ANATOMO-PHYSIOLOGICAL PECULIARITIES, METHODS OF EVALUATION, PARACLINICAL METHODS OF INVESTIGATION AND SEMEIOLOGY OF THE NERVOUS SYSTEM DISEASES IN CHILDREN

Academic discipline «Pediatric Propedeutics»

Teacher's guide for the 3rd year

English medium students

АНАТОМО-ФІЗІОЛОГІЧНІ ОСОБЛИВОСТІ, МЕТОДИ ОБСТЕЖЕННЯ ТА СЕМІОТИКА ЗАХВОРЮВАНЬ НЕРВОВОЇ СИСТЕМИ У ДІТЕЙ

З дисципліни «Пропедевтика педіатрії»

Методичні розробки для викладачів до аудиторної роботи студентів 3-го курсу медичного факультету

МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
Харківський національний медичний університет

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Compiled by: Klymenko V.A.
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Karpushenko J.V.

Анатомо-фізіологічні особливості, методи обстеження та семіотика захворювань нервової системи у дітей метод. розр. для викладачів до аудит. роботи студентів 3 курсу медичних факультетів / упор. В.А.Клименко, Т.В. Сіренко, Ю.В.Карпушенко. – Харків, ХНМУ, 2016. – 16 с.

Упорядники: Клименко В.А.
Сіренко Т.В.
Карпушенко Ю.В.

Amount of educational hours:

Independent work – 4;

Practical training – 4.

Contents

When a child is born, its nervous system is least developed and differentiated in comparison to the other organs and systems. At the same time, this system has the most important functions. The nervous system helps in the adaptation of an individual to the various environmental conditions; it regulates the vital functions of the internal organs and provides their coordinated activity.

Specific goals

- To know about emryogenesis of the nervous system in children.
- To know main morphofunctional peculiarities of the nervous system in children.
- To get skills of clinical and paraclinical methods of examination of the nervous system in children.

To know:

1. Emryogenesis of the nervous system in children
2. The main morphofunctional peculiarities of the nervous system in children.
3. Main symptoms and syndromes of the nervous system affection in children.
4. How to interpret results of laboratory and instrumental methods of examination of the nervous system of children.

Aims of the practice:

1. To demonstrate the technique of interrogation and inspection of the nervous system.
2. To interpret the results of clinical and paraclinical investigations.
3. To appoint laboratory and instrumental methods of investigations of the nervous system of children.
4. To conduct syndromic diagnosis of the nervous system diseases of children.
5. To get skills of care of children with diseases of the nervous system.

Providing initial level of knowledge, skills

To apply the materials of the guidelines for independent extra-curricular activities of students to the subject 8.

Materials needed for methodological support:

Medical case history of the child with nervous system disease, the results of laboratory tests: blood (clinical, biochemical), instrumental methods: lumbar punction, neurosonography, MRI, X - ray of the brain.

The technological card of the lesson

№ з/п	Stage of classes	Training time (min.)	Study Materials		Place of the lesson
			learning Tools	Equipment	
1.	Determination of the initial level of knowledge	20	Testing	Tests	Classroom
2.	Determination	25	Quiz, discussion	Graphology structure of	Classroom

	of the main positions of the topic			topics, sample case histories of child with nervous system disease, neurosonogramm, X-ray, laboratory test samples	
3.	Break	10			
4.	Solution for the training tasks of the topic	45	Independent work of a student under the guidance of a teacher - training of practical skills	Premises and equipment of the Hospital	Departments of the hospital
5.	Break	30			
6.	Solution for the training tasks of the topic	45	Independent work of a student under the guidance of a teacher - training of practical skills. Completion of the diary of practical training.	Premises and equipment of the Hospital	Departments of the hospital
7.	Break	10			
8.	Determination of the output level of skills readiness.	20	Checking of the practical skills of a student while work in the departments.	Premises and equipment of the Hospital	Departments of the hospital
9.	Determination of the output level of knowledge and skills readiness.	15	Solving and discussion of situational assignments Checking entries in the diary of practical training	Situational tasks	Classroom
10.	Summation of the lesson. Assignment to the next lesson.	10	Quiz, discussion		Classroom

Approximate basis of action in solving educational problems topics:

1. Studying the medical case history of the child with nervous system disease, determination of psycho-motor characteristics depending on age.
2. Independent classroom work in somatic branch - work at the bedside: interrogation, examination, palpation, review of the results of further investigation, analysis and interpretation.

Assignments for testing the final level of knowledge

Tasks

Task № 1.

RBCs are determind in the CSF of a 2-day-old newborn infant.

1. What is your interpretation of this fact?

2. What do you know about the CSF glucose content?
3. Which from the below factors can be excluded from those of risk of the central nervous system affection in newborns?

A) The mother's using alcohol, tobacco, drugs during her pregnancy;
B) Diabetes mellitus during pregnancy;
C) Toxicosis during first part of pregnancy;
D) Intrauterine infections.

Key answer:

1. The presence of RBCs indicates traumatic tap or subarachnoid haemorrhage.
2. In healthy children, their CSF glucose content is about 60% of blood glucose. Hypoglucorrhachia is found in association with meningeal diseases, particulary bacterial and tuberculous meningitis.
3. Toxicosis during second part of pregnancy should be excluded.

Task № 2.

