water at a temperature of 20-30 C is appointed for 20-30 minutes. before meals three times a day. Patients with normal gastric secretory function are prescribed mineral water for 40 minutes. before eating at a temperature of 30-38 ° C. The course of drinking balneotherapy up to 3-4 weeks.

- Peloidotherapy.
- Paraffin-ozokerite applications.
- Galvanic mud treatment.
- Electrophoresis of peloidine or peloid distillate.

A set of physiotherapeutic procedures is prescribed using the rules of combining and combining physiotherapy.

- Hardware physiotherapy:
- sinusoidal modulated currents;
- electrosleep;
- electrophoresis.
- Hydrotherapy. Mud treatments alternate with baths or you can use a rain shower.

• Climatotherapy includes aerotherapy, air, sunbathing, sea bathing according to the usual method.

• Motor mode: morning hygienic gymnastics, group physical therapy, dosed walking.

# K25 - Gastric ulcer (acute gastric erosion, pyloric ulcer, gastric ulcer).

K26 Duodenal ulcer (acute erosion of the duodenum, duodenal ulcer, postpyloric ulcer).

I. **Peptic ulcer** is a polyetiological disease characterized by the formation of an ulcer defect in the stomach and duodenum (duodenum), prone to progression, involving other digestive organs in the pathological process, with the possible development of complications. The formation of the disease is caused by an imbalance between the factors of "aggression" and "protection" of the mucous membrane of the gastroduodenal area, always with a predominance of "aggressive" components (H. pylori infection, acid aggression).

# II. Diagnostic criteria

# 1. *Clinical criteria* (depending on the stage and location of the ulcer defect): Duodenal ulcer

*Exacerbation period:* 

a) Stage I - acute ulcer

- The leading symptom is pain:
- epigastrium, pyloroduodenal area;
- on an empty stomach or late pain (2-3 hours after eating);
- mostly night pains;
- Moynihan's rhythm: hunger  $\rightarrow$  pain  $\rightarrow$  eating  $\rightarrow$  relief;
- in the form of an attack or aching;
- often p radiation in the back, waist.
- Dyspeptic syndrome:
- heartburn (leading symptom);
- nausea;
- sour belching;
- vomiting.
- Nonspecific intoxication syndrome:
- headache;
- reduction of working capacity;
- increased fatigue.
- Autonomic disorders:
- emotional lability;
- sweating.
- Palpation:
- severe pain in the pyloroduodenal area; in the epigastrium;
- the presence of Mendel's symptom (percussion with the fingertips of the wall and the vote there is pain);
- local muscle tension in the pain area;
- b) stage II the beginning of epithelialization:

- Pain
- persistent pain persists, usually during the day;
- Moynihan's rhythm is less pronounced;
- pain, mainly aching;
- ir radiation pain disappears.
- Dyspeptic manifestations:
- decrease or practically disappear.
- Palpation:
- no pain on superficial palpation;
- the local tension of muscles in a painful zone remains.
- c) Stage III ulcer healing:
  - Pain
  - periodic late (2-3 hours after eating) pain and pain on an empty stomach;
  - feeling of hunger, as the equivalent of night pain.
  - Dyspeptic manifestations:
  - practically absent.
  - Palpation:
  - moderate pain persists in the gastroduodenal area on deep palpation.

#### Period of remission

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There are almost no complaints. Palpation of the pyloroduodenal area is painless.

# Ulcer of the postpyloric part of the duodenum

- severe course, often - complications (bleeding), relapses.

- Severe pain (hunger, night, intense pain):
  - main localization upper right quadrant of the abdomen;
  - often irradiation in the back, spine.
    - Dyspeptic manifestations:
  - heartburn;
  - bitterness in the mouth;
  - nausea.
    - Palpation:
  - there is always local muscle tension;
  - epigastric pain;
  - a positive symptom of Mendel.

#### Ulcer stomach

1. *Clinical criteria* (depending on the stage and location of the ulcer defect):

- Pain
  - often aching;
  - in the upper half of the abdomen, behind the sternum;
  - immediately after eating;
  - rarely night pains.
    - Dyspeptic manifestations:
  - nausea;
  - belching;
  - bitterness in the mouth;
  - decreased appetite for anorexia;
  - flatulence.
  - Palpation:
  - local pain in the epigastrium;
  - infrequently in the pyloroduodenal area;
  - signs of local muscle tension.
  - 2. Laboratory tests:
  - a) mandatory:

- clinical blood test - in isolated cases, anemia, leukocytosis;

- determination of blood group and rhesus factor;
- clinical analysis of urine;
- total protein and protein fractions of blood;
- histological (cytological) examination (see below);
- tests for Helicobacter pylori (rapid urease, bacteriological, respiratory test, if possible serological (ELISA), ELISA analysis of the concentration of HP antigen in feces, PCR;
- analysis of feces for occult blood (Gregersen's reaction);

b) for therapy-resistant ulcers:

- blood test for hormone levels (hypergastrinemia, hypersomatotropinemia).

#### 3. Instrumental research and diagnostic criteria:

# Study of gastric secretion:

- intragastric pH-metry:

- moderate hyperacidity (pH 1.3 1.5);
- pronounced hyperacidity (pH 0.9 1.2);
- fractional study of gastric juice (hyperacid state).

**Fibroesophagogastroduodenoscopy with targeted biopsy** is performed for diagnostic purposes and 3-4 weeks after the start of treatment. If necessary - until complete epithelialization of the ulcer.

Histological examination of biopsies from the periulcerous zone of the gastric mucosa in peptic ulcer disease reveals acute inflammation with infiltration and stasis, atrophy of varying severity; in biopsies of the duodenal mucosa - acute inflammation with infiltration and plethora, hyperplasia of the duodenal glands, connective tissue growth. Histologically in the biopsy determine the presence of HP and the degree of contamination (microbial contamination) of the mucous membrane (+, ++, +++).

#### Exacerbation phase of the disease

a) Stage I - acute ulcer.

Against the background of pronounced inflammatory changes of the central nervous system and duodenum - a defect (defects) of round shape, surrounded by an inflammatory shaft, severe edema, the bottom of the ulcer - with a layer of fibrin.

b) Stage II - the beginning of epithelialization.

The hyperemia decreases, the inflammatory shaft is smoothed, the edges of the defect become uneven, the bottom of the ulcer begins to clear of fibrin, the convergence of folds to the ulcer is planned.

Phase of incomplete remission of the disease

c) Stage III - ulcer healing

At the site of repair - the remnants of granulation, red scars of various shapes, with or without deformation. Signs of gastroduodenitis activity remain.

#### <u>Remission</u>

Complete epithelialization of the ulcer defect, no signs of concomitant gastroduodenitis.

#### Auxiliary examination methods:

X-ray:

Radiological criteria of ulcer - "niche" syndrome, convergence of folds and other signs in children are rare - only in 18-25% of patients. The examination is used to diagnose motor-evacuation disorders, duodenostasis.

X-ray examination is performed only in case of impossibility to perform endoscopic examination.

#### Ultrasound of the abdominal cavity (once):

The study is performed for screening-diagnosis of concomitant pathology.

#### **III.** Basic principles of treatment

Depending on the location of the ulcer (stomach or duodenum), the phase of the disease, the severity of the course, the presence of complications, the connection with Helicobacter pylori.

# The purpose of treatment

- 1. Relieve the symptoms of IB and provide repair of the ulcer defect.
- 2. Eliminate H. pylori contamination, in accordance with the Maastricht Consensus \*.
- 3. Prevent the development of exacerbations and complications.

# In case of exacerbation:

Individual appointments complex treatment based etiology, Leading to sneeze pathogenic mechanisms, clinical and endoscopic symptoms, diet.

#### *Exacerbation phase (B):* In HP-associated gastric and duodenal ulcers:

- 1. Table № 5p for 5-7 days, then table №5 according to Pevzner.
- 2. Etiotropic therapy (minimum duration of treatment 14 days).

Weekly triple therapy with bismuth drugs
De Nol 120-240 mg 3 times a day;
Macrolides; clarithromycin 7.5 mg / kg / day
Semisynthetic penicillins (amoxicillin 250-500 mg 2 times a
day);
Imidazole derivatives (metronidazole 250-500 mg 2 times a day)

In the absence of success from the appointment of first-line therapy - the presence of pain syndrome of persistence of H. pylori, the appointment of second-line therapy (quadrotherapy) is indicated.

