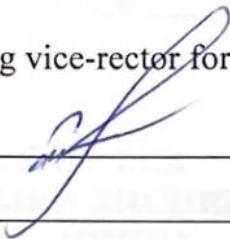


Ministry of Health of Ukraine  
ODESA NATIONAL MEDICAL UNIVERSITY

Faculty of medicine, international  
Department of Internal Medicine No. 1 with the cardiovascular pathology course

**CONFIRMED** by

Acting vice-rector for scientific and pedagogical work

  
\_\_\_\_\_  
Svitlana KOTYUZHYNSKA  
\_\_\_\_\_, 2022

**METHODOLOGICAL DEVELOPMENT OF PRACTICAL LESSON FROM  
EDUCATIONAL DISCIPLINE**

Course: 4 Faculty: International  
Academic discipline: Internal medicine

**Approved:**

Meetings of the department of internal medicine No. 1 on the course of cardiovascular pathology of the Odesa National Medical University

Protocol No. 1 from "31" 08 2022

Head of the department  \_\_\_\_\_ (Yurii KARPENKO)

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## **Practical lessons**

### *Practical lesson № 01*

**Topic: Essential arterial hypertension**

**Purpose:** to explain the essence of the arterial hypertension, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** essential arterial hypertension, secondary hypertension, atherosclerosis.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

**Plan:**

**1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**

**2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.)**

2.1 Questions to test basic knowledge of the topic of the lesson:

1. Give definition of EH
2. Etiology and pathogenesis of AH
3. To know classification of EH
4. Risk-factors
5. Clinical manifestations of EH
6. Laboratory and instrumental diagnostics of EH
7. Complications of EH
8. Principles and methods of EH treatment.

**3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):**

*3.1 task content:*

1. Patient K., 34 years old, was admitted urgently to the cardiology department with complaints of headache, dizziness, impaired visual acuity, palpitations, fear, thirst, frequent urge to urinate. Considers himself sick for 6 months. The disease proceeds in the form of attacks that occur suddenly, after physical exertion, emotional stress, last from 15 to 45 minutes and go away on their own. Objective data. General condition of moderate severity. The patient is agitated, the face is pale, the skin is covered with cold sweat. Pulse - 94 per minute, rhythmic, tense. AD 250/130 mm Hg The left border of the heart is 1 cm outward from the left mid-clavicular line. The 1st tone over the apex of the heart is preserved, the accent of the 2nd tone over the aorta is heard. When examining the respiratory system and abdominal organs, no changes were found. Additional research data. Complete blood count: erythrocytes -  $3.96 \times 10^{12} / l$ , hemoglobin - 120 g / l, cp - 0.9, leukocytes -  $5.9 \times 10^9 / l$ , eosinophils - 1%, stab neutrophils - 2%, segmented neutrophils - 63%, lymphocytes - 26%, monocytes - 8%, ESR - 8 mm / year. The general analysis of urine is transparent, the reaction is slightly acidic, the relative density is 1019, the protein is traces, erythrocytes are 0-3, leukocytes are 3-5 in the field of view, oxalate crystals are single in the field of view. Biochemical blood test: glucose - 7.9 mmol / L, bilirubin - 14.4 mmol / L, potassium - 4.4 mmol / L, sodium - 125 mmol / L, calcium - 2.15 mmol / L. Ultrasound data - the length of the right kidney is 10 cm, the width is 6 cm, the thickness is 4 cm, the left kidney is 11, 6.5, 4.5 cm, respectively; size of the right adrenal gland - 35 mm, left - 24 mm

**QUESTIONS.**

1. Give an assessment to the biochemical blood test.
2. Interpret the UltraSound data.
3. Determine the most likely diagnosis.
4. Determine the most informative additional laboratory test to verify the diagnosis.
5. Choose the most effective remedy for symptomatic treatment.

2. Patient S., 45 years old, complains of headache, thirst, weakness, leg muscle cramps, frequent (8-10 times a day) urination with the release of a significant (up to 5 liters) amount of urine per day. Con-

siders herself sick for 8 months, she did not seek help. Objective data. General condition of moderate severity. Muscle weakness is pronounced, and therefore difficulty in walking. Pulse 76 bpm, rhythmic, tense. BP - 180/100 mm Hg The left border of the heart is 0.5 cm outward from the left mid-clavicular line. The 1st tone over the apex of the heart is weakened, the accent of the 2nd tone over the aorta is determined. When examining the respiratory system and abdominal organs, no changes were found. Additional research data. Complete blood count - no changes. Biochemical blood test: sugar - 5.6 mmol / l, bilirubin - 16.93 mmol / l, calcium - 2.25 mmol / l, potassium - 2.8 mmol / l, sodium - 145 mmol / l. General urine analysis: alkaline reaction, relative density - 1005, protein - traces, leukocytes 3-4, erythrocytes 1-2 in the field of view.

**QUESTIONS:**

1. Give an interpretation to the biochemical blood test.
2. Determine the most likely diagnosis.
3. Assign a diagnostic test to verify the diagnosis.
4. Select a drug for conservative treatment of the patient.

*3.2 recommendations (instructions) for completing tasks:*

#	Consequence of actions	Indications
1	Diagnosis of essential hypertension	Plan of patient examination
2	Basic clinical and instrumental laboratory data of essential hypertension	Criteria of EH diagnosis, tests
3	Practical actions in clinics	Clinical diagnosis, prescribe medicine

*3.3 control materials for the final stage of the lesson*

Select one correct answer:

1. Which of the following drugs is an inhibitor of angiotensin converting enzyme?
  - A. Propranolol
  - B. alpha-methyldopa
  - C. Hydralazine
  - D. Hidroklorisiazit
  - E. Enalapril
2. The upper limit of normal diastolic blood pressure:
  - A. 80 mm Hg
  - B. 84 mm Hg
  - C. 89 mm Hg
  - D. 94 mm Hg
  - E. 99 mm Hg
3. The upper limit of normal systolic BP:
  - A. 119 mm Hg
  - B. 139 mm Hg
  - C. 154 mm Hg
  - D. 159mm Hg
  - E. 179 mm Hg
4. Microalbuminuria is the loss of protein in the urine:
  - A. 5-15 mg/day
  - B. 30-300 mg/day
  - C. 30-40 mg/day
  - D. 2-5 mg/day
  - E. 500-700 mg/day
5. Which of the following drugs belongs to the antihypertensive drugs of the second line?
  - A. Hidroklorisiazit
  - B. Nifedipine

- C. Enalapril
  - D. Metoprolol
  - E. alpha-methyldopa
6. Which of the following clinical signs/symptoms of complicated characterizes hypertensive crisis?
- A. Headache
  - B. Pain in the heart area
  - C. Dizziness
  - D. Cardiac asthma
  - E. Pronounced heartbeat
7. Which of the following antihypertensive drugs is the drug of choice in patients with hypertensive disease in combination with angina?
- A. Metoprolol
  - B. Hidroklorisiazit
  - C. Clonidine
  - D. alpha-methyldopa
  - E. Raunatin
8. Tactics in uncomplicated hypertensive crisis:
- A. The mandatory hospitalization in the therapeutic department
  - B. Hospitalization is not required
  - C. Hospitalization is required in an intensive care unit
  - D. Compulsory hospitalization in the cardiology department
  - E. It is Necessary to reduce the BP in for one hour
9. Which of the following drugs belongs to the first-line drugs in the treatment of hypertension?
- A. Moxonidin
  - B. Doxazosin
  - C. Verapamil
  - D. Hydralazine
  - E. Methyldopa
10. The most common side effects of ACE inhibitors include:
- A. Hypokalemia
  - B. Hypercholesterolemia
  - C. Hyperglycemia
  - D. Bertrille
  - E. Dry cough

#### **4. Summary:**

#### **5. Recommended reading list**

##### **Basic:**

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages
2. Bates' Guide To Physical Examination and History Taking (Lippincott Connect) 13th Edition
3. Pocket Medicine: The Massachusetts General Hospital Handbook of Internal Medicine 6th Edition, 2016
4. CURRENT Medical Diagnosis and Treatment 2019 58th Edition

##### **Additional:**

1. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al.
2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

##### **Electronic information resources:**

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3. <https://www.heart.org/>

4. <https://www.ace.com/>
5. <https://www.acc.org/>
6. <https://www.escardio.org/>
7. <https://www.ese-hormones.org/publications/guidelines/>
8. <https://ehaweb.org/>
9. [https://oup.silverchair-cdn.com/oup/backfile/Content\\_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/](https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/)

### *Practical lesson № 02*

**Topic: Secondary (symptomatic) hypertension. Neurocirculatory dystonia.**

**Purpose:** to explain the essence of the secondary hypertension and neurocirculatory dystonia, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** arterial hypertension, secondary hypertension, endocrinopathy, kidney failure, artery stenosis, neurocirculatory dystonia, cardiac variant, neurotic variant, arrhythmic variant of NCD.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

**Plan:**

**1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**

**2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.)**

2.1 Questions to test basic knowledge of the topic of the lesson:

1. Give definition of SHT
2. Etiology and pathogenesis of SHT
3. To know classification of SHT
4. Risk-factors
5. Clinical manifestations of SHT
6. Laboratory and instrumental diagnostics of SHT
7. Diff. diagnosis between types of SHT
8. Complications of SHT
9. Principles and methods of SHT treatment.
10. Definition of "neurocirculatory dystonia", classification. The clinic signs and symptoms.
11. Examination of patients with suspected neurocirculatory dystonia. Algorithm of examination of patients with neurocirculatory dystonia,
12. Examples of the formulation of the diagnosis. Principles of treatment.

**3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):**

*3.1 task content:*

1. Patient L, 38 years old, complains of headache, attacks of muscle weakness, convulsions, frequent urination. Objectively: Ps - 80 beats per minute, satisfactory properties. BP 160/120 mm Hg. The left border of the heart is 1.5 cm outward from the mid-clavicular line, the accent of the II tone is above the aorta. The potassium content in the blood is 2.8 mmol / l.

1. Which disease is most likely?
2. What changes of the heart have been founded?
3. Further diagnostics
4. Treatment plan

2. Patient A., 20 years old, has an increased blood pressure since childhood, the level of which is currently 180-200 / 110-120 mm Hg. Art. There is no influence of psychoemotional factors. There are practically no fluctuations in blood pressure. There is no headache. It is not possible to normalize

blood pressure with antihypertensive drugs. A systolic murmur is heard to the left and right of the navel. General urine analysis without pathology.

1. Name the presumptive form of arterial hypertension and its probable cause in this patient.
2. What is the mechanism of arterial hypertension formation?
3. What research should be done to confirm or deny the diagnosis?

What result of this study will support your assumption?

3. Woman, 42 y.o., after the family stressful situation, complains of stabbing pain in the apex of the heart and long-term aching pain over the region of the heart, palpitations, a sense of “fading” of the heart, shortness of breath, irritability. After intake of tincture of Valerian’s, condition is improving. Objectively: the emotionally labile, red spots on the face, brushes are wet and cold. Thyroid gland is not increased. Pulse – 92/bmp, rhythmic. Borders of heart are in norm. The cardiac sounds are sonorous, short systolic murmur over the apex. BP – 140/85 mm.Hg. On ECG – decrease in the amplitude of the wave T. What is most likely diagnosis?

4. 44 y.o. complains long of stabbing pains in the heart area to the left of the sternum, dizziness, paresthesia, sweating, insomnia, menstrual disorders. Sick for years. Objectively: the emotionally labile. The border of the heart is not changed. HR – 98/bpm. BP – 140/85 mm.Hg. Heart sounds are rhythmical, moderate systolic rhythm, sustained negative wave T V1-V4, which disappear when conducting obsidanum and potassium samples. What is the most likely diagnosis? What treatment is?

### 3.2 recommendations (instructions) for completing tasks:

#	Consequence of actions	Indications
1	Diagnosis of secondary hypertension	Plan of patient examination
2	Basic clinical and instrumental laboratory data of secondary hypertension	Criteria of secondary hypertension diagnosis, tests
3	Practical actions in clinics	Clinical diagnosis, prescribe medicine

### 3.3 control materials for the final stage of the lesson

Select one correct answer:

1. What disease is a common cause of renovascular hypertension?
  - A. Chronic pyelonephritis
  - B. Chronic glomerulonephritis
  - C. Amyloidosis of the kidneys
  - D. Atherosclerosis of the renal arteries
  - E. Konn’s syndrome
  
2. What laboratory index is informative for the diagnosis of Cushing's syndrome?
  - A. Increase in glucose content in daily urine
  - B. Increase in the content of norepinephrine daily urine
  - C. Increase in progesterone content in daily urine
  - D. Increase cortisol content in daily urine
  - E. Increased activity of renin in the blood
  
3. What is characteristic of hypertension in chronic pyelonephritis?
  - A. Frequent hypertensive crises
  - B. Preferred increase in systolic blood pressure
  - C. Preferred increase in diastolic blood pressure
  - D. Systolic noise in the circulatory region
  - E. Edema of the legs

4. Which of the following clinical signs is characteristic of pheochromocytoma?
  - A. Abdominal obesity, strains on the abdominal skin
  - B. Muscular weakness, paresthesia
  - C. Polyuria, polydipsia
  - D. Hypertensive crisis with increased body temperature, sweating, tachycardia
  - E. Systolic noise in the circulatory region
  
5. Which of the following clinical signs is characteristic for the Cushing's syndrome?
  - A. Hypertensive crisis with increased body temperature, sweating, tachycardia
  - B. Abdominal obesity, stomach on the abdominal skin
  - C. Muscular weakness, paresthesia
  - D. Polyuria, polydipsia
  - E. Increased excitability, tremor, weight loss
  
6. Which of the following clinical signs is characteristic of Conn syndrome?
  - A. Hypertensive crisis with increased body temperature, sweating, tachycardia
  - B. Systolic noise in the circumferonous region
  - C. Abdominal obesity, stomach on the abdominal skin
  - D. Muscular weakness, paresthesia
  - E. Increased excitability, tremor, weight loss
  
7. What laboratory index is informative for the diagnosis of renovascular hypertension?
  - A. High activity of renin in the blood
  - B. Low activity of renin in the blood
  - C. Increase cortisol content in daily urine
  - D. Increase of norepinephrine content in daily urine
  - E. Increased aldosterone content in the blood
  
8. A 20-year-old patient complains of breath shortness, continuous dull heart pain, irritability. Objectively: general condition is satisfactory, the pulse is labile, AP- 130/60 mm Hg. ECG shows re-polarization disorder. The patient has been diagnosed with cardiac-type neurocirculatory dystonia. The patient should receive treatment under the following conditions:
  - A. Outpatient treatment
  - B. Inpatient treatment at the therapeutic department
  - C. Inpatient treatment at the cardiology department
  - D. Inpatient treatment at the cardiac surgery department
  - E. Inpatient treatment at the psychiatric department
  
9. The 33-year-old patient was taken to the clinic with complaints of shortness of breath, which arose suddenly and turned into shortness of breath, a feeling of "a lump in the throat", tremor of the hands, fear of death. The attack developed for the first time due to strong anxiety. I had never been ill before. Objectively: BH - 28 / min., Ps - 104 / min., Rhythmic, blood pressure - 150/85 mm Hg. Breathing is vesicular, rapid, shallow, with prolonged exhalation. The boundaries of the heart are not percussion changed. Heart tones are loud, rhythmic. What is the most likely diagnosis?
  - A. NEUROCIRCULATORY DYSTONIA
  - B. Bronchial asthma
  - C. Hypertensive crisis
  - D. Cardiac asthma
  - E. Thyrotoxic crisis
  
10. A 27-year-old patient complains of intermittent pain in the heart, palpitations, shortness of breath,



dizziness. In the anamnesis of frequent ARI. Objectively: Ps- 98 / min, blood pressure - 100/70 mm Hg. The results of laboratory tests without features. Level T3, T4 within normal limits. VEM test is negative, the reaction of the cardiovascular system by dystonic type. What is the most likely diagnosis?

