

**FEDERAL STATE BUDGET EDUCATIONAL INSTITUTION OF HIGHER  
EDUCATION  
"ROSTOV STATE MEDICAL UNIVERSITY" OF THE MINISTRY OF HEALTH  
OF THE RUSSIAN FEDERATION**

FACULTY OF TREATMENT AND PREVENTION

Evaluation materials

BydisciplineHospital therapy Specialty

05/31/01 - "General Medicine"

**1. List of competencies formed by the discipline (in full or partially)**

*professional (PC)*

Code and name of professional competencies	Indicator(s) of professional achievement competencies
PK-8	ability to determine tactics for managing patients with various nosological forms
PK-10	readiness to provide medical care for sudden acute diseases, conditions, exacerbation of chronic diseases that are not accompanied by a threat life of the patient and not requiring emergency medical care

**2. Types of assessment materials in accordance with the competencies being developed**

Name of competency	Types of assessment materials	number of tasks for 1 competency
PC-8	Closed tasks	25 with sample answers
	Open-type tasks: Situational tasks Interview questions Tasks for additions (not more than 10)	75 with sample answers
PC-10	Closed tasks	25 with sample answers
	Open-type tasks: Situational tasks Interview questions Tasks for additions (not more than 10)	75 with sample answers

PC-8:

Closed type tasks:

Task 1. Instructions: Choose one correct answer. Clinically, the second period of acute lung abscess is determined by:

- A) after the formation of a cavity with a pyogenic membrane;
- B) after the breakthrough of pus or ichorous detritus through the bronchus;
- C) after the breakthrough of pus or ichorous detritus into the pleural cavity;
- D) until pus or ichorous detritus breaks through into the pleural cavity;
- E) until pus or ichorous detritus breaks through the bronchus.

Sample answer: B) after the breakthrough of pus or ichorous detritus through the bronchus.

Task 2. Instructions: Choose one correct answer.

Frenicus - a symptom occurs when the focus of destruction is localized:

- A) in the area of the apex of the lung;
- B) in the area of tracheal bifurcation;
- C) subpleural;
- D) in the basal segments of the lung.

Sample answer: D) in the basal segments of the lung.

Task 3. Instructions: Choose one correct answer.

The most likely diagnosis when cloud-like foci of a heterogeneous structure with unclear contours in combination with a non-structural root is detected on an x-ray of the lungs:

- A) pulmonary tuberculosis;
- B) pneumonia;
- C) lung cancer;
- D) "eosinophilic pneumonia";
- E) pulmonary infarction.

Sample answer: B) pneumonia.

Task 4. Instructions: Choose one correct answer.

The main criterion for successful reperfusion after systemic thrombolysis is:

- A) reduction of ST segment elevation by 50% or more from the original;
- B) pain relief;
- C) disappearance of signs of heart failure;
- D) restoration of AV conduction.

Standard answer: A) reduction in ST segment elevation by 50% or more from the original.

Task 5. Instructions: Choose one correct answer. Type 1 of acute myocardial infarction is:

- A) myocardial infarction caused by an imbalance in oxygen delivery and consumption;
- B) myocardial infarction, in which intracoronary thrombosis is detected during coronary angiography or atherothrombosis at autopsy;
- C) cardiac death in a patient with symptoms suggestive of myocardial ischemia;
- D) myocardial infarction associated with coronary angioplasty or stenting.

Sample answer: B) myocardial infarction, in which intracoronary thrombosis is detected during coronary angiography or atherothrombosis at autopsy.

Task 6. Instructions: Choose one correct answer.

Thrombolytic therapy is indicated for

- A) acute coronary syndrome with ST elevation;
- B) acute coronary syndrome without ST elevation;
- C) any acute coronary syndrome;
- D) unstable angina.

Sample answer: A) acute coronary syndrome with ST elevation.

Task 7. Instructions: Choose one correct answer.

Mechanical complications of myocardial infarction include all except:

- A) acute left ventricular failure;
- B) rupture of the mitral valve chords;
- C) rupture of the interventricular septum;
- D) rupture of the papillary muscles.

Sample answer: A) acute left ventricular failure.

Task 8. Instructions: Choose one correct answer.

The most important indicator for diagnosing nephrotic syndrome is:

- A) Hypoalbuminemia
- B) Albuminuria

C) Dislipidemia  
D) Arterial hypertension Standard  
answer: B) Albuminuria.

Task 9. Instructions: Choose one correct answer.

The most characteristic laboratory sign of nephrotic syndrome is: Proteinuria with daily protein loss of less than 3.5 g.

Leukocyturia

Hematuria

Proteinuria with daily protein loss of more than 3.5 g.

Sample answer: D) Proteinuria with daily protein loss of more than 3.5 g.

Task 10. Instructions: Choose one correct answer. The most typical combination of nephrotic syndrome is: Edema, proteinuria, hypoalbuminemia

Fever, dysproteinemia, leukocyturia Arterial hypertension, proteinuria, leukocyturia

Arterial hypertension, edema syndrome, hematuria Standard

answer: A) Edema, proteinuria, hypoalbuminemia.

Task 11. Instructions: Choose one correct answer.

In a patient with nephrotic syndrome and bronchiectasis, what should be excluded first?

Chronic pyelonephritis

Amyloidosis

Tubulo-interstitial nephritis Chronic

glomerulonephritis Sample answer:

B) Amyloidosis.

Task 12. Instructions: Choose one correct answer.

In a patient with stage 5 CKD who has missed another hemodialysis session, the ECG can most likely expect:

A) high pointed T wave; B) T wave

inversion;

C) ST segment depression;

D) the presence of a pathological Q wave.

Sample answer: A) high pointed T wave.

Task 13. Instructions: Choose one correct answer. The description of "Facies nephritica" corresponds to:

A) puffy, cyanotic face with swelling of the neck veins, pronounced cyanosis and swelling of the neck;

C) a deathly pale face with a grayish tint, sunken eyes, a pointed nose, with drops of cold profuse sweat on the forehead;

C) puffy, pale face with swelling under the eyes, swollen eyelids, narrow palpebral slits;

D) pronounced cyanosis of the lips, tip of the nose, chin, ears.

Sample answer: C) puffy, pale face with swelling under the eyes, swollen eyelids, narrow palpebral slits.

Task 14. Instructions: Choose one correct answer. The cause of uremic osteodystrophy in CKD is:

A) increase in urea level; B) increase in creatinine level;  
C) increase in the level of parathyroid hormone;  
D) decrease in erythropoietin levels.  
Sample answer: C) an increase in the level of parathyroid hormone.

Task 15. Instructions: Choose one correct answer.  
Specify the cardinal clinical sign of a lung abscess breaking into the bronchus: A) sudden acute pain in the chest;  
B) sudden release of copious purulent sputum mixed with blood; C) loss of consciousness, cold sweat;  
D) sudden increase in body temperature;  
E) drop in blood pressure, collapse.

Sample answer: B) sudden release of copious purulent sputum mixed with blood.

Task 16. Instructions: Choose one correct answer.  
Characteristic signs of the transition of an abscess to gangrene:  
A) more severe course with signs of intoxication;  
B) the appearance of dirty-gray, foul-smelling sputum;  
C) anaerobic microflora in sputum;  
D) all of the above.  
Sample answer: D) all of the above.

Task 17. Instructions: Choose one correct answer.  
Clinical and laboratory diagnostic criteria for community-acquired pneumonia: a) cough with sputum, b) physical signs of compaction of lung tissue, moist rales, crepitus, c) hemoptysis, d) leukocytosis in a general blood test more than  $10 \times 10^9/l$ , e) severe iron deficiency anemia. Choose the correct answer:

A) a), b), d);  
B) a), b), c);  
C) b), d), e);  
D) a), b), d).  
Sample answer: A) a), b), d).

Task 18. Instructions: Choose one correct answer. Which of the following is not included in the concept of ACS?  
A) stable angina;  
B) myocardial infarction with ST elevation;  
C) myocardial infarction without ST elevation;  
D) unstable angina.  
Sample answer: A) stable angina.

Task 19. Instructions: Choose one correct answer. The cause of ACS in most cases is:  
A) inflammation of the coronary arteries;  
B) spasm of the coronary arteries;  
C) systemic vasculitis;  
D) stenosing atherosclerosis.  
Standard answer: D) stenosing atherosclerosis.

Task 20. Instructions: Choose one correct answer.

The progression of angina is indicated by:

- A) increased frequency of attacks;
- B) increased duration of attacks;
- C) increasing the dose of nitroglycerin to relieve an attack;
- D) all of the above.

Sample answer: D) all of the above.

Task 21. Instructions: Choose one correct answer.

What element of the electrocardiogram is of diagnostic value in acute coronary syndrome?

- A) PQ interval;
- B) ST segment;
- C) P wave;
- D) QT interval.

Sample answer: B) ST segment.

Task 22. Instructions: Choose one correct answer. A second order pacemaker is normally:

- A) sinoauricular node;
- B) atrioventricular node;
- C) common bundle of His;
- D) bundle branches;
- E) Purkinje fibers.

Sample answer: B) atrioventricular node.

Task 23. Instructions: Choose one correct answer. Life-threatening arrhythmias include all except:

- A) paroxysms of ventricular tachycardia;
- B) ventricular extrasystole of high gradations;
- C) supraventricular extrasystole;
- D) ventricular flutter and fibrillation;
- E) atrial fibrillation in WPW syndrome.

Sample answer: C) supraventricular extrasystole.

Task 24. Instructions: Choose one correct answer. First degree atrioventricular block is characterized by:

- A) periodic loss of the QRS complex;
- B) prolongation of the PQ interval more than 0.20 s;
- C) prolongation of the PQ interval more than 0.15 s;
- D) prolongation of the PQ interval by more than 0.20 s and periodic loss of the complex

QRS;

- E) prolongation of the PQ interval by more than 0.25 s.

Sample answer: B) prolongation of the PQ interval by more than 0.20 s.

Task 25. Instructions: Choose one correct answer.

The effective daily dose of propafenone for the treatment of atrial fibrillation is (in mg.):

- A) 200-400
- B) 100-200
- C) 160-320
- D) 450-900

Standard answer: D) 450-900.

Open type tasks:

Exercise 1.

The main feature allowing to differentiate hospital  
And community-acquired pneumonia is considered \_\_\_\_\_

*Sample answer:* the nature of the occurrence of pneumonia (place and time).

Task 2.

How long after contact with an allergen do acute symptoms of “eosinophilic pneumonia” appear?

*Sample answer:* several hours after contact with the allergen.

Task 3.

What is the most informative sign of pulmonary tuberculosis?

*Sample answer:* detection of *Mycobacterium tuberculosis* in the sputum of a patient with focal radiological changes in the lungs.

Task 4.

List the criteria for the adequacy of antibacterial therapy for community-acquired bilateral bronchopneumonia with localization in the middle and lower lobes of the right lung, as well as the lower lobe of the left lung, severe, complicated by stage I ARF.

*Sample answer:* body temperature below 37.5°C; no intoxication; absence of respiratory failure (respiratory rate - less than 20 per minute); absence of purulent sputum; the number of leukocytes in the blood is less than  $10 \times 10^9/l$ , neutrophils - less than 80%, juvenile forms - less than 6%; absence of negative dynamics on the radiograph.

Task 5.

List the diseases that relate to disseminated processes in the lungs?

*Sample answer:* idiopathic pulmonary fibrosis, exogenous allergic alveolitis (hypersensitivity pneumonitis), sarcoidosis, focal disseminated tuberculosis, Wegener's granulomatosis.

Task 6.

What changes on a chest x-ray are characteristic of idiopathic pulmonary fibrosis?

*Sample answer:* on a radiograph of the chest organs, the strengthening and deformation of the pulmonary pattern in the form of a “honeycomb lung” is determined, mainly on the periphery in the lower parts of the lungs.

Task 7.

Patients with suspected acute coronary syndrome without persistent elevation ST segment is recommended to be chewed and swallowed \_\_\_\_\_ mg acetylsalicylic acid acids.

*Sample answer:* 150 – 325 mg.

Task 8.

List the ECG signs of atrial fibrillation.

*Sample answer:* Absence of P waves, presence of f waves and different RR distances.

Task 9.

What functional tests that activate the vagal function are allowed to relieve paroxysmal tachyarrhythmias?

*Sample answer:* abdominal straining test; rhythmic pressure on the eyeballs; rhythmic pressure on the glomus carotis on one side.

Task 10.

Describe the X-ray picture of pulmonary tuberculosis.

*Sample answer:* On an x-ray in the upper parts of the lungs, one can detect dense rounded lesions with fuzzy or clear contours and a path to the root, or a dense rounded lesion with the presence of smaller lesions near a scattering.

Task 11.

A 53-year-old patient complains of a cough with the release of a small amount of mucopurulent sputum, an increase in body temperature to 39.6°C, and general weakness. Got sick 2 days ago after hypothermia. Abuses alcohol.

An objective examination revealed a general condition of moderate severity. Moist fine bubbling rales were heard over the lower and middle parts of the right lung, and crepitus over the middle parts. An X-ray in the S6 projection revealed infiltration. The content of leukocytes in the blood is  $15.4 \times 10^{12}/l$ , band neutrophils are 12%, ESR is 36 mm/h.

The boundaries of the heart are within normal limits. Heart sounds are rhythmic and clear. Heart rate = 96/min., A/D = 130/80 mm Hg. Art. The bandage on the wound is dry. Abdominal organs without pathology. The spleen is not palpable. There is no peripheral edema. Physiological functions are not impaired.

The patient was prescribed amoxicillin 500 mg intramuscularly three times a day. On the 7th day from the onset of the disease, profuse purulent, foul-smelling sputum "full of mouth" appeared, the body temperature dropped to 37.5 ° C, the general condition improved, moist medium and coarse bubbling rales began to be heard over the lungs, "amphoric" breathing appeared over the lower lobe of the right lung .

1. Preliminary diagnosis?
2. What is the most effective antibacterial therapy regimen in this case?

*Response standard:*

1. abscess of the lower lobe of the right lung;
2. imipenem + linezolid.

Task 12.

The patient, 49 years old, complains of a cough with the release of mucopurulent sputum up to 200 ml per day, pain in the right side when breathing, increased body temperature up to 37.5°, chills, shortness of breath.

He became acutely ill more than 3 months ago after hypothermia, the illness began with chills, an increase in body temperature, then a cough and pain in the side appeared. He was treated in the hospital and then as an outpatient for acute lung abscess, taking antibiotic therapy for 4 weeks. During treatment, the patient's condition improved, but the cough and low-grade fever persisted.

Objectively: the general condition is of moderate severity. The skin is of normal color. The nail plates look like watch glasses, and the terminal phalanges of the fingers look like "Drumsticks". The chest is of regular shape, symmetrical, the right half of it is somewhat behind in the act of breathing. On percussion to the right behind the middle of the scapula and below, there is a moderate dullness of the percussion tone. Auscultation also reveals hard breathing, moist rales of various sizes, heart rate = 100 per minute. The boundaries of the heart are within normal limits. BP=120/70 mm Hg. Art.



In the general blood test, hemoglobin is 110 g/l, leukocytes are  $12 \times 10^9/l$ , ESR is 28 mm/h. General urine analysis without pathology. On the radiograph of the OGK, in the projection of the lower lobe on the right, there is a cavity with a horizontal fluid level against the background of pneumosclerosis.

1. Preliminary diagnosis?
2. The most effective drugs for empirical etiotropic therapy?

*Sample answer:*

1. chronic abscess of the lower lobe of the right lung;
2. meropenem + linezolid.

#### Task 13.

Patient F., 52 years old, consulted a local physician at his place of residence with complaints of fever up to  $38^\circ\text{C}$ , weakness, chills, cough with small amounts of yellow sputum. He became acutely ill when 3 days ago his temperature rose to  $38.2^\circ\text{C}$  and noted general malaise, weakness and chills. Didn't take any medications. Yesterday I started coughing with sputum. Objectively: the patient's condition is moderate. Body temperature  $37.7^\circ\text{C}$ . The skin is of normal color, without rashes. There is no peripheral edema. Lymph nodes are not enlarged. The chest is of regular shape and evenly participates in the act of breathing. Breathing in the lower parts of the lungs on the right is broncho-vesicular, somewhat weakened, ringing fine rales are heard there, and upon percussion - a slight shortening of the percussion sound. Respiratory rate - 20 per minute. The boundaries of the heart are not changed. Heart sounds are rhythmic and clear. Heart rate - 100 beats per minute. Blood pressure - 110/70 mm Hg. Art. The abdomen is soft, painless on palpation. The liver and spleen are not enlarged. The effleurage symptom is negative on both sides. There is no dysuria. The stool is regular and formed. An X-ray of the OGK revealed: several heterogeneous cloud-like foci with unclear contours against the background of an enhanced pulmonary pattern in the lower lobe of the right lung, the root of the right lung is expanded and unstructured.

1. Formulate a preliminary diagnosis?
2. Prescribe treatment?

*Sample answer:*

1. Community-acquired bronchopneumonia in the lower lobe of the right lung, non-severe course.
2. Bed rest, drink plenty of fluids. Broad-spectrum penicillin antibiotics (for example, Amoxicillin 500 mg 3 times a day orally). Expectorant (for example, Ambroxol hydrochloride 30 mg 3 times a day orally). Antipyretics at body temperature  $>38^\circ\text{C}$  (for example, Paracetamol 500 mg orally no more than 1 time within 6 hours).

#### Task 14.

Patient T., 45 years old, changes in the lungs were identified after a preventive fluorographic examination of the chest organs. As a child, she was registered at the tuberculosis dispensary due to contact with her mother with tuberculosis. Smoking experience 25 years. He makes no complaints. The condition is relatively satisfactory, low nutrition. The skin and visible mucous membranes are pale. Auscultation reveals harsh breathing, no wheezing. There are no changes in other organs and systems. On a survey fluorogram of the respiratory organs in 1-2 segments of the right lung, against the background of an enhanced pulmonary pattern, focal shadows of low intensity with unclear contours are determined.

Most likely diagnosis?

*Sample answer:*

Focal tuberculosis of the upper lobe of the right lung in the infiltration phase.

#### Task 15.

Patient A., 45 years old, engineer, complains of chills, increased body temperature up to 39°C, inspiratory shortness of breath during normal physical activity, cough with yellow sputum, pain with deep breathing and coughing on the right in the subscapular region, general weakness, fatigue and night sweats. He became acutely ill three days ago after hypothermia, when the temperature rose and a cough appeared, then shortness of breath developed. He took antipyretic drugs with little effect. I contacted the local general practitioner at the clinic. Due to the severity of the condition and suspicion of pneumonia, he was sent to the emergency room of the hospital at his place of residence. History: Works for 15 years as an engineer at a machine-building plant. I do not smoke. I had not been seen by a doctor before. Objectively: the general condition is serious. Skin with high humidity. Cyanosis of the lips is observed. Height - 175 cm, weight - 72 kg. Waist circumference - 100 cm. No peripheral edema. Peripheral lymph nodes are not enlarged. Body temperature 39°C. The chest is of regular shape and evenly participates in the act of breathing. NPV - 24 per minute. To the right and left along the scapular line there is a dullness of percussion sound. During auscultation on the right and left in the lower parts of the lungs, weakened bronchovesicular breathing and ringing fine bubbling rales are heard. The heart rhythm is correct, heart rate is 110 beats per minute. Blood pressure - 100/60 mm Hg. Art.

General blood test: erythrocytes -  $4.08 \times 10^{12}/l$ , hemoglobin - 120 g/l, leukocytes -  $13.2 \times 10^9/l$ , young - 2%, rods - 12%, segments - 56%, lymphocytes - 27% , monocytes - 3%, ESR - 38 mm/h. On a plain X-ray of the chest organs in direct and lateral projections: on the right in the lower and middle lobe there are several cloud-like heterogeneous foci with unclear contours up to 1.5 cm in diameter, on the left there are several of the same foci in the lower lobe, the roots of the lungs are expanded and non-structural.

1. Formulate a preliminary diagnosis?
2. What tactics and therapy does the patient require upon admission?

*Sample answer:*

1. Diagnosis: Community-acquired bronchopneumonia localized in the middle and lower lobes of the right lung, as well as the lower lobe of the left lung, severe, complicated by stage I ARF.

4. The patient must be hospitalized. Bed rest. For ARF: oxygen therapy. Intravenous administration of antibacterial drugs (Ceftriaxone, Cefotaxime or a protected penicillin inhibitor (Amoxicillin/Clavulanate 1.2 g intravenous drip 3 times a day)) in combination with intravenous macrolides (Clarithromycin, Azithromycin), for example, Azithromycin - 500 mg intravenous drip 1 time per day 3 days. After 3 days, when the temperature normalizes, switch to oral administration of a drug of the same class: Amoxicillin/Clavulanate 1 g 2 times a day.

#### Task 16.

Patient T., 35 years old, office manager, was taken by an ambulance team to the emergency department of a city hospital due to a sudden attack of mixed shortness of breath, palpitations, stabbing pain in the precordial area, dizziness and general weakness. The anamnesis noted that 5 days before the attack of shortness of breath, the patient developed mild swelling of the right lower limb from the foot to the inguinal fold, slight cyanosis and moderate pain in the limb. Subsequently, these symptoms persisted, and I tried to treat myself using various antibiotic ointments and alcohol compresses. A real attack of shortness of breath arose for the first time at the end of a long working day against the background of complete well-being.