Proton pump inhibitors;
De Nol 120-240 mg 3 times a day;
Macrolides; clarithromycin 7.5 mg / kg / day
Semi-synthetic penicillins; (250-500 mg amoxicillin 2 times a
day);
Imidazole derivatives (metronidazole 250-500 mg 2 times a day)

# In non-Hp gastric and duodenal ulcers (D):

- 1. Table  $N_{2}$  5p for 5-7 days, then table  $N_{2}$ 5.
- 2. Antisecretory drugs: H2-blockers of histamine receptors (4-6 weeks) or

antacids (4-6 weeks).

3. Proton pump inhibitors (in adolescents) - for 7-10 days.

4. Regardless of the etiology of the ulcer in the presence of reflux - prokinetics, antispasmodics (anticholinergics, ganglioblockers).

5. Colloidal bismuth substrate 120 mg 3 times a day for 2-4 weeks.

# The beginning of epithelialization

To the above therapy include:

1. Cytoprotectors (Smecta, Glycerol).

# Healing ulcers

1. Drugs that have reparative properties (Sea buckthorn oil, Altan).

2. Vitamins according to the indication.

In the healing phase of ulcers (unstable pain and dyspeptic syndromes) treatment can be continued in an outpatient setting.

<u>Criteria for the effectiveness of treatment</u>: the absence of clinical and endoscopic manifestations of the disease with a negative test for H. pylori.

# Complications of gastric and duodenal ulcers:

- Bleeding bloody vomiting, tarry stools, pale skin, dizziness, cold sweats, rapid heartbeat, drop in blood pressure;
- Perforation of the ulcer acute "dagger" pain, vomiting, pale face, cold limbs, forced position with knees brought to the abdomen, abdomen retracted, abdominal wall tense;

- Stenosis intense persistent pain, a feeling of fullness after eating, belching, vomiting, which brings relief, dehydration, weight loss;
- Penetration into other digestive organs increased pain, pain not associated with eating, in the area of pathological lesions expressed palpatory pain, inflammatory infiltrate, low-grade fever, leukocytosis, accelerated ESR.
- surgical treatment in a specialized hospital. The scope and duration of treatment is determined by the pediatric surgeon. After surgery, patients are transferred to a gastroenterological somatic hospital to determine further treatment regimen and dispensary supervision.

# Clinical and endoscopic remission (D):

- 1. Diet №5.
- 2. Sanatorium treatment in 4-6 months at achievement of a steady remission.
- 3. FGDS in HP-associated ulcers 8 weeks after treatment.
- 4. In HP-associated ulcers HP control is also 8 weeks after treatment.

**Dispensary supervision** - possible deregistration after 5 years of stable remission after inpatient examination. Consultation of a gastroenterologist - according to the indications not later than 6 months, FGDS control - according to the indications. Examination by specialists (ENT, dentist, etc. according to the indications) - once a year. With a favorable course of ulcers - anti-relapse treatment in a clinic (or day hospital) 2 times a year (spring-autumn period). The amount and duration of anti-relapse treatment is decided individually. Along with the appointment of the regime and diet N $\circ$ 5 use antisecretory drugs, antacids, cytoprotectors. Sanatorium treatment is indicated only when stable remission is achieved (4-6 months after inpatient treatment) in sanatoriums of gastroenterological profile.

# Chronic gastritis

**I. Chronic gastritis (CG)** - is a chronic recurrent disease of the gastric mucosa of an inflammatory nature, which also covers the submucous layer of the stomach, accompanied by cellular infiltration, impaired physiological regeneration, with a tendency to progression and gradual development of atrophy of the glandular apparatus, disorders of the secretory, motor and endocrine functions of the stomach.

# II. Diagnostic criteria:

The diagnosis of CG is morphological and based on histological evaluation of biopsies.

# Clinical criteria:

Clinical criteria for CG are based on the analysis of complaints and assessment of the main manifestations of the disease - pain, abdominal, dyspeptic, nonspecific intoxication syndrome.

With increased (or normal) secretion of hydrochloric acid	With reduced secretion of hydrochloric acid
<ol> <li>The most common clinical variant:</li> <li>ulcerative form.</li> </ol>	<ol> <li>The most common clinical variant:</li> <li>there is no clear typical clinic.</li> </ol>
<ul> <li>2. Pain syndrome:</li> <li>abdominal pain associated with food;</li> <li>often occur on an empty stomach;</li> <li>early pain (characteristic of fundal gastritis);</li> <li>late pain (characteristic of antral gastritis);</li> <li>pain at night.</li> </ul>	<ul> <li>2. Pain is mild:</li> <li>aching pains in the epigastrium, most often after eating;</li> <li>characteristic feeling of pressure and fullness in the upper abdomen;</li> <li>Pain occurs and worsens depending on the quality and volume of food.</li> </ul>

**Chronic gastritis (exacerbation period)** 

There is no clear connection with the time of year, dietary disorders. The pain is intense and long.	
3. Dyspeptic syndrome: the most	3. Dyspeptic syndrome (predominant over
characteristic:	pain -55-60%) are most characteristic:
- sour belching;	- belching food;
- belching air;	- nausea;
- heartburn;	- a feeling of bitterness in the mouth;
- nausea;	- decreased appetite;
- tendency to constipation.	- flatulence;
	- unstable nature of defecation.
4. Nonspecific intoxication syndrome:	4. Nonspecific intoxication syndrome:
- varying degrees of severity.	- significantly expressed,
	- asthenia prevails.
5. Palpation: clear moderate pain in the	5. Palpation: slight pain in the epigastrium,
epigastrium, pyloroduodenal area.	most often in the projection of pain points of
	other digestive organs.

# Laboratory and instrumental research:

•EGDS (esophagogastroduodenoscopy) for morphological confirmation of CG and the presence of Helicobacter pylori infection (histology or rapid urease test) (single). The criteria are given in the table.

Chronic gastritis (exacerbation period)

With increased (or normal) secretion of hydrochloric acid	With reduced secretion of hydrochloric acid
<ul> <li>a) The most characteristic endoscopic forms:</li> <li>- superficial;</li> <li>- superficial with hyperplasia;</li> <li>- hypertrophic;</li> <li>- erosive.</li> <li>Sometimes - mixed.</li> </ul>	<ul> <li>a) The most typical endoscopic forms:</li> <li>mixed;</li> <li>subatrophic;</li> <li>atrophic;</li> <li>with hemorrhages and (or) hyperplasia.</li> </ul>
<ul> <li>b) At gastroscopy:</li> <li>hypersecretion of gastric contents;</li> <li>a lot of mucus;</li> <li>often - bile impurities;</li> <li>mainly hyperemia and edema of the gastric mucosa (GM);</li> <li>swelling and thickening of the folds;</li> <li>local hyperplasia;</li> <li>often erosion.</li> <li>c) Detection of HP - in most cases</li> </ul>	<ul> <li>b) At gastroscopy:</li> <li>- a small amount of gastric contents;</li> <li>- often - impurities of bile</li> <li>- pale, dull, thinned mucous membrane;</li> <li>- folds are unevenly smoothed;</li> <li>- sometimes - mosaic of the mucous membrane.</li> <li>c) Detection of HP - sometimes.</li> </ul>
Histological criteria	
<ul> <li>Most often:</li> <li>- active superficial gastritis;</li> <li>- diffuse gastritis with glandular lesions without atrophy.</li> <li>Detection of HP in most cases.</li> </ul>	<ul> <li>Most often:</li> <li>subatrophic and atrophic gastritis;</li> <li>diffuse gastritis with glandular lesions and atrophy, characteristic reorganization of the epithelium by pyloric or intestinal type.</li> <li>HP detection is sometimes.</li> </ul>

#### Intragastric pH-metry

With increased (or normal) secretion of hydrochloric acid	With reduced secretion of hydrochloric acid
Intragastric pH-metry:	Intragastric pH-metry:
a) normoacidic state:	Hypoacid state:
- pH of the body of the stomach 1.6-2.3;	- pH of the body of the stomach> 2.3
- pH of the antrum 2.1-3.0.	- pH of the antrum> 5.9-6.0
b) hyperacid state:	
- pH of the body of the stomach	
<1.6;	
- pH of the antrum $<2.1$ .	Alkalizing capacity of gastric juice:
Alkalizing capacity of gastric juice:	more often compensated:
more often subcompensated:	$pH_{antrum} - pH_{body} \ge 4,0$
$pH_{antrum} - pH_{body} = 1,5-4,0;$	
decompensated:	
$pH_{antrum} - pH_{body} < 1.0 - 1.5;$	
rarely compensated:	
$pH_{antrum} - pH_{body} \ge 4,0;$	

# **Chronic gastritis (exacerbation period)**

•Determination of acidity of gastric juice by fractional method:

#### The flow rate of hydrochloric acid

With increased (or normal) secretion of	With reduced secretion of hydrochloric	
hydrochloric acid	acid	
gastric pH by fractional method	gastric pH by fractional method	
BAO≥1.14-2.38 mmol / hour	BAO <1.14 mmol / hour	
SAO≥3.20-5.30 mmol / hour	SAO <3.20 mmol / hour	
There is a significant increase in basal secretion.		
BAO - basal acid output; SAO - submaximal acid output		

• Determination of Helicobacter pylori infection by one of the methods - bacteriological,

- respiratory urease, serological (ELISA), PCR.Ultrasound of the abdominal cavity to determine biliary and pancreatic pathology (once).
- Ontasound of the abdominal cavity to determine binary and p
   General analysis of blood and urine (once)
- Proteinogram (once).
- Coprogram, fecal occult blood analysis (Gregersen reaction)
- Analysis of feces for worm eggs (three times).