- A. NEUROCIRCULATORY DYSTONIA
- B. Stable angina pectoris
- C. Unstable angina
- D. Myocarditis
- E. Thyrotoxicosis

#### 4. Summary:

#### 5. Recommended reading list

##### Basic:

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages
2. Bates' Guide To Physical Examination and History Taking (Lippincott Connect) 13th Edition
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##### Additional:

1. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al.
2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

##### Electronic information resources:

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3. <https://www.heart.org/>
4. <https://www.aace.com/>
5. <https://www.acc.org/>
6. <https://www.escardio.org/>
7. <https://www.ese-hormones.org/publications/guidelines/>
8. <https://ehaweb.org/>
9. [https://oup.silverchair-cdn.com/oup/backfile/Content\\_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/](https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/)

#### *Practical lesson № 03*

##### **Topic: Atherosclerosis**

**Purpose:** to explain the essence of the atherosclerotic process, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** lipid profile, atherosclerosis, hypertension, ischemic heart disease, stroke

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

##### **Plan:**

1. **Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**
2. **Control of the reference level of knowledge (written work, written test, frontal survey, etc.)**
  - 2.1 Questions to test basic knowledge of the topic of the lesson:
    1. Define the concept of atherosclerosis.
    2. Indicate the main etiological factors, features of pathogenesis.
    3. Modern classification of atherosclerosis.

4. The main clinical signs of atherosclerotic lesions depending on the location.
5. Laboratory and instrumental research of patients, interpretation of the obtained results.
6. Basic principles of treatment.

**3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):**

*3.1 task content:*

**Clinical task №1.**

Patient R., 22 years old, is hospitalized for acute glomerulonephritis for 7 days. From the anamnesis it is known that 10 days after the tonsillectomy the patient complained of pain in the lumbar region, fever, change in urine color to the color of "meat slops", headache, dizziness, weakness, swelling of the face, reduction the amount of urine excreted, so the patient was sent to hospital. 3 months ago, the patient noted a sudden onset of anuria, which preceded within 2 days, general malaise, weakness, oliguria, the patient did not seek medical attention. Despite the therapy in the hospital, the patient's condition deteriorated: drowsiness, urine does not go away for the last 12 hours.

Objectively: the patient is retarded, the skin is pale, swelling of the face, lower back, lower extremities. Body weight - 70 kg. The boundaries of cardiac dullness are extended to the left. The tones of the heart are muffled, the activity of the heart is rhythmic, the accent of the second tone on the aorta is felt on the basis of the heart. Heart rate - 104 beats per minute. BP 150/104 mm Hg. Percussion sound over the lungs is clear pulmonary, vesicular respiration. BH - 28 per minute. At laboratory research in the general analysis of urine micro hematuria, cylindruria, daily excretion of protein - 4.2 g a day is defined, in the general analysis of blood increase in ESR, leukocytosis, normochromic anemia is noted, at research of blood it is noted - hypoalbuminemia, dysproteinemia, hypercholesterolemia, creatinine increase to 356  $\mu\text{mol} / \text{l}$ .

Question.

1. Calculate the patient's GFR.
2. Was acute glomerulonephritis diagnosed correctly in the hospital?
3. What additional methods of examination will help to most accurately assess the patient's condition?
4. Recommended treatment measures?

**Clinical task №2**

A 58-year old man is referred to a vascular clinic due to a 3-month history of left calf pain after walking about two blocks. Over the counter nonsteroidal anti-inflammatory drugs (NSAIDs) and common analgesics do not relieve his symptoms. He is a smoker and his medical history includes dyslipidemia and a surgery for left anterior cruciate ligament rupture 10 years ago. He has no family history of cardiac disease. Laboratory workup, except for an LDL-C value of 4,2 mmol/l, is completely normal. Physical examination reveals palpable distal pulses to the left and right lower extremity, however distal pulses to the left foot are decreased. Right and left ankle-brachial index (ABI) values at rest are 1.3 and 1.1 respectively. A magnetic resonance imaging (MRI) is ordered and reveals small round masses with hypoechogenic center in the arterial wall of the popliteal artery.

Question.

What is the meaning of difference of ABI on the left and right side?

1. What changes were found on the MRI?
2. What is your diagnosis?
3. Treatment plan

*3.2 recommendations (instructions) for completing tasks:*

#	Consequence of actions	Indications
1	Diagnosis of atherosclerosis	Plan of patient examination
2	Basic clinical and instrumental laboratory data of atherosclerosis	Criteria of atherosclerosis diagnosis, tests
3	Practical actions in clinics	Clinical diagnosis, prescribe medicine

### 3.3 control materials for the final stage of the lesson

Select one correct answer:

1. Which of the following drugs is used to treat statins?

- A. Propranolol
- B. Rosuvostatin
- C. Hydralazine
- D. Hydrochlorothiazide
- E. Enalapril

2. What is the level of total cholesterol targeted at patients at low risk of fatal cardiovascular events?

- A. <2.5 mmol, l
- B. <3.0 mmol, l
- C. <4,5 mmol, l
- D. <5.0 mmol, l
- E. <5.5 mmol, l

3. What is the level of low-density lipoprotein cholesterol targeted at patients at high risk of fatal cardiovascular events?

- A. <2.5 mmol, l
- B. <3.0 mmol, l
- C. <4,5 mmol, l
- D. <5.0 mmol, l
- E. <5.5 mmol, l

4. What clinical sign is characteristic for atherosclerosis of renal arteries?

- A. Peripheral edema
- B. Lumbar pain
- C. Arterial hypertension
- D. Fever
- E. Polyuria

5. Which of the factors of cardiovascular risk belongs to those that are not modified? :

- A. Smoking
- B. Obesity
- C. Arterial hypertension
- D. Family history
- E. Diabetes mellitus

6. Atherosclerosis of the thoracic aorta can manifest itself clinically:

- A. Aorthalgia
- B. Isolated systolic hypertension
- C. Aortic aneurysm
- D. Voice and difficulty in swallowing
- E. All listed above

7. Non-medicated therapy for atherosclerosis consists of:

- A. Appointment of low-calorie and hypocholesterol diet
- B. Correction of overweight.
- C. Increased physical activity.
- D. Refusal of smoking.
- E. All the above is listed

8. To lipid-lowering drugs do not belong:

- A. Fenofibrate
- B. Cholesterram
- C. Niacin
- D. Clopidogrel

E. Atorvastatin

9. The most common side effects of statins include:

A. Increase in liver enzymes

B. Fever

C. Hyperglycemia

D. Hypokalemia

E. Dry cough

10. What is the level of low-density lipoprotein cholesterol targeted at patients at low risk of fatal cardiovascular events?

A. <2.5 mmol, l

B. <3.0 mmol, l

C. <4,5 mmol, l

D. <5.0 mmol, l

E. <5.5 mmol, l

**4. Summary:**

**5. Recommended reading list**

**Basic:**

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages

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**Additional:**

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13. <https://www.aace.com/>

14. <https://www.acc.org/>

15. <https://www.escardio.org/>

16. <https://www.ese-hormones.org/publications/guidelines/>

17. <https://ehaweb.org/>

18. [https://oup.silverchair-cdn.com/oup/backfile/Content\\_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/](https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/)

### *Practical lesson № 04*

**Topic: Chronic forms of Ischemic heart disease**

**Purpose:** to explain the essence of the chronic forms of IHD, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** atherosclerosis, ischemic heart disease, stable angina, vasospastic angina, cardiosclerosis, heart failure.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

**Plan:**

1. **Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**

**2. Control of the reference level of knowledge(written work, written test, frontal survey, etc.)**

**2.1 Questions to test basic knowledge of the topic of the lesson:**

1. Definition of IHD
2. To know classification of IHD.
3. Give definition of AP and unstable AP.
4. Etiology and pathogenesis of AP.
5. Clinical manifestations of AP.
6. Diagnostics of AP
7. Differential diagnostic of AP
8. Principles and methods of IHD treatment
9. Principles of rehabilitation of patients with IHD
10. Prophylaxis of IHD

**3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):**

*3.1 task content:*

1. At the patient of 50 years 2 weeks ago at fast rise on the 4th floor there was a pain in the lower third of a sternum of oppressive character, passing at rest. In the future, the pain began to occur when walking fast, climbing to the 2-3 floor.

1. Form of angina
2. doctor's tactics
3. a drug for pain relief
4. research plan

2. The patient, complained of a feeling of suffocation arising from brisk walking, passes alone at rest. Three days ago there was an attack of intense pain behind the sternum, lasting up to 20 minutes, accompanied by nausea.

From the anamnesis of life: for 10 years suffers from high blood pressure (up to 170/110), is treated irregularly, smokes for 25 years.

On examination: high nutrition. In the lungs vesicular respiration, no wheezing, BH 22 per minute. The border of the heart is expanded to the left by 2 cm. Heart tones are clear, heart rate 80 beats / min. Frequent extrasystole are heard. AD 180/115 mmHg For other bodies without changes. ECG: sinus rhythm, negative T teeth in V1-3.

Formulate a diagnosis  
tactics of patient management

*3.2 recommendations (instructions) for completing tasks:*

#	Consequence of actions	Indications
1	Diagnosis of IHD	Plan of patient examination
2	Basic clinical and instrumental laboratory data of IHD	Criteria of IHD diagnosis, tests
3	Practical actions in clinics	Clinical diagnosis, prescribe medicine

*3.3 control materials for the final stage of the lesson*

1. Which of the following statements is true for Princely Metastasis?

- A. Characteristic stenotic atherosclerosis of the coronary arteries
- B. Anginous attacks occur during exercise
- C. Angiogenic attacks, as a rule, arise at rest, at night
- D. Reduced tolerance to physical activity
- E. On the ECG is characterized by the presence of deep teeth Q passing through

2. Target level of total blood cholesterol in patients with stable angina pectoris and ejection fraction

<45%

- A. <2.5 mmol / l
- B. <4.0 mmol / L
- C. <6.0 mmol / L
- D. <3.5 mmol / l
- E. <6.4 mmol / L

3. Which of the following criteria indicates a positive result of a load test for the diagnosis of coronary heart disease?

- A. Increased blood pressure
- B. Appearance of extrasystole
- C. Appearance of oblique or horizontal depression of segment ST  $\geq$  1 mm
- D. T. inversion
- E. Increase in the amplitude of the positive T wave

4. The ability to improve the prognosis of cardiopulmonary diseases in patients with stable angina pectoris is proven for:

- A. Antagonists of angiotensin II receptors
- B. Statins
- C. Inhibitors of ADP receptor platelets
- D. Nitrates
- E. Heart glycosides

5. What is characteristic of microvascular angina (coronary syndrome X):

- A. Anginous attacks are absent
- B. Lack of stenotic atherosclerosis during coronavirentography
- C. No changes in ECG when loading tests are performed
- D. Characteristic paroxysmal rhythm disturbances
- E. There is no effect from medication therapy

6. Which of the following factors contributes to the development of coronary heart disease:

- A. Reduction of low density lipoprotein cholesterol in the blood
- B. Increase in blood cholesterol of low density lipoprotein.
- C. Arterial hypotension
- D. Increased high density lipoprotein cholesterol in the blood
- E. Reducing the content of triglycerides in the blood

7. With stable angina pectoris III, angina pain occurs:

- A. During insignificant physical activity
- B. At night in a state of rest
- C. At the slightest physical load
- D. During significant physical activity
- E. At a very high physical load

8. What is the next statement regarding nitrates true?

- A. Have a positive inotropic effect
- B. Caused deterioration of atrioventricular conduction
- C. The negative chronotropic effect
- D. Reduce the need for myocardium into oxygen due to a decrease in venous flow to the heart
- E. Contraindicated with angina pectoris

9. For what disease, besides coronary artery disease, is angina pectoris?

- A. Stenosis of the aortic mouth
- B. Mitral stenosis
- C. Neurocirculatory dystonia
- D. Metabolic cardiomyopathy
- E. Hernia of the esophagus of the diaphragm

10. Which of the following signs is pathognomonic for angina pectoris?

- A. Spitting pain in the area of the heart with physical activity
- B. Ventricular extrasystole after physical activity
- C. Pain for the stomach busting and depression of the ST segment arising during exercise
- D. Wave Q in lead III and aVF

E. Negative T in leads V 2-6

#### 4. Summary:

#### 5. Recommended reading list

##### Basic:

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages
2. Bates' Guide To Physical Examination and History Taking (Lippincott Connect) 13th Edition
3. Pocket Medicine: The Massachusetts General Hospital Handbook of Internal Medicine 6th Edition, 2016
4. CURRENT Medical Diagnosis and Treatment 2019 58th Edition

##### Additional:

1. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al.
2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

##### Electronic information resources:

19. <http://www.oxfordmedicaleducation.com/>
20. <http://www.strazhesko.org.ua/advice>
21. <https://www.heart.org/>
22. <https://www.ace.com/>
23. <https://www.acc.org/>
24. <https://www.escardio.org/>
25. <https://www.ese-hormones.org/publications/guidelines/>
26. <https://ehaweb.org/>
27. [https://oup.silverchair-cdn.com/oup/backfile/Content\\_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/](https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/)

### *Practical lesson № 05*

#### **Topic: Acute coronary syndrome (unstable angina, acute myocardial infarction)**

**Purpose:** to explain the essence of the acute coronary syndrome, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** ischemic heart disease, atherosclerosis, acute coronary syndrome, unstable angina, myocardial infarction, coronary death, heart failure.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

#### **Plan:**

1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.)

2.1 Questions to test basic knowledge of the topic of the lesson:

1. Give definition of ACS.
2. Give definition of MI
3. Give definition of Unstable angina.
4. Classification of MI.
5. Etiology and pathogenesis of MI.
6. Clinical manifestations of MI.
7. Diagnostics of ACS
8. differential diagnostics of MI.
9. Principles and methods of MI treatment
10. Complications of MI.

**3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):**

*3.1 task content:*

1. Patient A. was disturbed for 3 years short-term pain in the left half of the chest, irradiation in the neck. The day before there were very intense pains in left half of the chest with irradiation in the neck, arm, abdomen, lasting 30 minutes. The temperature rose to 37.0 C. Heart tones are weakened. Leukocytes -  $7 \cdot 10^9 / l$ . AST - 40 U / L (norm to 31), CPK - 150 U / L (norm up to 170). On the ECG, the T wave in the leads III and avF negative, pointed. After 3 days of ECG normalized.

1. Your diagnosis?
2. Assign the necessary additional research

2. A 49-year-old man consulted a doctor due to severe pain in the sternum, arising during snow removal 3 days ago, and remaining at the time of treatment.

At registration of an ECG at reception the frontal myocardial infarction, a subacute stage was revealed, in connection with which he was hospitalized. Reperfusion therapy was not performed. From the anamnesis it is known that the patient smokes. Has a burdensome family history of cardiovascular disease diseases (father - myocardial infarction at 45 years). Objectively: weight 81 kg, height 181 cm, blood pressure 100/60 mm Hg, pulse 60 beats in 1 min. In the rest is objective without features.

Laboratory tests

HSLPNP 3.0 mmol / l

Glucose 4.4 mmol / l

Sodium 139 mmol / L

ECG: sinus rhythm, PBLNPG

ECHO-KG: 20% PV, thrombus in the left ventricular cavity, aneurysm in the apex heart, moderate mitral and aortic regurgitation.

