

GUIDELINES
for practical classes
for students

Educational discipline: Pediatrics, including medical practice (professional training) childhood diseases

Field of knowledge: 22 "Health care"

Specialty: 222 "Medicine"

Department of Pediatrics No 2

Approved at the meeting of the Department of Pediatrics No. 2 on August 26, 2024, protocol No. 1

Considered and approved by: Cyclic methodological commission for pediatric disciplines

dated August 29, 2024, protocol No 1

Subject of the lesson:

“Juvenile idiopathic arthritis. Reactive arthropathies in children”

Competencies:

Ability to collect complaints, history of life and disease and analyze clinical data in children with juvenile idiopathic arthritis and reactive arthropathies.

The ability to distinguish and identify leading clinical symptoms and syndromes in juvenile idiopathic arthritis and reactive arthropathies.

The ability to determine the necessary list of instrumental studies for the diagnosis of juvenile idiopathic arthritis and reactive arthropathies

The ability to establish a preliminary and clinical diagnosis of juvenile idiopathic arthritis and reactive arthropathies

Ability to determine the principles and nature of treatment juvenile idiopathic arthritis and reactive arthropathies

Ability to abstract thinking, analysis.

The ability to master and process modern knowledge.

Understanding the peculiarities of working with children of different ages.

The ability to make decisions when studying the discipline "Pediatrics, including medical practice (professional training) childhood diseases"

The purpose of practical class

Formation of students' professional competencies for achieving program learning outcomes by controlling the initial level of knowledge in the process of discussing theoretical issues and testing, performing practical tasks and conducting control of the final level of training in solving situational problems on diagnosis, treatment of juvenile idiopathic arthritis and reactive arthropathies.

Equipment: PC with appropriate information support, reference materials, methodological recommendations, extracts from medical histories, a set of laboratory and instrumental and laboratory test results, manikin.

Lesson plan and organizational structure

Stage name	Description of the stage	Levels of assimilation	Timing
Preparatory	<ul style="list-style-type: none">- Organizational issues- Learning motivation: <p>According to the Ministry of Health of Ukraine, the prevalence of idiopathic arthritis among children aged 0-17 years in 2016 was 0.33 per</p>	Introductory	25 min

	<p>1,000 children under 17 years of age, the incidence rate was 6 cases per 100,000 children (O.P. Volosovets, 2017). 30-50% of patients with juvenile arthritis develop disability after 3-5 years of illness. The development of disability among children with juvenile arthritis and reduced work capacity in adulthood is the most important socio-economic consequence of this disease.</p> <p><i>Control of the initial level of knowledge - test control and oral survey.</i> <i>Examples of test tasks:</i></p> <p>1. The activity of the JIA process is determined by: A. Values of ESR and CRP in blood plasma B. Presence of rheumatoid factor in blood plasma C. The number of leukocytes in the synovial fluid D. Values of antistreptolysin O (ASL-O)</p> <p>2. Acute reactive arthritis can, with inadequate therapy, transform into a chronic one, especially after transferring a bacterial intestinal infection or an infection of the genitourinary tract. Which microorganism most often contributes to the development of chronic arthritis? A. Escherichia coli B. Chlamydia trachomatis C. Proteus mirabilis D Pseudomonas aeruginosa E Staphylococcus saprophyticus</p> <p>3. The presence of rheumatoid factor (RF) in the blood indicates: A. Mild course of JIA B. Severe course of JIA, tendency of the disease to systemic manifestations with progression of the inflammatory process in the joints C. Continuously relapsing course of JIA D. Positive prognosis, low probability of disability and mortality E. Clinical - laboratory remission of JIA</p> <p>4. Post-streptococcal reactive arthritis is typical for:</p>	Reproductive	
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	<p>A. Manifestation of arthritis in an average of 10-14 days after an acute respiratory disease or tonsillitis</p> <p>B. Symptoms of the disease meet the two minor criteria of Jones, 2015.</p> <p>C. Subclinical valvulitis</p> <p>D. Migratory symmetrical arthritis</p> <p>E. Slight narrowing of the joint space on the X-ray</p> <p>5. Enthesitis - associated arthritis (EAA) - is a clinical variant of JIA. What clinical signs prove the presence of EAA?</p> <p>A. Symmetrical arthritis at the beginning of the disease</p> <p>B. Early involvement of more than 5 joints</p> <p>C. Involvement of the joints of the upper limb</p> <p>D. Arthritis and enthesitis and the presence of 2 of the following signs: sensitivity of the sacroileal joints and / or back pain; presence of HLA – B 27 antigen; onset of arthritis in boys older than 6 years; acute anterior uveitis; in the family history of HLA – B 27- associated diseases in relatives of the 1st degree of consanguinity</p> <p>E. Asymmetric enthesitis</p>		
Main	<p>Formation of professional competences:</p> <ul style="list-style-type: none"> - demonstration of a thematic patient or review of extracts from medical histories of patients with juvenile idiopathic arthritis and reactive arthropathies. - evaluation of the results of instrumental and laboratory studies; - on the basis of anamnesis, data of a clinical examination and the results of laboratory studies, the establishment of a preliminary clinical diagnosis - determining of factors and pathogenetic mechanisms of disease development; - appointment of treatment and management of the disease; 	<p>Introductive</p> <p>Reproductive Creative</p> <p>Reproductive Creative</p> <p>Reproductive Creative</p>	125min
Final	Control of the final level of preparation (Clinical cases):	Creative	30 min