# **Basic principles of treatment.**

In case of exacerbation:

- 1. Resolving the issue of treatment conditions (inpatient or outpatient).
- 2. Choice of motor mode, use of exercise therapy.
- 3. The choice of mode and nature of nutrition, the purpose of dietary nutrition.

4. Individualized appointment of complex treatment (taking into account the etiology, the main pathogenetic mechanisms, the dominant syndrome).

In chronic gastroduodenitis associated with Hp, the appointment of eradication therapy is carried out according to one of the common schemes - triple or quadrotherapy (B).

# Modern treatment regimens for HP infection in children

I) One-week triple therapy with bismuth (mainly for children under 12 years):

1) Colloidal bismuth subcitrate + amoxicillin (roxithromycin) or clarithromycin (azithromycin) + nifuratel (furazolidone)

2) Colloidal bismuth subcitrate + amoxicillin (roxithromycin) / clarithromycin (azithromycin) + famotidine (ranitidine).

II) One-week triple therapy with H + / K + - ATPase blockers (mainly for children over 12 years):

1) Omeprazole (pantoprazole) + amoxicillin (roxithromycin) or clarithromycin (azithromycin) + nifuratel (furazolidone)

2) Omeprazole (pantoprazole) + amoxicillin (roxithromycin) / clarithromycin (azithromycin) + colloidal bismuth subcitrate.

III) One-week quadrotherapy (therapy of strengthening of the 2nd link, mainly to children after 12 years):

colloidal bismuth subcitrate + omeprazole (pantoprazole) + amoxicillin (roxithromycin) or clarithromycin (azithromycin) + nifuratel (furazolidone).

All drugs are prescribed 2 times a day (morning and evening) for 7 days. Azithromycin - once a day for the last three days of the weekly course.

Doses of drugs used in eradication schemes against HP-therapy in children:

- colloidal bismuth subcitrate - 4 - 8 mg / kg per day (maximum 480 mg per day);

- amoxicillin - 25 mg / kg (maximum 1 g per day);

- clarithromycin - 7.5 mg / kg (maximum 500 mg per day);

- roxithromycin (summamed) 10 mg / kg (maximum 1 g per day);
- nifuratel 15 mg / kg;
- furazolidone 10 mg / kg;
- omeprazole 0.5 0.8 mg / kg (maximum 40 mg per day);
- pantoprazole 20 40 mg per day;
- ranitidine 2 8 mg / kg (maximum 300 mg per day);
- famotidine 1 2 mg / kg (maximum 40 mg per day).

In other forms of gastritis, drug therapy is carried out taking into account the level of acid production and the type of disorders of motor-evacuatory function of the stomach (C).

In hyperacid gastritis, which is characterized by increased acid production, the appointment of antisecretory drugs (blockers of H2-receptors of histamine of the second or third generation - ranitidine 75 - 150 mg 2 times a day 20 minutes before meals or famotidine 10 - 20 mg 2 times a day day regardless of food intake for 7 - 10 days, or - H + / K + - ATPase (PPI) inhibitors): omeprazole - 0.5 - 0.8 mg / kg (maximum 40 mg per day); pantoprazole - 20 - 40 mg per day; then the dose of drugs is reduced by half (or one dose remains), followed by the use as a basic means of one of the drugs of the group of complex antacids (Smecta, Maalox, Phosphalugel and others) for 10-20 days.

**In hypoacid gastritis,** stimulants of gastric secretion are prescribed for a period of 3-4 weeks (plantaglucid, acidin-pepsin).

Regardless of the level of acid production, altan is prescribed, which has reparative antiinflammatory and antimicrobial action, cytoprotectors - to restore the relationship between factors of aggression and protection of the gastric mucosa (smectite, sucralfate, liquidit).

At disturbances of motor function of a stomach use of prokinetics - Motilium is recommended. In parallel, if necessary, cytoprotectors and reparants are prescribed for a period of 2 - 3 weeks (smectite - 0.5 - 1 sachet 3 times a day before meals, hydrogelmethylsilicic acid, liquiditon (or other derivatives of licorice root) - 0.05 - 0.1 g 3 times daily before meals, cytotec, etc.). At spasms and the expressed pain syndrome - antispasmodics (mebeverin appoint to children from 6 years in a dose of 2,5 mg / kg a day 2 times a day for 20 minutes before food, papaverine on 0,005 - 0,06 g 2 times a day, drotaverine 40 - 200 mg / day in 2 - 5 doses, prifinia bromide 1 mg / kg / day.

It is advisable to prescribe anti-stress therapy - Persen 2-3 tables. per day depending on age. In the stage of clinical remission - phytotherapy, balneotherapy, exercise therapy.

Dispensary supervision is carried out within 3 years from the last exacerbation, the frequency of endoscopic examination - once a year.

# 6.4. K 29.9 - Chronic gastroduodenitis

**Chronic gastroduodenitis (CGD)** is a chronic recurrent inflammatory disease, which is accompanied by nonspecific structural rearrangement of the mucous membrane and glandular apparatus of the stomach and duodenum (dystrophic, inflammatory and regenerative changes) with various secretory and motor disorders.

The most common form of chronic gastroduodenal disease in the structure of diseases of the stomach and duodenum HGD is 58-74%. High possibility of transformation into peptic ulcer disease. HGD with hypersecretion and hyperacidity is most common in children.

#### II. Diagnostic criteria:

The presence of risk factors for CGD and hereditary predisposition (35-40%).

*1. Clinical criteria* (depending on the phase and inflammatory process, art as well secretory function of the stomach, motor-evacuation disorders of the stomach and duodenum).

At an exacerbation the triad of symptoms is characteristic:

- painful;

- dyspeptic;

- chronic nonspecific intoxication.

Most often at the same time there are symptoms of concomitant pathology (hepatobiliary system, intestines, pancreas).

Clinical symptoms are similar to the manifestations of peptic ulcer disease, but there is no strict periodicity of pain, night pains are infrequent.

Most characteristic:

- abdominal pain aching, prolonged, occur in the morning on an empty stomach and 1.5-2 hours after eating;
- often (up to 40%) there is an acute, paroxysmal, but short-lived nature of pain, which is localized in the epigastrium (98-100%), in the right hypochondrium (60%), around the navel (45%). The pain worsens after eating and exercise. In erosive hyperacid CGD (pre-ulcer condition) a combination of hunger, night and late pain.
- dyspeptic manifestations: frequent belching, prolonged nausea, bitter taste in the mouth, flatulence, constipation, more rarely unstable bowel movements;
- nonspecific intoxication syndrome and emotional lability, frequent headaches, irritability, weakness.

Palpation: diffuse pain in the epigastrium, pyloroduodenal area, erosions - possible local muscle tension.

Seasonality of exacerbations - about 35-40%.

2. *Laboratory tests:* 

- clinical blood test;
- clinical analysis of urine;
- total protein and protein fractions of blood;
- tests for Helicobacter pylori (rapid urease, bacteriological, etc. and halnyy urease test, serological (ELISA) ELISA analysis of antigen concentration of HP in stool, PCR).
- fecal occult blood test (Gregersen reaction);
- histological (cytological) examination of biopsies (using the histological method of diagnosis of Helicobacter pylori - "gold standard");
- immunogram (according to the indications).

3. Instrumental research and diagnostic criteria: Necessarily:

- fibroesophagogastroduodenoscopy with targeted biopsy and rapid diagnosis of Hp (once, with erosive CGD twice);
- intragastric pH-metry (or fractional study of gastric contents) once;
- Ultrasound of the abdominal cavity once (to detect concomitant pathology).