1. Formulate and justify a preliminary diagnosis. Highlight risk factors.
2. Evaluate the results of the survey. Select the survey method, which must be performed on the patient first.
3. Prescribe treatment.

3.2 recommendations (instructions) for completing tasks:

#	Consequence of actions	Indications
1	Diagnosis of MI	Plan of patient examination
2	Basic clinical and instrumental laboratory data of MI	Criteria of MI diagnosis, tests
3	Practical actions in clinics	Clinical diagnosis, prescribe medicine

3.3 control materials for the final stage of the lesson

1. Sign resorcine-necrotic syndrome in acute it is:
  - A. Leukopenia within 8-10 days
  - B. a Decrease in body temperature within 2-5 days



- C. Lymphocytosis up to 5-6 days of illness
- D. Increased activity of CPK in the blood
- E. Neutrophilic leukocytosis with a maximum of 2 - 4 days

2. What drug is proven to improve the prognosis of patients after MI:

- A. Acetylsalicylic acid
- B. Nitroglycerin
- C. Nifedipine
- D. Verapamil
- E. Dipyridamole

3. Which of the following diseases can be a complication of acute MI?

- A. Dressler Syndrome
- B. The Syndrome Of Wolff-Parkinson-White
- C. Acute pulmonary heart
- D. Thromboembolism of the pulmonary artery
- E. Constrictive pericarditis

4. The pain characteristic of MI?

- A. Constant nagging pain, a feeling of heaviness in the heart, is reduced when bending forward
- B. Acute increases with movement of the trunk
- C. gripping pain behind the sternum, giving in the left hand under the left shoulder blade, lasts from several minutes up to 15 minutes is relieved with nitroglycerin
- D. Squeezing, crushing, burning behind the breastbone, radiating to the left arm under the left shoulder blade, continues for more than 30 minutes, is not removed by nitroglycerin
- E. Aching, stabbing, lasting minutes, hours and days.

5. Over what period remains elevated concentrations troponins with MI?

- A. 10-14 days
- B. 2 days
- C. 7 days
- D. 18 days
- E. 28 days

6. Indications for intravenous nitroglycerin in acute MI:

- A. the Existing pain syndrome.
- B. the right ventricle.
- C. Cardiogenic shock.
- D. Syndrome Of Dressler.
- E. Astrogational pericarditis.

7. Thrombolytic include:

- A. Streptokinase
- B. Heparin
- C. Enoxaparin
- D. Aspirin
- E. Clopidogrel

8. ACS include:

- A. Unstable angina
- B. cardiac syndrome X

- C. Vasospastic angina
- D. Stable angina FC III
- E. Stable angina of II FC

9. A patient with MI for 2-3 days in the overall analysis of blood observed

- A. Eosinophilia B. Moderate leukocytosis
- C. Leukopenia
- D. Lymphocytosis
- E. Anemia

5. Secondary prevention of sudden coronary death after myocardial infarction is carried out by receiving:

- A. Antiarrhythmic drugs class III
- B. Beta-blockers
- C. Antiarrhythmic drugs class IV
- D. Antiarrhythmic drugs class I

E. Intravenous nitroglycerin

#### 4. Summary:

#### 5. Recommended reading list

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30. <https://www.heart.org/>
31. <https://www.ace.com/>
32. <https://www.acc.org/>
33. <https://www.escardio.org/>
34. <https://www.ese-hormones.org/publications/guidelines/>
35. <https://ehaweb.org/>
36. [https://oup.silverchair-cdn.com/oup/backfile/Content\\_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/](https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/)

#### *Practical lesson № 06*

#### **Topic: Acute pulmonary heart – pulmonary embolism (PE). Chronic pulmonary heart**

**Purpose:** to explain the essence of the pulmonary embolism, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** pulmonary embolism, thromboembolism, pulmonary disease, chronic pulmonary heart, heart failure.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

**Plan:**

**1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**

**2. Control of the reference level of knowledge(written work, written test, frontal survey, etc.)**

2.1 Questions to test basic knowledge of the topic of the lesson:

1. Give definition of pulmonary thromboembolism and cor-pulmonale.
2. Etiology and pathogenesis of pulmonary thromboembolism and cor-pulmonale.
3. Classification of pulmonary thromboembolism and cor-pulmonale.
4. Clinical manifestations of pulmonary thromboembolism
5. Clinical manifestations of cor-pulmonale.
6. Laboratory and instrumental diagnostics of pulmonary thromboembolism and cor-pulmonale.
7. Diff. diagnosis of pulmonary thromboembolism and cor-pulmonale with other diseases
8. Diff. diagnosis of cor-pulmonale with other diseases
9. Management of pulmonary embolism
10. Treatment

**3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):**

*3.1 task content:*

1. A 62-year-old man was taken to the admission department by the SMP team after a brief loss of consciousness. Complains of severe weakness, heaviness in the chest, shortness of breath. It is not possible to find out the anamnesis it seems possible because the patient is sleepy and has difficulty answering the simplest questions. Objectively. Lies low, the skin is cold, moist, pronounced cyanosis of the face, neck, hands. The jugular veins are swollen. There are no peripheral edemas. BH 40 in 1 min. Vesicular respiration, no wheezing. Tones, rhythmic, deaf. Pulse 102 in 1 min, BP 60/40 mm Hg. Art. The abdomen is soft, the liver on the edge of the costal arc.

- preliminary diagnosis
- provide emergency assistance
- schedule an examination

2. An 62-year-old woman underwent an appendectomy three days ago. Today, when trying to get out of bed there was a sharp weakness, dizziness and shortness of breath. The doctor on duty was called. At the time of the examination, his condition returned to normal, there were no complaints. Objectively. Lies low. Integuments dry, warm, slight cyanosis of the lips. The left foot and shin are moderately swollen, palpation along the deep veins are painful. RR 18 in 1 min. Vesicular respiration, no wheezing. Heart tones are clear, rhythmic. Pulse 96 in 1 min, blood pressure 120/80 mm Hg.

- assess the clinical likelihood of PE
- Diagnosis
- Treatment

3.2 recommendations (instructions) for completing tasks:

#	Consequence of actions	Indications
1	Diagnosis of thromboembolism and cor-pulmonale	Plan of patient examination
2	Basic clinical and instrumental laboratory data of thromboembolia and cor-pulmonale	Criteria of thromboembolia and cor-pulmonale diagnosis, tests
3	Practical actions in clinics	Clinical diagnosis, surgical treatment prescribe medicine

3.3 control materials for the final stage of the lesson

Select one correct answer:

1. What disease often leads to the development of CCP?

- A. Chronic obstructive pulmonary disease
  - B. Systemic scleroderma
  - C. Bronchial asthma
  - D. Post-thromboembolic PH
  - E. Tuberculosis of the lungs
2. To exclude the diagnosis of pulmonary embolism, the most informative indicator is:
- A. AsAT, ALAT
  - B. Bilirubin blood serum
  - C. D-dimer plasma of blood
  - D. Leukocytosis
  - E. Myoglobin
3. Which of the following diagnostic methods allows non-invasive measurement of pressure in the pulmonary artery?
- A. ECG
  - B. Catheterization of the right heart
  - C. Dopplerechocardiography
  - D. Roentgenography of the thoracic cavity
  - E. Radionuclide ventriculography
4. What are the auspicious phenomena typical of PE?
- A. Accent II tone over the pulmonary artery
  - B. Accent II tone over the aorta
  - C. Systolic noise above the top
  - D. Proto-diastolic noise over the aorta
  - E. Weakening of the second tone over the aorta
5. What ECG changes are characteristic of CCP?
- A. Deflection of the electric heart to the right, "p-pulmonale", hypertrophy of the RV
  - B. Elevated segment of ST and abnormal tooth Q in V 1 -V 4
  - C. High tooth R, Eclipse depression ST and negative tooth T in leads V 5 -V 6
  - D. Deviation of the electric axis to the left, incomplete or complete blockade of the left branch of the Gis bundle
  - E. Decrease of teeth voltages, concordant ST elevation in all chest leads "arc down"
6. What is the average pressure in the pulmonary artery is considered a sign of pulmonary hypertension?
- A. Less than 10 mm Hg with physical activity
  - B. More than 25 mm Hg at rest
  - C. 10 mm Hg at rest
  - D. More than 20 mm Hg when loaded
  - E. Less than 15 mm Hg at rest
7. To treat high-risk pulmonary artery disease, which is complicated by cardiogenic shock, use:
- A. Nitroglycerin
  - B. Hydrochlorothiazide
  - C. Morphin
  - D. Furosemid
  - E. Streptokinase
8. Which of the following factors does not relate to factors of significant risk of venous thrombo-

embolism?

- A. Fracture of the lower extremities
- B. Chemotherapy
- C. polytrauma
- D. Injury of the spinal cord
- E. Prosthetics of the knee or hip joint

9. Which of the following medicines refers to phosphodiesterase type 5 inhibitors?

- A. Sildenafil
- B. Warfarin
- C. Boustean
- D. Iloprost
- E. Amlodipine

10. What Echo-CG changes are characteristic of CLS?

- A. Hypertrophy of the right ventricle
- B. Violation of the contractile capacity of the left ventricle myocardium
- C. Left ventricular hypertrophy
- D. Calcifies of the fibrous ring
- E. Vegetation on valves

#### **4. Summary:**

#### **5. Recommended reading list**

##### **Basic:**

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages
2. Bates' Guide To Physical Examination and History Taking (Lippincott Connect) 13th Edition
3. Pocket Medicine: The Massachusetts General Hospital Handbook of Internal Medicine 6th Edition, 2016
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##### **Additional:**

1. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al.
2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

##### **Electronic information resources:**

37. <http://www.oxfordmedicaleducation.com/>
38. <http://www.strazhesko.org.ua/advice>
39. <https://www.heart.org/>
40. <https://www.aace.com/>
41. <https://www.acc.org/>
42. <https://www.escardio.org/>
43. <https://www.ese-hormones.org/publications/guidelines/>
44. <https://ehaweb.org/>
45. [https://oup.silverchair-cdn.com/oup/backfile/Content\\_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/](https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/)

#### *Practical lesson № 07*

#### **Topic: Congenital heart defects in adults**

**Purpose:** to explain the essence of the congenital heart defects, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** congenital heart defects, atrial septal defect, ventricle septal defect, coarctation of aorta,

Tetralogy of Fallot.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

**Plan:**

**1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**

**2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.)**

2.1 Questions to test basic knowledge of the topic of the lesson:

1. Give definition of congenital heart disease.
2. Classification of congenital heart diseases.
3. Etiology of Congenital heart disease
4. Pathogenesis of Congenital heart disease
5. Clinical manifestations of congenital heart disease.
6. Laboratory diagnostics of Congenital heart disease
7. Instrumental diagnostics of Congenital heart disease
8. Management of patients with congenital heart defects
9. Differential diagnostics of congenital heart defects
10. Principles of surgical treatment.

**3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):**

*3.1 task content:*

1. A 17-year-old patient was admitted to the hospital with complaints of shortness of breath, aggravated by physical exertion, rapid fatigue, palpitations.

Objectively: there is a lag in physical development, pallor of the skin.

Auscultation reveals a rough "machine" systolic-diastolic murmur in the 2nd intercostal space to the left of the sternum. The noise is conducted into the interscapular space and on the vessels of the neck. In the lungs, breathing is vesicular. Pulse - 70 beats per minute, blood pressure - 100/60 mm Hg. Radiographically - increased pulmonary pattern, signs of left ventricular hypertrophy, bulging of the pulmonary artery arch. On the ECG - the norm. On aortography - simultaneous contrasting of the pulmonary artery.

Preliminary diagnosis?

Survey methods?

Indications for surgery?

2. The parents of an 8-year-old child drew attention to the pronounced development of the muscles of the shoulder girdle in the child in comparison with the underdevelopment of the muscles of the lower extremities.

Objectively: developmental imbalance. Systolic blood pressure in the upper extremities is 150 mm Hg. Art., and on the lower limbs - 60 mm Hg. X-ray - expansion of the borders of the heart to the left. ECG - signs of left ventricular hypertrophy. On auscultation, the heart sounds are sonorous, clear, the accent of the 2nd tone above the aorta, systolic murmur on the vessels of the neck, under the right collarbone. In the lungs, breathing is vesicular. The abdomen is soft, painless. The pulsation of the abdominal aorta is sharply weakened, the pulse in the arteries of the thigh is sharply weakened.

Preliminary diagnosis?

Survey methods?

Treatment?

### 3.2 recommendations (instructions) for completing tasks:

#	Consequence of actions	Indications
1	Diagnosis of congenital heart disease	Plan of patient examination
2	Basic clinical and instrumental laboratory data of congenital heart disorder	Criteria of congenital heart disorder diagnosis, tests
3	Practical actions in clinics	Clinical diagnosis, surgical treatment

### 3.3 control materials for the final stage of the lesson

Select one correct answer:

1. Which of the following statements is true for coarctation of the aorta?
  - A. Systolic noise in the III-IV interterritorial space to the left of the sternum edge.
  - B. There is an increase in blood pressure in the upper extremities and lower blood pressure on the lower extremities
  - C. Hypertrophy of both ventricles and dilatation of the left atrium
  - D. Systole-diastolic noise is heard in the second inter-ribbed gap to the left of the sternum edge.
  - E. The tone of Troub over the femoral artery is listening
  
2. With a defect of the atrial membrane may be:
  - A. Systolic noise and accent II of the tone in the second intercross gap to the left
  - B. Extension of the limits of cardiac dullness to the right due to right ventricular dilation and right ventricular
  - C. ECG is a complete or incomplete blockade of the right leg of the Gis beam
  - D. All listed - not true
  - E. All listed right
  
3. Enlargement of the right ventricle of the heart is characteristic for:
  - A. Aortic stenosis
  - B. Defect between the atrial septum
  - C. Insufficiency of the aortic valve
  - D. Mitral valve deficiency
  - E. Coarctation of the aorta
  
4. Which of the following statements is true for the defect of the interventricular septum?
  - A. Harsh rudimentary systolic noise on the apex, which is carried out in the armpit.
  - B. Characteristic systole-diastolic noise over the pulmonary artery
  - C. A frequent complication is atrial fibrillation
  - D. Frequently complicated by Eisenmenger syndrome
  - E. Radiological trait is the impoverishment of the pulmonary pattern
  
5. Name the ECG-signs of hypertrophy of the right ventricle:
  - A. Deep Stem S in V1-V2-leads, high R in V5-V6-leads
  - B. Increase in the amplitude of the R wave in the V1-V2 leads and amplitude S in the V5-V6 leads
  - C. Deep sinus S in V1-V2 leads and negative T-pin in V5-V6 leads
  - D. High R to aVL and deep S in III and aVF leads
  - E. Deep throat S in and out and pathological Q in III throw
  
6. Diffuse cyanosis is a characteristic feature:
  - A. Syndrome Eisenmenger
  - B. Defect interatrial septum

- C. Aortic Coarctation
- D. Defect of interventricular septum
- E. Opened arterial duct

7. Name ECG - signs of left ventricular hypertrophy:

- A. Deep wave S in V1-V2, high R in V5-V6 leads
- B. High wave R y V1-V2, deep S y V5-V6 leads
- C. Negative T-wave in V1-V2 leads
- D. Deep wave S in I standard, aVL leads and high wave R in III, aVF leads
- E. Deep wave Q in the third release and aVF

8. Complications of aortic coarctation:

- A. Atrial fibrillation
- B. Pulmonary hemorrhage
- C. Stroke
- D. Syndrome Eisenmenger
- E. Acute left ventricular failure

9. The open arterial duct is:

- A. Defect in the muscular part of the interventricular septum
- B. Defect in the central part of the atrial partition
- C. Abnormal communication between the aorta and pulmonary artery
- D. Narrowing of the aortic lumen in the area of the isthmus
- E. Dextroposition of the aorta

10. Features of the pulse during coarctation of the aorta:

- A. High, fast, spasmodic at the upper and lower extremities
- B. No peculiarities
- C. At an older age, atrial fibrillation is often present
- D. High, fast on the upper limbs and relaxed on the lower extremities
- E. Soft, weakened on the upper and lower limbs

#### **4. Summary:**

#### **5. Recommended reading list**

##### **Basic:**

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49. <https://www.aace.com/>
50. <https://www.acc.org/>
51. <https://www.escardio.org/>



52. <https://www.ese-hormones.org/publications/guidelines/>  
 53. <https://ehaweb.org/>  
 54. [https://oup.silverchair-cdn.com/oup/backfile/Content\\_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/](https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/)

*Practical lesson №08*

**Topic: Infective endocarditis**

**Purpose:** to explain the essence of the infective endocarditis, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** infective endocarditis, sepsis, heart failure, valve regurgitation, thromboembolism.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

**Plan:**

**1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**

**2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.)**

2.1 Questions to test basic knowledge of the topic of the lesson:

1. Definition of "infective endocarditis"
2. Classification of IE
3. Examination of patients with suspected IE
4. Diagnostic criteria of IE
6. Differential diagnosis
7. Prophylaxis and prophylactic medical examination
8. Treatment standards for patients with IE

**3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):**

*3.1 task content:*

**Clinical task №1**

A 23-year-old man complains of aching pain in the heart, shortness of breath, palpitations during exercise, cough, sometimes mixed with blood, joint pain. 4 years ago after a severe sore throat there was joint pain, shortness of breath. Took aspirin, after which the pain decreased. He was not treated further. Objectively: the boundaries of the heart are enlarged on the right side and up. At the top, during auscultation of the heart - diastolic murmur, clap and tone. Blood test: CRP ++, titer of ASLO-430AE STO in 1 ml, fibrinogen - 6.3 g / l.

