

Ministry of Health of Ukraine

Bogomolets National Medical University

GUIDELINES

to practical classes for students

Educational discipline: EQ 25 Pediatrics children's infectious diseases.

Field of knowledge: 22 "Health care"

Specialty: 222 "Medicine"

Pediatrics Department № 2

APPROVED

at the meeting of Pediatric Department № 2 of 26.08 2024, protocol №1

Reviewed and approved by Cycle Methodical Commission on

Pediatric Disciplines 29.08.2024 Protocol №1

Topic: Differential diagnosis of diseases of the hepatobiliary system and pancreas in children.

Competences.**The student should know:**

- The subject field of pediatrics (prevention, diagnosis and treatment of diseases in children of various ages) and to understand professional activity (ZK4): causes, mechanisms of development, diagnosis and assistance to children of various ages with pathology of the hepatobiliary system and pancreas in children.
- of examination and management tactics of children of different ages with pathology of the hepatobiliary system and diseases of the pancreas.

be able:

- Collect data on the patient's complaints, medical history, life history according to the standard scheme of the patient's survey, according to the established algorithms, conduct and evaluate the results of physical examination of children of various ages with pathology of the hepatobiliary system and the hypogastric gland. (PRN1)
- Evaluate information regarding the diagnosis, applying a standard procedure based on the results of laboratory and instrumental studies of children of various ages with pathology of the hepatobiliary system and the hypogastric gland. (PRN2)
- Identify the leading clinical symptom or syndrome. Establish the most likely or syndromic diagnosis of the disease (gall bladder dysfunction, chronic cholecystitis, pancreatitis and chronic hepatitis). Assign a laboratory and/or instrumental examination of a sick child. Carry out differential diagnosis of diseases in children of different ages. Establish a preliminary and clinical diagnosis in children of different ages with pathology of the hepatobiliary system and the hypogastric gland. (PRN3)
- Determine the principles and nature of treatment of diseases of the hepatobiliary system and the hypogastric gland in children of different ages. (PRN4)
- To determine the tactics of providing emergency medical care for acute liver failure in children of different ages. Portal hypertension syndrome in children. (PRN5)
- Provide emergency medical care for liver failure in children of various ages. Portal hypertension syndrome in children. (PRN6)

The student must be able to:

- The ability to collect medical information from children of various ages with pathology of the organs of the hepatobiliary system and the pancreas and analyze clinical data (PC1)
- Determine the necessary list of laboratory and instrumental studies and evaluate their results in children of different ages with pathology of the hepatobiliary system and pancreas (PC2)
- Establish a preliminary and clinical diagnosis of pathology of the hepatobiliary system and pancreas in children of various ages (PC3)
- Determine the principles and nature of treatment of diseases of the hepatobiliary system and pancreas in children of different ages (PC4)

The student must demonstrate:

- The student must have the following skills:

- (Note: GC – general competences PC – professional competences of the specialty
PLO - program learning outcomes)

- Ensure that students learn the etiopathogenesis, diagnosis and differential diagnosis of diseases of the hepatobiliary system and the pancreas.
- To control the degree of assimilation of the algorithm for providing medical care for the pathology of the hepatobiliary system and pancreas and emergency care for liver failure.
- Form students' skills and abilities to assess the child's condition; determination of treatment tactics and provision of emergency care; appointment and follow-up.

Equipment: dolls, phantoms, documentation (stories of an inpatient f.003, history of child development, f.112), medicines, instructions, tools for parenteral administration of drugs, textbooks, manuals, handbooks, methodical recommendations, algorithms for performing practical skills. Academic journal, student's workbook.