#### If necessary:

- X-rays of the stomach and duodenum (motor-evacuation pores in tion, abnormal development);
- electrogastrography;
- rheography;
- others.

Typical disorders of gastric secretion:

- often increased acid, acid-abuse function of the stomach (subcompensated and dekompensov and on obluzhnyuyucha capacity);
- increase in proteolytic activity.

#### **Endoscopic criteria:**

the presence of characteristic endoscopic signs of altered gastric mucosa and duodenum according to the classification of CGD (superficial, hypertrophic, hemorrhagic, erosive, mixed);

- the presence of duodenogastric reflux and other motor-evacuation disorders;
- identification of etiological factors.

Most often:

At superficial CGD: inflammatory hypostasis, hyperemia, contact bleeding.

At subatrophic (atrophic) CGD: the mucous membrane of the duodenum is pale, gray, thinned, circular folds are smoothed, the vascular network of the submucosal layer is translucent.

At erosive CGD (the bulb or a bulb and an antral department is more often struck): against edema, hyperemia - superficial defects of a mucous membrane which are not getting into a muscular layer, in the size to 0,5 cm, single or numerous, with signs of bleeding and without them .

# Histological signs (duodenitis):

- *Superficial duodenitis:* changes in the height of the villi (elongation) of various shapes, increasing the number of crypts. In enterocytes of villi and crypts dystrophic changes with focal hyperplasia of enterocytes are expressed.
- *Diffuse duodenitis (without atrophy):* the height of the villi and the thickness of the crypts decreases, the mucous membrane thins. The density of lymphocyte-plasmacytic and lymphocyte-histiocytic infiltration increases.
- *Atrophic (subatrophic) duodenitis:* shortening of villi, thinning of crypts and mucous membranes. Lymphoid and plasma cells predominate.

In all forms, erosions, gastric metaplasia, the presence of HP can be detected.

# **III. Basic principles of treatment**

Features of treatment depend on the period of the disease, the nature of clinical and endoscopic changes, the state of the secretory function of the stomach and disorders of the motor-evacuatory function of the stomach and duodenum.

In case of exacerbation:

- 1. Choice of treatment conditions (inpatient or outpatient).
- 2. Choice of physical activity, use of exercise therapy.
- 3. Appointment of dietary measures.

4. Individual selection of complex treatment taking into account the etiology, the main pathogenetic mechanisms and leading symptoms.

In the presence of HP eradication anti-HP therapy (B) is performed.

# *K51* - Ulcerative colitis (UC)

**<u>I.</u>** *Ulcerative colitis* is a chronic inflammatory disease of unknown origin, which is clinically characterized by a recurrent course, with periods of bloody diarrhea and pathomorphological-

diffuse inflammatory process in the colon. Inflammation has a proximal prevalence from the rectum and is limited to the rectal and colonic mucosa.

# II. Diagnostic criteria:

<u>**Clinical**</u> depend on the severity and period of the disease.

- 1. <u>Mild degree (exacerbation):</u>
  - diarrhea less than 4 times a day
  - the presence of blood in the stool
  - normal body temperature
  - no tachycardia
  - pain during or before defecation:
    - left iliac region,
    - mesogastric,
    - around the navel.
- 2. <u>Moderate severity (exacerbation):</u>
  - diarrhea 4-6 times a day with macroscopically visible blood
  - intermittent fever over 37.5  $^\circ$
  - abdominal pain during defecation:
    - left iliac region,
    - mesogastric,
    - around the navel,
    - hypogastrium,
    - iliac region
  - tenesmus
  - false urges
  - flatulence
  - nausea
  - weakness, fatigue
  - decreased appetite
- 3. <u>Severe (exacerbation):</u>
  - diarrhea more than 6 times a day with macroscopically visible blood
  - fever over 37.5  $^\circ$
  - tenesmus and false urges
  - flatulence

- intense pain regardless of the act of defecation and eating: mesogastrium, around the navel, hypogastrium, regio iliaca.

Palpation:

- muscular defense
- severe pain
- local muscle tension in the pain area
- grunting
- clapping noise

Classification

(Lukyanova OM, Denisova MF, 2004).

- I. Clinical forms
- 1.Easy
- 2. Moderate
- 3. Heavy
- II. <u>The course of the disease</u>
  - 1. Acute
  - 2. Chronic: a) recurrent;
    - b) continuously recurrent.

III. Stage of the disease

- 1. Active stage a period of detailed clinical manifestations
- 2. The period of reversal of the disease
- 3. Clinical remission
- 4. Complete clinical and laboratory remission
- IV. The prevalence of the pathological process
  - 1. Distal colitis
  - 2. Segmental colitis
  - 3. Total colitis

V. <u>The degree of activity of the inflammatory process (determined by clinical, endoscopic and histological signs)</u>

- 1.1st degree
- 2. 2nd degree

3. 3rd degree

- VI. <u>Complications of the disease</u>
- 1. Local: a) intestinal bleeding;
- b) stricture of the colon;
- c) anorectal complications anal fissures, incontinence;;
- d) dysbacteriosis.

# Intestinal

- toxic dilatation of the intestine,
- intestinal perforation,
- bleeding,
- intestinal stenosis,
- pseudopolyposis,
- colon cancer.

Systemic (extraintestinal):

- liver damage (hepatitis); primary sclerosing chola n hit;
- eye lesions (uveitis, iridocyclitis, etc.);
- aphthous stomatitis;
- nodular erythema, gangrenous pyoderma;
- arthritis, sacroiliitis.

# VII. Concomitant diseases.

Diagnosis of ulcerative colitis includes:

- Physical examination
- Laboratory tests

• Endoscopic examination (rectoromanoscopy, colonoscopy) with biopsy and histological examination

• X-ray examination

# III. Physical methods of examination

Taking of complaints and anamnestic data - clarify the history (intestinal infections), medication (antibiotics), the presence of ulcerative colitis in first-line relatives. Clinical criteria depend on the severity and period of the disease.

# Pediatric Ulcerative Colitis Activity Index (PUCAI)

Symptom Items
---------------

1. Abdominal pain	
None	0
The pain can be ignored	5
Severe pain	10
2. Rectal bleeding	
None	0
A small amount, less than 50% of defecation	10
A small amount in most bowel movements	20
Significant amount (over 50% of the number of chairs)	30
3. The consistency of the stool in most bowel movements	
Formalized	0
Semi-formed	5
Completely unfinished	10
4. Frequency of defecation in 24 hours	
0-2	0
3-5	5
6-8	10
> 8	15
5. Defecation at night (any episode that caused an awakening)	
-	0
+	10
6. Activity level	
There are no activity restrictions	0
Episodic restriction of activity	5
Severe limitation of activity	10

The total index of PUCAI (0-85)

PUCAI criteria

- Remission up to 10 points (sensitivity 89%, specificity 89%)
- Minimum activity 10-34 points (sensitivity 95%, specificity 95%)
- Moderate activity 35-64 points (sensitivity 92%, specificity 94%)
- High activity more than 65 points
- A clinically significant response corresponds to a reduction in PUCAI of at least 20 points.

<u>Physical examination -</u> with a mild form of ulcerative colitis, the general condition is not disturbed, there is no pallor of the skin; in moderate and severe forms - pale skin, decreased tissue turgor, subcutaneous fat, intoxication, pain in the colon on palpation, low blood pressure, pain and muscle tension of the anterior abdominal wall.

# Paraclinical criteria:

# **Obligatory laboratory:**

- General blood test (leukocytosis, decreased hemoglobin, red blood cell count, increased ESR);
- General analysis of urine (without changes);
- Coprogram (reaction to occult blood is positive, the presence of leukocytes, mucus);

- Proteinogram (decrease in albumin level, increase in  $\alpha$ 1-,  $\alpha$ 2- and  $\gamma$ -globulin levels);

# Auxiliary laboratory:

- determination of transaminase activity, bilirubin level and its fractions (increase of the given indicators takes place at reactive hepatitis).

# **Obligatory instrumental methods:**

Endoscopic examination with histological examination of colon biopsies.