Your diagnosis?

**Clinical task №2.**

A 35-year-old patient complains of fever up to 38 ° C with chills, sweating and weight loss. Ill for about a month. The skin is pale, punctate hemorrhagic rash on the legs. Short systolic and pronounced protodiastolic murmur in the aorta. Liver - +3 cm, spleen - +2 cm. Leukocytes - 13.5 G / l, Hb - 103 g / l, ESR - 35 mm / h, CRP +++, gamma globulin - 26%. Your diagnosis?

3.2 recommendations (instructions) for completing tasks:

№	The content and sequence of learning activities	Notes to the educational actions
1.	Know the diagnostic capabilities to identify IE	Make the patient's survey plan
2.	Know the basic clinical, laboratory and instrumental data of IE	Write IE criteria of diagnosis. Write tasks of the final control
3.	Be able to apply knowleges in the clinical situation	Write the clinical diagnosis of the patient. Write recipes.

### 3.3 control materials for the final stage of the lesson

1. Which of the causative agents of infective endocarditis prevails in patients with immunodeficiency states?
  - A. Streptococcus
  - B. Enterococci
  - C. Fungi of the genus Candida
  - D. Staphylococcus aureus
  - E. Viruses
  
2. What is the main echo cardiographic sign of infective endocarditis?
  - A. Significant regurgitation on the affected valve.
  - B. Violation of contractility of the myocardium.
  - C. Thrombs in the cavities of the heart.
  - D. Vegetation on the valves of the affected valves.
  - E. Decrease in the fraction of the ejection of the left ventricle.
  
3. Indicate antibacterial agents for the treatment of infective endocarditis caused by penicillin-resistant streptococcus:
  - A. Azithromycin + levofloxacin.
  - B. Erythromycin + amikacin
  - S. amoxicillin + vancomycin
  - D. Ceftriaxone + gentamicin
  - E. Levofloxacin + gentamicin
  
4. What is the Lukin-Liebman symptom?
  - A. microinfarctions of the retina
  - B. Petechia in the area of transitional fold of the conjunctiva
  - C. spleen infarction
  - D. Painful subcutaneous nodules
  - E. Petechial rash on the upper or lower limbs
  
5. What is the indication for urgent surgical treatment for infective endocarditis?
  - A. Signs of a subvalvular abscess and an increase in vegetation in size
  - B. Arterial hypotension
  - C. Changing the nature of noise during auscultation
  - D. Development of nephrotic syndrome
  - E. Paroxysm of atrial fibrillation
  
6. What kind of prosthetic valve endocarditis is considered to be early?
  - A. Less than 18 months after prosthesis
  - B. Less than 24 hrs
  - C. Less than 1 year
  - D. Less than 28 days
  - E. Less than 6 months
  
7. What is a Roth spots?
  - A. retinal microinfarcts
  - B. Petechiae in the transitional fold of the conjunctiva

- C. spleen microinfarcts
- D. Painful subcutaneous nodules
- E. Petechial rash on the upper or lower extremities

8. Which of the following criteria apply to large diagnostic criteria for infective endocarditis?

- A. Fever over 38 ° C
- B. Embolism large arteries
- C. vegetations on the valves when the valves echocardiography
- D. Heart failure.
- E. Addiction

9. Identify the indications for transesophageal echocardiography in suspected infective endocarditis?

- A. Cardiomegaly on x-ray of the thoracic cavity
- B. The ineffectiveness of antibiotic therapy
- C. Obesity
- D. The presence of congenital heart disease
- E. Lack of vegetation with transthoracic echocardiography

10. What is an antibacterial drug used in the treatment of infective endocarditis caused by Staphylococcus, in case of resistance to methicillin and vancomycin?

- A. tetracycline
- B. amikacin
- C. daptomycin
- D. ciprofloxacin
- E. rifampicin

#### 4. Summary:

#### 5. Recommended reading list

##### Basic:

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages
2. Bates' Guide To Physical Examination and History Taking (Lippincott Connect) 13th Edition
3. Pocket Medicine: The Massachusetts General Hospital Handbook of Internal Medicine 6th Edition, 2016
4. CURRENT Medical Diagnosis and Treatment 2019 58th Edition

##### Additional:

1. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al.
2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

##### Electronic information resources:

55. <http://www.oxfordmedicaleducation.com/>
56. <http://www.strazhesko.org.ua/advice>
57. <https://www.heart.org/>
58. <https://www.aace.com/>
59. <https://www.acc.org/>
60. <https://www.escardio.org/>
61. <https://www.ese-hormones.org/publications/guidelines/>
62. <https://ehaweb.org/>
63. [https://oup.silverchair-cdn.com/oup/backfile/Content\\_public/Journal/eurheartj/34/28/10.1093/e](https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/e)

**Topic: Acquired heart defects**

**Purpose:** to explain the essence of acquired heart defects, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** mitral stenosis, mitral regurgitation, aortic stenosis, aortic regurgitation, heart failure.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

**Plan:**

**1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**

**2. Control of the reference level of knowledge(written work, written test, frontal survey, etc.)**

2.1 Questions to test basic knowledge of the topic of the lesson:

1. Defining the concept of AHD.
2. What are the risk factors for AHD.
3. classification of AHD.
4. Classification of stages AHD.
5. AHD risk factors
6. Evaluation of patients with suspected AHD
7. Diagnostic Criteria of AHD
8. Principles of treatment AHD
9. Surgery and medication AHD
10. Criteria of AHD effective treatment

**3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):**

*3.1 task content:*

1.A 40-year-old patient was admitted to the clinic with complaints of angina pectoris pain in the heart, palpitations, dizziness. As a child, he suffered from bacterial endocarditis. Objectively: diffuse apical impulse of the heart, which is displaced downward. Increased pulsation of the arteries of the neck. AD - 130/30. In the projection of the aortic valve, a rough systolic murmur that spreads to the carotid arteries. In the lungs, breathing is vesicular. Pulse - 78 per minute. The abdomen is soft, painless. The liver and spleen are not palpable. X-ray enlargement of the heart due to the left ventricle, the ascending aorta and its arch. The waist of the heart is well defined, the heart is aortic configuration, the deposition of calcium salts in the projection of the aortic valve.

Preliminary diagnosis?

Diagnostic methods?

Treatment?

2. Patient 54 was admitted to the clinic with attacks of suffocation, chest pain with minor exertion, palpitations. As a child, he often suffered from angina, was not treated.

Objectively: on examination, the expansion of the area of the cardiac impulse by 3-4 cm, the displacement to the left of the apical impulse. On auscultation, weakening of the first tone, emphasis of the second tone over the pulmonary artery, systolic murmur at the apex. In the lungs, breathing is vesicular. The abdomen is soft, painless. The liver and spleen are not palpable. BH - 24 / min, pulse 84 / min, BP - 120 / 70mm Hg. ECG shows signs of left atrial and left ventricular hypertrophy.

What is your preliminary diagnosis?

Diagnostic methods?

Treatment?

3.2 recommendations (instructions) for completing tasks:

№	The content and sequence of learning activities	Notes to the educational actions
1.	Know the diagnostic capabilities to identify AHD	Make the patient's survey plan
2.	Know the basic clinical, laboratory and instrumental data of AHD	Write AHD criteria of diagnosis. Write tasks of the final control
3.	Be able to apply knowleges in the clinical situation	Write the clinical diagnosis of the patient. Write recipes.

3.3 control materials for the final stage of the lesson

1. What kind of noise is typical for aortic insufficiency?
  - A. presystolic murmur at the apex
  - B. Intensive holosystolic murmur at the apex
  - C. With a pansystolic murmur with an epicenter on the xiphoid process
  - D. proto-diastolic murmur with an epicenter in 3-4 intercostal spaces along the left side of the sternum
  - E. systolic-diastolic noise at the Botkin-Erba point
  
2. What is the norm of the aortic valve opening area:
  - A. less than 1 cm<sup>2</sup>.
  - B. 2.1-2.5 cm<sup>2</sup>.
  - C 1-1.5 cm<sup>2</sup>.
  - D. 2.5-3 cm<sup>2</sup>.
  - E. more than 1.5 cm<sup>2</sup>.
  
3. The verification method for the diagnosis of acquired heart disease is:
  - A. Electrocardiography
  - B. Sample with physical activity
  - C. Doppler echocardiography
  - D. Radiography of the thoracic cavity organs
  - E. Aortocoronarography
  
4. For which acquired heart disease is a characteristic symptom Rivero-Corvallio:
  - A. Insufficient tricuspid valve
  - B. Insufficient mitral valve
  - C. aortic stenosis
  - D. Insufficient aortic valve
  - E. mitral stenosis
  
5. For the prevention of thromboembolic complications in a permanent form of atrial fibrillation prescribe:
  - A. acetylsalicylic acid.
  - B. clopidogrel
  - C. ticlopidine
  - D. pentoxifylline
  - E. Warfarin
  
6. What are the characteristics of pulse on a. radialis can be determined in a patient with aortic stenosis?
  - A. Pulsus irregularis
  - B. Pulsus celer et altus
  - C. Pulsus tardus, parvus, brevis

- D. Pulsus deficiens
- E. Pulsus differens

7. What is the area of the mitral orifice is an indication for surgical correction of the defect?

- A.  $\leq 1 \text{ cm}^2$
- B.  $<3 \text{ cm}^2$
- C.  $<0,5 \text{ cm}^2$
- D.  $\leq 1,5 \text{ cm}^2$
- E.  $<2 \text{ cm}^2$

8. With what diseases carry out differential diagnosis of mitral stenosis?

- A. Mitral valve insufficiency
- B. cardiomyotoxicosis
- C. obstructive hypertrophic cardiomyopathy
- D. Dilated cardiomyopathy
- E. mitral valve prolapse

9. What is the purpose of secondary prevention of antibacterial agents in the case of valve replacement?

- A. Prevention of myocardial infarction
- B. Prevention of heart failure
- C. Prevention of acute rheumatic fever
- D. Prevention of infective endocarditis
- E. Prevention of atherosclerosis

10. Which defect is characterized by the following auscultatory picture: systolic click, a late systolic murmur of mitral regurgitation over the top?

- A. aortic insufficiency
- B. mitral insufficiency
- C. tricuspid insufficiency
- D. mitral stenosis
- E. Mitral valve prolapse

#### **4. Summary:**

#### **5. Recommended reading list**

##### **Basic:**

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages
2. Bates' Guide To Physical Examination and History Taking (Lippincott Connect) 13th Edition
3. Pocket Medicine: The Massachusetts General Hospital Handbook of Internal Medicine 6th Edition, 2016
4. CURRENT Medical Diagnosis and Treatment 2019 58th Edition

##### **Additional:**

1. Internal Medicine: in 2 books. Book 1. Diseases of the Cardiovascular and Respiratory Systems: textbook / N.M. Seredyuk, I.P. Vakaliuk, R.I. Yatsyshyn et al.
2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

##### **Electronic information resources:**

64. <http://www.oxfordmedicaleducation.com/>
65. <http://www.strazhesko.org.ua/advice>
66. <https://www.heart.org/>
67. <https://www.ace.com/>
68. <https://www.acc.org/>

69. <https://www.escardio.org/>  
 70. <https://www.ese-hormones.org/publications/guidelines/>  
 71. <https://ehaweb.org/>  
 72. [https://oup.silverchair-cdn.com/oup/backfile/Content\\_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/](https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/)

*Practical lesson № 10*

**Topic: Myocarditis. Cardiomyopathy**

**Purpose:** to explain the essence of the cardiomyopathy, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** hypertrophic cardiomyopathy, dilated cardiomyopathy, restrictive cardiomyopathy, heart failure, rhythm disorders.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

**Plan:**

**1. Organizational measures (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).**

**2. Control of the reference level of knowledge (written work, written test, frontal survey, etc.)**

2.1 Questions to test basic knowledge of the topic of the lesson:

1. Definition of myocarditis, cardiomyopathy.
2. Epidemiology of myocarditis, cardiomyopathy.
3. Etiology, pathogenesis of myocarditis, cardiomyopathy.
4. Classification of myocarditis, cardiomyopathy.
5. Clinical features of different types of myocarditis, cardiomyopathy.
6. Diagnosis of myocarditis, cardiomyopathy.
7. Severity criteria of the disease.

**3. Formation of professional abilities and skills (mastery of skills, conducting curation, determining the treatment scheme, conducting laboratory research, etc.):**

*3.1 task content:*

1) At the patient of 53 years after the transferred flu the general weakness, short wind, palpitations, cardialgias increased. About: temperature - 37.4 ° C, pulse - 110 beats. / min. The size of the heart is increased in diameter, extrasystole, deaf tones. In the lower lungs - wet rales. The liver is painful, protruding 6 cm from the hypochondrium. ESR - 32 mm / h, CRP (+++), ECG - diffuse myocardial changes.

Your diagnosis?

2) Patient D., 32 years old, complains of chest discomfort, shortness of breath, palpitations, dizziness, frequent episodes of loss of consciousness. Objectively:, on palpation, a double apical shock is determined, on auscultation - a late systolic murmur over the apex of the heart, increases in the position of the patient standing and after the use of nitroglycerin. ECG: in leads U4\_6 the pathological Tooth Q, R U5> RU4 is defined. Echocardiography: the ratio of the thickness of the interventricular septum to the thickness of the posterior wall of the left ventricle is 2.3; systolic fit of the anterior sash of the mitral valve to the interventricular septum, srednesistolichesky noise occurs through O, 14 s after opening the aortic valve, is determined by the subaortic systolic pressure gradient. The most likely diagnosis is?

### 3.2 recommendations (instructions) for completing tasks:

№	The content and sequence of learning activities	Notes to the educational actions
1.	Know the diagnostic capabilities to identify myocarditis	Make the patient's survey plan
2.	Know the basic clinical, laboratory and instrumental data of myocarditis	Write myocarditis criteria of diagnosis. Write tasks of the final control
3.	Be able to apply knowleges in the clinical situation	Write the clinical diagnosis of the patient. Write recipes.