From the life history it is known that the patient works in an office and spends most of her time in a sitting position, leads a sedentary lifestyle, smokes, and uses combined oral contraceptives.

Objectively: the condition is serious. The skin and visible mucous membranes are pale, clean, visible pulsation of the neck veins. There is swelling of the right lower limb, soft and warm to the touch, spreading from the level of the foot to the upper third of the thigh with mild cyanosis, moderate pain on palpation and preserved pulsation in the arteries of the foot, popliteal and common femoral arteries. Joints without pathology. The chest is of the correct shape. Percussion above the lungs is a clear pulmonary sound. Breathing is vesicular, there is no wheezing, respiratory rate is 25 per minute. The pulse is the same on both radial arteries, weak filling, 110 per minute, blood pressure - 90/65 mm Hg. Art. Accent of II tone at the point of listening to the pulmonary valve. There is no noise. The abdomen is symmetrical, soft, painless in all parts on superficial and deep palpation. The liver protrudes from under the costal arch by 1 cm. The effleurage symptom is negative. Body mass index more than 31 kg/m<sup>2</sup>. Low-grade fever.

Laboratory and instrumental studies revealed the following data. General blood test: hemoglobin - 130 g/l, erythrocytes -  $4.1 \times 10^{12}/l$ , leukocytes -  $5.7 \times 10^9/l$ , eosinophils - 1%, band neutrophils - 10%, segmented neutrophils - 50%, lymphocytes - 35%, monocytes - 4%; ESR - 24 mm/h. General urine analysis: straw-yellow, transparent, acidic pH, specific gravity - 1010, epithelium - 2-4 in the field of view, red blood cells, casts, salts are not detected. Biochemical blood test: total bilirubin - 12.8  $\mu\text{mol}/l$ , creatinine - 0.093 mmol/l, glucose - 5.6 mmol/l, cholesterol - 6.2 mmol/l, potassium - 3.7 mmol/l, total protein - 75 g/l, fibrinogen - 8.2 g/l, CRP - 25 mg/l.

ECG: Sinus tachycardia. Pathological Q and negative T in lead III, deep S in lead I. Incomplete blockade of the right bundle branch.

X-ray of the chest: In the upper lobes of both lungs and the middle lobe, several cone-shaped foci located subpleurally were detected. The roots of the lungs are expanded due to the vascular component.

1. Identify the syndromes, determine the leading one?
2. Formulate a diagnosis?

*Sample answers:*

1. Respiratory failure syndrome, acute pulmonary heart syndrome, chest pain syndrome, venous insufficiency syndrome, intoxication syndrome. The leading one is acute pulmonary heart syndrome.

2. Acute thrombosis of the common femoral vein on the right. Massive pulmonary embolism. Pulmonary infarction in the middle lobe and upper lobes of both lungs. Acute cor pulmonale.

Task 17.

A 52-year-old patient complains of an increase in body temperature to 38°C, cough with scanty mucous sputum, moderate weakness, and malaise. Symptoms appeared more than 2 months ago, possibly after a cold. An X-ray revealed an infiltrate in the upper lobe of the right lung. He was treated for pulmonary tuberculosis; a total of 7 drugs were used. However, the patient's condition did not change significantly.

On the X-ray of the chest, the infiltrate in the upper lobe of the right lung is no longer visible, but new focal shadows have appeared against the background of an enhanced pulmonary pattern on both sides, and migration of focal shadows is observed in dynamics. The roots of the lungs are slightly enlarged on both sides. A council of phthisiatricians rejected the diagnosis of pulmonary tuberculosis.

From the life history: previously he considered himself a healthy person, occasionally suffered from acute respiratory viral infections, allergies, drug intolerance, blood transfusions and

there were no blood substitutes, he did not work in hazardous industries, he did not travel outside the region in the last 3 years, he was not in contact with infectious patients, and according to the patient there were no helminthic infestations.

Objectively: General condition is relatively satisfactory. Body temperature 37.2°C. The skin is of normal color, without rashes. There is no peripheral edema. Lymph nodes are not enlarged. The chest is of regular shape and evenly participates in the act of breathing. Breathing in the lower parts of the lungs on the right is broncho-vesicular, somewhat weakened, ringing fine rales are heard there, and upon percussion - a slight shortening of the percussion sound. Respiratory rate - 18 per minute. The boundaries of the heart are not changed. Heart sounds are rhythmic and clear. Heart rate - 86 beats per minute. Blood pressure - 120/70 mm Hg. Art. The abdomen is soft, painless on palpation. The liver and spleen are not enlarged. The effleurage symptom is negative on both sides. There is no dysuria. The stool is regular and formed. Laboratory and instrumental studies revealed the following data. General blood test: hemoglobin - 145 g/l, erythrocytes -  $4.7 \times 10^{12}/l$ , leukocytes -  $10.6 \times 10^9/l$ , eosinophils - 36%, band neutrophils - 1%, segmented neutrophils - 39%, lymphocytes - 20%, monocytes - 4%; ESR - 25 mm/h. General urine analysis: straw-yellow, transparent, acidic pH, specific gravity - 1018, epithelium - 2-4 in the field of view, red blood cells, casts, salts are not detected. Biochemical blood test: total bilirubin - 12.8  $\mu\text{mol}/l$ , creatinine - 0.093 mmol/l, glucose - 5.5 mmol/l, cholesterol - 5.2 mmol/l, potassium - 4.2 mmol/l, total protein - 75 g/l, fibrinogen - 5.2 g/l, CRP - 7 mg/l. The sputum is mucous, a large number of eosinophils in the field of view. ECG: sinus rhythm, heart rate 84 beats/minute, no pathology detected.

Formulate a diagnosis?

*Sample answer:*

Chronic "eosinophilic pneumonia".

Task 18.

The patient complains of progressive shortness of breath with difficulty in inhaling, a dry cough and aching pain at the angles of the shoulder blades, aggravated by deep breathing, general weakness, fatigue, and low-grade fever. An objective examination and auscultation revealed crepitating rales of the "cellophane crackling" type up to the level of the lower third of the shoulder blades. On the radiograph of the chest, there is a widespread, enhanced pulmonary pattern due to the interstitial component in the form of unclear contours of blood vessels, peribronchial-perivascular changes and fine cellularity. Spirometry: vital capacity of the lungs - 67% of the proper value, forced expiratory volume in one second - 80% of the proper value, Tiffno test - 75%.

Formulate the most likely diagnosis?

*Sample answer:*

Idiopathic pulmonary fibrosis.

Task 19.

Patient B., 50 years old, complains of a "painful" unproductive cough during the day and a productive cough, with the release of up to 0.8-1.0 liters of mucous glassy sputum at night, as well as shortness of breath with little physical exertion, general weakness and malaise.

The disease began several months ago for no apparent reason. At first he noted a significant decrease in tolerance to physical activity, then an unproductive cough and low-grade fever appeared. The condition gradually worsened, shortness of breath progressed, and the cough intensified. In the last few days, glassy mucous sputum began to be released in large quantities at night. Antibiotic treatment had no effect. Denies bad habits and professional hazards. Lead a healthy lifestyle.

Objectively: the general condition is of moderate severity. The skin is moderately diffusely cyanotic and clean. There is no peripheral edema. Lymph nodes accessible to palpation are not enlarged and painless. The musculoskeletal system is without pathology. The chest is of regular shape and symmetrically participates in the act of breathing. The percussion tone in the lower parts on both sides is moderately shortened. Breathing is moderately weakened, crepitating rales are detected in the lower sections. NPV - 24 per minute, SatO<sub>2</sub>-92%. The boundaries of cardiac dullness are within normal limits. Heart sounds are rhythmic, moderately muffled. Heart rate - 92 per minute. Blood pressure - 130/80 mm Hg. The abdomen is soft and painless. The liver is at the edge of the costal arch, elastic, painless. The spleen is not palpable. The kidneys are not palpable, the effleurage symptom is negative on both sides. Physiological functions are not impaired.

Complete blood count: no pathological changes. Sputum analysis: mucous sputum, single leukocytes were detected, mycobacterium tuberculosis was not detected. Bronchoscopy showed moderate catarrhal endobronchitis. A chest x-ray shows dissemination of a large number of medium-intensity foci with unclear contours (0.5-1.0 cm in diameter) against the background of an enhanced and deformed pulmonary pattern, mainly in the middle and lower sections.

Formulate a preliminary diagnosis and justify it?

*Sample answer:*

Preliminary diagnosis: bronchioloalveolar lung cancer (BAR).

#### Task 20.

A 42-year-old patient has been experiencing fluctuating temperature (up to 37.2°C) in the evenings, cough with sputum up to 10-15 ml per day, and weakness for the last 1.5 years. I didn't go to the doctors, I tried to treat myself with home remedies without any effect. Gradually, her health and condition worsened - shortness of breath began to increase, the amount of sputum increased, and a cough streaked with blood appeared. I went to the clinic, where a chest x-ray examination revealed changes in the lungs for the first time.

Sent to an anti-tuberculosis dispensary, where, upon examination, a survey X-ray of the chest organs on the right and left along the entire surface of the lungs reveals numerous focal shadows of varying intensity and size, in places merging into large focal shadows with areas of clearing, the roots of the lungs are non-structural; in the lower parts of the lungs the pulmonary pattern is enhanced; The diaphragm domes are not changed. Mantoux test with 2TE is negative. Reaction with recombinant tuberculosis allergen (Diaskintest) - papule 8 mm.

Most likely diagnosis?

*Sample answer:*

Disseminated pulmonary tuberculosis in the stage of infiltration and decay.

#### Task 21.

Patient A., 36 years old, complains of shortness of breath with moderate physical activity, a slight cough with scanty mucous sputum, and long-lasting chest pain not related to exercise.

Symptoms arose 1 month ago for no apparent reason, increasing gradually. Sometimes he suffered from acute respiratory viral infections. Denies other diseases. Heredity is not burdened. The epidemiological anamnesis is favorable. Upon objective examination, the general condition is relatively satisfactory. The skin is of normal color and clean. Lymph nodes accessible to palpation are not enlarged, painless. The musculoskeletal system is without features. Rib cage correct shape, participates evenly in breathing.

Percussion tone moderately shortened, here it is determined in the subscapular areas on both sides is

moderate crepitus, harsh breathing, respiratory rate - 19 per minute. Heart sounds are muffled and rhythmic. Heart rate - 82 per minute, blood pressure - 130/80 mm Hg. The abdomen is soft and painless. The liver is at the edge of the costal arch, elastic, painless, the spleen is not palpable. The kidneys are not palpable, the effleurage symptom is negative on both sides. Diuresis and stool are normal.

Complete blood count: no pathology detected. General urine analysis without pathology. General analysis of sputum: mucous character, single leukocytes, mycobacterium tuberculosis were not detected. Blood troponins are within normal limits. ECG: no pathology detected. Bronchoscopy revealed moderate catarrhal endobronchitis. On a chest x-ray: bilateral enlargement of separately lying bronchopulmonary lymph nodes, not fused into bags; the roots of the lungs have a polycyclic outline. Mainly in the middle and lower parts of the lungs on both sides, a mesh-focal deformation of the pulmonary pattern is observed.

1. Formulate a preliminary diagnosis and justify it?
2. What are the main drugs for the treatment of this disease?

*Sample answer:*

1. Pulmonary sarcoidosis stage II, active (grade I), progressive course. Respiratory failure stage I
2. The main drugs for the treatment of this disease are glucocorticoids.

#### Task 22.

Patient M., 35 years old, became acutely ill when his body temperature rose to 37.5 °C. Complains of sweating, cough with serous sputum, weakness, malaise, weight loss of 4 kg.

Contact with tuberculosis patients was in places of detention. Released 3 months ago.

Upon objective examination, the general condition is relatively satisfactory. The skin is of normal color and clean. Lymph nodes accessible to palpation are not enlarged, painless. The musculoskeletal system is without features. The chest is of regular shape and evenly participates in the act of breathing. Percussion of the lungs revealed a slight dullness of pulmonary sound in the upper sections. When auscultating the lungs in the upper sections, breathing is harsh, in the lower sections it is weakened and vesicular. NPV - 19 per minute. Heart sounds are muffled and rhythmic. Heart rate - 82 per minute, blood pressure - 130/80 mm Hg. Body weight 70 kg. The abdomen is soft and painless. The liver is at the edge of the costal arch, elastic, painless, the spleen is not palpable. The kidneys are not palpable, the effleurage symptom is negative on both sides. Diuresis and stool are normal.

Microscopically in the sputum - acid-fast mycobacteria ++++. Results of a chest x-ray: in all pulmonary fields, focal shadows measuring 5-7 mm in diameter with blurred contours are determined; in the upper sections, the lesions tend to merge and disintegrate.

1. Formulate a preliminary diagnosis?
2. What diseases should be differentially diagnosed?

*Sample answer:*

1. Disseminated pulmonary tuberculosis in the phase of infiltration and decay, Mycobacterium tuberculosis +.
2. Sarcoidosis, fungal infections of the lungs, pneumoconiosis, exogenous allergic alveolitis, idiopathic fibrosing alveolitis.

#### Task 23.

Man M., 57 years old, called a doctor to his home. Complains of intense pressing retrosternal pain radiating to the left arm and left shoulder blade. The above symptoms appeared about 2 hours ago after intense physical activity. I took 2 tablets of nitroglycerin on my own - no effect. I had never had pain of this nature before.

History of arterial hypertension for the last 10 years with maximum blood pressure values of 200/100 mm Hg. I did not take medications regularly. Smokes 1 pack of cigarettes a day for 30 years. Gas-electric welder. Denies allergic reactions.

Upon objective examination: the skin is moist. In the lungs, the percussion sound is pulmonary, vesicular breathing, no wheezing. Heart sounds are weakened, the rhythm is correct, blood pressure is 160/100 mm Hg. Art., heart rate – 88 per minute. The abdomen is soft and painless. Physiological functions are normal.

The ECG recorded: sinus rhythm, ST segment elevation  $> 0.2$  mV in leads II, III, aVF. Transport accessibility to an emergency cardiology hospital with the ability to conduct primary PCI is 30 minutes.

1. Formulate a preliminary diagnosis?
2. What amount of drug care should be provided to the patient at the prehospital stage?

*Sample answer:*

1. Acute coronary syndrome with ST segment elevation in the inferior wall of the left ventricle. Stage III hypertension, uncontrolled grade III hypertension, risk 4 (very high). OSSN according to Killip I.

2. At the prehospital stage (at the clinic stage, at home): Nitroglycerin - again, chew Aspirin 500 mg. At the stage of emergency medical care: pain relief - Nitroglycerin IV, if ineffective - Morphine IV in fractions. Antithrombotic therapy: Chew Aspirin 250 mg, loading dose of Clopidogrel - 300 mg orally, direct anticoagulants IV bolus - Heparin. Oxygen therapy.

#### Task 24.

Patient X., 44 years old, was admitted to the cardiology department with complaints of prolonged intense chest pain. The use of nitroglycerin did not affect the intensity of pain.

He became acutely ill after physical exertion. Attacks of pain lasting 15-30 minutes recurred periodically. Works as a diesel locomotive driver. The patient's father died suddenly at the age of 56 from a stroke.

Objectively: the general condition is of moderate severity. Pulse 92/min, rhythmic. The first heart sound above the apex is weakened. Blood pressure – 140/70 mm Hg. Art. Examination of the lungs and abdominal organs revealed no changes. There is no swelling in the legs.

ECG on admission: sinus rhythm, regular, no increase in R wave in V1-V4. ST segment depression in V1-V4.

Formulate a preliminary diagnosis?

*Sample answer:*

IHD, acute anterior widespread myocardial infarction without Q. Acute cardiovascular failure according to Killip I.

#### Task 25.

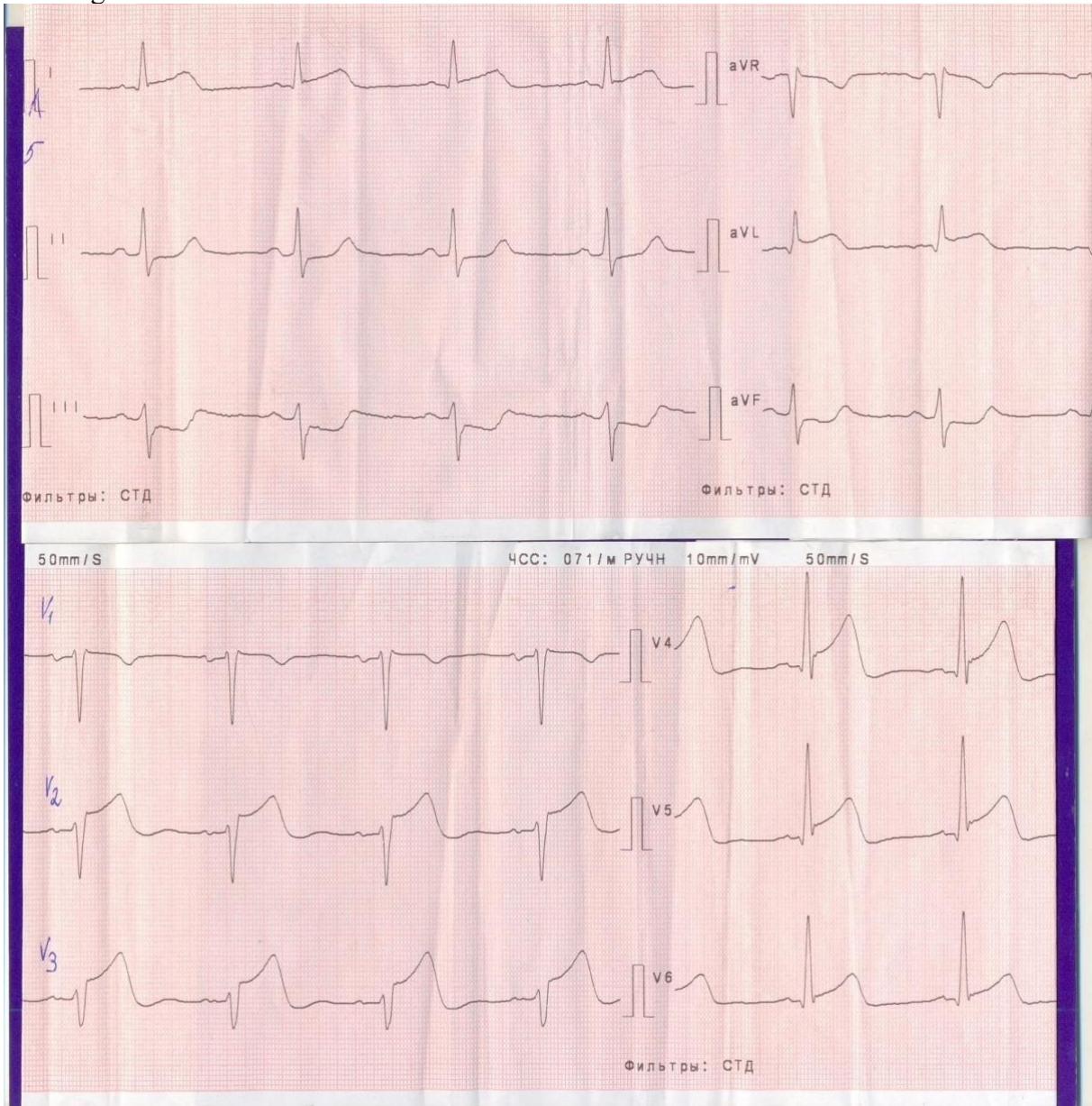
Man A., 48 years old, called an ambulance due to the appearance of pressing pain in the chest. The pain appeared 40 minutes ago, at rest, and was not relieved by 2 doses of isoket. The patient notes severe weakness and sweating.

Previously, he had not been bothered by chest pain and tolerated physical activity well.

Over the course of 6 children, blood pressure periodically increased to 160/100 mm Hg. Art. When blood pressure increased, he took Captopril, but did not receive constant antihypertensive drugs. He smokes 1 pack of cigarettes a day for 25 years. Heredity is not burdened.

Objectively: the condition is of moderate severity. The skin is moist. NPV - 18 per minute. In the lungs there is vesicular breathing, no wheezing. Heart sounds are muffled, rhythmic, heart rate - 70 beats per minute, blood pressure - 160/100 mm Hg. Art. The abdomen is soft and painless on palpation in all parts. The liver is not enlarged. The pulse in the vessels of the lower extremities is preserved.

ECG registered.



The patient was taken to the hospital emergency department with a department  
X-ray  
endovascular interventions within 20 minutes.

1. Formulate a preliminary diagnosis?
2. What reperfusion method is indicated for the patient?

*Sample answer:*

IHD. Acute coronary syndrome with ST segment elevation,  
anteriorseptal-lateral. OSSN according to

Killip 1.

Stage III hypertension, uncontrolled hypertension, risk 4 (very high).



2. Emergency percutaneous coronary intervention is the most effective way to restore blood flow.

Task 26.