Lesson plan and organizational structure

The name of the stage	Description of the stage	Levels of assimilation	Time, 5.5 ac.h
1.Preparatory	1.1. Organizational issues. 1.2. Individual oral survey. 1.3. Formation of motivations 1.4. Control of the initial level of knowledge: Testing; hecking home preparation for classes, workbooks; pre-auditory independent work of students	B B	15-20% 40min

2. The main one	0.1. demonstration of the thematic patient by the teacher; 0.2. independent work - curation of patients (collection of anamnesis, objective observation, identification of symptoms, formation of syndromes, putting forward and working out hypotheses regarding the preliminary diagnosis, drawing up an examination and treatment plan); 0.3. clinical examination of the patient with the participation of the teacher. Differential diagnosis, assessment of clinical data, results of laboratory and instrumental studies, treatment. 0.4. Acquisition and practice of practical skills.	C C C, D	60-65% 170min
3. The final stage	3.1. control and correction of the final level of training (situational, problematic tasks) 3.2. general evaluation of the student's educational activity, work analysis. 3.3. Informing students about the topic of the next lesson, detailing homework: repetition of topics from the subject and materials of interdisciplinary integration; tasks from the workbook for SR.	C	20% 40min

Test tasks for independent processing of the topic

Task 1.

The child is 7 years old. Complains of paroxysmal abdominal pain , which occurs after mental stress, drinking cold drinks, ice cream. After clinical and instrumental examination diagnosed: Dysfunction of gallbladder, hypertonic type. What medicines should be prescribed primarily for treatment?

- A. Choleretics and cholekinetic
- B. Antispasmodics
- C. Sedatives and cholekinetic
- D. Antioxidants
- E. Antibiotics

The correct answer: antispasmodics. In hypertonic type of dysfunction appointed antispasmodics action to relieve spasm of the sphincter. These may be drotaverine, mebeverine , prifinium bromide and others in age- appropriate dosage.

References: Nelson Textbook of Pediatrics, 2-Volume Set, 21th Edition, 2020. Chapter 342. Functional Abdominal Pain (Nonorganic Chronic Abdominal Pain). P- 1884 -1885.

Task 2.

Liver histology demonstrates normal architecture, but hepatocytes contain black pigment similar to melanin in

- A. Dubin-Johnson syndrome
- B. Rotor syndrome
- C. Gilbert syndrome
- D. Crigler_Najjar syndrome
- E. Zellweger syndrome

Correct answer: A- Liver histology demonstrates normal architecture, but hepatocytes contain black pigment similar to melanin. Liver function is normal and prognosis is excellent. The most commonly reported symptoms are abdominal pain and fatigue, jaundice, dark urine, and slight enlargement of the liver. Jaundice fluctuates in intensity and is aggravated by intercurrent disease.

References: Nelson Textbook of Pediatrics, 2-Volume Set, 21th Edition, 2020. Part XVIII. The Digestive System. Chapter 357. Metabolic Diseases of the Liver.P.-1937-1939.

Task 3.

The MOST common indication for liver transplantation in children is

- A. Alagille syndrome
- B Congenital hepatic fibrosis
- C. Hepatocellular carcinoma
- D. Biliary atresia
- E. Wilson disease

Correct answer: D. Biliary atresia is the most common indication for liver transplantation in children, followed by metabolic and inborn disorders, autoimmune and familial cholestatic disorders, and acute hepatic necrosis.

References: Nelson Textbook of Pediatrics, 2-Volume Set, 21th Edition, 2020. Part XVIII. The Digestive System. Chapter 368. Liver Transplantation. P.-1975-1977.

Task 4.

The child is 9 years old. Ill for three years. Complaints of abdominal pain, more right , low-grade fever . Liver +2 cm. Positive symptom of Kerr. Stools are unstable. In blood tests, ESR increases. What disease causes the following clinical picture:

- A. Chronic cholecystitis
- B. Chronic enterocolitis
- C. Nonspecific ulcerative colitis
- D. Dyskinesia of the biliary tract
- E. Acute intestinal infection

Correct answer: chronic cholecystitis. Chronic cholecystitis is characterized by intoxication syndrome, increased liver size, positive Kerr's symptom and other vesicular symptoms (Murphy, Ortner, Mussi-Georgievsky etc.), inflammatory changes in CBC (increased ESR, leukocytosis, granulocytosis).