### 3.3 control materials for the final stage of the lesson

1. "Against the background of an infectious disease or exposure to a non-infectious factor, the most likely sign of myocarditis is:"

- A) Accelerated ESR
- B) The appearance of "C" reactive protein
- C) Leukocytosis
- D) ECG changes**

2. "Specific changes for myocarditis on the ECG are:"

- A) Violation of conductivity at different levels of the conduction system
- B) Sinus tachycardia
- C) Ectopic rhythms
- D) Atrial fibrillation
- E) There are no specific rhythm and conduction disorders**

3. "To verify the diagnosis of myocarditis use endomyocardial biopsy, with:"

- A) Positive results confirm the diagnosis
- B) Negative results include diagnosis
- C) The final diagnosis should be based on data from all general clinical and additional studies**

4. "Dalian criteria for myocarditis take into account:"

- A) Clinical data
- B) ECG results
- C) The results of ultrasound examination of the heart
- D) The results of X-ray examination of organs
- E) Endomyocardial biopsy data**

5. "Biopsy for the study receive:"

- A) From the top of the heart
- B) From the left atrium
- C) From the right atrium
- D) From the interventricular septum on the left
- E) From the interventricular septum on the right**

6. Classification of hypertrophic cardiomyopathy (by NUHA) by pressure gradient: 1. I degree - up to 25 mm Hg. 2. II degree - up to 36 mm Hg. 3. III degree - up to 44 mm Hg. 4. IU degree - up to 80 mm Hg

- A) Everything is correct
- B) Correctly 1,2,3**
- C) Correctly 1,2,4
- D) Correct 1.2
- E) Correctly 2,3,4



7. In which of the following forms of non-coronary heart disease is most indicated the purpose of vitamin B1:

- A) Hypertrophic cardiomyopathy
- B) Hypothyroidism
- C) Alcoholic myocardial infarction with severe heart failure**
- D) Hemochromatosis
- E) Thyrotoxicosis

8. Tactics of beta-blockers in dilated cardiomyopathy:

- A) Appointed for tachycardia
- B) Contraindicated
- C) Indicated for atrial fibrillation
- D) More often prescribed long-acting drugs with additional action (vasodilation, antioxidant effect, etc.), starting with small doses**
- E) Non-selective short-acting beta-blockers are prescribed in small doses

9. The main in the treatment of restrictive cardiomyopathy are:

- A) Prescribing glucocorticoids, cytostatics, diuretics**
- B) Glucocorticoids are contraindicated
- C) Prescribing beta-blockers
- D) Appointment of cardiac glycosides in combination with peripheral vasodilators
- E) Prescription of cardiac glycosides and diuretics

10. What arrhythmia is more common in hypertrophic cardiomyopathy:

- A) Atrial fibrillation, ventricular overexcitation syndrome, paroxysm of ventricular tachycardia**
- B) Ventricular excitation syndrome, paroxysm of ventricular tachycardia, sinus bradycardia
- C) Atrial fibrillation
- D) Sinus bradycardia, nodular extrasystole
- D) Atrial fibrillation, paroxysm of ventricular tachycardia, nodular extrasystole

#### **4. Summary:**

#### **5. Recommended reading list**

##### **Basic:**

1. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition, McGraw-Hill Education / Medical; 20th edition (August 13, 2018), 4048 pages
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3. Pocket Medicine: The Massachusetts General Hospital Handbook of Internal Medicine 6th Edition, 2016
4. CURRENT Medical Diagnosis and Treatment 2019 58th Edition

##### **Additional:**

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2. Current Medical Diagnosis and Treatment 2020 by Stephen J. McPhee; Michael W. Rabow; Maxine A. Papadakis, 2019

##### **Electronic information resources:**

73. <http://www.oxfordmedicaleducation.com/>
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75. <https://www.heart.org/>
76. <https://www.ace.com/>
77. <https://www.acc.org/>

78. <https://www.escardio.org/>  
 79. <https://www.ese-hormones.org/publications/guidelines/>  
 80. <https://ehaweb.org/>  
 81. [https://oup.silverchair-cdn.com/oup/backfile/Content\\_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/](https://oup.silverchair-cdn.com/oup/backfile/Content_public/Journal/eurheartj/34/28/10.1093/eurheartj/eh151/2/)

### Practical lesson № 11

**Topic:** Cardiomyopathy: restrictive, arrhythmogenic cardiomyopathy of right ventricle. Pericarditis: acute forms. Heart's tamponade. Pericarditis: subacute and chronic forms.

**Purpose:** to explain the essence of the cardiomyopathy, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. To explain the essence of the pericarditis, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** restrictive cardiomyopathy, heart failure, rhythm disorders, acute pericarditis, chronic pericarditis, dry pericarditis, exudative pericarditis, constrictive pericarditis, cardiac tamponade.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

#### Plan of the practical lesson

1. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)
2. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)
3. Questions (tests) to test basic knowledge of the topic of the lesson:

1. In the treatment of restrictive cardiomyopathy use all these tools, except one. What's wrong?

- A) Diuretics
- B) Glucocorticoids, cytostatics
- C) Alpha-blockers**
- D) Surgical correction of valve defects, endocardial dissection
- E) Heart transplantation

2. "Biopsy for the study receive:"

- A) From the top of the heart
- B) From the left atrium
- C) From the right atrium
- D) From the interventricular septum on the left
- E) From the interventricular septum on the right**

3. The main in the treatment of restrictive cardiomyopathy are:

- A) Prescribing glucocorticoids, cytostatics, diuretics**
- B) Glucocorticoids are contraindicated
- C) Prescribing beta-blockers
- D) Appointment of cardiac glycosides in combination with peripheral vasodilators
- E) Prescription of cardiac glycosides and diuretics

4. What arrhythmia is more common in hypertrophic cardiomyopathy:

- A) Atrial fibrillation, ventricular overexcitation syndrome, paroxysm of ventricular tachycardia**
- B) Ventricular excitation syndrome, paroxysm of ventricular tachycardia, sinus bradycardia
- C) Atrial fibrillation
- D) Sinus bradycardia, nodular extrasystole
- E) Atrial fibrillation, paroxysm of ventricular tachycardia, nodular extrasystole

5. What auscultative phenomenon is characteristic for compressive pericarditis?

- A. Additional fourth tone

- B. Noise in the II-IV intercostal spaces to the left of the sternum scratching character, not associated with tones**
- C. Cannon Tone Strazhesko
- D. Pericard-tone (additional tone in the protodiastole)
- E. Systolic murmur at the apex of the heart with irradiation to the left axillary region
6. In case of chronic constrictive pericarditis, the face is:
- A. Puffy face with cyanotic shade, cervical vein swelling ("consular head")**
- B. Pale gray, with pointed features, sunken eyes (facies Hippocratica)
- C. Dark red with a cyanotic shade of blush on the cheeks (facies mitralis)
- D. Round, moonlike face with a deep red flush
- E. Anymic, "masky" face
7. What drugs are the basis of therapy for acute pericarditis?
- A. Metabolic drugs
- B. NSAIDs**
- C. Nitrates
- D.  $\beta$ -blockers
- E. calcium antagonists
8. In what clinical situation is the pericardiocentesis not shown?
- A. Available cardiac tamponade
- B. With a high likelihood of purulent or neoplastic pericarditis
- C. With a large amount of effusion, which despite the treatment is preserved for more than 1 week
- D. In acute exudative pericarditis without signs of tamponade
- E. With recurrent effusions and questionable results of a preliminary examination**
9. What laboratory indicators will testify to the autoimmune pathogenesis of pericarditis?
- A. Specific immunological markers**
- B. acute phase inflammatory abnormalities
- C. The resulting growth of the flora during the sowing of blood
- D. Increased level of leukocytes in the urine
- E. Increase in the level of creatinine, urea
10. Which of the etiological factors of pericarditis is a frequent?
- A. viral infection**
- B. Bacterial infection
- C. Diffuse diseases of connective tissue
- D. pericardium tumors
- E. metabolic disorders
11. What ECG-signs are typical of acute exudative pericarditis?
- A. domed ST segment elevation in leads II, III, aVF, V5-V6.
- B. ST Elevation and pathological Q wave in V1-V3
- C. High R wave, oblique ST depression and negative T in the left chest leads
- D. Atrial fibrillation, SIQIII syndrome, complete blockade of right bundle branch block.
- E. Reducing the voltage of the waves, concordant ST segment elevation in all leads "arc down" except for AVR.**
12. What determines the development of pericardial tamponade?
- A. From the etiology of pericarditis
- B. The nature of the exudate
- C. From the age of the patient
- D. From the rate of accumulation of exudate**
- E. From the presence of comorbidity
13. What position of the patient is typical for acute fibrinous pericarditis?
- A. Constantly and ineffectively looking for a position to reduce pain in the chest**
- B. Sits with legs down from the bed, leaning on the edge of the bed
- C. Lying, pressing his knees to the body

D. Sits with an inclination of the trunk forward

E. lies on the right side

14. What auscultative phenomenon is inherent in acute fibrinous pericarditis?

A. An additional third tone (proto-diastolic rhythm of the canal)

**B. Noise in the II-IV intercostal spaces to the left of the sternum scratching the character, not associated with tones**

C. Cannon Tone Strazhesko

D. Accent II tone over the aorta

E. Systolic murmur at the apex of the heart with a left axillary region

4. Discussion of theoretical issues:

1. Definition of cardiomyopathy.

2. Classification of cardiomyopathy.

3. Clinical features of different types of cardiomyopathy.

4. Diagnosis of cardiomyopathy.

5. Give a definition of pericarditis.

6. Name the etiological factors that contribute to the development of pericarditis

7. Pathogenesis of pericarditis depending on the variants of the course.

8. Describe the clinic of acute exudative pericarditis.

9. Learn the features of the clinics of chronic pericarditis, incl. constrictive.

10. Indicate the features of treatment of pericarditis and their complications.

11. Disassemble the issue of primary and secondary prevention of pericarditis.

*Note.* The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

5. Topics of reports/abstracts:

- Clinical features of hypertrophic cardiomyopathy.

- Clinical features of dilated cardiomyopathy.

- Clinical features of restrictive cardiomyopathy.

- The clinic of acute exudative pericarditis.

- The clinic of cardiac tamponade.

*Note.* When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

6. Summary.

7. List of recommended literature (main, additional, electronic information resources):

Main:

1. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMed. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021

2. Davidson's "Principles of Practice of Medicine" 20th edition 2016, Elsevier limited.

3. Harrison's "Principles of internal medicine" Volume 1,2, 2018, USA. – Cardiology

Electronic information resources:

1. <http://www.asco.org/practice-guidelines/quality-guidelines/guidelines>

2. <https://www.asn-online.org/education/training/fellows/educationalresources.aspx#Guidelines>

3. [www.brit-thoracic.org.uk/standards-of-care/guidelines](http://www.brit-thoracic.org.uk/standards-of-care/guidelines)

## Practical lesson № 12

**Topic:** Arrhythmias: classification, etiopathogenesis, symptoms, clinic, diagnosis.

Arrhythmias: antiarrhythmic drugs, invasive treatment. Conduction disorders: classification, etiopathogenesis, symptoms.

**Purpose:** to explain the essence of the arrhythmia, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. To explain the essence of conduction disorders, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** supraventricular arrhythmia, ventricular arrhythmia, atrial fibrillation, atrial flutter, heart failure, SA block, AV block, bundle branch block, WPW-syndrome.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson.

### Plan of the practical lesson

3. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)
4. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)
4. Questions (tests) to test basic knowledge of the topic of the lesson:

1. Select a symptom characteristic of atrial fibrillation

A) On the ECG, the P wave is negative in front of the ventricular complex

**B) Different R-R intervals**

C) Double-humped P wave

D) Different PQ interval

E) Prong P +/-

2. Select the most typical ECG change for atrial fibrillation

**A) There is no P wave**

B) Negative P wave in front of the QRS complex

C) Negative P wave behind the QRS complex

D) Different PQ interval

E) The same duration of the R-R intervals is noted

3. One of the main signs of atrial fibrillation according to ECG data?

**A) there are f waves of different amplitudes and durations**

B) Negative P wave in front of the QRS complex

C) Negative P wave behind the QRS complex

D) Different PQ interval

E) R-R intervals are the same

4. Which of the following is most related to atrial fibrillation according to ECG data?

A) Extension of the PQ interval

B) Negative P wave in front of the QRS complex

C) Negative P wave behind the QRS complex

D) PQ interval does not change

**E) R-R intervals are different**

5. What is most typical for atrial fibrillation according to ECG data?

**A) Instead of the P wave, flicker waves of different amplitudes and durations**

B) Negative P wave in front of the QRS complex

C) Negative P wave behind the QRS complex

D) PQ interval does not change

E) The duration of the R-R intervals does not change

6. In favor of atrial fibrillation according to ECG data, the most significant is:

**A) There are flickering waves of different magnitude, amplitude and duration**

B) The P wave is layered on the QRS complex

C) Negative P wave behind the QRS complex

D) PQ interval does not change

E) R-R intervals do not change

7. On auscultation: the rhythm is incorrect, different volume of the I tone, arrhythmic pulse, pulse waves of different amplitudes, pulse deficit of about 25 beats. What rhythm disturbance is most likely in the patient?

**A) Atrial fibrillation**

B) Atrial flutter

C) lower atrial rhythm

D) Sinus arrhythmia

E) Atrioventricular block

8. On the ECG - there are no P waves, instead of them f waves of different amplitudes and durations are better seen in leads II, III, avF, V1-V2. What rhythm disturbance is most likely in the patient?

**A) Atrial fibrillation**

B) Atrial flutter

C) Atrioventricular block I degree

D) Sinus arrhythmia

E) Atrioventricular block II degree

9. On the ECG - there are no P waves, instead of them f waves of different amplitudes and durations are better seen in leads II, III, avF, V1-V2, HRC -170 at 1min. What should be done first?

A) enteral cordarone

**B) cordaron i / v**

C) isoptin enterally

D) digoxin enterally

E) heparin IV

10. On the ECG - atrial fibrillation with the number of cardiac contractions approximately 115-125 per minute / Which of the drugs is best used for continuous administration in order to correct arrhythmia?

