

**GUIDELINES
for practical classes
for students**

Educational discipline: «Pediatric gastroenterology, pulmonology and nephrology»

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:

" Neurogenic urinary bladder in children. Dysmetabolic nephropathy in children "

Competencies:

Ability to collect medical information about the child and analyze data (complaints, life history, medical history)

Ability to distinguish and identify leading clinical symptoms and syndromes in neurogenic bladder and dysmetabolic nephropathy in children.

Ability to determine the necessary list of laboratory and instrumental studies for neurogenic bladder and dysmetabolic nephropathy in children and to evaluate their results.

The ability to determine the necessary list of laboratory and instrumental studies for the diagnosis of neurogenic bladder and dysmetabolic nephropathy in children and to evaluate their results.

The ability to establish a preliminary and clinical diagnosis of neurogenic bladder and dysmetabolic nephropathy in children.

Ability to determine the principles and nature of treatment for neurogenic bladder and dysmetabolic nephropathy in children and prevention of these diseases.

Ability to diagnose emergency conditions.

Ability to determine tactics and provide emergency medical care.

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 "Fundamentals of pediatric gastroenterology, pulmonology and nephrology"

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 and prevention of neurogenic bladder and dysmetabolic nephropathy in children

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

Lesson plan and organizational structure

Stage name	Description of the stage	Levels of assimilation	Timing
Preparatory	- Organizational issues - Learning motivation:	Introductory	15 min

	Neurogenic bladder (NB) in children is a painful condition, the basis of which are functional disorders of the accumulative and evacuatory capacity of the urinary bladder (UB). Among these disorders, two clinical forms prevail: hyperreflexia and hyporeflexia of the UB wall. The act of urination is a complex process of interaction of the anatomical structures of the lower urinary tract. Their coordination is carried out with the help of the central and peripheral nervous system. Dysmetabolic nephropathy (DMN) is an interstitial process with damage to the kidney tubules, which occurs as a result of the removal of excess metabolites that are formed during metabolic disorders. Common for dysmetabolic nephropathies is damage to the interstitial tissue of the kidneys with the deposition of salts in them, followed by the development of infiltrates, fibrosis, violation of tubule trophism, the appearance of foci of atrophy, dilatation and regeneration in them. Congenital and hereditary factors play a significant role in the formation of nephropathy in children. The risk factors of DMN are: intrauterine hypoxia of the fetus, which leads to the cessation of synthesis and destruction of cytomembranes of renal tissue; nephropathy of pregnant women, antenatal pathology of the fetus; difficult, complicated births. Metabolic nephropathies, including crystalluria, dysmetabolic nephropathy, variants of tubulointerstitial nephritis, and urolithiasis, take the leading place among diseases associated with hereditary predisposition. <i>Control of the initial level of knowledge - test control and oral survey.</i> Examples of test tasks: 1. Increased urinary excretion of what substances can cause nephropathy? A. Oxalates B. Urates C. Glucose D. Phosphates	Reproductive	
--	--	--------------	--

	E. All of the above 2. Diet for hyperoxaluria: A. cabbage and potato B. fruit and berry C. dairy D. with salt restriction E. with fluid restriction 3. Drinking regimen for metabolic nephropathies: A. Limiting B. do not change C. increase D. It is not recommended to drink liquids before going to bed E. Distribute evenly throughout the day 4. Violation of purine metabolism in Lesch-Nyhan syndrome is caused by a deficiency of: A. Hypoxanthine-guanine-phosphoribosyl-transferase B. Adenine phosphoribosyl transferase C. Purine phosphoribosyl pyrophosphate synthetase D. Transamidinase E. Phenylalanine-4-hydroxylase 5. The number of urinations in a child for 3 days A. 1-2 B. 4-5 C. 8-10 D. 15-16 E. 15-25		
Main	Formation of professional competences: - demonstration of a thematic patient or review of extracts from medical histories of patients with neurogenic bladder and dysmetabolic nephropathy - evaluation of the results of 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;	Introductive Reproductive Creative Reproductive Creative Reproductive	100 min