References: Nelson Textbook of Pediatrics, 2-Volume Set, 21th Edition, 2020.Part XVIII. Chapter 366. Diseases of the Gallbladder.P. 1972.

Task 5.

A 12-year-old child complains of dull aching pain in the right hypochondrium, which after exercise and after eating, is sometimes accompanied by nausea. Emotionally labile. Abdominal pain in the right hypochondrium, positive "bladder" symptoms. Liver +1 cm, slightly painful on palpation. Defecation without features. RBC $5.5 \times 10^{12}/l$, Hb 120 g / l, L . $7.1 \times 10^9/l$, ESR- 6 mm/h, AST - 0.52 mmol/, ALT - 0.6 mmol/l, total bilirubin - 22 $\mu\text{mol/l}$ (direct - 14 $\mu\text{mol/l}$), ultrasound-study: in the lumen of the gallbladder sediment. Which pathology do this clinical signs is indicated?

- A. Chronic hepatitis
- B. Chronic pancreatitis
- C. Gallbladder dysfunction
- D. Cirrhosis of the liver
- E. Gallstone disease

Correct answer: gallbladder dysfunction. With gallbladder dysfunction, pain in the right hypochondrium may occur after exercise or after a violation of diet. On objective examination, there may be moderate pain on palpation and some positive bladder symptoms. There may be an increase in the size of the liver. At the same time there is no intoxication syndrome and normal indicators of laboratory research CBC and biochemical research of blood). In USI of GB inflammatory changes is found (wall thickening than 2-3 mm). The presence of sediment in the lumen of the gallbladder indicates a violation of motor function (reduction) and cholestasis syndrome.

References: Nelson Textbook of Pediatrics, 2-Volume Set, 21th Edition, 2020. Part XVIII. The Digestive System. Chapter 366. Diseases of the Gallbladder. P. 1971.

Clinical Tasks

1. A 12-year-old girl complains of dull aching stomach pains that occur 30-45 minutes after eating, as well as weakness, rapid fatigue, and frequent headaches. For the first time, the complaints listed above appeared 6 months ago, but the examination and treatment were not carried out.

A child from I normal pregnancy, urgent birth. Since the age of 10, he has been registered with a neuropathologist for vegetative-vascular dysfunction. The mother is 40 years old and suffers from duodenal ulcer. Father - 42 years old, chronic gastroduodenitis.

Objectively: height 137 cm, weight 31 kg. The skin is pale, with moderate moisture. The abdomen is not enlarged. With superficial and deep palpation in the right hypochondrium, muscle tension and pain are determined. The liver protrudes from under the edge of the costal arch by 1.5 cm, the edge of the liver is soft, elastic, painless. Ortner-Grekov symptom (+). From the side of the lungs and heart - without pathology. Excretions are regular, formed, sometimes very light. General blood test: Hb - 130 g/l, CI. - 0.93, RBS - $4.6 \times 10^{12}/l$, leukocytes - $7.0 \times 10^9/l$: p - 2%, c - 66%, e - 2%, l - 25%, m - 5%, ESR - 7 mm/hour

General urine analysis: color - light yellow, transparent, pH - 5.7, relative density - 1.020, protein - no, sugar - no, epithelium - a small amount, leukocytes - 1-2 in p/z, erythrocytes - 0- 1 in p/z, mucus - not much, salt - no, bacteria - no.

Biochemical blood analysis: total protein - 72 g/l, ALT - 19 U/l, AST - 24 U/l, LF - 138 U/l (normal 70-140), amylase - 100 U/l (normal 0-120), thymol test - 4 Units, general bilirubin - 15 $\mu\text{mol/l}$, direct - 3 $\mu\text{mol/l}$.