**A) Digoxin**

B) Monopril

C) Dibazol

D) Euphyllin

E) Aspirin

11. On the ECG, the duration of the PQ interval is more than 0.20 s. This is typical for:

A. complete atrioventricular block;

**B. incomplete atrioventricular block of the 1st degree;**

C. blockade of the legs of the bundle of His;

D. sinoauricular block;

E. migration of the pacemaker through the atria.

12. On the ECG, the negative P wave is located after the premature, but unchanged QRS complex. It:

A. **atrioventricular extrasystole;**

B. atrial premature beats;

C. ventricular premature beats;

D. slip-out reduction;

E. the rhythm of the coronary sinus

13. On the ECG, the duration of the PQ interval is more than 0.20 s. This is typical:

A. for complete atrioventricular block;

**B. for incomplete atrioventricular block of the 1st degree;**

C. for blockade of the bundle branch

14. ECG shows sinus rhythm, R-R - 0.95 sec, P-Q - 0.22 sec, QRS - 0.09 sec. After physical loads: R-R - 0.65 s, P-Q - 0.18 s, QRS - 0.09 s. Conclusion:

**A. incomplete atrioventricular block of the 1st degree due to vagotonia;**

B. violation of intracardiac conduction;

### C. violation of sinoatrial conduction.

#### 4. Discussion of theoretical issues:

1. Define arrhythmias, extrasystole and atrial fibrillation.
2. Which two mechanisms underlie most heart rhythm disturbances
3. Risk factors of the CA
4. What are the three groups that divide all arrhythmias?
5. General signs of diagnosis of the CA (ECG, Holter monitoring ECG during the day, a sample with a dosed physical load, transesophageal pacing).
6. What are the ECG signs of atrial extrasystole?
7. What are the ECG signs of extrasystole from aV compounds?
8. What are the ECG signs of ventricular extrasystole?
9. Classification of antiarrhythmic drugs, pharmacological recovery of sinus rhythm
10. Electroimpulse therapy
11. Etiology of conduction disorders
12. Classification of conduction disorders
13. Symptoms and signs of conduction disorders

*Note.* The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

8. Topics of reports/abstracts:
  - Classification of antiarrhythmic drugs
  - Electroimpulse therapy
  - General signs of diagnosis of the CA

*Note.* When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

9. Summary:
10. List of recommended literature (main, additional, electronic information resources):

Main:

1. Davidson's "Principles of Practice of Medicine" 20th edition 2016, Elsevier limited.
2. Harrison's "Principles of internal medicine" Volume 1,2, 2018, USA. - Cardiology
3. Unified clinical protocol of primary, secondary (specialized), tertiary (highly specialized) medical care for atrial fibrillation. Order of the Ministry of Health of Ukraine of June 15, 2016 No. 597.

Additional:

Lei M, Wu L, Terrar DA, Huang CLH: Modernized classification of cardiac antiarrhythmic drugs. *Circulation* 138(17):1879–1896, 2018. doi: 10.1161/CIRCULATIONAHA.118.035455

Electronic information resources:

1. <https://www.msmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders>
2. <https://www.msmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/overview-of-arrhythmias>
3. <https://www.msmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/drugs-for-arrhythmias>

Practical lesson № 13

**Topic:** Conduction disorders: diagnosis, treatment. Electrical stimulation. Acute heart failure (AHF): classification, symptoms. Acute heart failure: diagnosis, complications, treatment.

**Purpose:** to explain the essence of conduction disorders, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. To explain the essence of the acute heart failure, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** SA block, AV block, bundle branch block, WPW-syndrome, acute heart failure, pulmonary edema, myocardial infarction.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

### Plan of the practical lesson

5. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)
6. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)
5. Questions (tests) to test basic knowledge of the topic of the lesson:
  1. Electrocardiographic signs of Wolff-Parkinson-White syndrome are:
    - A. the width of the QRS complex, exceeding 0.10 s;
    - B. P-Q interval 0.11 s;
    - C. the presence of a d-wave;
    - D. **all of the above**
  2. Electrocardiographic signs of Frederick's syndrome are:
    - A. irregular ventricular rhythm;
    - B. atrial fibrillation and flutter;
    - C. complete atrioventricular block;
    - D. all of the above;
    - E. **b and c are true.**
  3. On the ECG, the intervals between the QRS complexes of adjacent cycles differ no more than than 0.10 s; P waves (in leads I, II, AVF) are positive before each complex QRS. We can assume:
    - A. **regular sinus rhythm;**
    - B. sinus rhythm is irregular;
    - C. atrial fibrillation;
    - D. the rhythm of the atrioventricular junction, regular;
    - E. the rhythm of the atrioventricular junction, irregular;
  4. ECG signs of sinoatrial block are:
    - A. **periodic loss of individual cardiac cycles;**
    - B. periodic loss of the QRST complex;
    - C. increase in duration QRS complex more than 0.12 s;
    - D. an increase in the duration of the P wave by more than 0.11 with.
  5. For ventricular extrasystole, all of the listed signs are characteristic, except:
    - A. premature extraordinary appearance of the altered ventricular complex QRS;
    - B. discordant displacement of the ST segment and the T wave extrasystole;
    - C. **the presence of a P wave in front of the QRS complex of the extrasystole;**
    - D. **the presence of a full compensatory pause.**
  6. The cause of acute right ventricular failure can be
    - A. aortic insufficiency;
    - B. mitral valve insufficiency;
    - C. aortic stenosis;
    - D. **stenosis of the pulmonary artery;**
    - E. mitral stenosis
  7. The cause of right ventricular failure can be:
    - A. insufficiency of the aortic valve;
    - B. mitral valve insufficiency;
    - C. coarctation of the aorta;



- D. arterial hypertension of the pulmonary circulation;**  
E. arterial hypertension of the systemic circulation.
8. One of the signs of right ventricular failure is  
A. pallor;  
B. attacks of suffocation;  
C. hemoptysis;  
D. pulmonary edema;  
**E. cyanosis of the skin and visible mucous membranes, ascites**
9. One of the signs of right ventricular failure is:  
A. attacks of suffocation;  
B. hemoptysis;  
C. pulmonary edema;  
D. pronounced pallor of the skin;  
**E. edema of the lower extremities, ascites.**
10. One of the causes of left ventricular failure is  
A. lung disease;  
B. stenosis of the mouth of the pulmonary artery;  
C. insufficiency of the tricuspid valve;  
D. right ventricular infarction;  
**E. mitral valve insufficiency**
11. One of the causes of left ventricular heart failure is:  
A. pulmonary hypertension;  
B. stenosis of the mouth of the pulmonary artery;  
C. insufficiency of the tricuspid valve;  
D. pulmonary emphysema;  
**E. primary arterial hypertension.**
12. One of the signs of left ventricular failure is  
A. cyanosis;  
B. edema in the lower extremities;  
C. pulsation of the veins of the neck;  
D. enlargement of the liver;  
**E. attacks of suffocation (cardiac asthma)**
13. When left ventricular heart failure is observed:  
A. ascites;  
B. edema in the lower extremities;  
C. pulsation of the veins of the neck;  
D. enlargement of the liver;  
**E. pulmonary edema**
14. Leads to an overload form of heart failure  
**A. hypervolemia;**  
B. myocardial ischemia;  
C. myocarditis;  
D. extrasystole;  
E. myocardial dystrophy.
15. The overload form of heart failure leads to:  
**A. arterial hypertension;**  
B. myocardial ischemia;  
C. myocarditis;  
D. extrasystole;  
E. myocardial dystrophy.

4. Discussion of theoretical issues:

1. Diagnosis of conduction disorders
2. Treatment of conduction disorders
3. Which of the given drugs is an  $\alpha$ - and  $\beta$ -adrenostimulator
  - A. Propranolol
  - B. Alpha Methyl dopa
  - C. Hydralazine
  - D. **Dopamine**
  - E. Enalapril
4. Which of the following signs is not specific to acute right ventricular heart failure?
  - A. dyspnea on exertion
  - B. Edema of the lower limbs in the evening
  - C. **Patient liver enlargement, jugular venous distention, lower extremity edema**
  - D. crackles in the lower parts of the lungs
  - E. Increased liver
5. What disease can lead to acute LV failure?
  - A. **Acute Coronary Syndrome**
  - B. Pneumonia
  - C. Pulmonary embolism
  - D. COPD
  - E. Bronchial asthma
6. How pathophysiological process cardiogenic pulmonary edema is accompanied by:
  - A. Increased perfusion of organs and tissues
  - B. **Increase in cardiac output**
  - C. Increasing the hydrostatic pressure in the pulmonary capillaries
  - D. Increasing of myocardial contractility
  - E. Increased CVP
7. Choose mechanism of compensatory reaction in cardiogenic shock:
  - A. Expansion of peripheral vessels
  - B. bradycardia
  - C. **Centralization of blood circulation**
  - D. Extracting the liquid part of the blood into tissues
  - E. Exit of red blood cells from the depot.

*Note.* The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

#### 11. Topics of reports/abstracts:

- Diagnosis of conduction disorders
- Treatment of conduction disorders
- Classification of acute heart failure
- Diagnosis of acute heart failure

*Note.* When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

#### 12. Summary

#### 13. List of recommended literature (main, additional, electronic information resources):

Main:

1. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMed. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
2. Davidson's "Principles of Practice of Medicine" 20th edition 2016, Elsevier limited.
3. Harrison's "Principles of internal medicine" Volume 1,2, 2018, USA. - Cardiology

Additional:

PRACTICAL MANUAL IN CLINICAL MEDICINE. ABM Abdullah MRCP (UK) FRCP (Edin) Dean, Faculty of Medicine Professor, Department of Medicine Bangabandhu Sheikh Mujib Medical University Dhaka, Bangladesh Foreword Kamrul Hasan Khan. New Delhi | London | Philadelphia | Panama 2017

Electronic information resources:

1. <https://www.msmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/bundle-branch-block-and-fascicular-block>
2. <https://www.msmanuals.com/professional/cardiovascular-disorders/arrhythmias-and-conduction-disorders/atrioventricular-block>
3. <https://www.msmanuals.com/professional/cardiovascular-disorders/heart-failure>

#### Practical lesson № 14

**Topic:** Chronic heart failure (CHF): classification, etiopathogenesis, symptoms. Chronic heart failure: diagnosis, complications, treatment. Principles of evidence-based medicine.

**Purpose:** to explain the essence of the chronic heart failure, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. To explain the essence of evidence-based medicine, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** chronic heart failure, ischemic heart disease, arterial hypertension, atherosclerosis, evidence-based medicine, prevention, risk factors, clinical epidemiology, clinical trial.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

#### Plan of the practical lesson

7. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)
8. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)
9. Questions (tests) to test basic knowledge of the topic of the lesson:
  1. The causes of CHF can be:
    - A. **myocardial infarction**
    - B. sore throat
    - C. pneumonia
    - D. hemorrhagic fever
    - E. smoking
  2. The main biochemical marker of CHF is a high level:
    - A. troponin
    - B. transaminase
    - C. cholesterol
    - D. **natriuretic peptide**
    - E. amylase
  3. In CHF, echocardiography is necessary to identify:
    - A. heart disease
    - B. hypertrophy of the heart
    - C. reduced myocardial contractility
    - D. **all of the above**
    - E. arterial hypertension
  4. The main trigger for CHF is:
    - A. a decrease in the level of potassium in blood plasma
    - B. **decrease in myocardial contractility**

- C. a decrease in plasma sodium levels
  - D. decreased adrenaline levels
  - E. an increase in myocardial contractility
5. The main mechanism of action of ACE inhibitors is blockade:
- A. angiotensin I
  - B. renin
  - C. **angiotensin II**
  - D. aldosterone
  - E. testosterone
6. The main mechanism of action of antagonists of mineralocorticoid receptors is manifested by a decrease in the level of:
- A. **aldosterone**
  - B. adrenaline
  - C. angiotensin II
  - D. renin
  - E. cholesterol
7. How beta-blocker treatment is controlled:
- A. measuring systolic pressure
  - B. counting the pulse
  - C. counting the number of respiratory movements
  - D. **determining the number of heartbeats**
  - E. determining the function of external respiration
8. If-channel blocker of sinus node ivabradine:
- A. increases the heart rate
  - B. slows down the pulse
  - C. **slows down the number of heartbeats**
  - D. reduces the number of respiratory movements
  - E. lowers blood pressure
9. The main thing in the prevention of CHF with stable exertional angina:
- A. pain relief
  - B. **timely myocardial revascularization**
  - C. the use of medicines
  - D. the use of vitamins
  - E. the use of nitrates
10. Prevention of CHF with arterial hypertension consists in:
- A. decrease in systolic pressure
  - B. a decrease in diastolic pressure
  - C. controlling blood pressure below the target level
  - D. **taking medications**
  - E. maintaining blood pressure below the target level

4. Discussion of theoretical issues:

1. The basic rules of work with the literature in evidence-based medicine.
  2. What is evidence-based medicine and its basic methods?
  3. Stages of work in evidence-based medicine.
  4. Organization of research in evidence-based medicine.
  5. Which of the given drugs is ACE inhibitor?
- A. Propranolol
  - B. Valsartan
  - C. Hydralazine
  - D. Candesartan
  - E. **Enalapril**

6. Which of the following criteria is the most reliable in diagnosing systolic heart failure?
- Dyspnoea with exertion
  - Swelling of the lower extremities in the evening
  - Ejection fraction**
  - Wet rales in the lower parts of the lungs
  - Enlarged liver
7. What functional class of heart failure in a patient with heart disease, if the performance of normal physical activity does not cause shortness of breath, fatigue and palpitations?
- I**
  - II
  - III
  - IV
  - V
8. Drugs, the appointment of which in chronic HF should be avoided, include:
- Class I antiarrhythmic drugs**
  - ACE Inhibitors
  - Angiotensin II receptor antagonists
  - Aldosterone antagonists
  - Loop diuretics
9. What group of drugs it is advisable to appoint in diastolic HF?
- Cardiac glycosides
  - $\alpha$ -blockers
  - $\beta$ -blockers
  - Nitrate
  - Diuretics**

*Note.* The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

14. Topics of reports/abstracts:

- primary and secondary prevention of diseases of internal organs
- PRIMARY DISEASE PREVENTION includes

*Note.* When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

15. Summary.

16. List of recommended literature (main, additional, electronic information resources):

Main:

- Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMed. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
- Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition
- Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition

Additional:

PRACTICAL MANUAL IN CLINICAL MEDICINE. ABM Abdullah MRCP (UK) FRCP (Edin) Dean, Faculty of Medicine Professor, Department of Medicine Bangabandhu Sheikh Mujib Medical University Dhaka, Bangladesh Foreword Kamrul Hasan Khan. New Delhi | London | Philadelphia | Panama 2017

Electronic information resources:

1. <https://www.msdmanuals.com/professional/special-subjects/clinical-decision-making/evidence-based-medicine-and-clinical-guidelines>
2. <https://www.msdmanuals.com/professional/special-subjects/clinical-decision-making/introduction-to-clinical-decision-making>
3. <https://www.msdmanuals.com/professional/special-subjects/clinical-decision-making/understanding-medical-tests-and-test-results>

#### Practical lesson № 15

**Topic:** Contemporary clinical research. Features of diagnosis and treatment of elderly patients. Emergencies in the context of an incurable disease. Obesity: classification, complications, treatment.