Task 1. A 16-year-old child (girl) was admitted to the cardiorheumatology department with complaints of pain in symmetrical carpal, elbow, and knee joints, morning stiffness lasting 1 to 2 hours, general weakness. Body temperature is 37.8 C. Externally, the joints are enlarged, the temperature of the skin over the affected joints is increased, the volume of active and passive movements is limited, movements are painful. A maculo-papular rash is visualized on the skin of the body. X-rays of both knee joints were performed on an outpatient basis. Revealed: epiphyseal osteoporosis, cartilage fibrinosis, narrowing of the joint space, single erosions. In the blood test: hemoglobin 102 g/l, leukocytes - $9.7 \cdot 10^9 / l$, ESR - 35 mm/h, CRP level - ++, fibrinogen - 5.2 mg/l, alpha-2 globulin - 16%, ANA is positive in high titers, anti-citrulline antibodies (anti-CCP) are positive. 1. Formulate a preliminary diagnosis. 2. Determine the diagnostic and treatment algorithm.

Answer standard

Polyarticular JIA (with the greatest probability of RF "+", - to justify), I I stage of activity, I I stage of radiological changes, functional class according to Steinbroker - I I It should be differentiated from arthritis in ARF and systemic connective tissue diseases, reactive arthritis in various infectious and allergic diseases, post-traumatic arthritis, osteomyelitis, osteochondropathies, arthritis in hemorrhagic vasculitis and others a) diagnostic algorithm: - CBC in dynamics, GUA; - ultrasound, CT scan of two symmetrical joints, X-ray of two symmetrical joints; - serological tests: RF and in the dynamics of anti-CCP, ANA; - acute phase indicators taking into account the level of leukocytes, ESR, CRP in dynamics; - HLA-B-27; - Determine the level of 25OHD in venous blood serum; - ophthalmologist consultation (diagnosis of uveitis); - screening for tuberculosis and other infections; - other laboratory and instrumental studies for the purpose of carrying out differential diagnosis; b) Treatment tactics: - mode with restriction of

	<p>movement mode; - Diet with restriction of fats and carbohydrates. A protein diet with a high calcium content is preferred. Vitamin D3 is prescribed depending on the level of 25OHD in the serum of venous blood in therapeutic or prophylactic doses.</p> <ul style="list-style-type: none"> - Drug therapy: - nimesulide 2-3 mg/kg in 2 doses; - methotrexate 10 mg/m²/week under the control of clinical and laboratory indicators. if there is no effect after 6-8 weeks of complex therapy, prescribe etanercept at 0.4 mg/kg twice a week / or IL-1 inhibitors / or IL-6 receptor antagonists <p>Task 2. A 13-year-old boy was examined with complaints of knee-ankle joint pain for the past 4 months, prolonged low-grade fever, and increased fatigue. The onset of the disease is associated with the transferred acute respiratory viral infection, which occurred with a high fever. Against the background of persistent low-grade fever, the boy rested near the sea in the summer, after which the indicated complaints intensified. 1. Formulate a preliminary diagnosis. 2. Determine the diagnostic and treatment algorithm.</p> <p>Answer standard</p> <p>JIA is oligoarticular, persistent a) diagnostic algorithm: - GUA, CBC; - ultrasound, CT scan of two symmetrical joints, x-ray of two symmetrical joints; - serological tests: RF, anti-CCP, ANA; - acute phase indicators taking into account the level of leukocytes, ESR, CRP; - HLA-B-27; 25OHD in venous blood serum. - ophthalmologist consultation (diagnosis of uveitis); - screening for tuberculosis and other infections; - other laboratory and instrumental studies for the purpose of differential diagnosis; b) Treatment tactics: - determine the need to hospitalize the child; - mode with restriction of movement mode; - Diet with restriction of fats and carbohydrates. protein diet with high calcium content is preferred. Vitamin D is prescribed (the dose is selected individually depending on the level of 25OHD in the serum of venous blood). - Drug therapy (individualized): - nimesulide 2-3 mg/kg in 2 doses for 4-6 weeks under the control of clinical</p>		
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and laboratory parameters. In the absence of an effect from NSAIDs, when the functional capacity of the joint is limited, corticosteroids (Triamcinolonehexacetonide) with prolonged action should be administered intra-articularly. If there is no therapeutic effect after using the above therapy, the child should be prescribed methotrexate 10 mg/m²/week under the control of the clinical and laboratory picture of the disease. If there is no effect within 8 weeks, the child is prescribed TNF inhibitors