Patient L., 48 years old, was admitted to the emergency department with complaints of pressing pain in the epigastrium for 1 hour, when the above-described complaints first appeared. The disease is associated with intense physical activity: I had to quickly climb to the 10th floor (the elevator in the building was broken). Denies past illnesses, denies bad habits. Family history: the patient's father suffers from coronary artery disease and suffered a heart attack at the age of 45 years.

On examination: the condition is moderate. The patient has a normosthenic build, height - 165 cm, weight - 70 kg. The skin is pale, moderately moist. There is no swelling. BH -15 per minute. Auscultation over the lungs reveals hard breathing, no wheezing. The chest in the area of the heart is not changed. The apical impulse is palpated in the fifth intercostal space 2 cm medially from the left midclavicular line. The limits of relative cardiac dullness are within normal limits. On auscultation, muffled heart sounds are noted. Heart rate - 85 per minute. The rhythm is correct. There is no noise. Blood pressure 130/80 mm Hg. Art.

The abdomen is soft and painless. The liver is palpated at the edge of the right costal arch, painless. The troponin test on admission was positive.

The ECG shows sinus rhythm. ST segment depression in V<sub>3-6</sub>, negative T in I, V<sub>4-6</sub>.

1. How to interpret the ECG manifestations of the disease in this patient?
2. Formulate a preliminary diagnosis?

*Sample answer:*

1. Ischemia in the anterolateral region of the left ventricular myocardium.
2. IHD: non-Q-forming myocardial infarction of the lateral wall of the left ventricle.

OSSN according to Killip I.

Task 27.

Patient A., 60 years old. Complains of intense compressive pain localized behind the sternum with irradiation to the left scapula and lower jaw. The pain is prolonged and cannot be relieved by nitroglycerin.

Objectively: cold sweat. The patient is excited. Auscultatory tachycardia, muffled tones. Blood pressure 100/70 mm Hg. Art. ECG complexes QS and ST elevation above the isoline in I, aVL, V<sub>1</sub>, V<sub>2</sub>, V<sub>3</sub>, V<sub>4</sub>.

What is the most reliable pathology?

*Sample answer:*

OKS. AMI of the anteroseptal region involving the LV apex.

Task 28.

Patient R., 59 years old. He noted the appearance of severe chest pain radiating to the lower jaw and left upper limb. At home, on the advice of his wife, I tried to relieve pain with Nitroglycerin without any significant effect. The total duration of the pain syndrome was more than 20 minutes, the patient called an ambulance.

From the anamnesis it is known that over the past 10 years the patient's blood pressure has been increasing, to a maximum of 170 and 90 mm Hg. Art. Smokes 20 cigarettes a day for the past 20 years. Within a month, for the first time, he noticed the appearance of chest pain after intense physical activity and that went away with rest. He was not examined and did not receive treatment. Heredity: mother - 76 years old, suffers from arterial hypertension, suffered a myocardial infarction, father - died at 55 years old from a myocardial infarction.

On examination: the condition is of moderate severity. The skin is pale. Height – 168 cm, weight – 90 kg, BMI – 32 kg/m<sup>2</sup>. Heart sounds are muffled, the accent of the second tone is heard on the aorta, the rhythm is correct. Blood pressure – 160 and 90 mm Hg. Art. Heart rate – 92 beats per minute. Breathing is vesicular, there are no adverse breath sounds. NPV – 22 per minute. The abdomen is soft and painless. The dimensions of hepatic dullness according to Kurlov are 11×9×8 cm. There is no peripheral edema.

In the tests: total cholesterol - 6.7 mmol/l, TG - 2.8 mmol/l, HDL-C - 0.62 mmol/l; fasting glucose – 5.2 mmol/l; creatinine – 124 μmol/l,

The ECG recorded sinus rhythm with a heart rate of 92 per minute, ST segment elevation up to 4 mm in I, AVL, V1-5, ST segment depression up to 2 mm in II, III, AVF.

1. Guess the most likely diagnosis?
2. What medications do you recommend to the patient for oral antiplatelet therapy?

*Sample answer:*

1. IHD. Acute coronary syndrome with ST segment elevation of the anterior septum, apex, and lateral wall of the left ventricle. KILLIP I severity class. Stage III hypertension, stage 2 arterial hypertension, risk 4. CKD C3a A1. Exogenous-constitutional obesity of the first degree.

2. Dual antiplatelet therapy is used: Acetylsalicylic acid 150-300 mg followed by 75-100 mg orally daily + P2Y<sub>12</sub> receptor blockers - Ticagrelor (loading dose 180 mg followed by 90 mg 2 times a day).

#### Task 29.

A 48-year-old patient woke up at night from pain in the epigastric region, accompanied by weakness, sweating, and nausea. Previously, I had not been bothered by pain and considered myself healthy. An attempt to relieve pain with a soda solution did not bring relief. After taking Nitroglycerin under the tongue, the pain decreased, but did not go away completely. Nausea, weakness, and sweating persisted. An ambulance was called in the morning.

The ECG revealed a deep Q wave in leads III and aVF; the ST segment in the same leads is raised above the isoline, arched, and turns into a negative T wave; ST segment in leads I, a VL and V1 to V4 below the isoline.

1. What is the most likely diagnosis for this patient?
2. What are your further treatment tactics?

*Sample answer:*

1. IHD: acute Q-myocardial infarction in the area of the lower wall.  
2. Thrombolysis; PCI (BAP and stenting); anesthesia; antiplatelet agents; anticoagulants; β-blockers; statins.

#### Task 30.

A 20-year-old student, a student, complained of weakness, shortness of breath, massive swelling of the face, feet, legs, and a decrease in the amount of urine excreted per day.

From the medical history it is known that 2.5 weeks ago the young man developed a runny nose, sore and sore throat, cough with scanty gray sputum, and general malaise. I didn't take my temperature, didn't see a doctor, and continued to go to classes. I took aspirin twice on my own, used decongestants, and cough syrup. 10 days after the onset of the disease, these symptoms gradually began to decrease until they completely disappeared; slight weakness remained. Yesterday morning I suddenly noticed the appearance of massive edema, noted that I began to produce little urine, and therefore consulted a doctor. From his life history it is known that he often suffered from respiratory infections (4-5 times a year), suffers from atopic dermatitis with seasonal exacerbations, and uses corticosteroid ointments. 1-2 times a week

I am bothered by headaches, which I associate with overload at the university, and are relieved by taking Pentalgin. During medical examinations, no changes in urine tests or biochemical blood tests were ever noted. There was never any increase in blood pressure or hyperglycemia.

Objective status: general condition of moderate severity. Height 185 cm, weight 82 kg (before illness 77 kg). The skin is pale and clean. The mucous membrane of the pharynx walls is not hyperemic. The tonsils are not enlarged. Massive symmetrical uniform swelling of the face, feet, legs; when pressed, a distinct pit is formed. There was no hyperemia or hyperthermia of the skin at the site of edema formation. On percussion - a dull sound above the lower parts of the lungs, on the right - to the angle of the scapula, on the left - 2 cm below. In the lungs, breathing is vesicular, not carried into the lower sections, there is no crepitus, and no wheezing is heard. NPV 18 per minute. Heart sounds are clear, rhythmic, no murmurs. Heart rate – 80 beats/min, blood pressure – 105/65 mm. rt. Art. Percussion of the abdomen reveals a moderate amount of fluid in the peritoneal cavity. The abdomen is soft and painless. The liver is 2 cm below the edge of the costal arch. Urination is painless. Diuresis was not measured. The effleurage symptom is negative on both sides.

Used: total. protein 40 g/l, albumin 28 g/l, creatinine 110  $\mu\text{mol/l}$ , urea 7.8 mmol/l, total. CS – 6.5 mmol/l. TAM – specific gravity 1021, protein 4 g/l.

Formulate a diagnosis?

*Sample answer:*

Main: Acute post-streptococcal glomerulonephritis. Nephrotic syndrome.

Complication: effusion (exudative) bilateral pleurisy.

Task 31.

Patient M., 21 years old, fell ill after hypothermia. The disease began with an increase in temperature to 39°C, pain and swelling in the knee, ankle and elbow joints, enlargement and tenderness of the submandibular lymph nodes. There is a bright blush on the cheeks. I am worried about sharp pain in the lower parts of the lungs when taking a deep breath and coughing.

On examination: the condition is of moderate severity, the skin is pale, the submandibular lymph nodes are enlarged, slightly painful and hardened. Swelling of the knee, ankle and elbow joints, the skin over them is hot. Movement in these joints is painful. Disc-shaped rashes in the décolleté area. Pulse - 118 per minute, rhythmic. Blood pressure - 190/40 mm Hg. Art. The right border of the relative dullness of the heart is shifted 1 cm to the right from the right edge of the sternum, the upper border reaches the third rib, the left border is 1.5 cm to the left of the left midclavicular line. Heart sounds are weakened, systolic murmur at the apex, gallop rhythm. In the lower posterior parts of the lungs - hard breathing, pleural friction noise. Swelling of the lower extremities, arms, face.

Blood tests showed erythrocytes 3.6 million/ $\mu\text{l}$ , platelets – 80 thousand/ $\mu\text{l}$ , leukocytes – 4.6 thousand/ $\mu\text{l}$ , ESR – 48 mm/h. In the TAM – density 1013, protein – 5.4 g/l, altered red blood cells – 8-10 per field of view, granular and waxy cylinders.

1. Make a guess about the diagnosis?

2. Prescribe treatment?

*Sample answer:*

1. Systemic lupus erythematosus, acute course, degree of activity III (high), glomerulonephritis, nephrotic form, polyarthritis, polyserositis (pleurisy, pericarditis), anemia, discoid rash.

2. Therapy with cyclophosphamide and systemic glucocorticosteroids (pulse therapy with transfer to tablet form) in a hospital setting is indicated. Doses are selected individually.

### Task 32.

Patient P., 40 years old, a nurse, consulted a local general practitioner with complaints of periodically frequent painful urination, aching pain in the lumbar region without radiating, headache, and weakness. Considers himself sick for 8 years. Pain in the lumbar region is associated with physical overexertion. Over the past 3 days, she has been feeling periodic "chilling."

Objectively: the condition is satisfactory. Slight pastiness of the legs, face and hands, pallor, body temperature - 37.3°C. On percussion over all pulmonary fields there is a clear pulmonary sound, auscultation - vesicular breathing, no wheezing. BH - 16 per minute. The limits of relative cardiac dullness are within normal limits. Heart sounds are loud and rhythmic. Blood pressure - 155/95 mm Hg. Art., heart rate - 84 per minute. My blood pressure has started to rise over the last 2 years. The tongue is dry. The abdomen is soft, painless in all parts. The liver and spleen are not palpable. There is slight pain when tapping the lumbar region, more on the right. Bad habits – smoking, alcohol – in moderation.

The following data were obtained from laboratory and instrumental studies.

Complete blood count: erythrocytes -  $3.9 \times 10^{12}/l$ , hemoglobin - 107 g/l, color index - 0.7, leukocytes -  $10.2 \times 10^9/l$ , eosinophils - 2%, band neutrophils - 8%, segmented neutrophils - 48% , lymphocytes - 38%, monocytes - 4%, ESR - 25 mm/h. General urine analysis: relative density - 1010, protein - 0.04%, leukocytes -12-16 in the field of view, nitrites - positive, erythrocytes - 0-1 in the field of view, bacteriuria.

Urine according to Nechiporenko: erythrocytes -  $1.2 \times 10^6/l$ , leukocytes -  $8.0 \times 10^6/l$ .

ECG: sinus rhythm, heart rate - 86 per minute. EOS – deviated to the left. Signs of left ventricular hypertrophy.

X-ray of the chest organs: pulmonary fields without focal and infiltrative changes, expansion of the borders of the heart to the left.

1. Formulate a diagnosis?
2. Prescribe treatment?

*Sample answer:*

1. Chronic right-sided pyelonephritis (E. Coli?), active phase. Related: Arterial hypertension, stage II, degree 1, risk 2 (medium).

2. Empiric prescription of antibacterial therapy is required (for example, Ciprofloxacin IV 400 mg - 2 times a day for 7 days), antispasmodic therapy (Drotaverine), detoxification therapy. antiplatelet therapy. RAAS blockers (for example, perindopril) in combination with calcium channel blockers (for example, amlodipine). Dynamic observation by a nephrologist and urologist.

### Task 33.

Male, 42 years old. I consulted a therapist with complaints of weight loss for a month and swelling under the eyes. At the end of the day, swelling of the face decreases, but swelling of the ankles increases. Temperature during examination – 37.2 C, blood pressure – 152/88 mm Hg, pulse – 80 beats/min, respiratory rate – 16/min. Ankle swelling 2+.

Blood test results: Red blood cells -  $3.9 \times 10^{12}/l$ , hemoglobin - 110 g/l, leukocytes -  $8 \times 10^9/l$ , platelets -  $200 \times 10^9/l$ , blood test: creatinine - 188  $\mu\text{mol}/l$ , urea 12.1 mmol/l, albumin – 22 g/dl, o. cholesterol - 6.8 mmol/l, TAG - 1.5 mmol/l, LDL - 5.9 mmol/l, HDL - 0.4 mmol/l, sodium - 135 mmol/l, potassium - 4.0 mmol/ l.

TAM: density - 1018, glucose - no, protein - 4 g/l, leukocytes - 1-2 in the field of view, erythrocytes - 5-10 in the field of view, changed.

Formulate a diagnosis?

*Sample answer:*

1. Acute glomerulonephritis. Nephrotic syndrome. Arterial hypertension stage I, degree 1, risk 2 (medium).

Task 34.

The patient, M., 23 years old, was taken to the hospital in an extremely severe state of shock, which developed as a result of an injury received in a car accident. Blood pressure 70/50 mm Hg. Art. The daily amount of urine is 78 ml, the protein in the urine is 0.7 g/l, the relative density of urine is 1.025. Biochemical blood test: creatinine 137 mmol/l, blood urea – 36 mmol/l.

What pathological process can be assumed in this case, the causes?

*Sample answer:*

Acute kidney injury, stage 1. The main reason is shock as a result of massive blood loss, a decrease in blood volume, destruction of soft tissues and an increase in myoglobin, kidney damage and acute disturbance of intraglomerular hemodynamics.

Task 35.

A 47-year-old man was admitted to the nephrology department with complaints of severe headaches and skin itching for the last month, abdominal pain, nausea, vomiting and loose stools. From the anamnesis it is known that he has been suffering from pyelonephritis for 25 years. Objectively: a petechial rash and signs of scratching are visible on the skin of the arms and chest, the skin is dry, there is whitish dust at the roots of the hair, ammonia is coming from the mouth. A pericardial friction rub is heard in the heart area. Noisy Kussmaul breathing is noted. The abdomen is painful on palpation along the large intestine and in the epigastric region.

1. What complication arose in the patient against the background of the underlying disease?
2. At what stage of the disease is the patient?

*Sample answer:*

1. End-stage renal failure (ESRD).
2. In this case, the patient has C5 (ESRD), stage of uremia.

Task 36.

A 56-year-old man, an engineer, complained to increased blood pressure (maximum up to 170/105 mm Hg) for 6 months, accompanied by headaches in the occipital and temporal regions. From the anamnesis it is known that the patient has been suffering from arterial hypertension for about 6 years, however, despite the recommendations of doctors, he does not take constant antihypertensive therapy. During the last visit to the therapist six months ago, the blood pressure was recorded at 170/100 mm. rt. Art.; urine analysis revealed albuminuria 100 mg/day. Heredity is burdened: a 79-year-old mother has suffered from hypertension since a young age, and also has a history of coronary artery disease and suffered a myocardial infarction; father died at 50 from myocardial infarction. Bad habits: smokes for more than 30 years, ½ pack of cigarettes a day.

Objective status: General condition is satisfactory. BMI – 31.8 kg/m<sup>2</sup>. Waist circumference – 106 cm. The skin is of normal color, clean, moist. Lymph nodes are not enlarged. NPV – 16/min. The percussion sound is clear, pulmonary. In the lungs there is vesicular breathing, no wheezing. The boundaries of the heart are not expanded, the tones are muffled, rhythmic, the accent of the second tone is over the projection of the aorta, there are no noises. Heart rate – 72 beats/min, blood pressure – 160/100 mm. rt. Art. The abdomen is soft, painless on palpation. The liver and spleen are not enlarged. The kidneys are not palpable, the effluage symptom is negative on both sides. The thyroid gland is not enlarged. The neurological status did not reveal focal symptoms.

This is the norm at UAC. B/x: glucose 6.4 mmol/l, creatinine 128 µmol/l, total. CS – 5.3 mmol/l, LDL – 3.9 mmol/l.

OAM – albuminuria 190 mg/day. Make a guess about the diagnosis?

## 2. Assign treatment?

*Sample answer:*

1. Basic: Arterial hypertension stage III, degree 2, risk 4 (very high).

Complications: hypertensive nephropathy. CKD C3a (GFR according to CKD-EPI 54 ml/min/1.73 m<sup>2</sup>), A2.

Associated: IHD, PICS (NOS). Alimentary-constitutional obesity of the 1st degree.

2. RAAS blocker; beta blocker; acetylsalicylic acid; iNGLT-2 (nephroprotection).

### Task 37.

A 71-year-old woman complained of shortness of breath with slight physical exertion, sometimes at rest, and an increase in blood pressure to 160/100 mm. rt. Art., tinnitus, lower back pain. She considers herself sick for 10 years, when she began to notice an increase in blood pressure with maximum values of 160-170/100 mm. rt. Art., accompanied by deterioration of the condition and the appearance of the above-described complaints. Until this time, her blood pressure was not controlled and she did not receive antihypertensive therapy. The patient was selected for therapy with amlodipine and indapamide. Subsequently, I felt well, blood pressure was at the target level. Over the past 3 months, he has noted an increase in blood pressure to 170/100 mm. rt. Art. Heredity is aggravated by cardiovascular diseases: her father had arterial hypertension from the age of 40, her mother had a transient ischemic attack at the age of 54.

Objective status: General condition is relatively satisfactory. The skin is of normal color and moisture. BMI – 36 kg/m<sup>2</sup>. Pastiness of the legs. Lymph nodes are not enlarged. NPV – 18/min. Percussion sound is clear pulmonary. The breathing in the lungs is harsh, there is no wheezing. The borders of the heart are slightly expanded to the left, sonorous, rhythmic, no murmurs. Heart rate – 80 beats/min, extrasystole. Blood pressure – 160/80 mm. rt. Art. The abdomen is soft, painless on palpation. The liver and spleen are not enlarged. The kidneys are not palpable. The effluage symptom is positive on both sides. The thyroid gland is not enlarged. The neurological status did not reveal focal symptoms. UAC is the norm. B/x: glucose 5.3 mmol/l, creatinine 149 µmol/l, urea 9.2 mmol/l, total. cholesterol 4.99 mmol/l, LDL – 3.2 mmol/l.

OAM – cloudy urine, leukocytes cover the entire field of view, bacteriuria more than 10<sup>7</sup>, albuminuria 250 mg/day.

Ultrasound of the kidneys: the kidneys are usually located, of normal size, parenchyma thickness up to 12-13 mm, with uneven contours, dilatation of the joints of both kidneys, no shadows of stones were detected, on both sides there are multiple sinus cysts with a diameter of 13-17 mm.

Formulate a diagnosis?

*Sample answer:*

Main: Chronic pyelonephritis in the acute stage.

Background: Arterial hypertension stage II, degree 2, risk 3 (high)

Complications: Kidney cysts. Hypertensive nephropathy, CKD C3b (GFR according to CKD-EPI formula: 30 ml/min/1.73 m<sup>2</sup>), A2.

Concomitant: Alimentary-constitutional obesity of the 2nd degree.

### Task 38.

A 35-year-old woman complained of increased fatigue, periodic nagging pain in the lumbar region, polyuria, and headaches. I have been experiencing discomfort in the lumbar region for about 5 years; there were 2 episodes of pyelonephritis. Polyuria appeared 2 years ago. For the last year I have been worried about headaches, with one-time blood pressure measurements

140-150/90-100 mm. rt. Art. Heredity: father - missing; mother - died at the age of 55 from complications of end-stage renal failure of unknown etiology; The patient's sister has been suffering from a kidney disease she doesn't know for 20 years; maternal aunt, 60 years old – cysts in the kidneys, hypertension.

Objective status: general condition is satisfactory. Weight 60 kg, height 165 cm. The skin is pale and clean. There is no swelling. Zev is clean. Lymph nodes are not enlarged. NPV – 18/min. The percussion sound is clear, pulmonary. In the lungs there is vesicular breathing, no wheezing. The borders of the heart are not expanded, sonorous, rhythmic, no noise. Heart rate – 76 beats/min. Blood pressure – 150/90 mm. rt. Art. The abdomen is soft, slightly painful in the mesogastrium. The liver is enlarged. Enlarged, tuberous kidneys are palpated. Tapping on the lumbar region is sensitive on both sides. Urination is painless.

UAC is the norm. B/x: urea 9 mmol/l, creatinine 119  $\mu$ mol/l. OAM – cloudy urine, protein 0.2 g/l, 8-10 red blood cells in the field of view.

