

Ministry of Health of the Republic of Belarus
Education Establishment
"Gomel State Medical University"
Normal Physiology Department

It was discussed at the department meeting 30.08.16
The protocol № 8

METHODICAL INSTRUCTION

for carrying out classes by teachers with the 2nd course students
of Faculty for training specialists for foreign countries (teaching in English)
on normal physiology

Topic: Arterial pulse. Arterial pressure
Reserve opportunities of heart.

General time of the class 4 hours.

**1. THE STUDYING AND EDUCATIONAL PURPOSES, THE MOTIVATION FOR
ASSIMILATION OF THE SUBJECT, REQUIREMENTS TO THE INITIAL LEVEL OF
KNOWLEDGE**

Purposes of the class

To master at the level of ability a technique of a research of arterial pulse properties by palpation method, measurement of arterial pressure by Korotkov's method.

Motivational characteristic of the subject

Functional condition of cardiovascular system (CCC) is evaluated by various mechanical implications of its activity. Researches of these implications and their analysis are one of the most important methods of assessment of CCC state for students of medical and medico-diagnostic faculties.

As a result of carrying out the class the student has to:

To know:

– normal indicators of arterial pulse and arterial pressure.

To be able:

– to give an assessment of properties of arterial pulse by means of a palpation method, to master a method of measurement of arterial pressure on Korotkov's method;
– to make a conclusion about a functional condition of cardiovascular system of the examinee.

2. CONTROL QUESTIONS FROM RELATED SUBJECTS:

1. Structure of arteries, veins, capillaries.
2. Innervation of vessels.
3. Fundamental laws of hydrodynamics.

3. CONTROL QUESTIONS ON THE CLASS SUBJECT:

1. Morphological and functional classification of blood vessels.
2. Fundamental laws of hemodynamics. The factors causing the blood flow on vessels of high and low pressure.
3. Linear and volumetric rates of blood flow in different parts of a circulatory system. Factors which cause them.

4. Peripheral resistance to a blood flow, its value.
5. Blood pressure, its types: arterial (systolic, diastolic, pulse, average), venous. The factors causing blood pressure. A concept about normal values and age changes of the ABP. Techniques of a hemodynamometry.
6. Arterial pulse, its origin and clinical-physiological characteristics. Sphygmography, analysis of a sphygmogram. Rate of distribution of a pulse wave.

Reports:

1. The blood pressure, its types and factors causing its size.
2. Arterial pulse, its origin and characteristic.

4. PRACTICAL PART OF THE CLASS

- 21.1. Research of arterial pulse properties by palpation.
- 21.2. Measuring of arterial pressure in person:
 - a) auscultation method by Korotkov
 - b) palpation method by Riva-Rochi.
- 21.3. Definition of reserve resources of hearts (Roufier's test)
- 21.4. Respiratory-cordial reflex of Goering

5. THE COURSE OF THE CLASS

- *Introduction*: the teacher answers questions of students which caused certain difficulties in the course of independent mastering of education material;
- *Requirements to the initial level of knowledge*: from anatomy students have to know a structure of blood vessels (arteries, veins, capillaries), innervation of vessels. From of biophysics have to know fundamental laws of hydrodynamics.
- *Correction of the initial level of knowledge*: on the subject "Arterial Pulse, arterial pressure, reserve opportunities of heart". Questions of morphological and functional classification of vessels, their innervation, laws of hemodynamics are considered. The teacher corrects answers of students on a subject;
- *Setting of problems which will be solved by students*: The teacher sets a task to master definition of arterial pulse properties and measurement of the ABP by Korotkov's method at the level of ability, to give an assessment of the defined parameters.
- *Independent performing of tasks by students*:
 - students make out the protocol of laboratory work with the subsequent discussion of a technique of its performance;
 - students perform practical work under control of the teacher or laboratory assistant. For work performance students are provided with methodical grants, phonendoscopes, tonometers, a stop watch. Presentation is provided by tables, drawings, a slide projector;
 - students report papers with the subsequent discussion;
- *Assessment of final level of knowledge of the class subject*: The teacher specifies the final level of knowledge of students of theoretical and practical questions, the basic concepts and terms, and also knowledge of basic physiological constants of the class subject;
- *Fixing of knowledge*: The teacher suggests students to solve several situational problems of an occupation subject, to pass computer test, viewing of the video.
- *The conclusion of the teacher and the task to the next class*: At the end of the class the teacher makes the conclusion about the carried-out work and tells students the home task for the independent work. Then summing up the results of the class and signing of experience protocols. and also an assessment of practical skills in an account leaf is carried out.

Note: time of breaks is 15 minutes during a class.

6. QUESTIONS FOR SELF-CHECKING OF KNOWLEDGE

1. Almost healthy elderly person having quickly got up after sleep felt giddiness and fainted. What was the reason of the event if pulse was 80 per minute?

2. The young healthy man drank 1 l of water. Did the ABP raise in the first hour after that and why?
3. How and why values of linear and volumetric rates of blood flow will change at increasing of HR, SV?

LITERATURE

Basic

1. Human physiology: textbook for overseas students = Физиология человека: учеб. пособие для иностранных студентов, обучающихся на английском языке / А. И. Киеня [и др.]; под ред. проф. Э. С. Питкевича; пер. на англ. яз. Р. А. Карпов, В. А. Мельник. — Гомель: УО ГoГМУ, 2009. — 352 с.
2. Text of lectures.

Alternate

1. Textbook of medical physiology // C. Guyton, 2006. — 1116 p.
2. Human anatomy and physiology // Alexander P., Spence-Elliott B. Masson.
3. Human physiology. The mechanisms of body function // Arthur J. Vander James H Sherman Dorothy S. Luciano, 1986. — 715 p.
4. Lecture notes on human physiology // John J Bray, Patricia A. Cragg, Anthony D.C. Macknight, Roland G. Mills and Douglass W. Taylor.
5. Human anatomy and physiology // Elaine N. Marieb, 1989. — 995 p.
6. Review of medical Physiology, International edition, 2003. — 912 p.