Task 3 A 6-year-old patient repeatedly comes to the hospital with complaints of pain and movement disorders in the knee, ankle, wrist, and hip joints, morning stiffness. From the anamnesis, it is known that the child has been sick since the age of 2. General blood analysis: Hb – 90 g/l, er – 3.1×10^{12} , L – 15.0×10^9 /l, p – 4%, c – 42%, e – 6%, l – 47%, m – 1 %, ESR - 25 mm / h. General analysis of urine: specific gravity - 1014, protein - 0.033 g / l, leukocytes - 1-3 in p/z, erythrocytes - absent. Biochemical blood analysis: total protein - 83 g/l, albumins - 48%, globulins: $\alpha 1$ - 5%, $\alpha 2$ - 12%, β - 5%, γ - 30%, seromucoid - 0.8 (normal - up to 0.2), ALT-32 U/l, ACT – 25 U/l, urea – 4.5 mmol/l. CRP ++++. X-ray of hip and knee joints: epiphyseal osteoporosis, narrowing of the joint space is determined. 1. Formulate a diagnosis by classification. 2. Define diagnostic and treatment tactics.

Answer standard:

JIA polyarticular, I I stage of activity, I I stage of radiological changes, functional class according to Steinbroker - I I a) diagnostic algorithm: - CBC, GUA; - ultrasound, CT scan of two symmetrical joints, X-ray of two symmetrical joints; - serological tests: RF, anti-CCP, ANA; - acute phase indicators taking into account the level of leukocytes, ESR, CRP; - HLA-B-27; - To determine the level of 25OHD in the serum of venous blood - ophthalmologist consultation (diagnosis of uveitis); - screening for tuberculosis and other infections; - other laboratory and

	instrumental studies for the purpose of differential diagnosis; b) Treatment tactics: - determine the need to hospitalize the child; - mode with restriction of movement mode; - Diet with restriction of fats and carbohydrates. protein diet with high calcium content is preferred. Vitamin D is prescribed (the dose is selected individually depending on the level of 25OHD in the serum of venous blood). - Drug therapy: - nimesulide 2-3 mg/kg in 2 doses; - methotrexate 10 mg/m ² /week under the control of clinical and laboratory indicators. if there is no effect after 6-8 weeks of complex therapy, prescribe etanercept at 0.4 mg/kg twice a week / or IL-1 inhibitors / or IL-6 receptor antagonists		
	<i>General assessment of educational activity</i>		

Recommended Books

1. Nelson Textbook of Pediatrics, 2-Volume set, 21-th edition. By Robert M. Kliegman, Bonita M.D. Stanton, Joseph St. Geme and Nina F Schor. – Philadelphia, PA : Elsevier Inc., 2020 - 4264 p. (1258-1268)
ISBN-10 : 032352950X ISBN-13 : 978-0323529501
2. Zaripova LN, Midgley A, Christmas SE, Beresford MW, Baildam EM, Oldershaw RA. Juvenile idiopathic arthritis: from aetiopathogenesis to therapeutic approaches. *Pediatr Rheumatol Online J.* 2021 Aug 23;19(1):135. doi: 10.1186/s12969-021-00629-8. PMID: 34425842; PMCID: PMC8383464.
3. David D Sherry, Lawrence K Jung / Juvenile Idiopathic Arthritis[Электронный ресурс] - Medscape (2024). Режим доступа: <https://emedicine.medscape.com/article/1007276-overview>

Questions for student self-preparation for practical classes

1. Definition of JIA, reactive arthropathy;
2. Etiology and pathogenesis of JIA, reactive arthropathies;
3. Classifications of JIA;
4. The main clinical variants of JIA in children;
5. Clinic of reactive arthropathy in children;
6. Basic diagnostic criteria for JIA, reactive arthropathy in children;
7. Features of joint syndrome in JIA, reactive arthritis;
8. Diagnostic methods for JIA, reactive arthropathies in children;
9. X-ray picture in JIA;

10. Laboratory signs of activity in JIA. Rheumatoid factor;
11. Differential diagnosis of JIA with other systemic diseases;
12. Basic principles of treatment of children with JIA reactive arthropathies;
13. Basic therapy for JIA, reactive arthropathies in children;
14. Rehabilitation of children with JIA;
15. Prognosis in children with JIA.

Methodical guidelines have been created as.prof. Iemets O.V.