Ultrasound of the kidneys: the kidneys are enlarged, with uneven contours. Multiple round anechoic formations (cysts) with a diameter of 1 to 3 cm, diffusely located in the cortical, medullary and subcapsular layers. Cortico-medullary differentiation is not visible.

Formulate a diagnosis?

*Sample answer:*

Main: Autosomal dominant polycystic kidney disease.

Complications: secondary symptomatic (renoparenchymal) arterial hypertension stage II, degree 1. CKD C3a (GFR according to CKD-EPI formula: 51 ml/min/1.73 m<sup>2</sup>), A2.

Concomitant: nutritional and constitutional obesity of the 2nd degree.

Task 39.

A chest x-ray of a farmer working with hay revealed a diffusely enhanced deformed pulmonary pattern, as well as many scattered pneumonia-like shadows.

1. What disease are these changes characteristic of?
2. What method confirms the diagnosis of exogenous allergic alveolitis (hypersensitivity pneumonitis)?
3. What drug is usually used to relieve the acute form of exogenous allergic alveolitis (hypersensitivity pneumonitis)?

*Sample answer:*

1. These changes are characteristic of exogenous allergic alveolitis (hypersensitivity pneumonitis).
2. The diagnosis is confirmed by the detection of antibodies to the suspected allergen in the blood.
3. GCS (Prednisolone).

Task 40.

List the criteria for unfavorable rapidly progressive pulmonary fibrosis in systemic scleroderma and other interstitial lung diseases with a rapidly progressive fibrotic phenotype?

*Sample answer:*

- 1) decrease in FVC >10% compared to the previous one;
- 2) a decrease in FVC by 5-10% compared to the previous one in combination with a worsening of symptoms and/or HRCT picture caused by ILD;
- 3) decrease in FVC <5% compared to the previous one in combination with an increase in the volume of lung damage according to HRCT and worsening of symptoms;

4) initial pronounced fibrotic changes in the lungs on a conventional X-ray or HRCT in combination with FVC less than <70% of the proper value and/or DLco < 60% of the proper value.

Task 41.

The patient, 19 years old, complains of a cough with the release of mucopurulent sputum up to 150 ml per day, pain in the right side when breathing, increased body temperature up to 37.5°, chills, shortness of breath.

Considers himself sick since childhood. He was treated for chronic bronchitis. Exacerbations occur several times a year; exacerbations occur with the release of a significant amount of mucopurulent sputum, sometimes mixed with blood. The last exacerbation began 5 days ago after hypothermia. The disease began with chills, an increase in body temperature to 38.5°C, then the cough intensified, and the amount of sputum increased. During treatment with antibiotics, the patient's condition improved, but the cough and low-grade fever persisted.

Objectively: the general condition is of moderate severity. The skin is of normal color. The nail plates look like watch glasses, and the terminal phalanges of the fingers look like "Drumsticks". The chest is regular in shape and symmetrical. During percussion on the left front in the lower parts there is a moderate dullness of the percussion tone. Auscultation also reveals hard breathing, moist rales of various sizes, heart rate = 98 per minute. The boundaries of the heart are within normal limits. BP=120/75 mm Hg. Art.

In the general blood test, hemoglobin is 110 g/l, leukocytes are  $12 \times 10^9/l$ , ESR is 30 mm/h. General urine analysis without pathology. On the radiograph of the chest, the lingular segments on the left are reduced in volume, in the projection of the lingular segments there is an increase and cellular deformation of the pulmonary pattern.

1. Preliminary diagnosis?
2. What are the most likely causative agents of the disease?

*Sample answer:*

1. bronchiectasis with damage to S4.5 of the left lung;
2. gram-negative microflora, pneumococcus, Staphylococcus aureus.

Task 42.

The patient, 25 years old, complains of a cough with the release of mucopurulent sputum up to 200 ml per day, pain in the right side when breathing, an increase in body temperature to 37.6°, chills, shortness of breath.

Considers himself sick since childhood. He was treated for chronic bronchitis. Exacerbations occur several times a year; exacerbations occur with the release of a significant amount of mucopurulent sputum, sometimes mixed with blood. The last exacerbation began 6 days ago after hypothermia. The disease began with chills, body temperature rising to 38.6°C, cough intensified, and the amount of sputum increased. During treatment with antibiotics, the patient's condition improved, but the cough and low-grade fever persisted.

Objectively: the general condition is of moderate severity. The skin is of normal color. The nail plates look like watch glasses, and the terminal phalanges of the fingers look like "Drumsticks". The chest is regular in shape and symmetrical. During percussion on the left front in the lower parts there is a moderate dullness of the percussion tone. Auscultation also reveals hard breathing, moist rales of various sizes, heart rate = 98 per minute. The boundaries of the heart are within normal limits. BP=120/75 mm Hg. Art.

In the general blood test, hemoglobin is 110 g/l, leukocytes are  $12 \times 10^9/l$ , ESR is 30 mm/h. General urine analysis without pathology. On the radiograph of the OGK, the middle lobe on the right is slightly reduced in volume, in the projection of the middle lobe there is an increase and cellular deformation of the pulmonary pattern.



1. Preliminary diagnosis?
2. What do you expect to see on a CT scan of the lungs?

*Sample answer:*

1. Bronchiectasis with damage to the middle lobe of the right lung in the acute phase.
2. On the right, the middle lobe is reduced in volume, a cavity is determined  
With horizontal liquid level.

#### Task 43.

A 43-year-old patient complains of a cough with 150-200 ml of foul-smelling mucopurulent sputum, an increase in body temperature to 37.6°C, and general weakness. I fell ill 7 days ago, after hypothermia, chills appeared, body temperature rose to 39.6°, cough with scanty sputum. He was treated for “flu”, took azithromycin and NSAIDs. After 6 days, foul-smelling purulent sputum began to be released in large quantities “mouth full”, after which the patient’s condition improved, the body temperature became low-grade, and the symptoms of intoxication decreased.

An objective examination revealed a general condition of moderate severity. Various moist rales are heard over the lower and middle parts of the right lung. The boundaries of the heart are within normal limits. Heart sounds are rhythmic and clear. Heart rate = 96/min, blood pressure = 130/80 mm Hg. Art. Abdominal organs without pathology. The spleen is not palpable. There is no peripheral edema. Physiological functions are not impaired.

An X-ray in the S6 projection revealed a cavity with thick walls (4 cm in diameter) and perifocal infiltration. The content of leukocytes in the blood is  $15.4 \times 10^9/l$ , band neutrophils are 12%, ESR is 36 mm/h.

1. Preliminary diagnosis?
2. The most effective drug in this case?

*Sample answer:*

1. Abscess of the lower lobe of the right lung;
2. Imipenem.

#### Task 44.

Patient R., 38 years old, is an auxiliary worker by profession. I went to the clinic to see a general practitioner with complaints of an increase in temperature to 38.0 °C, a cough with moderate amounts of mucopurulent sputum, mild pain in the chest when coughing, headache, weakness in the limbs, sweating. He became acutely ill after hypothermia. Bad habits: smokes 20 cigarettes a day for more than 15 years; there are no associated diseases.

Objective data: the skin is pale and moist. The patient's excessive sweating is noteworthy. In the lungs, breathing is weakened on the right, multiple moist fine rales are heard at the angle of the right scapula. RR at rest up to 22/min. Heart sounds are muffled, rhythmic, single extrasystoles. Heart rate – 100 beats/min, blood pressure – 110/70 mm Hg. Art. The abdomen is soft and painless. In other organs and systems without visible pathological abnormalities.

Laboratory and instrumental examination methods: Clinical blood test: hemoglobin – 135 g/l, erythrocytes  $4.7 \times 10^{12}/l$ , leukocytes  $11 \times 10^9/l$ , band – 28%, segmented – 57%; ESR – 35 mm/hour. General urine analysis: relative density – 1018, protein – 0.99 g/l, hyaline casts. Biochemical blood test: ALT – 58 units/l; AST – 100 units/l; creatinine – 115  $\mu\text{mol}/l$ ; fibrinogen – 8 g/l. ECG: Sinus rhythm, regular, heart rate – 100 beats/min, focal changes in the myocardium, no myocardial hypertrophy. X-ray of the chest organs: focal infiltration in the basal parts of the right lung, deformation of the root of the right lung.

1. Guess the most likely diagnosis?

2. What groups of antibiotics are recommended for the patient?  
starting antibacterial therapy?

*Sample answer:*

1. Community-acquired right-sided pneumonia, non-severe course.
2. The drugs of choice are Amoxicillin and macrolides (Clarithromycin, Azithromycin).

Task 45.

In a patient with community-acquired right-sided pneumonia of a non-severe course, after 3 days of therapy (Amoxicillin 500 mg 3 times or Azithromycin 500 mg 1 time per day), body temperature returned to normal - 36.8 °C, intoxication decreased (decreased weakness, sweating, improved appetite), shortness of breath has decreased.

What are your further treatment tactics?

*Sample answer:*

It is necessary to continue antibiotic therapy without changes for another 3-4 days and continue dynamic observation. Monitoring of a general blood test after 7 days, X-ray monitoring of the chest organs.

Task 46.

A 54-year-old patient complains of an unmotivated increase in cough with scant sputum for 3 months. Moderate cough with scant sputum for many years (smoking experience 30 pack-years). The patient did not pay attention to the cough for a long time, but recently the cough became significantly worse and forced the patient to seek medical help. History of chronic bronchitis.

On objective examination, the general condition is satisfactory. Body temperature 36.9°. Lymph nodes accessible to palpation are not enlarged and painless. The chest is of regular shape and evenly participates in the act of breathing. Percussion and palpation revealed no pathology. On auscultation, breathing is harsh, there are no wheezes. NPV - 17 in 1 min. Heart sounds are rhythmic, somewhat muffled, heart rate - 82 per minute. A/D - 130/80 mm Hg. Art. The abdomen is soft, painless, the liver is not enlarged, painless, the spleen is not palpable. Physiological functions are not impaired. An x-ray of the chest organs in the middle lobe on the right reveals a round formation 2.5 cm in diameter with a clear and uneven (scalloped) contour and the presence "crown", located at a sufficient distance from the root. The roots are light and of normal size, structural. In the general blood test: ESR - 25 mm/h, otherwise without pathology. General analysis of sputum: mucous in nature, leukocytes - in small quantities, no atypical cells were found.

Formulate a preliminary diagnosis?

*Sample answer:*

Peripheral cancer of the middle lobe of the right lung.

Task 47.

Patient N., 48 years old, has been suffering from diabetes mellitus for 3 years. Over the past 6 months, he has been worried about increasing weakness, fatigue, and cough with sputum. Periodically notes an increase in body temperature. I did not consult a doctor, since the listed complaints are associated with diabetes mellitus. During the next preventive fluorographic examination, pathological changes in the lungs were revealed.

X-ray - in the right lung from the apex to the third rib, an inhomogeneous darkening with clearing in the center of 2x3 cm is determined, the contours are unclear. In the surrounding lung tissue there are focal shadows of low intensity. In the general blood test: leukocytes -  $11.0 \times 10^9/l$ , band neutrophils - 12%, segmented neutrophils -

58%, lymphocytes - 19%, monocytes - 11%, ESR - 18 mm/hour. Reaction to the Mantoux test with 2 TE

– papule 11 mm. Due to pulmonary hemorrhage, sputum examination for MBT was not performed.

Make a diagnosis?

*Sample answer:*

Infiltrative tuberculosis of the upper lobe of the right lung in the phase of decay and contamination of the office?

Task 48.

Patient V., 55 years old, an accountant by profession, was hospitalized in the pulmonology department due to complaints of progressive shortness of breath with difficulty inhaling, dry cough and aching pain at the angles of the shoulder blades, aggravated by deep breathing, general weakness, fatigue, low-grade fever. Considers himself sick for 8 months, when a dry cough, low-grade fever and weakness appeared.

The condition was assessed as an acute respiratory disease, aspirin, suprastin, and calcium gluconate were prescribed. The patient's health continued to deteriorate. Shortness of breath appeared and gradually began to increase. Then there was aching pain at the angles of the shoulder blades when taking a deep breath. During auscultation, the local therapist detected crepitating rales, on the basis of which pneumonia was suspected and therapy with ampicillin was prescribed at a dose of 2 g per day. Despite ongoing antibacterial therapy, the condition could not be stabilized. Weakness, sweating, and dry cough persisted, and the patient lost 5 kg in six months. Shortness of breath progressed steadily. The patient was referred for consultation to a tuberculosis dispensary, where the diagnosis of tuberculosis was ruled out. For examination and selection of therapy, the patient was sent to hospitalization in the pulmonology department.

Objectively: the condition is relatively satisfactory. A patient with low nutrition. The skin and visible mucous membranes are of normal color and clean. Heart rate – 96 per minute. Blood pressure 130/80 mm Hg. Art. The limits of relative and absolute cardiac dullness are within normal limits. Heart sounds are muffled, no murmurs are heard. NPV – 24 per 1 minute. Voice tremors are unchanged and symmetrical. Percussion tone is clear, pulmonary. Breathing is vesicular, weakened. Crepitating rales like “cellophane crackling” are heard from behind on both sides to the level of the lower 1/3 of the shoulder blades. The tongue is wet and pink. The abdomen is soft and painless. The liver does not protrude from under the edge of the costal arch. Tapping on the lower back is painless on both sides.

Blood test results: erythrocytes -  $4.2 \times 10^{12}/l$ , hemoglobin - 120 g/l, leukocytes –  $6.4 \times 10^9/l$ , eosinophils – 1%, basophils – 0%, band neutrophils – 3%, segmented neutrophils – 58%, lymphocytes – 35%, monocytes – 3%. ESR – 26 mm/hour. An x-ray of the chest organs in 2 projections reveals a widespread increase in the pulmonary pattern due to the interstitial component in the form of unclear contours of blood vessels, peribronchial-perivascular changes and fine cellularity. The greatest severity of changes can be seen in the lower zones of both lungs. The roots of the lungs are not expanded, structural. The diaphragm is located high (posterior sections of the 9th rib) and has clear, even contours. The cardiac shadow lies widely on the diaphragm with low arcs. Study of the function of external respiration: vital capacity of the lungs - 68% of the proper value, forced expiratory volume in one second - 80% of the proper value, Tiffno test - 75%.

1. Formulate a preliminary diagnosis?

2. What method of surgical treatment is effective for this pathology?

*Sample answer:*

1. Idiopathic pulmonary fibrosis.

2. In case of ineffectiveness of drug treatment, progression of pulmonary fibrosis, or negative clinical dynamics, lung transplantation is indicated.

Task 49.

Patient 35 years old, farmer, working with hay, consulted a pulmonologist with complaints of a nonproductive cough, an increase in body temperature to 37.6°, and a feeling of lack of air during moderate physical activity.

Considers himself sick for three to four months; the disease began while working with hay. He repeatedly sought medical help and was treated for pneumonia with varying success. While the farmer stopped working and stayed in the hospital, his condition improved significantly and recovery was stated. Symptoms returned 1-2 weeks after returning to work. His life history is uneventful, he has not been in contact with infectious patients, he has not noted any allergic reactions or reactions to medications. Sometimes I suffered from mild ARVI, the last time was 1.5 years ago.

Objectively: general condition is relatively satisfactory. The skin is of normal color and clean. Lymph nodes accessible to palpation are not enlarged, painless. The musculoskeletal system is without pathology. The chest is of regular shape, symmetrical, and evenly participates in the act of breathing. During percussion, a moderate shortening of the percussion tone is noted in the lower and lateral sections on both sides, and a squeak is also detected on inspiration. Crepitating rales are also heard here. NPV

-19 in 1 minute. The boundaries of the heart are within normal limits. The heart sounds are rhythmic and clear, heart rate is 84 per minute. Body temperature is 37.2°. No pathology was detected from other organs and systems.

On the chest X-ray: diffuse enhancement of the pulmonary pattern with dissemination of structurally heterogeneous foci with unclear contours, mainly in the middle and lower sections.

Formulate the most likely diagnosis and justify it?

*Sample answer:*

Acute hypersensitivity pneumonitis (exogenous allergic alveolitis). The diagnosis was made on the basis of recurrent disseminated lung lesions, presumably arising from contact with hay, with a process duration of about 4 months.

Task 50.

A 44-year-old woman is being treated for systemic scleroderma, chronic course, activity II, limited cutaneous form with Raynaud's syndrome, sclerodactyly, dysphagia, pulmonary fibrosis, DN I, cor pulmonale with extrasystole.

On examination: the skin is uniformly hyperpigmented. The skin of the hands and fingers is cold, compacted, evenly thickened, not folded, and there are no wrinkles over the interphalangeal joints. The nail phalanges of all fingers are shortened. The muscles of the shoulder and pelvic girdle are atrophic, the forearms are compacted and rigid. The range of passive and active movements in the interphalangeal joints is sharply reduced. Breathing is shallow, 24 per minute. A decrease in lung excursion and a symmetrical weakening of vesicular respiration in the lower sections was revealed. Blood pressure - 110/70 mm Hg. Art. Heart sounds are irregular, 88 per minute, single extrasystoles; The first tone over the apex and base of the xiphoid process is weakened. The abdomen is soft, painless on both superficial and deep palpation.

Laboratory. General blood test: red blood cells -  $3.1 \times 10^{12}/l$ , hemoglobin - 95 g/l, color index -0.85; leukocytes -  $15.3 \times 10^9/l$ ; eosinophils - 2%, band neutrophils - 8%, segmented neutrophils - 72%, lymphocytes - 17%, monocytes -

1%; ESR - 27 mm/h. Biochemical blood test: total protein - 75 g/l; albumins - 40%, globulins - 60%, 1 - 3.8%, 2 - 12%; - 12%; - 32.2%; fibrinogen - 6.6 g/l; SRB (++) . Repeated studies of LE cells in the blood are negative.

On spirometry, FVC decreased by 10% over time. ECG: single ventricular extrasystoles.

Radiography chest organs: "honeycomb" lung, symptoms of pneumosclerosis. On CTOG there are signs of honeycomb lung, reticular changes with

predominant damage to the cortical and basal parts of the lungs. In dynamics

There is an increase in fibrotic changes in the lungs.

1. What type of interstitial pneumonia corresponds to the CT picture identified in the patient? Justify.

2. Determine the nature of the pathological process in the lungs? Justify.

*Sample answer:*

1. CT changes correspond to UIP (usual interstitial pneumonia), since bilateral reticular changes and signs of honeycomb lung with a predominance of changes in the cortical and basal parts of the lungs were detected.

2. The course is progressive, since according to the P-study, an increase in pulmonary fibrosis and a decrease in FVC by 10% are observed over time.

Task 51.

The patient, 42 years old, complains of shortness of breath during moderate physical activity, discomfort in the chest, unproductive cough in the morning with hemoptysis, pain in the joints of the hands, feet, knee joints of a migrating nature, swelling of the above joints, redness of the conjunctiva and pain in the eyeball area on the right, difficulty in nasal breathing, congestion in the right ear, severe general weakness, increased sweating, increased body temperature to 38 degrees.

From the anamnesis it is known: he considers himself sick for 6 months, when chest pain appeared in the subscapular areas. During the examination, a diagnosis of pulmonary tuberculosis was made, for which she was treated in a hospital. There was no improvement in the patient's condition during the therapy; a month later, an unproductive cough joined the listed symptoms. The control X-ray of the chest organs shows negative dynamics. After 2 months, the patient's condition worsened, pain in the chest intensified, pain and swelling in the joints of the hands, feet, knee joints of a migrating nature began to bother her, fever, hemoptysis, nasal congestion, weakness, shortness of breath with slight exertion, change in the color of urine to "dirty" yellow." During the examination, negative results of bacterial cultures (including tuberculosis) of sputum were obtained. SCT of the OGK revealed multiple polymorphic focal formations with signs of destruction in some of them, areas of "ground glass", as well as honeycomb lung phenomena and reticular changes, mainly in the middle and lower sections. The patient was hospitalized in the pulmonology department.

Upon admission, the consciousness is clear, the position is active, the range of active movements is limited due to the severity of the articular syndrome; skin: on the skin of the ankle joints there is a pinpoint rash of a hemorrhagic nature; percussion of the lungs: moderate dullness in the middle and lower parts; Auscultation of the lungs: breathing is carried out in all parts, with a hard tint, no wheezing; Auscultation of the heart: heart sounds are muffled, rhythmic, sinus tachycardia up to 90 beats per minute; genitourinary system: the symptom of effleurage is negative on both sides, there is no swelling, urination is free, the urine is cloudy; musculoskeletal system: synovitis of the left wrist joint, limited mobility in it.