Endoscopic criteria of UC activity:

0 degree activity, (remission)	Pale mucous membrane, visible vessels
1 level of activity	Erythema, moderate edema, slight granulation of the mucous membrane, weakening (loss) of vascular pattern, moderate contact bleeding, no light glare
2 degree of activity (medium severity)	Single ulcers, erosions, pseudopolyps, mucosal edema, granularity, lack of vascular pattern, significant contact bleeding
3rd degree activity, (severe)	Sharp edema, lack of vascular pattern, diffuse contact bleeding, granularity, continuous purulent plaque, ulcers, erosions, pseudopolyps, free pus and blood in the lumen of the intestine

<u>Histological criteria</u>: dystrophic and atrophic changes of the superficial epithelium with areas of erosive and microerosion ulcers, change in the shape of the crypts, decreased mitotic activity of epitheliocytes, reduction in the number or absence of mucus-producing cells, mute neutrophil and eosinophilic lymphocytes);

<u>Radiological signs:</u> (irigography): local hypermotility (accelerated release of the affected area from the contrast agent), often with painful sensations; in severe cases - the syndrome of "free movement", violation of the gaustral pattern (asymmetry, deformation to complete disappearance), shortening of the intestine and displacement (smoothing) of natural curves, jagged contours, syndrome of double contour of the intestine; after emptying - thickening of the folds, their longitudinal direction ("combed relief"), spotted ("marble") pattern, in places of erosions and ulcers - accumulation of barium suspension.

<u>Ultrasound</u> - abdominal organs - increase in the size of the liver, its compaction.

# Consultations:

• Ophthalmologist (if there are complications)

• Surgeon (if complications develop)

• Oncologist (in the long run, the presence of dysplasia in biopsies of the mucous membrane of the colon).

# **Basic principles of treatment.**

# **Purpose of treatment:**

- achieving remission of the disease;

- prevention of exacerbations and complications.

# Diet therapy

(see Crohn's disease)

# 2. Drug therapy.

1.

A. Basic therapy:

a) Preparations of 5-ASA and sulfapyridine (level of evidence of the latter C):

- sulfasalazine daily dose at the age of 3-5 years is 1.5 g, 5-7 years - 1.5-3.0 g, 7-15 years - 3.0-6 g;

- salazopyridazine - daily dose at the age of 3-5 years 0.5 g, 5-7 years - 0.75-1.0 g, 7-15 years - 1.25-1.5 g; salazodimethoxine - doses of salazopyridazine. The maximum dose is prescribed until the clinical effect, then reduced by 1/3 of the initial for a period of 2-3 weeks, then - another 1/3 of the initial dose and supported as maintenance therapy for 2-3 to 6 months;

- 5-ASA (mesalazine) - 30-50 mg / kg per day for 3 uses; for the prevention of recurrence of the disease, depending on age, 15-30 mg per kg of body weight is prescribed in two doses (level of evidence A)

**b**) Glucocorticoids: (level of evidence B)

*systemic:* prednisolone - maximum dose - 1-1.5 mg per kg / weight per day to obtain a therapeutic effect, then the dose is reduced weekly by 2.5 mg; maintenance dose - 2.5-5 mg for 1-4 months.

*topical:* budesonide 3 mg 3 times a day (level of evidence A)

Indications for glucocorticoids:

- acute course of UC;
- severe life-threatening forms;
- lack of effectiveness of a two-week course of drug therapy and we 5-ASA;
- intolerance to 5-ASA drugs;
- systemic (extraintestinal) manifestations of UC;

c) Ursodeoxycholic acid suspension,  $\frac{1}{4}$  -4 tablespoons per day, in 1 measuring spoon - 250 mg of Ursodeoxycholic acid. Ursodeoxycholic acid, table. (250mg, 500mg) at the rate of 10 mg / kg body weight (day) - 3-6 months (level of evidence C)

d) systemic immunosuppressants - azathioprine - 1.5-2 mg / kg / d for 2-4 doses, are appointed only in the conditions of specialized hospitals in the absence of efficiency during two-week hormonal therapy (level of evidence A).

Hemostatic therapy - Menadione sodium bisulfate (0.008-0.015 g / d), aminocaproic acid (5% solution intravenously, drip), ethamsylate (12% solution intravenously or intravenously 1-2 ml, 1 / 2-1tablets 3-4 times / day for 7-14 days) (level of evidence D)

B. Symptomatic therapy: (level of evidence D)

a) enzyme preparations that do not contain bile acids - pancreatin and others - individual dosage; b) antibacterial therapy in case of secondary infection or exacerbation of foci of chronic infection (metronidazole - 0.25 g 2-3 times a day, amikacin, semi-synthetic penicillins, cephalosporins 5-7 days in age doses);

c) Antianemic drugs: drugs of iron, folic, ascorbic acid, B vitamins in conventional doses depending on age.

d) infusion therapy according to the indications (electrolyte solutions);

e) biological products for the suppression of the inflammatory process: (for example, multiprobiotics 1 dose per day (3 weeks), saccharomycetes bullardi - children under 10 years 1 pack 2 times a day, from 12 years - 1-2 sachets / day and others.

f) Antianemic drugs: drugs of iron, folic, ascorbic acid, B vitamins in conventional doses depending on age.

g) infusion therapy according to the indications (electrolyte solutions);

h) biological products for the suppression of the inflammatory process: (for example, multiprobiotics 1 dose per day (3 weeks), saccharomycetes bullardi - children under 10 years 1 pack 2 times a day, from 12 years - 1-2 sachets / day and others.

g) Antifungal drugs (natamycin 50 mg 2 times a day for 7 days with excessive growth of fungi of the genus Candida).

B. Surgical treatment - total colonectomy.

Indications for surgical treatment are:

- severe colitis in children of the 1st year of life;

- severe and moderate colitis in the absence of effect from the base drug therapy;

- complications of colitis;

- lightning colitis;

Degree of severity	the scheme of appointment of drugs of basic therapy
Light	Preparations of 5-ASA (mesalazine) for distal localization - in suppositories, microenemas, or a combination of oral and rectal administration; or sulfasalazine orally, enterosorbents, probiotics, multivitamins
Medium	Drugs 5-ASA (mesalazine), in the absence of effect -
severity	corticosteroids (topical, in the absence of effect - systemic (oral),
	infusion therapy, antianemic, hemostatic drugs, antispasmodics,
	probiotics
Severe	Corticosteroids (orally, if necessary - intravenously), in the absence
	of effect - in combination with immunosuppressants; infusion
	therapy, transfusion of erythrocyte mass, blood; enterosorbents,
	hemostatic, antianemic drugs, probiotics. In the absence of effect -
	surgery (total colonectomy)

<u>The general scheme of appointment of drugs of pathogenetic therapy depending on</u> <u>severity of UK</u>

**Duration of inpatient treatment -** individually before receipt therapeutic effect.

**Requirements for treatment results.** Elimination of hemocolitis, long-term achievement clinical and laboratory remission.

**Dispensary supervision.** Examination by a pediatric gastroenterologist and pediatric x - ray 2 times a year, pediatrician - per month (first 3 months after drink with pocket with hospital, then every 3 months), surgeon - once a year, other specialists – for requirements.

Anti-relapse treatment: 2 times a year in a hospital.

Scope of control and diagnostic examinations: clinical blood test once every 2 weeks (first 3 months), then monthly for a year, then once every three months; clinical analysis of urine and coprogram - 1 time in 3 months (first 2 years), then 1-2 times a year; analysis of feces for worm eggs and protozoa - 2 times a year;

Biochemical examination of feces (Gregersen reaction, Tribula) once every 3 months (first year), then - once a year; proteinogram, biochemical parameters of liver function, coagulogram, acute phase indicators - 1 time in 3 months (first two years), then -1 once a year, fecal analysis for dysbacteriosis - 2-3 times a year, rectoromanoscopy - 1 time in 3 months (the first year of supervision, then 2 times a year), ultrasound of the abdominal cavity - as required, irigography - once a year.

Dispensary supervision - for life.

Sanatorium treatment is contraindicated.

**Crohn's disease (CD)** is a chronic recurrent disease characterized by transmural granulomatous inflammation with segmental lesions of various parts of the digestive tract, stenosis of intestinal segments, the appearance of fistulas and extraintestinal lesions.

	*	Ileitis
Form	Localization	Ileocolitis
Form	Period	Anorectal
		Stomach

Clinical classification (VN Kopeikin et al., 2001)

		Duodenum	
		Other localizations	
		Infiltration	
		Cracks	
		Scarring	
		Stenosis	
		Severity:	
Dhasa	Exacerbation	- mild	
1 hase	Remission	- moderate	
		- severe	
	Acute		
Course	Subacute		
	Chronic		
Extraintestinal manifestations: spondyloarthritis, peripheral arthritis, aphthous stomatitis,			
erythema nodosum, uveitis, scleroconjunctivitis, hepatitis.			
Complications: fistulas (intestinal, interstitial and others), perianal lesions,			
intestinal stenosis, obstructive obstruction, intestinal perforation and peritonitis, intestinal			
bleeding, toxic megacolon, amyloidosis, septic-toxic conditions, vascular thrombosis,			
thromboembolism.			