	- appointment of treatment and management of the disease;	Creative	
Final	Control of the final level of preparation Clinical cases Task 1. The child is 5 months old, weighs 5,000 The parents of an 11-year-old boy sought help from a family doctor regarding the child's pain in the lower back, which has lasted for about 2 months and does not go away after taking ibuprofen. The survey also revealed unstable nocturnal enuresis during this time. During the examination, the child's condition was not disturbed. Body temperature 36.7 C, heart rate 78/min, heart rate 16/min. There are no swellings. Palpation in the lumbar region is symmetrically painful. Laseg's sign is negative on both sides. The anal reflex is not disturbed, although there is a moderate disturbance of sensitivity of the perianal area. What pathology is most likely? Answer standard Spondylolisthesis, which is evidenced by a typical combination of back pain with sensitivity disorders and urination disorders. This disease is caused by pinching of the nerve roots due to displacement of the vertebra. Pronounced pain during palpation and dysuria are characteristic signs of pronounced displacement and a severe course of the disease Task 2. A mother with a 4-year-old boy consulted a doctor about the child's enuresis. From the history of life, it is known that the child goes to the potty independently from the age of 2 years, but sometimes nocturnal incontinence is noted. The mother is very worried about the child's condition, therefore she asks for a comprehensive examination of the child and to prescribe the necessary treatment. What recommendations should the doctor give? Answer standard	Creative	20 min

	It is always useful to remember that this pathological condition is physiological and transient under the age of 5 and does not require any examination or treatment. A. Prescribe ultrasound of the bladder and kidneys. Task 3. A boy, 6 years old, from a family where the mother has hematuria of unspecified origin, and the paternal grandfather has urolithiasis. In the first year of life, skin allergic manifestations were observed, in the second, the manifestations of obstructive bronchitis were determined, in the 3rd year, persistent hematuria appeared. Oxalate-calcium crystalluria was determined in the urine analysis, the crystals were large, aggregated, and the urinary excretion of glycine phospholipases was increased. The amount of oxalates in the urine is from 140 to 190 mmol/24 hours. What is the most likely diagnosis? What research will allow to verify the diagnosis? Answer standard Dysmetabolic nephropathy with oxalate-calcium crystalluria. 1. Nephrobiopsy General assessment of educational activity		
--	---	--	--

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. (pp. 2813-2820)
ISBN-10 : 032352950X ISBN-13 : 978-0323529501
2. Sayer J.A. (2017) Progress in understanding the genetics of calcium-containing nephrolithiasis. J. Am. Soc. Nephrol., 28(3): 748–759..

Questions for student self-preparation for practical classes

1. Define neurogenic bladder.
2. Determination of the main dysfunctions of the lower urinary tract in children and adolescents.

3. Physiological functions of the bladder. Basics of regulation of bladder function
4. Clinical manifestations of bladder-sphincter dysfunction
5. Clinical classification of bladder dysfunction
6. Clinical features of hyper and hyporeflex bladder.
7. Secondary inflammatory changes in children with neurogenic bladder-sphincter dysfunction.
8. Name the methods of diagnosis of neurogenic bladder.
10. Principles of treatment of bladder-sphincter dysfunction.
11. Drug therapy of bladder-sphincter dysfunction.
12. Diagnostic possibilities of kidney and urinary tract examination methods in children
13. Classification of dysmetabolic nephropathies
14. Methodology of "salt transport" analysis, analysis indicators, value in diagnosis of DN
15. Criteria for laboratory and instrumental diagnosis of oxalate nephropathy
16. Criteria for laboratory and instrumental diagnosis of oxalate nephropathy
17. Criteria for laboratory and instrumental diagnosis of urate nephropathy.
18. Treatment of urate nephropathy
19. Criteria for laboratory and instrumental diagnosis of phosphate nephropathy.
20. Treatment of phosphate nephropathy

Methodical guidelines have been created as.prof. Horobets N.I., as prof. Iemets O.V.