Laboratory test results: general blood test - anemia, accelerated ESR, neutrophilia, lymphocytopenia (hemoglobin 97 g/l, red blood cells  $3.46 \times 10^{12}/l$ , leukocytes  $6.94 \times 10^9/l$ , platelets  $417 \times 10^9/l$ , hematocrit 28.8 %, ESR 60 mm/h, eosinophils - 2.6%, basophils 0.2%, band 12%, lymphocytes 11.3%, monocytes 6.3%). In general urine analysis - proteinuria, leukocyturia, hematuria (incomplete transparency, relative density of urine 1.019, reaction 5.5, protein 1.05 g/l, leukocytes 8-10 per field of view, erythrocytes 30-40 per field of view). In the biochemical blood test - an increase in the level of creatinine and urea (total protein 69 g/l., albumin 36 g/l., AST 22 U/l, ALT 27 U/l., creatinine  $160 \mu\text{mol}/l$ , urea 10.4 mmol /l). Tests for ANA and dDNA are negative, ANCA is positive. C-reactive protein 58.8 mg/l. Rheumatoid factor 24.9 IU/ml.

An ophthalmologist verified keratitis of the right eye.

An examination by an ENT doctor revealed a displacement of the nasal septum to the left, granulomatous formation of the nasal septum on the left, and persistent difficulty in nasal breathing.

1. Which the disease most likely caused a disseminated process in the lungs?

Justify your assumption.

2. Prescribe treatment?

*Sample answer:*

1. Granulomatosis with polyangiitis (Wegener's). The following criteria allowed us to suspect this disease: the presence of a granuloma in the nasal cavity, changes in the lungs on X-ray, changes in urine.

2. The standard treatment regimen includes the use of high doses of glucocorticosteroids (methylprednisolone or prednisolone, including pulse therapy) and cytostatics (cyclophosphamide, including pulse therapy).

Task 52.

Patient A., 42 years old, complains of shortness of breath with slight physical exertion, moderate cough with scanty mucous sputum, increased body temperature to  $37.2^{\circ}$ - $37.5^{\circ}$ . He fell ill 5 years ago.

According to the patient, he was examined in a pulmonology clinic, and a histological examination of a lung biopsy was carried out. He was treated for pulmonary sarcoidosis for 1 year (he cannot provide the documents, he may have lost it). As a result of treatment, remission of the disease occurred. Symptoms of the disease resumed 1 month ago for no apparent reason, increasing gradually. Sometimes he suffered from acute respiratory viral infections. Denies other diseases. Heredity is not burdened. The epidemiological anamnesis is favorable.

Upon objective examination, the general condition is relatively satisfactory. The skin is of normal color and clean. Lymph nodes accessible to palpation are not enlarged, painless. The musculoskeletal system is without features. The chest is of regular shape and evenly participates in the act of breathing. The percussion tone in the subscapular areas on both sides is moderately shortened, here moderate crepitus is determined, breathing is harsh, respiratory rate is 24 per minute. Heart sounds are muffled and rhythmic. Heart rate - 96 per minute, blood pressure - 130/80 mm Hg. The abdomen is soft and painless. The liver is at the edge of the costal arch, elastic, painless, the spleen is not palpable. The kidneys are not palpable, the effleurage symptom is negative on both sides. Diuresis and stool are normal.

Complete blood count: no pathology detected.

General urine analysis without pathology.

General analysis of sputum: mucous character, single leukocytes, mycobacterium tuberculosis were not detected.

Bronchoscopy revealed moderate catarrhal endobronchitis. On the chest x-ray: the roots of the lungs are without features. There is diffuse enhancement and deformation of the pulmonary pattern, dissemination of polymorphic foci mainly in the middle and lower sections on both sides. Tuberculin tests are negative.

1. Formulate a preliminary diagnosis?
2. What are the main drugs for the treatment of this disease?

*Sample answer:*

1. Pulmonary sarcoidosis stage III, active (Ist stage), relapse, progressive course. Respiratory failure stage II.

2. The main drugs for the treatment of this disease are glucocorticoids.

#### Task 53.

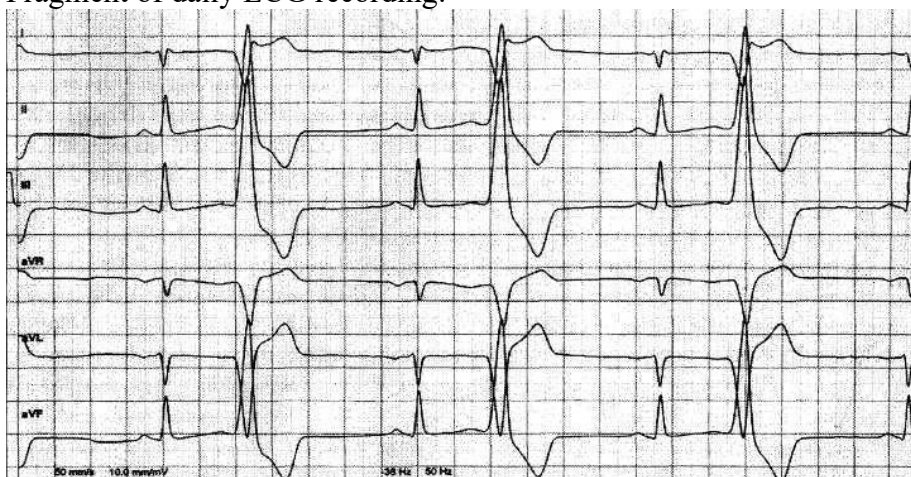
Patient F., 22 years old, came to the clinic with complaints of darkening of the eyes, dizziness, and short-term loss of consciousness when performing physical activity. From the anamnesis it is known that for two years he has been observed by a cardiologist with a diagnosis of “hypertrophic cardiomyopathy”, did not receive constant therapy. Over the past few months, my health has worsened, and attacks of dizziness and loss of consciousness have become more frequent.

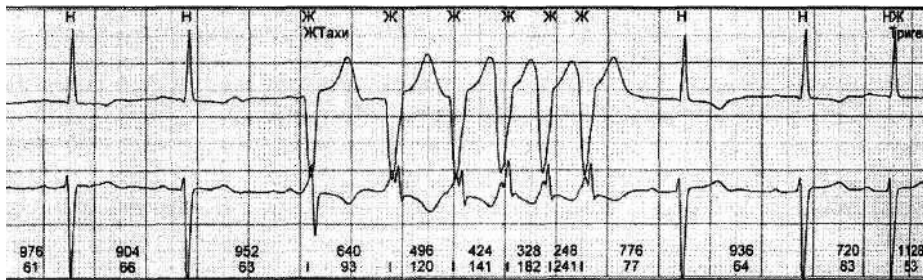
The family history is burdened: the patient's uncle died suddenly at the age of 32 years. Not smokes.

On examination, the skin and visible mucous membranes are of normal color. NPV – 18 in 1 min. With comparative percussion, the sound is clear and light. Auscultation of the lungs: vesicular breathing, no wheezing. The apical impulse is determined in the 5th intercostal space 1 cm outward from the midclavicular line. The boundaries of relative dullness of the heart: right 1 cm to the right from the right edge of the sternum, left 1 cm outward from the midclavicular line in the 5th intercostal space, upper at the level of the upper edge of the 3rd rib. On auscultation of the heart, the sounds are sonorous and arrhythmic. Pulse – 72 beats per minute, satisfactory filling and tension, blood pressure – 120/80 mm. rt. Art. on both hands. The abdomen is soft and painless. The lower edge of the liver is soft and painless. The spleen is not enlarged. General blood and urine analysis without pathology.

The patient underwent 48-hour ECG monitoring, which revealed cardiac arrhythmias.

Fragment of daily ECG recording:





Echocardiography revealed symmetrical hypertrophy of the left ventricle (the thickness of the posterior wall of the left ventricle is 1.6 cm, the thickness of the interventricular septum is 1.7 cm), there are no signs of obstruction of the outflow tract of the left ventricle.

1. What rhythm disorder does the patient have?
2. What recommendations can be given for treatment?

*Sample answer:*

1. Ventricular bigeminy, paroxysm of ventricular tachycardia (6 complexes).
2. The optimal method of treatment is the installation of an implantable cardioverter-defibrillator.

#### Task 54.

Patient K., 19 years old, student, for two weeks after suffering from an acute respiratory viral infection, which occurred with an increase in temperature to 38 ° C, noticed excessive fatigue, weakness, palpitations and interruptions in the work of the heart, stabbing pain in the heart area, lasting several seconds, arising and passing spontaneously, shortness of breath during moderate physical activity - climbing the stairs to the first floor.

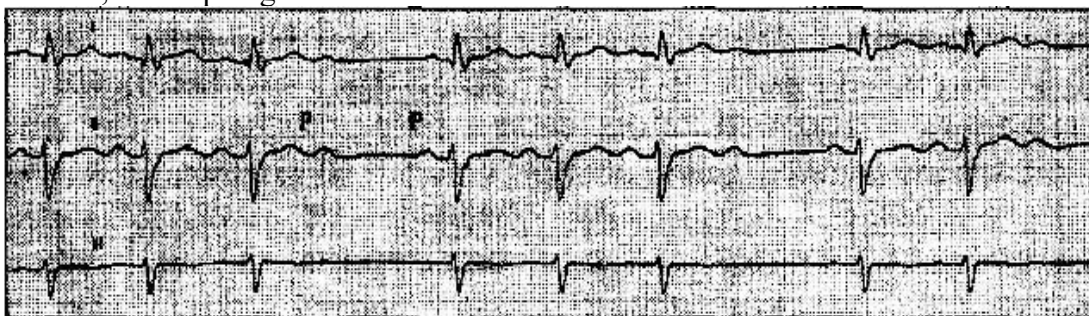
On examination: the patient has an asthenic build. The skin is pale, joint hypermobility. Lymph nodes are not enlarged. Temperature – 36.7 °C. In the lungs, breathing is vesicular, carried out in all parts, wheezing is not heard. NPV –

16 per minute. The apical impulse is weakened and localized in the 5th intercostal space. When percussion determines the boundaries of relative cardiac dullness: left - along the 1. Media clavicularis sinistra, upper - along the 2nd intercostal space, right - 4 cm outward from the right edge of the sternum. On auscultation of the heart: the tones are muffled, arrhythmic, a soft systolic murmur without conduction is heard at the apex. Heart rate – 52 beats per minute. BELL – 110/70 mm Hg. Art. The abdomen is soft and painless. The soft elastic edge of the liver is palpated under the edge of the costal arch. The dimensions of the liver according to Kurlov are 9x8x7 cm.

General blood test: without any features.

Biochemical blood test: total protein - 74 g/l, creatinine - 78 μmol/l, urea - 5.2 mmol/l, ALT - 24 U/l, AST - 30 U/l, total bilirubin - 12 μmol/l, direct – 3.0 μmol/l, K<sup>+</sup> – 4.6 mmol/l, Na<sup>+</sup> – 138 mmol/l.

X-ray of the chest organs: the lung fields are transparent. Roots are structural. The sinuses are free, the diaphragm is mobile. The heart and aorta are unremarkable. ECG:



1. What rhythm disorder was detected in the patient?
2. Describe the ECG criteria for this cardiac arrhythmia?

*Sample answer:*



1. Second degree AV block, Mobitz type II.
2. ECG signs of second degree AV block, Mobitz type II: loss of the QRS complex with a normal or steadily increased duration of the P-Q interval in the ratio 2:1, 3:1, 4:1, etc.

Task 55.

Patient F., 83 years old, was hospitalized in the clinic with complaints of attacks of short-term loss of consciousness, which occur for no apparent reason, last, according to relatives, 10-20 seconds, and go away on their own.

From the anamnesis it is known that over the past three years he has been suffering from coronary artery disease; during everyday physical activity, a feeling of heaviness in the chest and shortness of breath appear. Over the past year, cognitive disorders have progressed rapidly, and memory has significantly decreased. The real deterioration occurred during the last month, when short-term loss of consciousness began to appear, which was accompanied by a decrease in heart rate to 20 beats per minute.

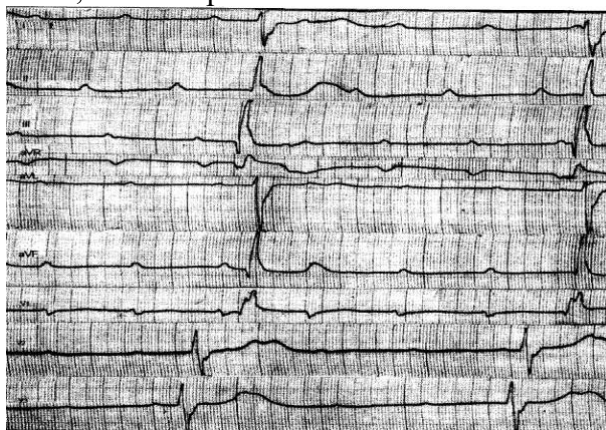
Upon examination, the condition is serious, pronounced cyanosis of the lips, acrocyanosis, pallor of the skin. The hands are cold on palpation. The shape of the chest is funnel-shaped, breathing is free, respiratory rate is 17 breaths per minute. On percussion, the sound is clear, pulmonary, the boundaries of the lungs are within normal limits. On auscultation, breathing is harsh, weakened in the lower parts, and there is no wheezing. The boundaries of relative cardiac dullness: right - the right edge of the sternum, left - along the left midclavicular line, upper - the upper edge of the third rib. On auscultation, heart sounds are muffled, rhythmic, with an accent of the second tone over the aorta. Heart rate – 48 beats per minute. Peripheral vascular pulsation is reduced. Blood pressure – 160/90 mm Hg. Art. The abdomen is soft and painless. The liver is at the edge of the costal arch, dimensions according to Kurlov are 10x9x8 cm. The kidneys are not palpable. Pasternatsky's symptom is negative on both sides.

General blood test: red blood cells -  $4.5 \times 10^{12}/l$ , hemoglobin - 136 g/l, leukocytes -  $6.2 \times 10^9/l$ , platelets -  $209 \times 10^9/l$ , ESR - 10 mm/h.

General urine analysis: specific gravity – 1010, acidic reaction, complete transparency, yellow color. Protein, no glucose. There are no cylinders. Leukocytes – 0-1 in the field of view, erythrocytes – 10-11 in the field of view.

Biochemical blood test: total protein – 80 g/l, total bilirubin – 17  $\mu\text{mol}/l$ , creatinine – 81  $\mu\text{mol}/l$ , glucose – 5.6 mmol/l, cholesterol – 7.1 mmol/l, triglycerides – 3.8 mmol/l,  $\text{K}^+$  - 4.2 mmol/l,  $\text{Na}^+$  - 135 mmol/l, AST - 21 U/l, ALT - 20 U/l.

During an objective examination, the patient lost consciousness, against which an ECG was taken, which is presented below:



1. Describe the mechanism of development of fainting in a patient?
2. What cardiac arrhythmia did the patient experience?

*Sample answer:*

1. The patient has Morgagni-Adams-Stokes syndrome. This syndrome occurs due to the sudden cessation of effective cardiac activity due to asystole, flutter and ventricular fibrillation. Severe cerebral ischemia occurs when cardiac output decreases below two liters per minute due to cardiac arrhythmias.
2. During loss of consciousness, the patient had third degree AV block.

Task 56.

Patient R., 28 years old, student, was hospitalized in the cardiology hospital. Complaints of shortness of breath when walking up to 100 m, increased shortness of breath in a horizontal position, palpitations, general weakness, swelling in the legs. Within 2 months, he notices the appearance of shortness of breath and weakness. A week ago, interruptions in the functioning of the heart and palpitations appeared, and from that time swelling appeared in the legs.

Among the diseases suffered, he noted acute respiratory infections, appendectomy in childhood, and influenza about 4 years ago.

Objectively: the general condition is serious. The skin is pale. Swelling of the legs, feet. Peripheral lymph nodes are not enlarged. Dullness of percussion sound in the lower parts of the lungs. Breathing is vesicular, crepitating rales in the lower parts, respiratory rate is 26 per minute. Apical impulse in the VI intercostal space 3 cm outward from the left midclavicular line. Borders of relative dullness of the heart: right - 2 cm outward from the right edge of the sternum, upper - 2nd intercostal space along the left midclavicular line, left - along the anterior axillary line. Heart sounds are muffled, systolic murmur at the apex and at the V point of auscultation. The heart rhythm is abnormal, heart rate is 122 beats per minute, blood pressure is 100/80 mm Hg. Art., average pulse - 105 per minute, irregular. The dimensions of the liver according to Kurlov are  $14 \times 11 \times 10$  cm.

General blood test: hemoglobin - 125 g/l, leukocytes -  $4.0 \times 10^9/l$ , ESR - 10 mm/h. Chest x-ray revealed signs of cardiomegaly.

EchoCG: dilatation of the left and right ventricles, diffuse hypokinesis, ejection fraction - 28%.

ECG: atrial fibrillation, heart rate - 132 per minute. Guess the most likely diagnosis?

*Sample answer:*

Dilated cardiomyopathy. Rhythm disturbances such as permanent atrial fibrillation, tachysystole. CHF II B stage. III FC.

Task 57.

Patient K., 78 years old, at an appointment with a local general practitioner, complains of attacks of dizziness, sometimes with short-term loss of consciousness, which have become more frequent over the past month. In addition, there is shortness of breath with little physical exertion and swelling in the legs, which also appeared about a month ago and subsequently intensified.

History: he considers himself sick for about 10 years, when for the first time a compressive pain in the heart area and shortness of breath when walking up to 200 m appeared, the pain was effectively relieved by Nitroglycerin. A year ago, for the first time, an attack of loss of consciousness occurred for several minutes, accompanied by involuntary urination. In the last month, similar attacks have become more frequent, and blood pressure has increased.

Objectively: consciousness is clear. Severe cyanosis of the lips, the border of relative cardiac dullness of the heart is shifted to the left by 2 cm. Heart sounds are muffled, rhythmic. At times, a loud (cannon-like) 1st tone is heard. Heart rate - 34 beats per minute. Blood pressure - 180/100 mm Hg. Art. There is hard breathing in the lungs, no wheezing. The liver protrudes from under

costal arch by 5 cm, its edge is dense, sensitive to palpation. Symmetrical swelling on the legs up to the upper third of the legs.

Presented ECG (speed 25 mm/s):



1. Guess the most likely diagnosis?
2. What method of treating this emergency condition, manifested by fainting, is the most effective?

*Sample answer:*

1. IHD. Angina pectoris, FC II. Complete atrioventricular block (AV block 3rd degree). Morgagni-Adams-Stokes attacks. Stage III arterial hypertension, uncontrolled, risk 4.
2. Temporary cardiac pacing.

#### Task 58.

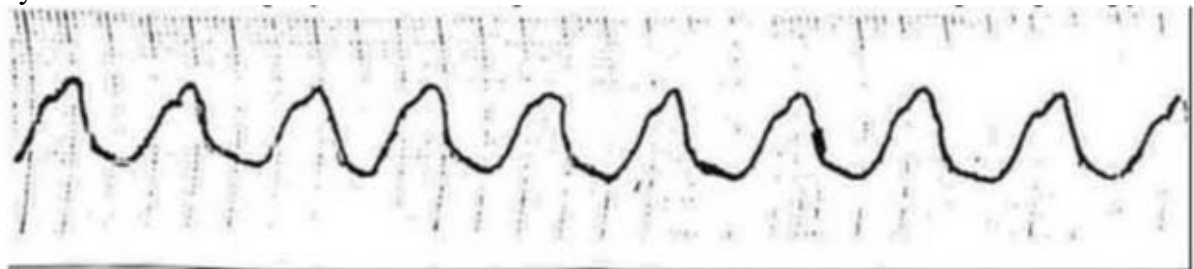
An emergency doctor was called to see patient M., 71 years old. Complaints of shortness of breath, weakness, dizziness and rapid heartbeat for 15 minutes.

Medical history: suffered a myocardial infarction of the posterior inferior wall of the left ventricle in 2012, was treated as an inpatient. Suffering from hypertension with blood pressure readings of 180/90 mm Hg. Art. within 10 years. With little physical activity (walking 200 meters at a calm pace), there are chest pains, which are relieved by taking Nitroglycerin. The attacks have not become more frequent over the past six months. Notes swelling of the legs, more in the evening. She periodically takes Cardipin XL, Furosemide, Digoxin.

Objectively: the condition is of moderate severity. Conscious. Lies with a high headboard. The skin is pale and moist. Acrocyanosis. Pulse -120 per minute, weak filling, rhythmic. Blood pressure -90/60 mm Hg. Art. The boundaries of relative cardiac dullness on the left in the V intercostal space from lin.medioclavicularis sin. + 2 cm. Heart sounds are muffled, the first sound at the apex is weakened. The emphasis of the second tone is on the pulmonary artery. Respiratory rate -26 per minute. There is hard breathing in the lungs, small moist rales in the lower sections. Liver + 5 cm below the costal arch. Swelling of the legs.

An ECG taken immediately after examination of the patient in order to assess the nature of the disorders

rhythm:



1. What is your presumptive diagnosis?
  2. Treatment tactics, choice of drugs?
- Sample answer:*
1. Cardiac ischemia. Angina pectoris III functional class. Post-infarction cardiosclerosis. Stage III hypertension. Paroxysm

ventricular tachycardia, stable form. Arrhythmic shock stage I. CHF stage IIB, functional class IV. CV risk 4

2. Emergency electrocardioversion is indicated. Hospitalization in the intensive care unit. Cancellation of cardiac glycosides. To improve the prognosis of life in patients who have suffered an MI and have potentially malignant VAs, the administration of b-blockers (without their own sympathomimetic activity) and amiodarone is indicated. Resolution of the issue of implantation of a cardioverter-defibrillator.

