

**ANATOMO-PHYSIOLOGICAL PECULIARITIES, METHODS
OF EVALUATION OF THE CARDIOVASCULAR SYSTEM IN
CHILDREN**

**Academic discipline «Pediatric Propedeutics»
*Teacher's guide for the 3rd year
English medium students***

**АНАТОМО-ФІЗІОЛОГІЧНІ ОСОБЛИВОСТІ, МЕТОДИ
ОБСТЕЖЕННЯ СЕРЦЕВО-СУДИННОЇ 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.
Sirenko T.V.
Plakhotna O.M.

Анатомо-фізіологічні особливості, методи обстеження серцево-судинної системи у дітей: метод. розр. для викладачів до аудит. роботи студентів 3 курсу медичних факультетів / упор. В.А.Клименко, Т.В. Сіренко, О.М. Плахотна. – Харків, ХНМУ, 2016. – 16 с.

Упорядники: Клименко В.А.
Сіренко Т.В.
Плахотна О.М.

Amount of educational hours: self-dependent work – 4;
practical training – 4.

Contents

Embryogenesis of the cardiovascular system. Critical period of development. Organs of the cardiovascular system: heart, arteries, veins, system of central hemodynamic, microcirculation. Function of the cardiovascular system is transport function.

The main regularity of morpho-functional development of cardiovascular system on tissue, organ and organism levels. Morpho-functional development and structure of the cardiovascular system in prenatal period, placental type of hemodynamic, its characteristics. Functional changes of the cardiovascular system in postnatal period. Growth and development of the cardiovascular system in postnatal period. Hemodynamic in different age periods, pulse rate, arterial pressure in age aspect.

The main clinical methods of investigation of the cardiovascular system: interrogation, observation, palpation, percussion, auscultation, palpation of pulse, determining of blood pressure. The main paraclinical methods of investigation of the cardiovascular system: electrocardiography, phonocardiography, echocardiography, roentgenography, determining of arterial and venous pressure, function tests with physical exercises, angiocardiology, measuring of cardiac output, measuring of circulating blood volume, measuring of blood flow speed, capillaroscopy.

Specific goals:

- to collect anamnesis of a patient with diseases of the cardiovascular system.
- to conduct an objective examination of the cardiovascular taking into account the child's age characteristics.
- to interpret the results of investigation.

To know:

- the embryogenesis of cardiovascular system
- the congenital anomalies of the heart and blood vessels.
- the peculiarities of blood circulation in fetus.
- anatomo-physiological peculiarities of the heart and blood vessels in childhood.
- method of physical examination, palpation of the cardiovascular system in children.
- percussion of absolute and relative boundaries of the heart in children.
- auscultation of the heart in children.

Be able to:

- to collect anamnesis of a patient with diseases of the cardiovascular system.
- to conduct an objective examination of the cardiovascular taking into account the child's age characteristics.
- to interpret the results of investigation.

Providing an initial level of knowledge-abilities

To apply the materials of the guidelines for independent extra-curricular activities of students to the topic 12.

Materials needed for methodological support:

1. Case history of children with cardiovascular system pathology, tables.

The technological card of the lesson

№	Stage of the lesson	Study time (min)	Tutorials		Place of the lesson
			Learning tools	Equipment	
1.	Determination of the initial level of knowledge	20	Testing	Tests	Classroom
2.	Determination of the main positions of the topic	25	Quiz, discussion	Graphical structure of the topic, examples of the functional responsibilities of nurses.	Classroom
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.	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	Premises and equipment of the hospital	Departments of the hospital

			in the departments.		
9.	Determination of the output level of knowledge and skills readiness.	15	Solving and discussion of situational assignments.	Situational tasks	Classroom
10.	Summation of the lesson. Assignment to the next lesson.	10	Quiz, discussion		Classroom

The estimated basis of the action in performance of the learning objectives of the topic (sections 4, 6):

1. The anamnesis taking, clinical examination of the cardiovascular system (inspection , palpation of the chest, heart boards percussion, pulls rate, blood pressure) in children with age features.
2. Self-training in newborn, infant, pulmonology , allergology departments, conducting history taking, physical examination of the cardiovascular system (inspection , palpation of the chest, heart percussion) in children with different age features. Interpretation of the data.

Assignments for testing the final level of knowledge **Situational tasks**

Task №1

At examination of child of 1 year old the heart beat rate 150 per minute was found. The apex beat determined in V intercostal space, the left boarder comparative heart dullness is situated at 1,5 cm to the left from left media-clavicular line. Heart tones are clean, rhythm is correct.

What are the pathological symptoms and what are the reasons of this symptoms.

Answer: The reason of increased heart beat rate can be heart disease or restlessness of the child. It is necessary to repeat assessment of heart beat rate in calm condition or during sleep. If tachicardia disappears it causes by excitement of the child. If tachicardia does not disappear the child must be examined by paraclinical methods of investigation (ECG, FCG, ultrasound investigation for diagnostic).

Task № 2

The borders of comparative heart dullness of child 2 month old are: upper border – II rib, left – at 2 cm to the left from left medioclavicular line, right – right parasternal line.

Assess the border of comparative heart dullness. Explain the reason difference of borders of heart dullness in this child with the same of 13 years old child.

Answer: The borders of comparative heart dullness of the child 2 month old are normal. Difference of borders of heart dullness causes comparative big mass of heart and high level of diaphragm in young child, position of heart is more horizontal in young child. Difference is more marked if the child more young.

Task № 3

It was marked during inspection and examination of healthy child of 8 years of old that borders of heart dullness are displaced to the right. Heart tones are auscultated not in typical points of projection, but in right side of chest.

What is the reason of this changes? What kind of instrumental methods of investigation can be used for diagnostic?

Answers: Dextracardia. ECG with reverse fixation of electrodes, X-ray picture of chest, ultrasound investigation of heart.

Task № 4

It was marked during auscultation of heart of the 14 years child that in second intercostal space at left splitting of heart tones appears in horizontal position. Cardiac complains are absent. Reaction on physical exercises is normal. What is the reason of such heart rhythm? What is action of physician for diagnostic?

Answers: The adolescent has physiological splitting of II hear sound, it increases at deep inhale. The physician must auscultate heart in vertical position, in deep inhale during physical exercises. Such instrumental methods of investigation as ECG, FCG, Ultrasound investigation of heart with dopler for determining of pressure gradients on vessels are advisable.

Task № 5

The mother of 1 month old infant complains of small increases of weight – 450 g during one month, perioral cyanosis during breast feeding. The systolic-diastolic murmur “machine” type over whole heart region is marked during auscultation, it spreads on heart vessels and on the child’s back. Which pathology of the heart can be suspected? Which paraclinical methods of investigation must be done?

Answers: Congenital heart defect – pattern Ductus arteriosus. ECG, FCG, Ultrasound investigation of heart , X-ray picture of the chest for determination of hyper volemia of lungs.

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

Для нотатків

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Навчальне видання

**Анатомо-фізіологічні особливості, методи обстеження серцево-
судинної системи у дітей**

Упорядники: Клименко Вікторія Анатоліївна
Сіренко Тетяна Вадимівна
Плахотна Ольга Миколаївна

Відповідальний за випуск: Клименко В.А.

Комп'ютерна верстка

Ум. друк. арк. ____ . Тираж ____ прим. Зам. № ____ .