Concomitant diseases

The clinic of CD is largely due to the predominant localization of the pathological process. At defeat of a large intestine, mainly its right departments, clinic of a syndrome of defeat of a large intestine - abdominal pains, grunting, bloating, diarrhea is noted. The pain is crampy and more pronounced than in ulcerative colitis, stool is less frequent, there may be no blood in the stool, no tenesmus and false urges. If the distal ileum is affected at the same time, a tumor-like conglomerate is palpated in the right iliac region due to productive inflammation of all layers of the intestine, mesenteric lymph nodes. Often in the ileocecal angle strictures of the intestine develop, as well as in other areas of both the small and large intestine. And here develops a fairly typical picture of the syndrome of partial intestinal obstruction, but sometimes complete intestinal obstruction. Isolated lesion of the small intestine, joining the pathological process of the colon leads to the development of a typical picture of enteral insufficiency syndrome. The patient loses weight, he has signs of polyvitaminosis, metabolic disorders of varying severity. The development of fistulas is characteristic, especially in the perianal region. At defeat of a gullet and a duodenum the clinic can remind a peptic ulcer, stenosis of initial department of a stomach and initial departments of a duodenum with the corresponding clinic of a cicatricial stenosis of a gut often develops.

**The severity of CD** is determined by the localization of the pathological process and the presence of complications. *Severe form of the* disease: the pain is paroxysmal, severe, may be constant; intensifies during walking, after eating and before the act of defecation; manifestations of intestinal dyspepsia, stool disorders (semi-liquid stool up to 10-12 times a day with a mixture of mucus, pus, blood), tenesmus, urge to defecate at night; palpation: pain at the site of injury, there may be a tumor (in the presence of intestinal adhesions); anorexia.

*Moderate form* : pain paroxysmal, severe, after eating, may be aching, constant; localization depends on the place of the greatest defeat; sensation of transfusion, bloating, diarrhea (semi-liquid pasty stool up to 10 times a day with mucus, pus, blood), palpation: grunting, navel pain, splashing noise, painful dense intestine, loss of appetite. *Mild form* : abdominal pain, unstable bowel movements (constipation is replaced by pasty stools), occasionally flatulence, loss of appetite.

In addition to local complications - fistulas, intestinal obstruction - Crohn's disease is characterized by extraintestinal manifestations - fever, joint damage, skin rash, eye damage, liver.

minuminutory sower discuse in emilareny, v (Demisova ivir et any 2010)			
Clinical sign	Crohn's disease	Ulcerative colitis	
Abdominal pain	85	40	
Diarrhea	60	90	
Weight loss	92	45	
Rectal bleeding	25	97	
Growth retardation	32	5	
Fever	48	30	
Perianal changes	15	1	
Extraintestinal manifestations	25	15	

Clinical signs and their frequency in inflammatory bowel disease in children,% (Denisova MF et al., 2016)

#### **Diagnostic program for CD**

*Objective examination*: determine height (with percentiles) and body weight (with percentiles). Deviations of percentiles below the third, along with changes in growth rates can determine the severity of the disease:

• examination of the oral cavity (presence of aphthae, gingivitis);

• changes in the skin and joints (erythema nodosum, gangrenous pyoderma, arthritis, spondylitis, sacroiliitis);

• palpation of the abdominal cavity - the presence of infiltrate in the right lower quadrant of the abdomen, segmental compaction of the colon; perianal cracks; increase in the size of the liver (in severe forms of the disease).

Regardless of the location of the pathological process in CD, there are general disorders: fever (from low-grade fever to hectic temperature), weight loss, signs of anemia, polyvitaminosis, electrolyte deficiency and hypoproteinemic edema.

#### Laboratory tests.

• Clinical blood test - anemia, leukocytosis, accelerated ESR.

• biochemical blood test: during exacerbation of acute symptoms, dysproteinemia (hypoalbuminemia, hyper-alpha-2 globulinemia).

• Coprogram: steatorrhea, Tribula positive test (with chloro- and trichloroacetic acids), Gregersen's positive test, dysbiotic changes of intestinal microflora.

#### Instrumental methods of examination

• X-ray examination of the abdominal cavity depends on the phase of the disease and is divided into non-stenotic (early) and stenotic signs. Non-stenotic signs have an intermittent appearance, are characterized by rigidity of the affected areas, mosaic image due to edema, linear ulcers, fistulas, penetration of contrast beyond the intestinal wall in the form of a pocket or fringe. Later there are stenotic signs: reduced or completely disappears the contractile capacity of the intestine, slows down the evacuation of barium, there is an uneven narrowing of the intestinal lumen to the state of "lace", at the same time over the narrowing zone there is a significant expansion.

• Endoscopic examination: the picture is polymorphic and depends on the phase of the disease (infiltration, cracks, scarring). The duration of the process can be local and diffuse.

*Infiltration phase:* lesions of the deep layers of the wall (narrowing of the lumen, edema of the mucous membrane, vascular pattern is determined only by large vessels, there may be small aphthous defects).

*Crack phase (destructive):* large ulcerative defects in the form of longitudinal cracks, which have a direction along or across the intestine, relief in the form of "cobblestones".

Scarring phase: cicatricial stenoses, which cause intestinal obstruction.

• Histological examination of the biopsy: the presence of longitudinally located ulcers-cracks penetrating into the muscular and subserous layers, granulomas of tuberculoid and sarcoid types, lesions of lymphatic microvessels.

# **HC treatment**

#### General recommendations

Preparations 5 - ASA (mesalazine):

- Salofalk (tablets, granules, rectal suspensions, suppositories): children 2-12 years in the period of exacerbation is prescribed at a rate of 30-50 mg / kg / day, adolescents - 3,0-4 5 g / day; in remission - children at the rate of 15-30 mg / kg / day, adolescents - 1.0-1.5 g / day

- Pentasa: children 2-12 years in the period of exacerbation is prescribed at a rate of 30-50 mg / kg / day, adolescents - 1.5-4 g / day; in remission for children at the rate of 15-30 mg / kg / day, adolescents - 2 g / day;

- Glucocorticosteroids are indicated in patients with no effect on the use of 5-ASA; patients with lesions of the gastrointestinal tract (from the esophagus to the small intestine) and / or extraintestinal manifestations;

- topical corticosteroids: budesonide is indicated for patients with mild and moderate forms of the disease in the acute stage, as well as patients with lesions of the distal ileum and descending colon; the optimal dose of budesonide is 9 mg per day

Cytostatics (azothioprine or its active metabolite 6-mercaptopurine) are indicated for hormoneresistant patients or, if necessary, reduce the dose of glucocorticosteroids due to their side effects. The recommended dose of azothioprine is 2.5 mg / kg body weight per day, 6-MP 1-1.5 mg / kg body weight per day.

- Antibacterial therapy: metronidazole at a dose of 20 mg / kg body weight per day in patients with predominant localization in the colon;

- Monoclonal antibodies to TNF- $\alpha$  - infliximab is recommended for intravenous use in children from 6 years in severe and moderate form in a single dose of 5 mg / kg body weight. Side effects - headache, shortness of breath, urticaria, infections, including tuberculosis.

Surgical treatment.

Absolute indications: complete intestinal obstruction. Relative indications - no effect from conservative treatment, strictures, fistulas. Complications - perforation of the intestinal wall, abscesses of the abdominal cavity. Selection operation - limited resection.