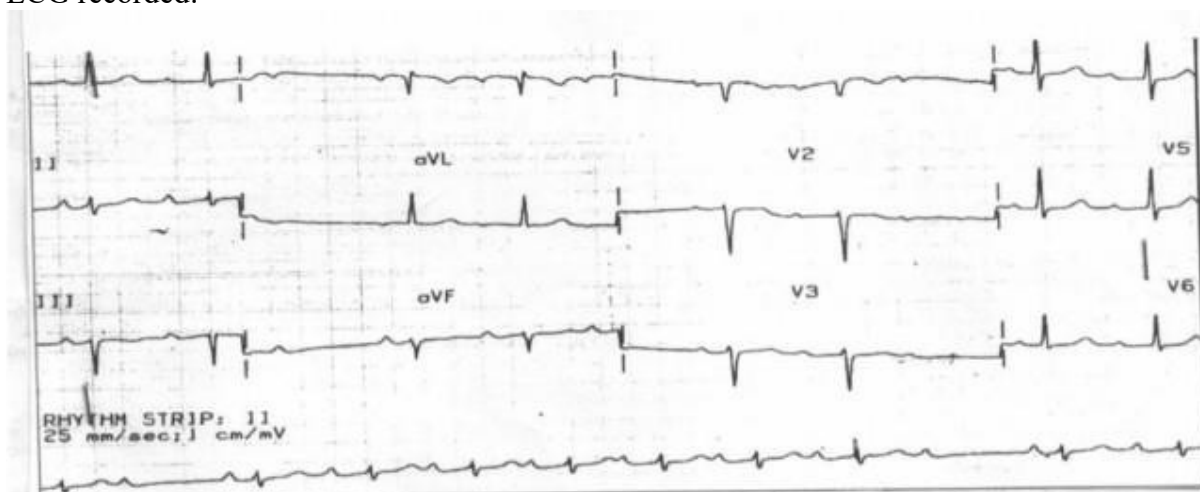
#### Task 59.

A 67-year-old patient, a pensioner, was admitted to the clinic with complaints of a rare pulse, interruptions in the work of the heart, a feeling of fading and stopping, a feeling of lack of air when climbing 1 flight of stairs, pressing pain in the chest during normal physical activity, relieved by taking Nitroglycerin after 1 -2 minutes; short-term episodes of loss of consciousness.

From the anamnesis: four years ago he suffered a myocardial infarction. A year later, anginal pain began to appear during normal physical activity. A week ago, I felt interruptions in my heart function, inspiratory shortness of breath, and noted short-term episodes of loss of consciousness, which was the reason for hospitalization.

Objectively: the condition is of moderate severity, acrocyanosis, no edema. In the lower parts of the lungs there is a small amount of silent, fine rales. Heart sounds are muffled, arrhythmic, heart rate -42 beats per minute, Ps -42 per minute. Blood pressure -110/65 mm Hg. Art. The abdomen is soft and painless. The liver is 2 cm below the costal arch, its edge is smooth, rounded, slightly painful on palpation.

ECG recorded:



1. Formulate a diagnosis?

2. Prescribe treatment?

*Sample answer:*

1. IHD: angina pectoris FC II. Post-infarction cardiosclerosis. Atrioventricular block II degree, Mobitz type I. CHF II A, FC III.

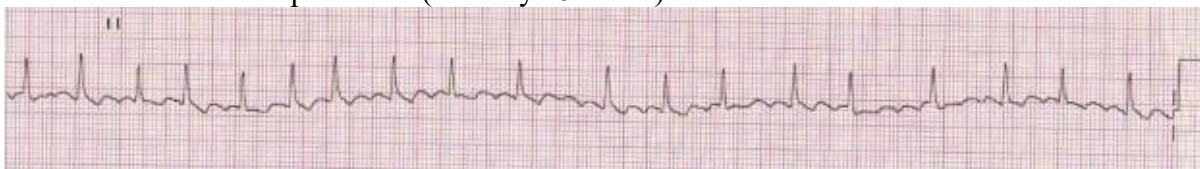
2. Implantation of pacemaker is indicated. Taking into account the results of coronary angiography, determine the indications for myocardial revascularization (PCI and/or coronary bypass surgery). Drug therapy: ACE inhibitor or sacubitril/valsartan (Uperio), if Sartana is intolerant; AMKR; iNGLT-2; Statins; Antiplatelet agents.

#### Task 60.

Patient K., 50 years old, consulted a local general practitioner due to a first-time attack of palpitations, accompanied by muscle tremors, weakness, and slight difficulty breathing. The attack occurred about 2 hours ago with strong

emotional stress. Previously, during regular medical examinations, no diseases were detected; blood pressure was always within normal limits. Previously taken ECGs showed no pathological changes. He tolerates very significant physical activity well. On examination: consciousness is clear. The skin is of normal color and moisture. In the lungs there is vesicular breathing, respiratory rate -18 per minute. The limits of relative cardiac dullness are within normal limits. Heart sounds are arrhythmic, no murmurs, heart rate -144 beats per minute, pulse -108 per minute. Blood pressure -130/80 mm Hg. Art. The liver is not enlarged. There is no peripheral edema. Body temperature 36.9°C.

ECG lead II is presented (velocity 25 mm/s):



Guess the most likely diagnosis?

*Sample answer:*

Paroxysmal atrial fibrillation, tachysystolic form, hemodynamically insignificant paroxysm.

#### Task 61.

A 32-year-old patient was seen by a local general practitioner with complaints of periodic pressing retrosternal pain during moderate physical activity, interruptions in heart function and periodic loss of consciousness, which appeared about six months ago. The patient's brother died suddenly at a young age.

On examination, the skin is without any features, respiratory rate is 19 per minute, heart rate is 88 beats per minute, the rhythm is incorrect. Auscultation of the heart reveals a systolic murmur in the 3rd–4th intercostal space on the left. Blood pressure – 115/75 mm Hg. Art. The liver is not enlarged. There is no swelling.

ECG:



Daily ECG monitoring revealed frequent ventricular extrasystole and short paroxysms of ventricular tachycardia.

With echocardiography, the thickness of the interventricular septum in diastole is 1.7 cm, the posterior wall of the left ventricle is 1.3 cm, the size of the cavity of the left ventricle in diastole is 4.2 cm. He was hospitalized for examination and clarification of the diagnosis.

What is the most likely diagnosis?

*Sample answer:*

Hypertrophic cardiomyopathy, idiopathic hypertrophic subaortic stenosis. Progressive

course. Frequent ventricular extrasystole.

#### Task 62.

Patient K., 20 years old, was admitted to the therapeutic department with complaints of headache, increased body temperature to 38.8 °C, hemorrhagic rashes on the legs, thighs, buttocks, swelling of the knee and ankle joints, pain on movement.

From the medical history it is known that 3 weeks ago he suffered from acute respiratory viral infection and was treated independently with doxycycline and aspirin. While taking medications, a small-spotted rash appeared on the skin of the legs, swelling of the knee joints, and pain in them when moving. A general practitioner called from the clinic assessed the symptoms as an allergic reaction to drug therapy. The patient was advised to stop taking anti-inflammatory drugs. Antihistamines were prescribed.

After 2-3 days, the rashes and swelling of the joints disappeared, and the arthralgia stopped.

A week ago, due to rhinitis and low-grade fever (37.2 °C), the patient independently resumed taking aspirin. However, the condition worsened: the body temperature increased to 38.8°C, hemorrhagic rashes appeared on the lower extremities, thighs, buttocks, swelling and pain in the knee and ankle joints when moving, the headache and weakness intensified.

Two days after hospitalization, cramping abdominal pain, nausea, repeated vomiting, and bloody diarrhea suddenly appeared.

Objectively: the patient's condition is serious, body temperature is 38 °C. The skin is pale and dry. There are hemorrhagic rashes on the skin of the extensor surfaces of the feet, legs, and thighs, sometimes confluent in nature.

The knee and ankle joints are enlarged and movements in them are painful. Acute cramping pain in the abdomen every 5-7 minutes, during which the patient rushes about and groans.

In the lungs, breathing is vesicular, respiratory rate is 20 per minute. The boundaries of the heart are within normal limits, the sounds are muffled, tachycardia is 100 per minute, the rhythm is correct, blood pressure is 100/60 mm Hg. The tongue is dry, covered with a white coating. The abdomen is painful on superficial palpation, there are no symptoms of peritoneal irritation. Stools up to 15 times a day mixed with blood, almost without feces; repeated vomit the color of "coffee grounds."

Data from laboratory research methods.

Clinical blood test: Hb - 90 g/l, leukocytes - 12.6x10<sup>9</sup>/l, band leukocytes - 12%, ESR - 34 mm/h, platelets - 180x10<sup>9</sup>/l.

Clinical urine analysis: relative density - 1015, protein - 0.33 mg/l, red blood cells - 0-1 in the field of view. VSK is the norm. APTT is normal. VK is the norm.

1. Formulate a preliminary diagnosis?
2. Determine the type of bleeding in this patient?

*Sample answer:*

1. Hemorrhagic vasculitis with damage to the skin (purpura), joints (arthritis of the knee and ankle joints), and gastrointestinal tract (ischemic enteritis complicated by gastrointestinal bleeding).

2. Vasculitic purpuric type of bleeding.

#### Task 63.

55-year-old patient M., a nurse, became acutely ill 7 days ago, when complaints of fever up to 38 °C, rhinorrhea and severe weakness appeared.

She treated ARVI on her own, with little effect, but after 6 days a rash appeared on the skin of her legs, thighs and buttocks, and therefore she consulted a general practitioner.

Objectively: symmetrical hemorrhagic rashes on the skin of the legs, thighs and buttocks, rising above the skin and not disappearing with pressure. Enlarged liver and spleen. Heart rate - 100 per minute, systolic murmur at the apex.

In the blood: Hb - 90 g/l, erythrocytes -  $3 \times 10^{12}/l$ , leukocytes -  $12 \times 10^9/l$ , eosinophils - 2%, band - 10%, segmented - 70%, lymphocytes - 13%, monocytes - 5%, platelets -  $150 \times 10^9 /l$ , ESR - 40 mm/h. AST - 250 IU, ALT - 200 IU. Bleeding time - 5 minutes. APTT - 30 s, prothrombin index - 80%. The level of platelet aggregation is increased.

1. What disease can hemorrhagic syndrome be a manifestation of?
2. Determine the type of bleeding in the patient.

*Sample answer:*

1. Hemorrhagic vasculitis due to viral hepatitis C.
2. Vasculitic purpuric type of bleeding.

#### Task 64.

A 32-year-old woman applied to a general practitioner with complaints of general weakness, fatigue, weight loss of 10 kg over the past few months, pain in the right submandibular region radiating to the right ear, sore throat when swallowing, pain in the right side of the neck, low-grade fever. Considers himself sick for 5-6 weeks. It is known from the anamnesis that before contacting a general practitioner, she was examined by an otolaryngologist, an infectious disease specialist, and a dentist (exacerbation of chronic tonsillitis, mononucleosis were excluded, the 7th tooth of the upper jaw on the right was extracted, and a course of antibacterial therapy was administered). Treatment without effect. Laboratory signs of severe inflammation: ESR 70 mm/hour, CRP 90 mg/l, hemoglobin 112 g/l. When examining the patient, the doctor revealed peripheral lymphadenopathy and decreased pulsation in the right radial artery. Blood pressure on the right arm is 95/65 mm Hg. Art., on the left arm – 125/80 mm Hg. Art., pulse 75 beats. per minute

1. To which specialist should the patient be referred?
2. What diseases can be suspected?

*Sample answer:*

1. See a rheumatologist.
2. Takayasu arteritis; systemic lupus erythematosus (SLE).

#### Task 65.

A 35-year-old man consulted a general practitioner with complaints of purulent-bloody nasal discharge, frequent nosebleeds, redness of the eyes, pain in the joints of the hands, general weakness, and an increase in body temperature to 37.5-37.5°C. Complaints persist for 4 weeks after hypothermia (winter fishing). There was purulent sinusitis and otitis media during the same period. He was treated independently (nasal drops, non-steroidal anti-inflammatory drugs (diclofenac), antibiotics (flemoxin-solutab) with a short-term effect. Manifestations of rhinitis progress, nosebleeds continue. Upon examination, the doctor revealed a granuloma-type formation in the nasal cavity, erythematous elements on the skin of the lower extremities rashes.

1. Can you guess the diagnosis?
2. The procedure for interaction between a general practitioner and specialist doctors?

*Sample answer:*

1. Systemic vasculitis, most likely granulomatosis with Wegener's polyangiitis (GPA).

2. A rheumatologist must confirm the diagnosis and prescribe treatment. Also required consultation with an otolaryngologist, pulmonologist and nephrologist.



Task 66.

A 53-year-old man presented with several months of cough, shortness of breath, fever, and weight loss. Notes periodic cough with streaks of blood or pink sputum.

A year ago I was diagnosed with bronchial asthma. History of multiple food allergies.

On auscultation - dry rales over the entire surface of the lungs. A chest x-ray reveals cavities.

In urine analysis - red blood cells, red blood cell casts, protein.

In the UAC – eosinophilia. There is no response to ongoing antibiotic therapy.

Sputum culture is negative (including tuberculosis).

1. Can you guess the diagnosis?
2. Treatment plan? Give examples of drugs.

*Sample answer:*

1. Eosinophilic granulomatosis with Churg-Strauss polyangiitis.
2. Corticosteroids (prednisolone) together with immunosuppressants (eg, cyclophosphamide, rituximab, methotrexate, azathioprine).

Task 67.

Woman A., 36 years old, an accountant, turned to her local physician with complaints of general malaise, weakness, weight loss of 5 kg in 2 months, migrating pain in the interphalangeal joints of the hands and ankle joints, red spots of irregular shape on the face, low-grade fever bodies. Considers himself sick for about 6 months.

The onset of the disease is gradual. Pain appeared in the interphalangeal joints, their swelling and hyperemia, alternately on the right and left hand. Weakness and malaise gradually set in. She did not seek medical help. 2 months ago (July) - vacation in Thailand. After returning, she noted a deterioration in her health: increased weakness, pain in the ankle joints, began to lose weight for no apparent reason, body temperature increased to 37.5°C, without chills.

She noted the presence of red spots on her face; for a long time she considered them the consequences of tanning. During the next routine medical examination, anemia and changes in the urine were detected, and therefore she turned to her local physician.

On examination: skin and visible mucous membranes are pale, “vascular butterfly” in the area of the bridge of the nose and irregularly shaped cheeks, hair is dull, brittle, there are areas of baldness. Subcutaneous fat tissue is practically absent. There is no swelling. Submandibular, axillary, and inguinal lymph nodes are palpated, 0.5-1 cm in diameter, soft consistency, painless on palpation. Muscle tone and strength are normal, equal on both sides. The parts of the skeleton are proportional, the bones are painless upon palpation and tapping. There is swelling of the proximal and distal interphalangeal joints of the hands and ankles, pain when moving in them, and local hyperemia.

The chest is normosthenic, symmetrical, and evenly participates in breathing. Percussion above the lungs there is a clear pulmonary sound. Breathing is vesicular, no wheezing. The pulse is rhythmic, 78 per minute, blood pressure is 120/80 mm Hg. Art. The apex beat is not visually or palpably determined. The boundaries of relative cardiac dullness: right - 0.5 cm from the right edge of the sternum, upper - the lower edge of the third rib, left - 1 cm medially from the midclavicular line. Auscultation: the tones are dull, rhythmic, heart rate - 78 per minute. Swelling and hyperemia of the red border of the lips. The abdomen is symmetrical, soft, painless in all parts on superficial and deep palpation. The liver is not enlarged. The effleurage symptom is negative on both sides, the kidneys are not palpable, palpation in their projection is painless.

Laboratory examination:

General blood test: hemoglobin - 99 g/l, red blood cells -  $2.9 \times 10^{12}/l$ , color index - 0.9; leukocytes -  $2.7 \times 10^9/l$ , eosinophils - 4%, band neutrophils - 3%, segmented neutrophils - 52%, lymphocytes - 35%, monocytes - 6%; ESR - 30 mm/h, platelets -  $98 \times 10^9/l$ .

General urine analysis: light yellow, transparent, acidic pH, specific gravity - 1016; protein - 0.3 g/l, sugar - none, leukocytes - 1-2 in the field of view, renal epithelium - 2-4 in the field of view, erythrocytes - 3-4 in the field of view, hyaline casts - 5-8 in the field of view, waxy cylinders - 2-3 in the field of view, no salt.

Biochemical blood test: bilirubintotal - 38.8  $\mu\text{mol}/l$ , direct - 8.2, indirect - 30.6  $\mu\text{mol}/l$ , creatinine - 108 mmol/l, glucose - 4.3 mmol/l, AST - 10.0 mmol/l, ALT - 19.0 mmol/l, cholesterol - 4.0 mmol/l, potassium - 3.9 mmol/l, total protein - 86 g/l, albumin - 45%,  $\alpha_1$  - 3.5%,  $\alpha_2$  - 10, 5%,  $\beta$  - 13.6%,  $\gamma$  - 27.4%, fibrinogen - 6.2 g/l, CRP - + + +, seromuroid - 0.32 g/l.

Antibodies to DNA, antinuclear factor, 6 LE cells per 1000 leukocytes were detected.

ECG: sinus rhythm, heart rate - 64 beats per minute. The electrical axis is tilted to the left. Diffuse dystrophic changes in the myocardium of the left ventricle.

X-ray of the chest organs: without pathology.

X-ray of the joints of the hands and ankles revealed no pathological changes.

1. Guess the most likely diagnosis?
2. List the identified syndromes?

*Sample answer:*

1. Systemic lupus erythematosus, subacute course, with damage to the skin, joints, lymph nodes, kidneys. Activity III degree. Arthritis of the metacarpophalangeal and interphalangeal joints of the hands. Anemia of mild severity, normochromic.
2. Syndromes: cutaneous, articular, febrile, lymphadenopathy, anemic, urinary.

Task 68.

Patient B., 24 years old, complains of headache, weakness, joint pain, and erythematous rash on the back.

Ill for 3 years. The disease began with high fever, the appearance of an erythematous rash on the trunk and limbs, and gross hematuria. She received Prednisolone 30 mg per day irregularly, but subsequently refused treatment. A year later, arthritis developed and generalized enlargement of the lymph nodes appeared. The examination revealed pericarditis and pleurisy. Present deterioration within 2 months.

Objectively: the condition is serious. Reduced nutrition. The skin is dry, with areas of erythematous rash on the skin of the back. Enlarged lymph nodes up to 1 cm in diameter are palpated. There is stiffness and swelling in the interphalangeal joints of the hands. There are no deformations. Breathing is weakened in the lower regions on both sides, and there is dullness on percussion. The heart is expanded in diameter (14.5 cm), the sounds are muffled. Pulse – 58 beats per minute, the rhythm is correct. Blood pressure – 150/90 mm Hg. Art. The liver protrudes from under the edge of the costal arch by 1.5 cm. The spleen is not palpable. Swelling of the legs.

General blood test: hemoglobin – 64 g/l, erythrocytes –  $1.8 \times 10^{12}/l$ , platelets –  $180 \times 10^9/l$ , leukocytes –  $4.2 \times 10^9/l$ , ESR – 56 mm/h.

Urinalysis: specific gravity – 1010, protein – 1.2%, sediment up to 40 red blood cells in the field of view, serum cholesterol – 6.4 mmol/l, serum creatinine – 124  $\mu\text{mol}/l$ , total serum protein – 51 g/l, albumin – 25 g/l.

1. What is the probable diagnosis?

## 2. What diseases are differentially diagnosed?

*Sample answer:*

1. Systemic lupus erythematosus with lesions of the skin, lymph nodes, heart, kidneys, joints and anemia, subacute course. Activity III degree.
2. Differential diagnosis should be carried out with drug-induced lupus, granulomatous vasculitis with polyangiitis, HIV infection, chronic glomerulonephritis, rheumatoid polyarthritis.

### Task 69.

Woman M., 45 years old, programmer, was admitted to the therapeutic department with complaints of increasing general weakness, pain, limitation of movements and numbness, mainly of the fingers, in both hands, a slight dry cough, palpitations during physical activity, decreased appetite, dry mouth, difficulty chewing and swallowing.

She considers herself sick since the age of 32: after severe hypothermia, she first began to notice numbness in the fingers of both hands when washing them with cold water, gradually the duration of the numbness increased, and it began to occur with a slight decrease in air temperature. At the same time, increased sweating of both palms appeared. Gradually, over the course of 6 months, general weakness and loss of appetite developed, and therefore the patient went to the clinic at her place of residence.