**Purpose:** to explain the essence of evidence-based medicine, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. To explain the essence of diagnosis and treatment of elderly people, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. To explain the essence of the obesity, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** evidence-based medicine, prevention, risk factors, clinical epidemiology, clinical trial, metabolism in old age, comorbid pathology, drug action, emergency, incurable disease, alimentary obesity, secondary obesity, body mass index, atherosclerosis, ischemic heart disease, diabetes type 2, non-alcoholic fatty liver.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

#### Plan of the practical lesson

10. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)
11. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)
6. Questions (tests) to test basic knowledge of the topic of the lesson:
  1. What is step 1 of the key steps for the practice of EBM?
    - A. Critically appraising the evidence for its validity and applicability
    - B. Converting clinical scenarios into a structured answerable question
    - C. Searching the literature to identify the best available evidence to answer the question
    - D. Applying the results of the appraisal to clinical practice
    - E. Evaluation/assessment of the EBM process
  2. What is step 3 of the key steps for the practice of EBM?
    - A. Applying the results of the appraisal to clinical practice
    - B. Critically appraising the evidence for its validity and applicability
    - C. Evaluation/assessment of the EBM process
    - D. Converting clinical scenarios into a structured answerable question
    - E. Searching the literature to identify the best available evidence to answer the question
  3. What is step 2 of the key steps for the practice of EBM?
    - A. Searching the literature to identify the best available evidence to answer the question
    - B. Converting clinical scenarios into a structured answerable question
    - C. Evaluation/assessment of the EBM process
    - D. Critically appraising the evidence for its validity and applicability
    - E. Applying the results of the appraisal to clinical practice
  4. What is step 4 of the key steps for the practice of EBM?
    - A. Converting clinical scenarios into a structured answerable question
    - B. Evaluation/assessment of the EBM process
    - C. Critically appraising the evidence for its validity and applicability

- D. Applying the results of the appraisal to clinical practice
  - E. Searching the literature to identify the best available evidence to answer the question
5. What is step 5 of the key steps for the practice of EBM?
- A. Searching the literature to identify the best available evidence to answer the question
  - B. Applying the results of the appraisal to clinical practice
  - C. Critically appraising the evidence for its validity and applicability
  - D. Evaluation/assessment of the EBM process
  - E. Converting clinical scenarios into a structured answerable question
6. Aging is a process:
- A. stabilizing life, which increases life expectancy
  - B. naturally comes the final period of age development
  - C. destabilizing life, which reduces life expectancy
  - D. destructive, the result of increasing with age insufficiency of physiological functions
  - E. creative, the result of increasing with age hyperfunction of organs and systems
7. Not characteristic changes in the ECG during physiological aging:
- A. the expansion of the wave P
  - B. flattening of the wave P
  - C. reducing the amplitude of all waves
  - D. negative wave T
  - E. reducing the amplitude of the wave T
8. Characteristic ECG changes in the elderly:
- A. decreased myocardial function
  - B. increase in myocardial contractile function
  - C. tachycardia
  - D. sinus arrhythmia
  - E. the vertical axis deviation
9. The main features of the disease in the elderly
- A. reducing the number of diseases
  - B. polymorbidity, chronic and atypical disease
  - C. the predominance of acute forms of disease
  - D. the predominance of external etiological factors
  - E. the predominance of infectious diseases
10. What is the heart rhythm most characteristic of the physiological type of aging?
- A. tachycardia
  - B. bradycardia
  - C. normal, sinus
  - D. arrhythmia
  - E. AV – blockade
11. For the II degree of obesity, BMI is characteristic:
- A. 18.5-24.5
  - B. more than 40
  - C. 30.0- 34.5
  - D. 25.0-29.9
  - E. 35.0-39.9
12. In the development of obesity, all of the listed alimentary factors other than:
- A. overeating
  - B. food mainly in the second half of the day
  - C. excessive consumption of easily digestible carbohydrates
  - D. excess fiber intake
  - E. excessive consumption of animal fats
13. Obesity, develops with all of the listed endocrine diseases, except:

- A. insulinomas
- B. hypothyroidism
- C. Cushing's disease
- D. hypocorticism
- E. hypogonadism

14. Changes in the endocrine system in obesity are manifested by everyone listed, except:
- A. disorders of carbohydrate metabolism up to the development of diabetes mellitus
  - B. menstrual irregularities
  - C. infertility
  - D. the predominant development of type 1 diabetes mellitus
  - E. increased frequency of fetal death at different stages of pregnancy
15. Obesity is a risk factor for the development of all of these diseases, except for:
- A. diabetes mellitus
  - B. coronary heart disease
  - C. hypertension
  - D. hypotension
16. Diet therapy for obesity includes all of the above, except:
- A. limiting fast-absorbing carbohydrates
  - B. inclusion of vegetable fats in the diet
  - C. multiple 5-6 meals a day
  - D. food 2-3 times a day
  - E. low-calorie, but significant food volume
17. The diet of obese patients includes all of the above, except:
- A. reducing the amount of carbohydrates to reduce the calorie content of food
  - B. sufficient protein content to prevent protein fasting and lowering the feeling of hunger
  - C. reduced protein content
  - D. fats of predominantly vegetable origin
  - E. vitamins and minerals within physiological norms
18. Preventive measures to prevent the development of obesity are carried out in all the following "risk groups", except for:
- A. persons with a hereditary predisposition to obesity
  - B. persons over 40 years old
  - C. persons whose profession does not involve physical activity
  - D. persons who are limited in movement due to the disease
  - E. patients with cancer
19. A patient had macrofocal myocardial infarction. He is overweight for 36%, BP is 150/90 mm Hg, blood sugar- 5,9 mmol/L, general cholesterol- 4,9 mmol/L, uric acid 0,211 mmol/L. Which risk factor should be urgently eradicated during the secondary prevention?
- A Obesity
  - B Arterial hypertension
  - C Hyperglycemia
  - D Hypercholesterolemia
  - E Hyperuricemia.

4. Discussion of theoretical issues:

1. Basic concepts of clinical epidemiology.
2. The criteria for statistical data analysis.
3. Rating scale evidence.
4. The levels of evidence
5. Prevalence of different diseases in old age
6. Features in courses of illnesses in old age
7. Features in medical care for elderly people



8. Specific features in medication treatments in old age
9. Define the concept of obesity.
10. Indicate the main etiological factors, features of pathogenesis.
11. Modern classification of obesity.
12. The main clinical signs of obesity.
13. Laboratory and instrumental research of patients, interpretation of the obtained results.
14. Basic principles of treatment.

*Note.* The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

17. Topics of reports/abstracts:

- Specific changes in body with aging and its outcomes
- Features in courses of illnesses in old age
- Specific features in medication treatments in old age
- Laboratory and instrumental research of patients, interpretation of the obtained results.
- Basic principles of treatment.

*Note.* When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

18. Summary.

19. List of recommended literature (main, additional, electronic information resources):

Main:

4. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMed. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
5. Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition
6. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition
7. [Hwang U, Dresden SM, Rosenberg MS, et al](#) : Geriatric Emergency Department Innovations: Transitional Care Nurses and Hospital Use. J Am Geriatr Soc. 2018
8. Hales CM, Carroll MD, Fryar CD, et al : Prevalence of obesity and severe obesity among adults: United States, 2017–2018. NCHS Data Brief, no 360. Hyattsville, MD: National Center for Health Statistics, 2020.
9. Wilding JPH, Batterham RL, Calanna S, et al : Once-weekly semaglutide in adults with overweight or obesity. N Engl J Med 18;384(11):989, 2021

Additional:

PRACTICAL MANUAL IN CLINICAL MEDICINE. ABM Abdullah MRCP (UK) FRCP (Edin) Dean, Faculty of Medicine Professor, Department of Medicine Bangabandhu Sheikh Mujib Medical University Dhaka, Bangladesh Foreword Kamrul Hasan Khan. New Delhi | London | Philadelphia | Panama 2017

Electronic information resources:

- <https://www.msdmanuals.com/professional/special-subjects/clinical-decision-making/evidence-based-medicine-and-clinical-guidelines>
- <https://www.msdmanuals.com/professional/special-subjects/clinical-decision-making/introduction-to-clinical-decision-making>
- <https://www.msdmanuals.com/professional/special-subjects/clinical-decision-making/understanding-medical-tests-and-test-results>

- <https://www.msdmanuals.com/professional/geriatrics/providing-care-to-older-adults/hospital-care-and-older-adults>
- <https://www.msdmanuals.com/professional/nutritional-disorders/obesity-and-the-metabolic-syndrome/obesity>

### Practical lesson № 16

**Topic:** Anemia: classification, etiopathogenesis, symptoms. Anemia: diagnosis, treatment. Acute leukemia.

**Purpose:** to explain the essence of anemia, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. To explain the essence of the leukemia, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** iron deficiency anemia, megaloblastic macrocytic anemia, hemolytic anemia, aplastic anemia, acute myeloblastic leukemia, acute lymphoblastic leukemia.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

#### Plan of the practical lesson

12. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)
13. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)
7. Questions (tests) to test basic knowledge of the topic of the lesson:
  1. What value of peripheral blood allows to evaluate regenerative ability of bone marrow?
    - A. Erythrocytes
    - B. Megacaryocytes
    - C. Reticulocytes
    - D. Leucocytes
  2. What anemia is characterized by higher count of reticulocytes of peripheral blood?
    - A. Iron deficiency anemia
    - B. Megaloblastic anemia
    - C. Hypoplastic anemia
    - D. Hemolytic anemia
  3. The cause of B12-deficiency anemia is:
    - A. Hemorrhage
    - B. Violation of hemoglobin synthesis
    - C. Increased hemolysis
    - D. Violation of secretion of gastromucoprotein
  4. Pathogenetic therapy of megaloblastic anemia is:
    - A. Glucocorticoids
    - B. Iron preparations
    - C. Vitamin B12
    - D. Splenectomy
    - E. Vitamin B1
  5. What of listed changes in peripheral blood is a characteristic of the B12(folic acid deficiency) anemia?
    - A. Reticulocytosis
    - B. High color index
    - C. Leukocytosis
    - D. Thrombocytosis
    - E. Drepanocytosis
  6. Which of listed anemia refers to required hemolytic anemia?
    - A. Minkowski-Shoffar's anemia

- B. Paroxysmal nocturnal hemoglobinuria
  - C. Thalassemia's
  - D. Sickle cell anemia
  - E. Favism
7. Which of listed changes of peripheral blood are typical for hemolytic anemia?
- A. Thrombocytosis
  - B. Reticulocytosis
  - C. Leukocytosis
  - D. Lymphocytosis
  - E. Poikilocytosis
8. Which of listed changes of peripheral blood is characterized by B12 deficiency anemia?
- A. Poikilocytosis
  - B. Reticulocytosis
  - C. High color index
  - D. Leukocytosis
  - E. Thrombocytosis
9. What is the most decisive in the diagnosis of aplastic anemia:
- A. Research of protein and protein fractions of blood
  - B. Analysis of bone marrow
  - C. The level of iron in blood serum
  - D. X-ray of bones
  - E. The level of bilirubin
10. The regenerative forms of RBC belong to:
- A. Poikilocytes
  - B. Polychromatophilia
  - C. Anisocytes
  - D. Reticulocytes.
11. What type of acute leukemia is more common for adults?
- A. Lymphocytic leukemia
  - B. Myelogenous leukemia
  - C. Monocytic leukemia
  - D. Undifferentiated leukemia
  - E. Promyelocyte leukemia
12. What actions is more featured for patients with acute leukemia with the progress of anemia?
- A. Blood transfusion
  - B. Transfusion of packed red cells
  - C. Prescription of iron preparations
  - D. Prescription of cyanocobalamin
13. Which of listed factors can lead the development of acute leukemia?
- A. Barbiturates intoxication
  - B. Hemorrhage
  - C. Chemical mutagens
  - D. Azotemia
  - E. Hypothermia
14. What criteria are lying in the basic of classification of acute leukemia?
- A. The level of severity in the patient
  - B. Cytochemical features of blast cells
  - C. Level of leukocytes
  - D. The degree of intoxication
  - E. The level of expression of anemia
15. Acute leukemia is characterized by:
- A. Metaplasia of the bone marrow

- B. Hyperplasia of erythropoiesis
  - C. Hyperplasia of all lineages of hemopoiesis
  - D. Hyperplasia of granulocytopoiesis
  - E. Megaloblastic type of hemopoiesis
16. What is determined the choice of program of therapy for acute leukemia?
- A. The severity of anemia
  - B. The degree of intoxication
  - C. General condition of a patient
  - D. The presence of complications
  - E. Morphological type of acute leukemia

4. Discussion of theoretical issues:

1. Define the concept of anemia.
2. Indicate the main etiological factors, features of pathogenesis.
3. Modern classification of anemia.
4. The main clinical signs of anemia.
5. Laboratory and instrumental research of patients, interpretation of the obtained results.
6. Basic principles of treatment.
7. Define the concept of leukemia.
8. Indicate the main etiological factors, features of pathogenesis.
9. Modern classification of leukemia.
10. The main clinical signs of leukemia.
11. Laboratory and instrumental research of patients, interpretation of the obtained results.
12. Basic principles of treatment.

*Note.* The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

20. Topics of reports/abstracts:

- Laboratory and instrumental research of patients, interpretation of the obtained results.
- Basic principles of treatment of anemia.
- Indicate the main etiological factors, features of pathogenesis of leukemia
- Laboratory and instrumental research of patients, interpretation of the obtained results.
- Basic principles of treatment of leukemia.

*Note.* When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

21. Summary.

22. List of recommended literature (main, additional, electronic information resources):

Main:

10. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMED. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
11. Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition
12. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition

Additional:

1. PRACTICAL MANUAL IN CLINICAL MEDICINE. ABM Abdullah MRCP (UK) FRCP (Edin) Dean, Faculty of Medicine Professor, Department of Medicine Bangabandhu Sheikh Mujib Medical

University Dhaka, Bangladesh Foreword Kamrul Hasan Khan. New Delhi | London | Philadelphia | Panama 2017

2. DeZern AE, Zahurak M, Symons H, et al : Alternative donor transplantation with high-dose post-transplantation cyclophosphamide for refractory severe aplastic anemia. *Biol Blood Marrow Transplant* 23(3):498–504, 2017.
3. Winkler T, Fan X, Cooper J, et al : Treatment optimization and genomic outcomes in refractory severe aplastic anemia treated with eltrombopag. *Blood* 133(24):2575–2585, 2019.
4. Berry DA, Zhou S, Higley H, et al : Association of minimal residual disease with clinical outcome in pediatric and adult acute lymphoblastic leukemia: A metaanalysis. *JAMA Oncol* 3(7): e170580, 2017.
5. Kantarjian H, Stein A, Gökbüget N, et al : Blinatumomab versus chemotherapy for advanced acute lymphoblastic leukemia. *N Engl J Med* 376(9):836–847, 2017.
6. Kantarjian HM, DeAngelo DJ, Stelljes M, et al : Inotuzumab ozogamicin versus standard therapy for acute lymphoblastic leukemia. *N Engl J Med* 375(8):740–753, 2016.
7. Maude SL, Laetsch TW, Buechner J, et al : Tisagenlecleucel in children and young adults with B-cell lymphoblastic leukemia. *N Engl J Med* 378(5):439–448, 2018.
8. Stone RM, Mandrekar SJ, Sanford BL, et al : Midostaurin plus chemotherapy for acute myeloid leukemia with a FLT3 mutation. *N Engl J Med* 377(5):454–464, 2017.
9. Lancet JE, Uy GL, Cortes JE, et al : CPX-351 ( cytarabine and daunorubicin) liposome for injection versus conventional cytarabine plus daunorubicin in older patients with newly diagnosed secondary acute myeloid leukemia. *J Clin Oncol* 36(26):2684–2692, 2018.
10. Perl AE, Martinelli G, Cortes JE, et al : Gilteritinib or chemotherapy for relapsed or refractory FLT3-mutated AML. *N Engl J Med* 381:1728–1740. 2019.

Electronic information resources:

1. <https://www.msmanuals.com/professional/hematology-and-oncology/approach-to-the-patient-with-anemia/etiology-of-anemia>
2. <https://www.msmanuals.com/professional/hematology-and-oncology/approach-to-the-patient-with-anemia/evaluation-of-anemia>
3. <https://www.msmanuals.com/professional/hematology-and-oncology/anemias-caused-by-hemolysis/autoimmune-hemolytic-anemia?query=hemolytic%20anemia>
4. <https://www.msmanuals.com/professional/hematology-and-oncology/anemias-caused-by-deficient-erythropoiesis/aplastic-anemia?query=aplastic%20anemia>
5. <https://www.msmanuals.com/professional/hematology-and-oncology/leukemias/overview-of-leukemia>
6. <https://www.msmanuals.com/professional/hematology-and-oncology/leukemias/acute-lymphoblastic-leukemia-all>
7. <https://www.msmanuals.com/professional/hematology-and-oncology/leukemias/acute-myeloid-leukemia-aml>

#### Practical lesson № 17

**Topic:** Chronic leukemia. Hemophilia: definition, main clinical forms, diagnosis.

Hemophilia: treatment.