Appendix 1. Working classification of chronic gastritis, duodenitis, gastroduodenitis in children

А	Infectious	1 Gastritis	1 Frythematous	A By depth	1 Exacerbation	1 Increased
Primarv	1 Helicobacter	- antral	exudative	of lesion.	2. Incomplete	2 Invariable
I IIIIai y	nylori	- fundal	2 Nodular	- superficial	clinical	3 Decreased
	2 Other	- nangastritis	3 With erosions	- diffuse	remission	5. Decreased
	bacteria viruses	2 Duodenitis	(with flat or	B By nature	3 Complete	
	fungi	2. Duodennus.	(with flat of	of lesion:	olinical	
	Toria (reactive)	-outoitis	4 Homorrhagia	1 With	romission	
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-postouioai	4. Hemonagic	1. Willi	4 Clinical and	
	1. Environmentel	-	5. with altophy	assessment	4. Cliffical and	
	factors		o. Mixed	of degree:	endoscopic	
	1actors	5. Castas das das:		- inflormation	5 Clinical and	
р	2. Chemical	Gastroduodeni		inflammation	5. Clinical and	
B.	5. Radiation	us		- activity	endoscopic,	
Seconda	4. Medicinal			- atrophy	morphological	
ry	5. Alcoholic			- intestinal	remission	
	6. Nicotine			metaplasia		
	/. Stressful			-		
	conditions			Helicobacter		
	Alimentary			pylori		
	Allergy			2. Without		
	Crohn's disease			assessment		
	Granulomatosis			of degree:		
	Celiac disease			- subatrophy		
	In systemic			- specific		
	diseases			- nonspecific		
	Sarcoidosis			Degrees of		
				severity:		
				- norm (0)		
				- weak (1+)		
				- average		
				(2+)		
				- strong (3+)		

# 6. Mater i Ali methodical providing employment

6.1. Tests

- 1. Saliva secretion increases significantly in children aged:
  - 1. the period of the newborn
  - 2. after a year
  - 3. from 3-5 years
  - 4. after 5 years
  - 5. 2-3 months \*
- 2. The physical methods of examination of the digestive tract include:

1. examination of the abdomen, palpation of the gallbladder, fractional examination of gastric contents

- 2. pH-metry, medical history, digital rectal examination
- 3. palpation of the abdomen, advanced coprologic examination, ultrasound
- 4. examination of the abdomen, palpation of the liver, endoscopic examination

5. examination of the mucous membranes of the mouth, examination of the abdomen, percussion of the stomach, auscultation of the intestine \*

3. Burping - the release of gas from the stomach into the mouth is due to:

- 1. eating large amounts of food
- 2. chalasia and achalasia \*
- 3. well-developed cardia
- 4. poorly developed pyloric department
- 5. overexcitation of the child

- 4. In the normal intestinal microbiocinosis of children in the first half of the year are dominant:
  - 1. lactobacilli and bifidobacteria \*
  - 2. Escherichia coli and bacteroids
  - 3. enterococci and Escherichia coli
  - 4. staphylococci
  - 5. Citrobacter and Clostridia
- 5. The duration of the first phase of duodenal sounding is normal in children:
  - 1. 3-5 minutes
  - 2. 10-12 min
  - 3. 15-20 minutes
  - 4. 22-30 min \*
  - 5. 40-60 min

6. In young children, the liver normally comes out from under the edge of the costal arch along the right mid-clavicular line:

- 1. at 0.5-1 cm
- 2. 2-3 cm \*
- 3. at 4-5 cm
- 4. at 6-7 cm
- 5. does not speak
- 7. Vomiting in a newborn baby usually indicates:
  - 1. congenital pylorostenosis \*
  - 2. peptic ulcer disease
  - 3. chronic gastroduodenitis
  - 4. cystic fibrosis
  - 5. celiac disease
- 8. The upper limit of the esophagus in newborns is located at the level of:
  - 1. 1-2 thoracic vertebrae
  - 2. 3-4 cervical vertebrae \*
  - 3. 5-6 cervical vertebrae
  - 4.7 cervical vertebrae
  - 5. 1-2 cervical vertebrae
- 9. At microscopic research of feces define:
  - 1. starch, color, fat
  - 2. fiber, fat, color, texture
  - 3. pus, blood, fecal stones, color, mucus
  - 4. foreign bodies, parasitic elements, mucus
  - 5. muscle fibers, fats, fiber, mucus, erythrocytes \*
- 10. In the syndrome of "acute abdomen" determine the positive syndrome:
  - 1. Grekov-Ortner
  - 2. Schotkin-Blumberg \*
  - 3. Gluing
  - 4. Murphy
  - 5. Kera-Obraztsova

6.2. The information necessary for the formation of knowledge and skills can be found in literary sources.

Basic:

- Pediatrics: A textbook for students of higher medicine. educational institutions of III-IV levels of accreditation. - 4th ed. / V.G. The site. - Kharkiv: Folio, 2009. - P. 108-153
- 2. Aryaev ML Pediatrics: a textbook in 2 volumes / ML Аряев, H.B. Kotova, N.Yu. Gornostaeva [etc.] // Odessa: Phoenix, 2014. 659 p.

- 3. Order of the Ministry of Health of Ukraine dated January 29, 2013 № 59 "Unified clinical protocols of medical care for children with diseases of the digestive system"
- 4. D 362 State form of medicines. Issue ten. Kyiv, 2018 <u>https://moz.gov.ua/uploads/1/5052-dn\_20180510\_868\_dod\_2.pdf</u>
- 5. Differential diagnosis of the most common diseases of childhood. Textbook / ed. V.M. Dudnyk, 1st edition. Vinnytsia: Nilan Ltd., 2017. 560 p.
- Karen J. Markdante, Robert M. Kligman. Fundamentals of Pediatrics according to Nelson: translation of the 8th English. edition: in 2 volumes. Volume 1. Kyiv: VSV "Medicine", 2019. XIV, 378 p.
- Karen J. Markdante, Robert M. Kligman. Fundamentals of Pediatrics according to Nelson: translation of the 8th English. edition: in 2 volumes. Volume 2. Kyiv: VSV "Medicine", 2019. XIV, 426 p.
- 8. Emergencies in pediatric practice: Textbook. way. for students. honey. ZVO, interns. -2nd type. Recommended by the Ministry of Education and Science, Recommended by the Academic Council of NMU. O.O. Bogomolets / Marushko YV, Chef GG etc. Kyiv: VSV "Medicine", 2020. 440 p.
- 9. Pediatrics: a national textbook: in 2 volumes / Ed. prof. Berezhnogo VV Kyiv, 2013. Vol.1. Kyiv, 2013. 1040 p.
- 10. Pediatrics: a national textbook: in 2 volumes / Ed. prof. Berezhnogo VV Kyiv, 2013. Vol.2. Kyiv, 2013. 1024 p.

#### Additional:

1. Belousov Yu.V. Gastroenterology of childhood - Kyiv, 2007

2. Beketova GV, Soldatova OV Crohn's disease in children and adolescents (clinical lecture). Pediatrics. Eastern Europe. 2017. №5. Pp. 472-491.

3. Inflammatory bowel disease in children: difficulties in diagnosis and treatment in the manifestation of extraintestinal manifestations (clinical case). Perinatology and pediatrics. 2019. №1 (77). Pp. 85-91.

4. Comparative clinical and paraclinical characteristics of ulcerative colitis and Crohn's disease in children / Denisova MF, Chernega NV, Music NN and [etc.] // Child health. - 2016. - №2.- P. 10-15.

5. Grigoriev KI, Zaprudnov AM, Kharitonova LA Peptic ulcer disease - the historical dynamics of views on etiopathogenesis and treatment from the standpoint of pediatricians. Experimental and clinical gastroenterology. 2019. No 1 (161). Pp. 155-165.

6. Dzhagaeva ZK Principles of treatment for peptic ulcer disease in children. Medical and pharmaceutical magazine "Pulse". 2019. №21 (9). Pp. 88-92.

7. Turobova BZ, Yuldashev BA, Akhmedzhanova NI, Davlatova IR Peptic ulcer in children: risk factors, features of the clinical course and therapy. Achievements of science and education. 2019. №12 (53). Pp. 74-76.

8. Gastrointestinal bleeding in children. A. Yu. Kharitonova, DI Leonov, VA Kapustin [et al.]. Pediatric surgery. 2017. № 21 (5). Pp. 266-273.

9. Nyankovsky SL, Sadova OR Evaluation of the effectiveness of treatment of gastric and duodenal ulcers in adolescents from the standpoint of quality of life criteria. Child health. 2016.  $N_{2}$  5 (73). Pp. 23-28.

10. Sokolnik SO Route of children with ulcerative gastroduodenal bleeding. ScienceRise. 2015. №7, Vol. 4 (12). Pp. 90-93.

11. Sorokman TV, Popelyuk M.-O.V. Distribution of HLA antigens in children with peptic ulcer disease. Child health. 2015. Thematic issue 62. pp. 13-16.