Research has been done: general blood test, chest x-ray, FGDS, but the cause of asthenia was not identified. The numbness of the fingers persisted, and gradually limited mobility of the fingers and pain in the nail phalanges of the hands appeared. When re-examined a year later, a diagnosis of rheumatoid arthritis was made, and the patient was prescribed Prednisolone 20 mg/day, with which the pain was relieved, but numbness in the hands persisted, and the patient independently stopped taking Prednisolone. At the age of 42, after exposure to sun exposure, the patient began to notice difficulty swallowing, a dry cough, and palpitations when walking. Over the past 6 months, the pain in the nail phalanges has sharply increased when trying to work on the computer keyboard. The skin is uniformly hyperpigmented. The skin of the hands and fingers is cold, compacted, evenly thickened, not folded, and there are no wrinkles over the interphalangeal joints. The nail phalanges of all fingers are shortened. The muscles of the shoulder and pelvic girdle are atrophic, the forearms are compacted and rigid. The volume of passive and active movements in the interphalangeal joints is sharply reduced. Breathing is shallow, 24 per minute. A decrease in lung excursion and a symmetrical weakening of vesicular respiration in the lower sections was revealed. Blood pressure - 110/70 mm Hg. Art. Heart sounds are irregular, 88 per minute, single extrasystoles; The first tone over the apex and base of the xiphoid process is weakened. The abdomen is soft, painless on both superficial and deep palpation.

Laboratory examination:

General blood test: red blood cells -  $3.1 \times 10^{12}/l$ , hemoglobin - 95 g/l, color index - 0.85; leukocytes -  $15.3 \times 10^9/l$ ; eosinophils - 2%, band neutrophils - 8%, segmented neutrophils - 72%, lymphocytes - 17%, monocytes - 1%; ESR - 27 mm/h.

Biochemical blood test: total protein - 75 g/l; albumins - 40%, globulins - 60%, 1 - 3.8%, 2 - 12%; - 12%; - 32.2%; fibrinogen - 6.6 g/l; SRB (++)

Repeated studies of LE cells in the blood are negative.

ECG: single extrasystoles, hypertrophy of the right heart. X-ray of the chest organs: "honeycomb" lung, symptoms of pneumosclerosis, mainly in the lower sections.

X-ray of the hands: osteolysis of the distal phalanges, epiphyseal osteoporosis.

1. Formulate a preliminary diagnosis?

2. Determine the treatment tactics for this patient? Justify your choice.

*Sample answer:*

1. Systemic scleroderma, chronic course, activity II, cutaneous form with Raynaud's syndrome, sclerodactyly, dysphagia, pulmonary fibrosis, DN I.

2. Methotrexate once a week subcutaneously or orally for 6–12 months or more + Prednisolone 0.5–1 mg/kg body weight per day orally for 2–4 weeks, followed by gradual withdrawal.

In order to reduce the frequency and severity of undesirable effects, folic acid is used: orally, 1 tablet (1 mg) once a day, except on the day of methotrexate administration, or 5 mg once a week 1–3 days after taking methotrexate.

Hydroxychloroquine 200 mg 2 times a day orally, with a gradual reduction in dose to 100–200 mg per day, course of treatment up to 6 months.

Vasodilating and antiplatelet agents: pentoxifylline 100–200 mg orally 3 times a day or 400 mg orally 1–2 times a day for 4–6 weeks; calcium antagonists (amlodipine 5 mg).

Task 70.

Patient P., 46 years old, was admitted to the therapeutic department of a city clinical hospital with complaints of severe muscle pain, muscle weakness, fever up to 38 °C, the appearance of edema, itchy spots on the skin of the face, neck, and chest.

Considers himself sick for about 3 days, associates the onset of the disease with excessive physical activity several days before the onset of pain.

Objectively: the general condition is of moderate severity. Consciousness is clear. The position is passive (the patient lies in bed). Body temperature 37.6 °C. The skin on the face, around the eyes, neck, and chest is clearly hyperemic and swollen. To the touch it has a doughy consistency. Slightly raised erythematous scaly rashes over the knuckles. Redness and peeling of the skin of the palms. The patient has a normal build and a moderate diet. The muscles are developed normally. Muscle tone is sharply reduced. The muscles of the shoulder and pelvic girdle are compacted, increased in volume, have a doughy consistency, and are very painful on palpation. The strength of these muscles is reduced to 1–2 points. The joints are not changed, movements in the joints are limited due to muscle pain. Lymph nodes are not enlarged. The chest is painful on palpation. Percussion - clear pulmonary sound. In the lungs, breathing is vesicular, weakened by a respiratory rate of 16 per minute. The boundaries of the heart are not changed. The heart sounds are muffled and rhythmic. Pulse 82/min, blood pressure - 110/170 mmHg. Art. The abdomen is calm and painless.

Complete blood count: erythrocytes -  $4.6 \times 10^{12}/l$ , hemoglobin - 139 g/l, leukocytes -  $15.0 \times 10^9/l$ , band neutrophils - 2%, segmented neutrophils - 70%, eosinophils - 2%, lymphocytes - 19%, monocytes - 7%, ESR - 26 mm/h.

General urine test: clear, acidic reaction. Specific gravity - 1015, no protein, 2–3 leukocytes per cell.

Biochemical blood test: protein - 81 g/l, AST - 98 IU/l, ALT - 100 IU/l, CPK - 1002 IU/l, cholesterol - 5.2 mmol/l, CRP ++, total bilirubin 12  $\mu\text{mol}/l$ , creatinine - 120  $\mu\text{mol}/l$ , urea - 4.52 mmol/l. seromucoids 46 units.

Electromyography: short small polyphasic motor units fibrillation. Skeletal muscle biopsy: signs of muscle fibril necrosis types 1 and 2, phagocytosis, regeneration with basophilia, large nuclei and nucleoli in the sarcolemma, perifascial atrophy, variability in microfibril size, inflammatory exudate.

1. Formulate a preliminary diagnosis?

2. Prescribe treatment?

*Sample answer:*

1. Primary idiopathic polymyositis, acute course.

2. Glucocorticoids (prednisolone or metipred). The initial dose of prednisolone is 1 - 2 mg/kg/day. Evaluation of the effectiveness of therapy is carried out 2-4 weeks from the start of glucocorticoid therapy.

If the effectiveness of the carried out glucocorticoid therapy, add immunosuppressive therapy: methotrexate 7.5–25 mg/week orally or intravenously, azathioprine 2–3 mg/kg/day (100–200 mg/day). In case of resistance to glucocorticoid therapy - cyclosporine A at 2.5–5.0 mg/kg/day, as well as mycophenolate mofetil.

#### Task 71.

Patient B., 49 years old, complains of erythematous skin rashes, shortness of breath on exertion, progressive muscle weakness, choking when eating, voice changes, and severe general weakness.

The patient considers himself sick for about 6 months from the moment of the appearance of erythematous rashes; later, muscle weakness appeared, which progressed in the last month.

Objectively: The general condition is of moderate severity. There are erythematous rashes on the skin of the décolleté and above the extensor surface of the proximal interphalangeal joints. Periorbital edema. The muscles of the forearms, legs and thighs are dense, painful on palpation.

General blood test: erythrocytes -  $4.3 \times 10^{12}/l$ , Hb - 120 g/l, leukocytes -  $8.0 \times 10^9/l$ , platelets -  $400.0 \times 10^9/l$ , ESR - 50 mm/hour.

Biochemical blood test: ALT - 200 U/l, AST - 250 U/l, CPK - 1600 U/l, Myoglobin (+++).

An x-ray of the esophagus shows a decrease in the tone of the esophageal wall. According to myography (conventional, stimulation), a decrease in potentials is observed.

Formulate a preliminary diagnosis?

*Sample answer:*

1. Primary idiopathic dermatomyositis affecting muscles and skin. Acute course.

#### Task 72.

Patient U., 24 years old, a paramedic, was sent to the hospital with complaints of pain with an inflammatory rhythm in the joints of the hands and ankles, and the presence of morning stiffness in the joints for up to 1 hour. He also notes an increase in body temperature to subfebrile levels in the evenings, the appearance of a rash on the face in the cheekbones, general weakness, and hair loss.

From the anamnesis: she considers herself sick for 2 years, when she began to notice the appearance of hyperemia of the skin of the face and neck in response to insolation. Since the summer of this year, after hyperinsolation (I was on vacation in the south) and overheating, erythematous rashes appeared on the neck and arms. Two weeks after returning home, she noted an increase in body temperature to febrile levels. At the place of residence, a diagnosis of acute respiratory infection was made, and therapy with antibacterial drugs was carried out without effect. Additional examination revealed protein in the urine. Sent to hospital.

On examination: the general condition is of moderate severity. Skin: erythematous rash in the form of a “butterfly” on the skin of the face and décolleté. Symmetrical swelling up to the lower third of the legs. Mucous membranes are clean. Breathing is vesicular, no wheezing. NPV – 17 per minute. Heart sounds are clear, the rhythm is correct. Heart rate - 92 beats per minute, blood pressure - 140/80 mm Hg. Art. The abdomen is soft, painless, the liver does not protrude from under the edge of the costal arch along the midclavicular line. Urination is free and painless. The stool is regular and formed. Swelling in the area of II, III metacarpophalangeal and II

proximal interphalangeal joints, in the area of the ankle joints; limitation of movements due to pain, hand grip - 80%; no deformations.

Complete blood count: red blood cells –  $3.6 \times 10^{12}/l$ , hemoglobin – 86 g/l, platelets –  $100 \times 10^9/l$ , leukocytes –  $1.6 \times 10^9/l$ , eosinophils – 1%, band neutrophils – 8%, segmented neutrophils – 59%, lymphocytes – 25%, monocytes – 4%, ESR – 22 mm/h.

General urine analysis - cloudy, color - yellow, density - 1.022, reaction - acidic, protein - 0.560 g/l, glucose - negative, leukocytes - 20-25 in the field of view.

Biochemical blood test: creatinine - 118  $\mu\text{mol}/l$ , urea - 8.8 mmol/l, total protein - 67 g/l, albumin - 45%,  $\alpha_1$  - 4%,  $\alpha_2$  - 15%,  $\beta$  - 9%,  $\gamma$  - 27%, fibrinogen – 6.3 g/l. Antibodies to DNA and antinuclear factor – more than 200 U/ml.

1. Guess the most likely diagnosis?

2. What drug groups would you recommend to a patient as part of combination therapy?

Justify your choice.

*Sample answer:*

1. Systemic lupus erythematosus, subacute, highly active with damage to the skin (erythema, photosensitivity), joints (arthralgia, arthritis), kidneys (lupus nephritis), blood (thrombocytopenia, anemia, leukopenia).

2. Short-acting glucocorticosteroids (Prednisolone or Methylprednisolone) orally. With a high degree of SLE activity, pulse therapy is indicated (500-1000 mg of Methylprednisolone intravenously for 3 days).

Cytostatic immunosuppressants (Cyclophosphamide or Mofetylamicophenolate) are prescribed to patients with SLE with a progressive course, high activity, accompanied by damage to vital organs and systems. Cytostatics are an essential component of the treatment of SLE, especially with a threatening course with damage to the kidneys, central nervous system, generalized vasculitis, and alveolitis.

Task 73.

Patient P., 37 years old, was taken to the hospital emergency department due to heavy nosebleeds. Complaints of weakness, dizziness.

History: over the past 5 years, he has noted frequent nosebleeds and easy bruising of the skin. Examined by an otolaryngologist - no pathology in the ENT organs was detected. Blood pressure is within normal limits. When taking a family history, it turned out that the mother also had frequent nosebleeds. Objectively: upon examination the condition is satisfactory. The skin is pale, there are abundant petechial hemorrhagic rashes and isolated extensive ecchymoses on the skin of the chest and legs. In the lungs there is vesicular breathing, no wheezing. Heart sounds are clear, rhythmic, heart rate 70 per minute, blood pressure 120/80 mmHg. The liver and spleen are not enlarged. The effleurage symptom is negative on both sides. Stool and diuresis are not disturbed. Complete blood count: hemoglobin

- 94 g/l, erythrocytes -  $3.6 \times 10^{12}/l$ , CP - 0.68, leukocytes -  $6.2 \times 10^9/l$ , ESR - 20 mm/h. Leukocyte formula: band - 3%, segmented - 67%, eosinophils - 2%, lymphocytes - 23%, monocytes - 5%, platelets  $15 \times 10^9/l$ .

1. Identify the main clinical syndromes?

2. Formulate and justify a preliminary diagnosis?

*Sample answer:*

1. Hemorrhagic with petechial-spotted type of bleeding, anemic.

2. Hereditary thrombocytopenia, continuously relapsing course, exacerbation.

Posthemorrhagic hypochromic anemia of mild severity.

Task 74.

Patient N., 16 years old, was admitted with complaints of pain and swelling of the left knee joint, hematuria, and general weakness.

From the anamnesis: from childhood periodically noted nasal and gingival bleeding, extensive hematomas of various localization repeatedly appeared, there were hemarthrosis of the elbow and knee joints, my maternal uncle also had joint damage since childhood, frequent prolonged nosebleeds, frequent causeless formation of extensive hematomas).

The general condition is moderate. The position is forced due to severe pain. The skin and visible mucous membranes are pale and clean. The right elbow and right knee joints are deformed. The left knee joint is deformed, painful on palpation, hot to the touch. In the lungs there is vesicular breathing, no wheezing. Heart sounds are clear, rhythmic, heart rate 70 per minute, blood pressure 120/80 mmHg. The liver and spleen are not enlarged. The effleurage symptom is negative on both sides. Stool and diuresis are not disturbed.

CBC: Red blood cells 3.6 g/l, HB 116.3 g/l, CP 0.82. Platelets 180.0 G/l. Leukocytes 7.5 g/l, segmented - 66%, lymphocytes 19%, monocytes 15%. ESR 28 mm/h. Anisocytosis +; poikilocytosis +; microcytosis+.

OAM. The reaction is neutral, beat. weight 1013, protein negative, ep. class flat 1-2 in square sp., leukocytes 0-1-2 in area. vision, red blood cells 10 -15 per square. vision, unchanged.

Biochemical blood test: creatinine 79.3  $\mu\text{mol/l}$ . total protein 79.3 g/l, bilirubin 19.5  $\mu\text{mol/l}$ , AST 0.22 mmol/l, ALT 0.19 mmol/l, blood glucose 4.8 mmol/l.

1. Justify and formulate a preliminary diagnosis?
2. What research methods are needed to clarify the diagnosis?

*Sample answer:*

1. Hemophilia, type A, severe form, acute hemarthrosis of the left knee joint, chronic osteoarthritis of the right knee, both elbow joints; hematuria.

3. Determination of APTT, Duke bleeding time, blood clot retraction time, PTT, INR, coagulation factors VII, VIII, IX. Ultrasound of the knee joint, consultation with an orthopedist to prevent synovitis and contracture of the knee joint.

Task 75.

Patient P., 25 years old, was admitted to the hematology department with complaints of heavy nosebleeds, dizziness, general weakness and shortness of breath with little physical exertion.

Considers himself sick from birth: prolonged bleeding from scratches, abrasions (including small ones); frequent heavy nose and gum bleeding; bruises on the body from minor blows or spontaneous. From the age of 2 he was registered with a hematologist. From the age of 11, heavy menstruation lasts 7-10 days. 2 years ago, heavy alveolar bleeding after tooth extraction. Heredity on the maternal side is burdened: hemorrhages were observed in my great-grandfather, grandmother, two uncles, and mother.

Objectively: the condition is of moderate severity. Visible mucous membranes and skin are pale. The gums are loose and staining. Breathing in the lungs is vesicular. Heart sounds are rhythmic, 90 per minute. Blood pressure = 130/80 mm Hg. Art. The abdomen is soft and painless. The liver and spleen are not enlarged. Stool and diuresis are not disturbed.

In the UBC: red blood cells –  $2.97 \times 10^{12}/\text{l}$ , HB – 63.0 g/l, reticulocytes – 0.5%, platelets –  $250 \times 10^9/\text{l}$ , leukocytes –  $6.6 \times 10^9/\text{l}$ , basophils – 1%, eosinophils – 4%, band neutrophils – 1%, segmented neutrophils – 52%, lymphocytes – 36%, monocytes – 6%, ESR – 29 mm/h. The smear shows anisocytosis, poikilocytosis, hypochromia and microcytosis of erythrocytes. Iron in blood serum – 5.7  $\mu\text{mol/l}$ , total life-saving value – 78.3  $\mu\text{mol/l}$ , coef. iron transferrin saturation – 7.28%.

Coagulogram: blood clotting time – 6 min 25 sec (N up to 5 min)); Duque bleeding time – 9 minutes (N up to 6 minutes), aPTT – 45.2 seconds (N up to 35 s); PTI – 88%; PTV – 15.6sec;

TV – 16.1 sec; INR – 1.0; fibrinogen – 2.25 g/l; platelet adhesion – 5.9%; platelet aggregation with ADP – 53 sec; platelet aggregation with ristomycin – 35 sec; blood clot retraction – 70%, factor VIII activity – 61%.

1. Identify the main clinical syndromes?
2. Justify and make a diagnosis?

*Sample answer:*

1. The main clinical syndromes are hemorrhagic syndrome of petechial-hematoma (mixed) type, anemic syndrome.
2. Von Willebrand's disease. Chronic posthemorrhagic iron deficiency anemia, grade III (severe).

OPK-10:

Closed type tasks:

Task 1. Instructions: Choose one correct answer.

All of the following can be used to treat PE with a low risk of early death except:

- A) thrombolytics;
- B) unfractionated heparin;
- C) low molecular weight heparins;
- D) dabigatran, apixaban, rivaroxaban.

*Sample answer:* A) thrombolytics.

Task 2. Instructions: Choose one correct answer.

For long-term prevention of recurrent pulmonary embolism, everything can be used except:

- A) warfarin;
- B) dabigatran, apixaban, rivaroxaban;
- C) unfractionated heparin.

*Sample answer:* C) unfractionated heparin.

Task 3. Instructions: Choose one correct answer.

When using warfarin for long-term prevention of recurrent pulmonary embolism, the target INR value should be within:

- A) 1.5-2.0;
- B) 2.0-2.5;
- C) 2.5-3.0;
- D) 3.0-3.5.

*Sample answer:* B) 2.0-2.5.

Task 4. Instructions: Choose one correct answer.

The main method of treating mild pulmonary infarction is the use of:

- A) antibacterial agents;
- B) glucocorticosteroids;
- C) cytostatics;
- D) anticoagulants;
- E) surgical treatment.

*Sample answer:* D) anticoagulants.

Task 5. Instructions: Choose one correct answer.

All drugs are used to treat pneumonia except one:

- A) ceftriaxone;



- B) amoxicillin;
- C) levofloxacin;
- D) isoniazid;
- E) linezolid.

*Sample answer:* D) isoniazid.

Task 6. Instructions: Choose one correct answer. The main method of treating lung cancer is the use of:

- A) antibacterial agents;
- B) glucocorticosteroids;
- C) cytostatics;
- D) anticoagulants;
- E) surgical treatment.

*Sample answer:* E) surgical treatment.

Task 7. Instructions: Choose one correct answer. Necrosis of the nasal septum is typical for:

- A) idiopathic fibrosing alveolitis;
- B) exogenous allergic alveolitis;
- C) Wegener's disease;
- D) Goodpasture's syndrome;
- E) sarcoidosis.

*Sample answer:* C) Wegener's disease.

Task 8. Instructions: Choose one correct answer.

An X-ray of the chest organs reveals dilated lung roots with polycyclic outlines on both sides. No other pathological changes were found. These changes are typical for:

- A) idiopathic pulmonary fibrosis;
- B) lymphogranulomatosis;
- C) central lung cancer;
- D) tuberculous bronchoadenitis;
- E) sarcoidosis.

*Sample answer:* E) sarcoidosis.

Task 9. Instructions: Choose one correct answer.

A chest x-ray shows a ground-glass appearance.

These changes are typical for:

- A) interstitial pneumonia;
- B) pneumoconiosis;
- C) pulmonary tuberculosis;
- D) lung cancer;
- E) sarcoidosis.

*Sample answer:* A) interstitial pneumonia.

Task 10. Instructions: Choose one correct answer. The

diagnosis of Wegener's granulomatosis is reliably confirmed:

- A) detection of antibodies to the basement membrane in the blood;
- B) histological detection of granulomas in tissues and arteries of medium caliber;
- C) computed tomography of the chest organs;
- D) MRI of the chest;
- E) blood chemistry.

*Sample answer:* B) histological detection of granulomas in tissues and arteries of medium caliber.

Task 11. Instructions: Choose one correct answer. The cause of paradoxical pulsus in pericarditis is:

- A) decreased filling of the left ventricle during inspiration;
- B) increased filling of the left ventricle during inspiration;
- C) addition of atrial fibrillation;
- D) decreased filling of the left ventricle during exhalation.

*Sample answer:* A) decreased filling of the left ventricle during inspiration.

Task 12. Instructions: Choose one correct answer.

What is not typical for heart pain in acute fibrinous pericarditis?

- A) are permanent, long-lasting and monotonous;
- B) weaken when the chest is tilted forward;
- C) worsens with deep breathing and coughing;
- D) relieved by taking nitroglycerin.

*Sample answer:* D) are relieved by taking nitroglycerin.

Task 13. Instructions: Choose one correct answer.

Inflammatory pericardial syndrome is characterized by all criteria except:

- A) pericardial chest pain;
- B) pericardial murmurs;
- C) the appearance of deep Q, ST elevation and T inversion on the ECG;
- D) the appearance or increase of pericardial effusion.