Coprogram: color - brown, decorated, pH - 7.3, muscle fibers - in a small amount, intracellular starch - not much, iodide flora - a small amount, vegetable fiber - a moderate amount, mucus - not much, leukocytes - 1-2 in p/z

Ultrasound of abdominal organs: liver - contours are even, parenchyma is homogeneous, echogenicity is increased, vessels are not dilated, portal vein is not changed. Gallbladder 85x37 mm (norm 75x30), the walls are not thickened. Choledoch - up to 3.5 mm (norm 4), the walls are not thickened. After a choleretic breakfast, the gallbladder decreased by 10%. FGDS - without pathology.

What disease should we think about?

Correct answer: Dysfunction of biliary tract.

The diagnosis is made on the basis of clinical (complaints of nausea, abdominal pain, objectively positive "bladder" symptoms), laboratory (no features) and instrumental (no changes in the gallbladder wall) examination methods.

Reference: Karen J. Marcdante, R.M. Kligman. "Fundamentals of pediatrics according to Nelson". Translation of the 8th Eng. edition in 2 volumes. Scientific editors of the translation V. Berezenko, T. Pochynok. Kyiv "Medicine" vol. 2, 2020 p. 145.

2. The child is 6 years old, 3 weeks ago she suffered from parotitis. Complaints of vomiting after each meal, an increase in body temperature up to 37.5, abdominal pain. Objectively: pale skin, marked intoxication. The abdomen is accessible to deep palpation, painful in the left hypochondrium, positive symptoms of Mayo-Robson, Kach, Desjardins. Stool twice a day, foamy, gray, putty-like. Previous diagnosis?

Correct answer: Acute pancreatitis.

It rarely occurs in children, one of the causes is a viral infection (intestinal, parotitis). A typical clinic is described: abdominal pain, increased body temperature, frequent vomiting, positive pancreatic symptoms, characteristic stool. Pancreatic enzymes must be determined.

References: Karen J. Marcdante, R.M. Kligman. "Fundamentals of pediatrics according to Nelson". Translation of the 8th Eng. edition in 2 volumes. Scientific editors of the translation V. Berezenko, T. Pochynok. Kyiv "Medicine" vol. 2, 2020 p. 145.

Questions for student self-preparation for practical training:

1. Define biliary tract dysfunction and chronic cholecystitis.
2. Causes and etiology of diseases of the biliary system in children.
3. Classification of dysfunctions of the biliary system in children.
4. Diagnosis of diseases of the biliary system in children.
5. Differential diagnosis of biliary dyskinesia, acute and chronic cholecystitis in children.
6. Treatment of sick children with biliary dyskinesia, acute and chronic cholecystitis.
7. Acute and chronic pancreatitis in children.
8. Diagnosis and differential diagnosis of pancreatitis in children.
9. Treatment of pancreatitis in children.
10. Emergency care for liver failure in children. Portal hypertension in children.

Recommended Literature

Fundamental:

1. Nelson Textbook of Pediatrics, 2-Volume Set (Nelson Pediatrics) 21st Edition by Robert M. Kliegman MD, Joseph St. Geme MD, 2020, 5932 p
2. Ghai. Essential Pediatrics. 9 edition.- 2019.-768 p.
3. Pediatric physical examination: textbook for students of higher educational institutions/O.V. Katilov [et al.]; пер. L.M.Bulat [et al.].-Vinnytsya: Nova Knyha, 2018. - 504 p.

Additional

1. Pediatric gallstones (cholelithiasis). Author: Melissa Kennedy, MD; Medscape.Updated: Mar 30, 2021
<https://emedicine.medscape.com/article/927522-treatment>
- 2.Diseases of the Liver and Biliary System in Children Edited by Deirdre A. Kelly. Fourth Edition, 2017. - 628p.
3. Pediatrics Fulminant hepatic failure (FHF). Author: Hisham Nazer, MBBCh, FRCP, DTM&H; Chief Editor: Carmen Cuffari. Medscape.Updated: Aug 09, 2017.
<https://emedicine.medscape.com/article/929028-overview>

Guidelines composed by assistant of the Pediatrics Department №2 Grishchenko N.V.