The child of 3-years – old develops a fever of 39.5C, headache, vomiting. His muscle tone strain and cervical muscle rigidity are marked. Kernig's and Brudzinski's signs are positive.

1. What methods of paraclinical examination must be urgently done?

Key answer:

1. Lumbar puncture with CSF investigations and blood count must be done urgently.

Task № 3.

A 10-month-old infant is admitted to the hospital with its mother complaints of the infant restlessness, monotonous cry, as well as seizures in the upper and low extremities.

1. Which signs must be checked in the infant?
2. What syndrome combines these symptoms?

Key answer:

1. The checking signs of the bulgigng fontanelle, stiffness of the neck, Kernig's and Brudzinski's symptoms with CSF investigation must be done.
2. Infant has meningeal syndrome.

Task № 4.

A 2-month-old infant has increase in brain spaces (the size of the anterior and posterior fontanelles increases and bulging), scalp veins are prominent, eyes are sunken and half opend.

1. What disease can be suspected?
2. Which signs must be checked in the infant?

Key answer:

1. Infants view is typical for hydrocephaly.
2. The pathognomonic signs of hydrocephaly are ''sun set'' sign, Graefe's symptom.

Task № 5.

A 2-days-old newborn has wide and flat nose bridge, macroglossia, mongoloid shall of eyes, short feet and hands, a distinct cross-line on the palm.

1. What disease can be suspected?

2. What is the reason of the disease?
3. Which method of diagnosis is the most informative for final diagnose?

Key answer:

1. Infant's view is typical for Down's syndrome.
2. The reason is the trisomy of the 21st chromosome.
3. Genetic examination must be done – caryotype must be examined.

Task № 6.

A 10-year-old boy admitted to the hospital with complaints on the fever (39.5C), nausea, vomiting, hypersensitivity of the skin. He was laying on the side, the head was thrown back, legs were pressed to the abdomen.

1. What paraclinical methods of examination must be used urgently for diagnoses?
2. Which type of exudates is possible to get depending on the amount of protein and the type of cells?

Key answer:

1. Lumbar puncture with the analysis of the cerebrospinal fluid are the most informative methods for meningitis.
2. There are following types of exudates: serous (contains basically plasma and a small amount of blood cells), purulent (consist of broken leukocytes, cells of the affected tissue and microorganisms), hemorrhagic (RBC from the greater part of the exudate), fibrinous (it's characterized by a significant quantity of fibrinogen), mucous (contains a large amounts of mucin and pseudomucin).

Task № 7.

A 5-days-old newborn infant has a head with the facial part of the skull bigger than its cranial one. The fontanel and sutures between the bones are closed. The facial part prevails over the cerebral one. Forehead is narrow and low.

1. What disease is in the infant?
2. What could cause the disease?

Key answer:

1. The disease is microcephaly.
2. The possible reason is in any unfavorable antenatal factor – external or internal during intrauterine period of life.

Task № 8.

A 3-years-old infant admitted to the hospital with a sudden attack of involuntary and short-term contraction of muscles with short time loss of consciousness on the background of fever (40C). The muscles tension was with twitching.

1. How can you estimate the situation?
2. At which case it can arise?

Key answer:

1. An infant has clonic convulsion, more possible caused by high fever (febrile spasm).
2. It can arise at diseases of the brain and pathologies of other system (intoxication, dehydration).

The **maximum number of points** which may be consequently obtained by students is 200 points; this includes 120 points for current educational activity and 80 points for the final lesson.

Current educational activity of students is controlled during practical classes according to specific goals in the course of each practical class as well as during self-training in the hospital department. It is recommended to apply the following means of diagnostics of the students' level of readiness: control of practical skills, solving cases and test control of theoretical knowledge.

The current assessment of students on respective topics is conducted in the traditional 4-point grade scale ("excellent", "good", "satisfactory" and "unsatisfactory") with further conversion into a multiscore scale.

The grade "Excellent" is given when the student knows the program in toto, illustrating the answers with various examples; gives clear and comprehensive answers without any hints; delivers the material without any inaccuracies or errors; performs practical tasks of a different degree of complexity.

The grade "Good" is given when the student knows the whole program and understands it well, gives correct, consistent and structured but not completely comprehensive answers to questions, although he is able to answer additional questions without mistakes; solves all cases and performs practical tasks experiencing difficulties only in the most complex situations.

The grade "Satisfactory" is given to the student based on his satisfactory level of knowledge and understanding of the entire subject. The student is able to solve modified tasks with the help of hints; solves cases and applies practical skills experiencing difficulties in simple cases; is unable to deliver a consistent answer, but answers direct questions correctly.

The mark "Unsatisfactory" is given when the student's knowledge and skills do not meet the requirements of the grade "satisfactory".

Given the number of practical classes the grades are converted into the multiscore scale as follows:

The mark "Excellent" – 72-80 scores
The mark "Good" – 60-71 scores
The mark "Satisfactory" – 50-59 scores
The mark "Unsatisfactory" – 0 scores

Навчальне видання

Анатомо-фізіологічні особливості, методи обстеження та семіотика захворювань ендокринної системи у дітей

Упорядники: Клименко Вікторія Анатоліївна
Сіренко Тетяна Вадимівна
Карпушенко Юлія Валентинівна

Відповідальний за випуск: Клименко В.А.

Комп'ютерна верстка

Ум. друк. арк.___. Тираж____ прим. Зам. №____.