**Purpose:** to explain the essence of the leukemia, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. To explain the essence of hemophilia, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** chronic myelogenous leukemia, chronic lymphocytic leukemia, polycythemia vera, myelodysplastic syndrome, hemophilia A, hemophilia B

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

### Plan of the practical lesson

14. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)

15. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)

8. Questions (tests) to test basic knowledge of the topic of the lesson:

1. What disease is characterized by blast cells and leukemic failure in the analyses of peripheral blood?

- A. Chronic myeloid leukemia
- B. Chronic lymphocytic leukemia
- C. Lymphogranulomatosis
- D. Myeloma
- E. Acute leukemia

2. Indicate the most characteristic changes in peripheral blood at the beginning of the accelerated phase of chronic myeloid leukemia?

- A. Anemia
- B. Lymphocytosis
- C. Reticulocytosis
- D. Leucocytosis
- E. Thrombocytopenia

3. What is the most frequent clinical symptom of chronic lymphocytic leukemia?

- A. Fever
- B. Bleeding
- C. Enlargement of lymph nodes
- D. Liver enlargement
- E. Splenomegaly

4. When hyperleukocytosis with absolute lymphocytosis is observed most frequently?

- A. In acute leukemia
- B. In chronic lymphocytic leukemia
- C. In tuberculosis
- D. In whooping cough
- E. In agranulocytosis

5. Which of listed preparations is basic in the treatment of hemophilia A?

- A. Fibrinogen
- B. Hemostatic sponge
- C. Recombinant VIII coagulation factor
- D. Dried plasma
- E. Preserved blood

6. What of listed factors is related to plasma coagulation factors of blood?

- A. PLT
- B. Heparine
- C. Plasminogen
- D. Fibrinogen
- E. Serotonin

7. In the II stage of coagulation hemostasis is:

- A. Formation of thromboplastin
- B. Fibrination
- C. Thrombocyte aggregation
- D. Formation of thrombin
- E. Blood clot retraction

8. The cause of hemophilia B is:

- A. Infectious and inflammatory diseases
- B. The hereditary angiopathy

- C. Thrombocytopenia
  - D. Deficiency of factor VIII of coagulation
  - E. Deficiency of coagulation factor IX of blood
9. The second phase of hemocoagulation is:
- A. Creation of active thromboplastin
  - B. Retraction of blood clot
  - C. Synthesis of protrombin
  - D. Formation of thrombin
  - E. Formation of fibrin
10. Which of following medical preparations is basic in the treatment for the hemophilia?
- A. Aminocaproic acid
  - B. Preparations of coagulation factors
  - C. Splenectomy
  - D. Prednizolon
  - E. Heparin
11. In the II stage of coagulation hemostasis is:
- A. Formation of thromboplastin
  - B. Fibrination
  - C. Thrombocyte aggregation
  - D. Formation of thrombin Blood clot retraction.

4. Discussion of theoretical issues:

1. Define the concept of leukemia.
2. Indicate the main etiological factors, features of pathogenesis.
3. Modern classification of leukemia.
4. The main clinical signs of leukemia.
5. Laboratory and instrumental research of patients, interpretation of the obtained results.
6. Basic principles of treatment.
7. Define the concept of hemophilia.
8. Indicate the main etiological factors, features of pathogenesis.
9. Modern classification of hemophilia
10. The main clinical signs of hemophilia.
11. Laboratory and instrumental research of patients, interpretation of the obtained results.
12. Basic principles of treatment.

*Note.* The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

5. Topics of reports/abstracts:

- Indicate the main etiological factors, features of pathogenesis of leukemia Laboratory and instrumental research of patients, interpretation of the obtained results.
- Basic principles of treatment of leukemia.
- Laboratory and instrumental research of patients, interpretation of the obtained results of hemophilia
- Basic principles of treatment of hemophilia.

*Note.* When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

6. Summary.

7. List of recommended literature (main, additional, electronic information resources):

Main:

1. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMED. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
2. Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition
3. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition

Additional:

1. PRACTICAL MANUAL IN CLINICAL MEDICINE. ABM Abdullah MRCP (UK) FRCP (Edin) Dean, Faculty of Medicine Professor, Department of Medicine Bangabandhu Sheikh Mujib Medical University Dhaka, Bangladesh Foreword Kamrul Hasan Khan. New Delhi | London | Philadelphia | Panama 2017
2. Maude SL, Laetsch TW, Buechner J, et al : Tisagenlecleucel in children and young adults with B-cell lymphoblastic leukemia. N Engl J Med 378(5):439–448, 2018.
3. Perl AE, Martinelli G, Cortes JE, et al : Gilteritinib or chemotherapy for relapsed or refractory FLT3-mutated AML. N Engl J Med 381:1728–1740. 2019.
4. George LA : Hemophilia gene therapy comes of age. Blood Adv 1:2591–2599, 2017.
5. Neunert C, Terrell DR, Arnold DM, et al : American Society of Hematology 2019 guidelines for immune thrombocytopenia. Blood Adv 3(23):3829–3866, 2019.

Electronic information resources:

1. <https://www.msmanuals.com/professional/hematology-andoncology/leukemias/overview-of-leukemia>
2. <https://www.msmanuals.com/professional/hematology-andoncology/leukemias/chronic-lymphocytic-leukemia-cll>
3. <https://www.msmanuals.com/professional/hematology-andoncology/leukemias/chronic-myeloid-leukemia-cml>
4. <https://www.msmanuals.com/professional/hematology-andoncology/coagulation-disorders/hemophilia>

### Practical lesson № 18

**Topic:** Thrombocytopenic purpura. Lymphomas: definition, classification. Hodgkin's lymphoma.

**Purpose:** to explain the essence of thrombocytopenic purpura, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention. To explain the essence of lymphoma, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** thrombocytopenic purpura, coagulopathy, Hodgkin lymphoma.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

### Plan of the practical lesson

1. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)
2. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)
3. Questions (tests) to test basic knowledge of the topic of the lesson:

1. In the pathogenesis of idiopathic thrombocytopenic purpura the main role belongs to:

- A. Toxic influence
- B. Autoimmune mechanism
- C. Decrease of PLT formation
- D. Genetic defects
- E. Mechanic traumatization of PLT



2. Which of listed changes of laboratory data are the most typical for idiopathic thrombocytopenic purpura?
  - A. Increased bleeding time by Duke
  - B. Increased coagulation time
  - C. Decreased bleeding time by Duke
  - D. Decreased coagulation time
3. Which of listed drugs is the main for conservative treatment of the idiopathic thrombocytopenic purpura?
  - A. Hemotransfusions
  - B. Heparine
  - C. Cryoprecipitate
  - D. Glucocorticoids
  - E. Dicinone
4. What of listed factors is related to plasma coagulation factors of blood?
  - A. PLT
  - B. Heparine
  - C. Plasminogen
  - D. Fibrinogen
  - E. Serotonin
5. In the II stage of coagulation hemostasis is:
  - A. Formation of thromboplastin
  - B. Fibrination
  - C. Thrombocyte aggregation
  - D. Formation of thrombin
  - E. Blood clot retraction
6. The second phase of hemocoagulation is:
  - A. Creation of active thromboplastin
  - B. Retraction of blood clot
  - C. Synthesis of protrombin
  - D. Formation of thrombin
  - E. Formation of fibrin
7. In the II stage of coagulation hemostasis is:
  - A. Formation of thromboplastin
  - B. Fibrination
  - C. Thrombocyte aggregation
  - D. Formation of thrombin
  - E. Blood clot retraction
8. Pathological exclusion of Hodgkin's disease is accurate having lymph node in tissue specimen of:
  - A. Langan's cells
  - B. Prolymphocytes
  - C. Lymphoblasts
  - D. Stenberg's cells
9. What necessary research is needed to perform to make a diagnosis of Hodgkin's lymphoma?
  - A. Myelogramm
  - B. Punch biopsy
  - C. Histopathological examination
  - D. Blood analysis
  - E. Cytogenetic analysis
10. Cells are pathognomonic for Hodgkin's lymphoma
  - A. Pirogov-Langhansa
  - B. Histiocytes
  - C. Reed-Berezovsky-Sternberg

- D. Plasmocytes
  - E. Eosinophils
11. Hodgkin's lymphoma is a tumor emanating from
- A. Muscle tissue
  - B. Sheaths of peripheral nerves
  - C. Bone marrow lymphoid cells
  - D. Parasympathetic nervous system
  - E. Extraosseous lymphoid tissue
12. What cells make up the morphological substrate of Hodgkin's lymphoma:
- A. Reed-Sternberg cells
  - B. plasma cell
  - C. monocyte
  - D. plasmacyte and osteoclast
  - E. B-lymphocyte
  - G. Immunoblast
13. Adverse prognosis factors for Hodgkin's lymphoma include:
- A. increase in the level of LDH
  - B. massive damage to the lymph nodes of the mediastinum
  - C. the presence of symptoms of intoxication
  - D. the defeat of 3 or more areas of the lymph nodes

4. Discussion of theoretical issues:

1. Define the concept of hemophilia or thrombocytopenic purpura.
2. Indicate the main etiological factors, features of pathogenesis.
3. Modern classification of hemophilia or thrombocytopenic purpura.
4. The main clinical signs of hemophilia or thrombocytopenic purpura.
5. Laboratory and instrumental research of patients, interpretation of the obtained results.
6. Basic principles of treatment. Define the concept of lymphoma.
7. Indicate the main etiological factors, features of pathogenesis.
8. Modern classification of lymphoma.
9. The main clinical signs of lymphoma.
10. Laboratory and instrumental research of patients, interpretation of the obtained results.
11. Basic principles of treatment.

*Note.* The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

5. Topics of reports/abstracts:

- Indicate the main etiological factors, features of pathogenesis of thrombocytopenia
- Laboratory and instrumental research of patients, interpretation of the obtained results.
- Basic principles of treatment of thrombocytopenia.
- Laboratory and instrumental research of patients, interpretation of the obtained results of lymphoma
- Basic principles of treatment of lymphoma.

*Note.* When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

6. Summary.

7. List of recommended literature (main, additional, electronic information resources):

Main:

1. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMED. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
2. Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition
3. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition

Additional:

1. PRACTICAL MANUAL IN CLINICAL MEDICINE. ABM Abdullah MRCP (UK) FRCP (Edin) Dean, Faculty of Medicine Professor, Department of Medicine Bangabandhu Sheikh Mujib Medical University Dhaka, Bangladesh Foreword Kamrul Hasan Khan. New Delhi | London | Philadelphia | Panama 2017
2. Al-Samkari H, Rosovsky RP, Karp Leaf RS : A modern reassessment of glycoprotein-specific direct platelet autoantibody testing in immune thrombocytopenia. Blood Adv 14;4(1):9–18, 2020.
3. Neunert C, Terrell DR, Arnold DM, et al : American Society of Hematology 2019 guidelines for immune thrombocytopenia. Blood Adv 3(23):3829–3866, 2019.
4. Provan D, Arnold DM, Bussel JB, et al : Updated international consensus report on the investigation and management of primary immune thrombocytopenia. Blood Adv 3(22):3780–3817.
5. Bussel J, Arnold DM, Grossbard E, et al : Fostamatinib for the treatment of adult persistent and chronic immune thrombocytopenia: Results of two phase 3, randomized, placebo-controlled trials. Am J Hematology 93: 921–930, 2018.
6. Johnson P, Federico M, Kirkwood A, et al : Adapted treatment guided by interim PET-CT scan in advanced Hodgkin's lymphoma. N Engl J Med 374(25):2419– 2429, 2016.
7. Connors JM, Jurczak W, Straus DJ, et al : Brentuximab vedotin with chemotherapy for stage III or IV Hodgkin's lymphoma. N Engl J Med 378(4):331– 344, 2018. Epub 2017 Dec 10.

Electronic information resources:

1. <https://www.msmanuals.com/professional/hematology-andoncology/lymphomas/overview-of-lymphoma>
2. <https://www.msmanuals.com/professional/hematology-andoncology/lymphomas/non-hodgkin-lymphomas>

Practical lesson № 19

**Topic:** Non-Hodgkin's lymphomas. Myeloma.

**Purpose:** to explain the essence of lymphoma and myeloma, the causes of its occurrence, the role of various factors in the etiopathogenesis, approaches to diagnosis, treatment and prevention.

**Key words:** non-Hodgkin lymphoma, Burkitt lymphoma, myeloma.

**Equipment:** laptop with a presentation, a multimedia projector, individual assignments on the topic of a practical lesson

**Plan of the practical lesson**

1. Organizational measures (greetings, verification of present students, messages of the topic and purpose of the lesson, motivation of students to study the topic)
2. Control of basic knowledge (written work, written test, frontal survey, etc.) (if necessary)
3. Questions (tests) to test basic knowledge of the topic of the lesson:
  1. Pathological exclusion of Hodgkin's disease is accurate having lymph node in tissue specimen of:
    - A. Langan's cells
    - B. Prolymphocytes
    - C. Lymphoblasts
    - D. Stenberg's cells
  2. The main treatment for stage IV non-Hodgkin lymphoma is:
    - A. symptomatic therapy
    - B. radiation therapy

- C. combined (chemoradiation) method
  - D. Chemotherapy
3. The mechanisms of lymphoma development are:
- A. Activation due to mutations of protooncogenes
  - B. Inactivation of tumor suppressor genes due to mutations
  - C. Mutations in genes that control DNA repair mechanisms
  - D. Chromosomal translocations involving immunoglobulin gene loci
  - E. Chromosomal translocations leading to the formation of chimeric fusion genes
  - F. All of the above

4. Discussion of theoretical issues:

1. Define the concept of lymphoma and myeloma.
2. Indicate the main etiological factors, features of pathogenesis.
3. Modern classification of lymphoma and myeloma.
4. The main clinical signs of lymphoma and myeloma.
5. Laboratory and instrumental research of patients, interpretation of the obtained results.
6. Basic principles of treatment.

*Note.* The discussion of theoretical issues can take place in the form of answers to the questions, debates, discussions, presentations with reports, abstracts, discussion of reports and abstracts, review of the answers of higher education graduates, etc.

5. Topics of reports/abstracts:

- Indicate the main etiological factors, features of pathogenesis of Non-Hodgkin's lymphoma
- Laboratory and instrumental research of patients, interpretation of the obtained results.
- Basic principles of treatment of Non-Hodgkin's lymphoma.
- Laboratory and instrumental research of patients, interpretation of the obtained results of myeloma
- Basic principles of treatment of myeloma.

*Note.* When preparing a report, abstract, analytical review, etc., students of higher education can, along with this, prepare didactic visual materials in the form of tables, code diagrams, slides, drawings, drug schemes, etc.

6. Summary.

7. List of recommended literature (main, additional, electronic information resources):

Main:

1. Clinical Medicine. Adam Feather MBBS, FRCP, FAcadMed. David Randall MA, MRCP. Mona Waterhouse MA (Oxon), MRCP. London New York Oxford Philadelphia St Louis Sydney 2021
2. Davidson's Principles and Practice of Medicine: With Student Consult Online Access (Principles & Practice of Medicine (Davidson's)) 21st Edition
3. Harrison's Principles of Internal Medicine, Twentieth Edition (Vol.1 & Vol.2) 20th Edition

Additional:

1. PRACTICAL MANUAL IN CLINICAL MEDICINE. ABM Abdullah MRCP (UK) FRCP (Edin) Dean, Faculty of Medicine Professor, Department of Medicine Bangabandhu Sheikh Mujib Medical University Dhaka, Bangladesh Foreword Kamrul Hasan Khan. New Delhi | London | Philadelphia | Panama 2017

Electronic information resources:

1. <https://www.msmanuals.com/professional/hematology-andoncology/lymphomas/overview-of-lymphoma>
2. <https://www.msmanuals.com/professional/hematology-andoncology/lymphomas/non-hodgkin-lymphomas>