6.3 Indicative map for independent work with literature.

No	The main tasks	Instructions Answers	
p /			
р			
1	2	3	4
1.	Get acquainted with the literature and the purpose of the lesson	Get acquainted with modern ideas about the etiopathogenesis, classification, clinical course and additional methods for diagnosing gastrointestinal diseases in children	Know the risk factors for the development of the disease, modern classification, clinical picture of disease manifestations, hematological, immunological, radiological and functional signs of diseases and conditions that are part of gastrointestinal diseases
2.	Epidemiology	Know the prevalence among children.	Know: the prevalence of the most common diseases and pathological conditions in the pediatric population.
3.	Etio pathogenesis	Know the causes and mechanism of gastrointestinal lesions in children	Know that these changes may be due to malformations, acquired and traumatic injuries, but more often they are the result of inflammatory diseases
4.	Clinic	Describe the clinical picture	Remember the difference in clinical manifestations of the disease
7.	Diagnosis	Know the schemes of diagnosis and treatment of gastrointestinal diseases treatment of gastrointestinal diseases	

# 7. Materials for self-control over the quality of preparation.

A. Questions for self-control.

1. Leading clinical symptoms and syndromes in organic diseases of the stomach and intestines in children (esophagitis, reflux disease, gastritis, peptic ulcer of the stomach and duodenum, celiac disease, cystic fibrosis, Crohn's disease, ulcerative colitis).

2. Clinical variants of gastric and duodenal ulcers, nonspecific ulcerative colitis. Tactics of children with functional and organic diseases of the stomach and intestines.

3. Diagnosis of complicated gastric and duodenal ulcers in children, tactics of a general practitioner, emergency care.

4. Clinical and instrumental research and differential diagnosis of dyspeptic, abdominal pain syndrome and intestinal absorption syndrome in children.

5. Prevention of functional and organic diseases of the stomach and intestines in children *B. Tests for self-control:* 

1. Saliva secretion increases significantly in children aged:

- 1. the period of the newborn
- 2. after a year
- 3. from 3-5 years
- 4. after 5 years
- 5. 2-3 months \*

2. The physical methods of examination of the digestive tract include:

1. examination of the abdomen, palpation of the gallbladder, fractional examination of gastric contents

- 2. pH-metry, medical history, digital rectal examination
- 3. palpation of the abdomen, advanced coprologic examination, ultrasound
- 4. examination of the abdomen, palpation of the liver, endoscopic examination

5. examination of the mucous membranes of the mouth, examination of the abdomen, percussion of the stomach, auscultation of the intestine \*

3. Burping - the release of gas from the stomach into the mouth is due to:

- 1. eating large amounts of food
- 2. chalasia and achalasia \*
- 3. well-developed cardia
- 4. poorly developed pyloric department
- 5. overexcitation of the child

4. In the normal intestinal microbiocinosis of children in the first half of the year are dominant:

- 1. lactobacilli and bifidobacteria \*
- 2. Escherichia coli and bacteroids
- 3. enterococci and Escherichia coli
- 4. staphylococci
- 5. Citrobacter and Clostridia

5. The duration of the first phase of duodenal sounding is normal in children:

- 1. 3-5 minutes
- 2. 10-12 min
- 3. 15-20 minutes
- 4. 22-30 min \*
- 5. 40-60 min

6. In young children, the liver normally comes out from under the edge of the costal arch along the right mid-clavicular line:

- 1. at 0.5-1 cm
- 2. 2-3 cm \*
- 3. at 4-5 cm
- 4. at 6-7 cm
- 5. does not speak

7. Vomiting in a newborn baby usually indicates:

- 1. congenital pylorostenosis \*
- 2. peptic ulcer disease
- 3. chronic gastroduodenitis
- 4. cystic fibrosis
- 5. celiac disease
- 8. The upper limit of the esophagus in newborns is located at the level of:
  - 1. 1-2 thoracic vertebrae
  - 2. 3-4 cervical vertebrae \*
  - 3. 5-6 cervical vertebrae
  - 4.7 cervical vertebrae
  - 5. 1-2 cervical vertebrae
- 9. At microscopic research of feces define:
  - 1. starch, color, fat
  - 2. fiber, fat, color, texture
  - 3. pus, blood, fecal stones, color, mucus
  - 4. foreign bodies, parasitic elements, mucus
  - 5. muscle fibers, fats, fiber, mucus, erythrocytes \*
- 10. In the syndrome of "acute abdomen" determine the positive syndrome:

- 1. Grekov-Ortner
- 2. Schotkin-Blumberg \*
- 3. Gluing
- 4. Murphy
- 5. Kera-Obraztsova

#### B. Tasks for self-control:

№1. The boy is 9 years old. Complaints of pain in the epigastric region, at night the child sometimes woke up from the pain, and the boy had hypersalivation, periodically - nausea, bloating, accompanied by a feeling of discomfort in the epigastric region. Ill for 2 months, fell ill in the spring. He did not receive treatment. Objectively: body temperature 36.2 ° C, respiratory rate 42 per minute, pulse 132 per minute, blood pressure 80/50 mm Hg. The skin is clean, pale. The tongue is covered with a whitish-yellow layer at the root, dry. Abdomen of the correct shape, soft. At a palpation of a pyloroduodenal zone the painful reaction is observed. The liver and spleen are not enlarged. The chair is unstable, recently dark in color. During the examination - defecation, defecation in the form of melena. General blood test: Hb -90 g / 1; erythrocytes - 2.83 T / 1, KP - 0.95, reticulocytes - 3%; ESR - 12 mm / year. General analysis of urine - without pathological abnormalities. ECG - a variant of the norm. In the coprogram - leukocytes 5-6 in the field of view, a positive Gregersen reaction.

Answer the questions:

1. Which system is affected? What abnormal symptoms, syndromes observed in children?

2. What additional examination methods should be prescribed to the patient?

3. Principles of treatment.

№2. The boy is 9 years old. Complaints of pain in the epigastric region, at night the child sometimes woke up from the pain, and the boy had hypersalivation, periodically - nausea, bloating, accompanied by a feeling of discomfort in the epigastric region. Ill for 2 months, fell ill in the spring. He did not receive treatment. Objectively: body temperature 36.2 ° C, respiratory rate 42 per minute, pulse 132 per minute, blood pressure 80/50 mm Hg. The skin is clean, pale. The tongue is covered with a whitish-yellow layer at the root, dry. Abdomen of the correct shape, soft. At a palpation of a pyloroduodenal zone the painful reaction is observed. The liver and spleen are not enlarged. The chair is unstable, recently dark in color. During the examination - defecation, defecation in the form of melena. General blood test: Hb -90 g / l; erythrocytes - 2.83 T / l, KP - 0.95, reticulocytes - 3%, neutrophils: rod - 7%, segment - 49%; eosinophils-3%; lymphocytes-38%; monocytes - 3%; ESR - 12 mm / year. General analysis of urine - without pathological abnormalities. ECG - a variant of the norm. In the coprogram - leukocytes 5-6 in the field of view, a positive Gregersen reaction.

Answer the questions:

1. What is the previous diagnosis? What methods of additional examination to confirm the underlying disease will be carried out in the future?

2. What complication of the underlying disease has developed and what are the signs in its favor? Your tactics in this situation.

#### 8. Materials for classroom independent training.

- 8.1. The list of educational practical tasks that must be performed during practical classes.
- 1. Collect anamnesis, select data that indicate the disease.
- 2. Identify the most informative signs of the disease during the objective and laboratory-instrumental examination of the patient.
- 3. Establish a clinical diagnosis according to modern classification.

#### 9. Instructional materials for mastering professional skills and abilities.

- 9.1. Methods of work performance, stages of performance
- 1. Evaluate the obtained data of life history and disease, identify risk factors
- 2. Conduct a clinical examination of the patient.
- 3. Make a plan for additional examination.
- 4. Evaluate the results of laboratory and instrumental examination.
- 5. Formulate a clinical diagnosis according to the classification.
- 6. Prescribe treatment that is adequate for the specific situation

# 10. Materials for self-control of mastering knowledge, skills, abilities

Situational tasks:

1. A 6.5-year-old child complains of cramp-like abdominal pain during the act of defecation, tenesmus and urge to defecate at night, stool with blood and pus up to 3-4 times a day, weight loss, weakness. At a palpation of a stomach flatulence, "splash noise", morbidity in the course of a large intestine is defined. At colonoscopy of intestines the mucous membrane in the form of "cobblestone" cobblestones, gaustras are irregular, the lumen of a mucous membrane is asymmetric.

question:

- 1. Justify the clinical diagnosis
- 2. What additional research methods can be conducted?
- 3. What diet should be prescribed to this patient?
- 4. Principles of therapy of this disease.

5. Scheme of dispensary observation.