*Sample answer:* C) the appearance of deep Q, ST elevation and T inversion on the ECG.

Task 14. Instructions: Choose one correct answer.

What disease is most often differentiated from constrictive pericarditis?

- A) dilated cardiomyopathy;
- B) hypertrophic cardiomyopathy;
- C) restrictive cardiomyopathy;
- D) acute myocardial infarction.

*Sample answer:* C) restrictive cardiomyopathy.

Task 15. Instructions: Choose one correct answer.

What treatment is recommended for a patient with pericardial effusion and developed cardiac tamponade?

- A) emergency pericardiocentesis;
- B) vasodilators;
- C) diuretics;
- D) corticosteroids.

*Sample answer:* A) emergency pericardiocentesis.

Task 16. Instructions: Choose one correct answer.

The stage of acute left ventricular failure stage IV according to KILLIP corresponds to:

- A) interstitial pulmonary edema;
- B) cardiogenic shock;
- C) stoppage of blood circulation;
- D) alveolar pulmonary edema.

*Sample answer:* B) cardiogenic shock.

Task 17. Instructions: Choose one correct answer. Indications for the use of morphine are:

- A) pulmonary embolism;
- B) uncontrollable vomiting;
- C) tachycardia;
- D) pulmonary edema.

*Sample answer:* D) pulmonary edema.

Task 18. Instructions: Choose one correct answer. In acute left ventricular failure, preference is given to:

- A) furosemide;
- B) mannitol;
- C) spironolactone;
- D) hydrochlorothiazide.

*Sample answer:* A) furosemide.

Task 19. Instructions: Choose one correct answer. The most common complication of true cardiogenic shock is:

- A) ventricular fibrillation;
- B) atrioventricular tachycardia;
- C) electromechanical dissociation;
- D) tachysystolic form of atrial fibrillation.

*Sample answer:* A) ventricular fibrillation.

Task 20. Instructions: Choose one correct answer.

A patient with pulmonary edema that developed against the background of paroxysmal atrial fibrillation is prescribed:

- A) placement of temporary cardiac pacing;
- B) intravenous administration of nitroglycerin;
- C) intravenous administration of metoprolol;
- D) electrocardioversion.

*Sample answer:* D) electrocardioversion.

Task 21. Instructions: Choose one correct answer.

When hypertension and coronary artery disease are combined, the following combination of antihypertensive drugs is recommended:

- A) prolonged dihydropyridine calcium antagonist and beta-blocker;
- B) beta blocker and diuretic;
- C) alpha-blocker and calcium antagonist;
- D) calcium antagonist and diuretic.

*Sample answer:* A) long-acting dihydropyridine calcium antagonist and beta-blocker.

Task 22. Instructions: Choose one correct answer.

Indications for nephrobiopsy in patients with renal AKI of unknown etiology are all except:

- A) the presence of anuria or prolonged oliguria (more than 2-3 weeks);
- B) rapidly progressive nephritic syndrome;
- C) the presence of severe arterial hypertension and the absence of signshypervolemia (after correction of blood pressure);

D) the presence of a single functioning kidney (congenital or acquired pathology).  
*Sample answer:* D) the presence of a single functioning kidney (congenital or acquired pathology).

Task 23. Instructions: Choose one correct answer. A disease with which Crohn's disease should not be differentiated:

- A) ulcerative colitis;
- B) irritable bowel syndrome;
- C) dysentery;
- D) brucellosis;
- E) peptic ulcer of the 12th intestine.

*Sample answer:* D) brucellosis.

Task 24. Instructions: Choose one correct answer. Therapist's tactics for acute cholecystitis:

- A) cold on the stomach, hospitalization;
- B) a heating pad on the liver area;
- C) "blind probing";
- D) choleric drugs on an outpatient basis.

*Sample answer:* A) cold on the stomach, hospitalization.

Task 25. Instructions: Choose one correct answer.

In the treatment of peptic ulcer associated with *Helicobacter*, all are used except:

- A) omeprazole + clarithromycin + metronidazole
- B) omeprazole + clarithromycin + amoxicillin
- C) bismuth subcitrate + amoxicillin + metronidazole
- D) bismuth subcitrate + amoxicillin + metronidazole + omeprazole/ranitidine
- E) antacids + ranitidine + lactobacterin

*Sample answer:* E) antacids + ranitidine + lactobacterin.

Open type tasks:

Exercise 1.

In the postpartum period, mother M., 35 years old, developed severe pain in the chest, severe shortness of breath of a mixed nature with loss of consciousness.

Objectively: the general condition is severe, the skin is cold and moist. Facial cyanosis is noted. NPV up to 30 per minute. On auscultation, breathing in the right half of the chest is sharply weakened, there are single dry rales, and in the lower parts there are silent fine-bubble rales. The neck veins are swollen, the pulse is rhythmic 100 per minute. Blood pressure - 90/60 mm Hg. Art. Heart sounds are muffled, splitting of the second tone above the pulmonary artery. The abdomen is soft and painless.

Complete blood count: erythrocytes -  $4.5 \times 10^{12}/l$ , HB - 135 g/l, ESR - 15 mm/hour, leukocytes -  $9.5 \times 10^{12}/l$ , p - 2%, s - 65%, e - 2%, m - 10%, l - 21%.

Coagulation time - 4 minutes, LDH -  $4.2 \mu\text{mol}/h/l$ .

General urine analysis: straw-yellow color, acidic reaction, beat. weight - 1016, leukocytes - 1-2 in p/z., epithelial cells - 1-2 in p/z.

1. Establish a preliminary diagnosis?

2. Given the hemodynamic status, which test should be immediately performed at the patient's bedside?

*Sample answer:*

1. Pulmonary embolism, shock, acute respiratory failure.
2. Immediately perform an echocardiogram at the patient's bedside.

Task 2.

A 39-year-old woman, M., a day after a long flight, suddenly developed chest pain, severe shortness of breath, and lost consciousness. Regularly takes hormonal contraceptives. Suffers from obesity. Three years ago I suffered thrombophlebitis of my left leg.

Objectively: The general condition is severe, consciousness is present, blue-purple cyanosis of the upper body is noted, the skin is moist, cold, overweight. Breathing is shallow up to 32 per minute. On auscultation, breathing is weakened, medium- and fine-bubbling silent rales over the entire surface of the lungs. The neck veins are swollen, the pulse is thready 112 beats per minute, the heart sounds are muffled. Blood pressure 90/40 mm Hg. The abdomen is enlarged and cannot be palpated.

1. Establish a preliminary diagnosis?
2. Determine the treatment strategy for the patient?

*Sample answer:*

1. Pulmonary embolism, shock, acute respiratory failure.
2. Treatment of shock, respiratory failure, thrombolysis or embolectomy.

Task 3.

Patient T., 35 years old, office manager, was taken by an ambulance team to the emergency department of a city hospital due to a sudden attack of mixed shortness of breath, palpitations, stabbing pain in the precordial area, dizziness and general weakness. The anamnesis noted that 5 days before the attack of shortness of breath, the patient developed mild swelling of the right lower limb from the foot to the inguinal fold, slight cyanosis and moderate pain in the limb. Subsequently, these symptoms persisted, and I tried to treat myself using various antibiotic ointments and alcohol compresses. A real attack of shortness of breath arose for the first time at the end of a long working day against the background of complete well-being.

From the life history it is known that the patient works in an office and spends most of her time in a sitting position, leads a sedentary lifestyle, smokes, and uses combined oral contraceptives.

Objectively: the condition is serious. The skin and visible mucous membranes are pale, clean, visible pulsation of the neck veins. There is swelling of the right lower limb, soft and warm to the touch, spreading from the level of the foot to the upper third of the thigh with mild cyanosis, moderate pain on palpation and preserved pulsation in the arteries of the foot, popliteal and common femoral arteries. Joints without pathology. The chest is of the correct shape. Percussion above the lungs is a clear pulmonary sound. Breathing is vesicular, there is no wheezing, respiratory rate is 25 per minute. The pulse is the same on both radial arteries, weak filling, 110 per minute, blood pressure - 90/65 mm Hg. Art. Accent of II tone at the point of listening to the pulmonary valve. There is no noise. The abdomen is symmetrical, soft, painless in all parts on superficial and deep palpation. The liver protrudes from under the costal arch by 1 cm. The effleurage symptom is negative. Body mass index more than 31 kg/m<sup>2</sup>. Low-grade fever.

Laboratory and instrumental studies revealed the following data: General blood test: hemoglobin - 130 g/l, erythrocytes -  $4.1 \times 10^{12}/l$ , leukocytes -  $5.7 \times 10^9/l$ , eosinophils - 1%, band neutrophils - 10%, segmented neutrophils - 50%, lymphocytes - 35%, monocytes - 4%; ESR - 24 mm/h.

General urine analysis: straw-yellow, transparent, acidic pH, specific gravity - 1010, epithelium - 2-4 in the field of view, red blood cells, casts, salts are not detected.

Biochemical blood test: total bilirubin - 12.8  $\mu\text{mol/l}$ , creatinine - 0.093 mmol/l, glucose - 6.9 mmol/l, cholesterol - 6.2 mmol/l, potassium - 3.7 mmol/l, total protein - 75 g/l, fibrinogen - 8.2 g/l, CRP - 25 mg/l.

X-ray of the chest organs of patient T., 35 years old



1. Formulate a diagnosis?

2. Prescribe treatment?

*Sample answer:*

1. Acute thrombosis of the common femoral vein on the right. Massive pulmonary embolism. Acute cor pulmonale.

2. Carrying out systemic drug thrombolysis (Streptokinase or Alteplase), anticoagulant therapy (unfractionated heparin or low molecular weight heparin - fraxiparin; Warfarin - 5 days before discontinuation of Heparin under INR control, for 6-12 months).

An alternative to the combination of parenteral anticoagulants with Warfarin are: Rivaroxaban or Apixaban. Inotropes (Dobutamine or Dopamine, IV infusion), oxygen inhalation (6-8 liters/min), elastic compression of the lower extremities, physiotherapy in the subacute period, prescription of NSAIDs, phlebotonics. If there is a floating thrombus in the lumen of the vein, install a removable vena cava filter.

Task 4.

Patient A., 52 years old, 3 days after appendectomy. When trying to get out of bed, shortness of breath, a dry cough, pressing pain along the entire front surface of the chest, severe general weakness suddenly appeared, and a day later hemoptysis developed.

Objectively: moderate condition, cyanosis, swelling of the neck veins. In the lungs there is vesicular breathing, no wheezing. The respiratory rate is 36 per minute. Heart sounds are muffled, the rhythm is correct, the emphasis of the 2nd tone is on the pulmonary artery.

ECG: rightogram, deep S wave in lead I, Q wave in lead III, depth 1/3 of the R wave and duration 0.02 seconds. ST segment depression and negative T waves in leads V1-V3, high P waves in standard leads.

1. What is the most likely diagnosis?

2. What diseases should be differentially diagnosed?

*Sample answer:*

1. Preliminary diagnosis: Postoperative pulmonary embolism.
2. Differential diagnosis should be carried out with the following diseases: myocardial infarction, dissecting aortic aneurysm, lobar pneumonia, pneumothorax, acute pericarditis.

#### Task 5.

Woman A., 44 years old, manager, came to the clinic with complaints of attacks of suffocation and shortness of breath after physical activity and appearing spontaneously at night, as well as chest discomfort.

History of the disease: the patient first became ill after severe pneumonia 11 years ago. Then attacks of suffocation recurred after physical exertion and during colds, which were relieved by inhalation of Salbutamol (3-4 times a day). The patient suffered community-acquired bilateral bronchopneumonia and acute appendicitis. He denies the presence of allergic diseases in himself and his relatives. There were no blood transfusions. There are no bad habits.

Objectively: the condition is satisfactory, consciousness is clear. The skin and mucous membranes are clean physiological in color. Tongue is wet. Lymph nodes are not enlarged. On percussion of the lungs - a boxy sound; on auscultation - hard breathing, dry wheezing throughout all lung fields, whistling during forced exhalation. The respiratory rate is 19 per minute. The boundaries of the heart are not changed. Heart sounds are muffled and rhythmic. Blood pressure - 135/90 mm Hg. Art. Pulse – 67 beats per minute, good filling and tension. The abdomen is soft and painless. The liver and spleen are not enlarged. Stool and diuresis are normal.

Complete blood count: hemoglobin – 123 g/l, erythrocytes –  $3.8 \times 10^{12}/l$ , leukocytes –  $8.9 \times 10^9/l$ , band neutrophils – 3%, segmented neutrophils – 63%, eosinophils – 5%, monocytes – 6%, lymphocytes – 13%; ESR - 19 mm/h.

Biochemical blood test: total bilirubin - 5.3  $\mu\text{m}/l$ ; total protein - 82 g/l, urea - 4.7 mmol/l.

General urine analysis: specific gravity - 1028, protein - negative, epithelium - 1-3 in the field of view. Sputum analysis: mucous, odorless. Under microscopy: leukocytes - 5-6 in the field of view,

eosinophils - 10-12 per field of view, bronchial epithelial cells, single alveolar macrophages. BK (Koch bacilli) - negative. (3 times).

X-ray of the chest organs: increased transparency of the lung fields, flattening and low standing of the diaphragm. The pulmonary pattern is enhanced. The roots of the lungs are enlarged, the shadow is intensified. The heart shadow is increased in diameter.

1. Suggest a probable diagnosis?

2. Make a treatment plan (name the necessary groups of medications)?

*Sample answer:*

1. Bronchial asthma, moderate, insufficiently controlled course. DN 0. 2. Therapy: Inhaled glucocorticosteroids in low doses in combination with long-acting beta2-agonists; Inhaled  $\beta_2$  agonists are rapid-acting on demand or a combination of low-dose inhaled glucocorticosteroids in combination with Formoterol.

#### Task 6.

Patient S., 34 years old, turned to her local physician with complaints of frequent attacks of suffocation over the last month, which are accompanied by wheezing, a cough audible at a distance, with the release of a small amount of viscous sputum, after which relief occurs. Similar conditions have been bothering me for about 2 years, and have not been examined.

The patient has a history of allergic rhinitis. The deterioration of the condition is associated with the transition to a new job in the library. Over the past month, symptoms have occurred daily, at night 3 times a week, and interfere with activity and sleep.

Objectively: general condition is satisfactory. Normosthenic physique. The skin is pale pink, there are no rashes. There is no peripheral edema. Breathing over the lungs is harsh, scattered dry wheezing sounds are heard. NPV - 18 per minute. Heart sounds are clear, the rhythm is correct, heart rate is 72 beats per minute. Blood pressure – 120/80 mm Hg. Art. The abdomen is soft and painless on palpation.

Complete blood count: erythrocytes -  $4.2 \times 10^{12}/l$ , hemoglobin - 123 g/l, leukocytes -  $4.8 \times 10^9/l$ , eosinophils - 16%, segmented neutrophils - 66%, lymphocytes - 18%, monocytes - 2%, ESR - 10 mm/h.

General analysis of sputum: mucous membrane, leukocytes - 5-7 in the field of view, squamous epithelium - 7-10 in the field of view, detritus in a small amount, Kurschmann spirals.

X-ray of the chest organs: no infiltrative shadows in the lungs are detected. Diaphragm, heart shadow, sinuses without features.

Spirometry test. Original data: vital capacity - 82%, FEV<sub>1</sub> - 62%, FVC - 75%. 15 minutes after inhalation of 800 mcg of Salbutamol: FEV<sub>1</sub> - 78%.

Formulate a diagnosis. Justify the severity of the disease?

*Sample answer:*

Bronchial asthma, mixed, persistent, moderate severity, exacerbation. The severity of asthma (persistent, moderate) is determined based on the number of daytime attacks (daily), night symptoms (3 times a week).

Task 7.

Patient B., 62 years old, at an appointment with a therapist, complains of general weakness, increased fatigue, cough with the release of a small amount of mucous sputum, shortness of breath with slight physical exertion (climbing to the 1st floor, walking at a moderate pace).

The severity of symptoms according to the COPD Assessment Test (CAT) was 28 points.

Smokes 1 pack of cigarettes per day for 35 years, smoker index = 35 pack/years. For many years I have been bothered by a cough with phlegm in the morning. Sometimes low-grade fever. 3 years ago, gradually increasing shortness of breath and swelling in the legs appeared. When shortness of breath increased, Berodual was used. In recent years, exacerbations due to colds have become more frequent, up to 3 times a year. Last year, he was hospitalized once with an exacerbation.

Objectively: hypersthenic physique, increased nutrition. BMI – 28 kg/m<sup>2</sup>. Severe diffuse cyanosis. The chest is of normal configuration. On percussion there is a pulmonary sound, in the lower parts with a boxy tint. Breathing is harsh, with prolonged exhalation, scattered dry wheezing. NPV – 24 per minute. The borders of the heart are expanded to the right, the accent is 2 tones above the pulmonary artery. Heart rate – 85 beats per minute. Blood pressure - 130/80 mm Hg. The neck veins swell when lying down. The liver is palpated 2 cm below the edge of the costal arch. Swelling of the lower extremities is noted.

General blood test: erythrocytes –  $4.6 \cdot 10^9/l$ , Hb – 166 g/l, leukocytes –  $6.2 \cdot 10^9/l$  (leukocyte formula – without features), ESR – 14 mm/h.

Spirometry: FEV<sub>1</sub>=30.0% of the required value, FEV<sub>1</sub>/FVC=0.6. Pulse oximetry: SaO<sub>2</sub>=87%.

ECG - signs of hypertrophy of the right ventricle and right atrium.

Results of a chest x-ray: the pulmonary pattern is strengthened and deformed. The roots are deformed and compacted.

Guess the most likely diagnosis?

*Sample answer:*

Chronic obstructive pulmonary disease, grade III severity of bronchial obstruction, stable course with severe symptoms (CAT-28) and frequent exacerbations.



Complications: Respiratory failure stage II. Chronic pulmonary heart, decompensated. CHF IIA, FC III.

#### Task 8.

Man S., 70 years old, consulted a physician with complaints of a cough with a small amount of difficult-to-discharge mucopurulent sputum, shortness of breath with slight physical exertion, and an increase in body temperature to 37.4°C, which appeared after hypothermia.

Cough with sputum has been noted for 10 years. Exacerbations of the disease 3-4 times a year in the autumn-winter period. About 2 years ago, shortness of breath appeared during physical exertion, and sputum began to come out with difficulty. The patient has been smoking 1 pack per day for 30 years.

On examination: the face is puffy, there is warm cyanosis, swelling of the neck veins on exhalation. The chest is barrel-shaped. Above the pulmonary fields there is a percussion sound with a box-like tint. Breathing is uniformly weakened, dry wheezing sounds are heard on both sides. NPV - 24 per minute. The heart sounds are muffled, the emphasis of the 2nd tone is on the pulmonary artery, a diastolic murmur is heard there, the rhythm is correct. Heart rate - 90 beats per minute. Blood pressure - 130/80 mm Hg. Art. The abdomen is soft and painless. The liver and spleen are not palpable. There is no peripheral edema.

Complete blood count: hemoglobin - 165 g/l, leukocytes -  $9.2 \times 10^9/l$ , eosinophils - 1%, neutrophils - 73%, lymphocytes - 26%, ESR - 29 mm/h.

Results of chest x-ray: pulmonary fields of increased transparency, pulmonary pattern is strengthened, deformed, vascular pattern is strengthened in the center and depleted in the periphery, the roots of the lungs are expanded, bulging of the pulmonary artery trunk. No infiltrative changes were detected.

ECG: signs of right ventricular hypertrophy.

Spirometry data: decrease in vital capacity - up to 80%, FEV<sub>1</sub> - 29% of the required values.

1. Formulate a probable diagnosis?

2. What additional studies need to be performed to confirm the diagnosis?

*Sample answer:*

1. Preliminary diagnosis: Chronic obstructive pulmonary disease, IV degree of bronchial obstruction, extremely severe course, exacerbation stage.

Complications: Respiratory failure II degree Chronic cor pulmonale, decompensated. CHF IIA, FC III.

2. Additional research methods necessary to confirm the diagnosis: EchoCS, blood gas composition, pulse oximetry, bronchodilator test, cytological and microbiological examination of sputum, fibrobronchoscopy.

#### Task 9.

Patient A., 48 years old, when visiting a therapist, complains of daily attacks of shortness of breath, wheezing, coughing, lasting several hours, relieved by 3-4 inhalations of Salbutamol or IV administration of Euphyllin and Prednisolone. Wakes up 1-2 times at night due to attacks of shortness of breath. This condition persists stably for 2 months.

I fell ill 10 years ago in the winter; respiratory discomfort and wheezing appeared against the background of an acute respiratory disease. The diagnosis was made: Chronic bronchitis with an asthmatic component. I took Salbutamol, Fenoterol. For several years, symptoms were observed only during the cold season, with colds, inhalation of cold air, and changes in weather. 2-3 years ago, attacks of shortness of breath appeared in the autumn and spring against the background of flowering plants, as well as inhalation of library and house dust. The attacks became more severe and more difficult to treat. Shortness of breath appeared between attacks of the disease. Constantly accepts

Montelukast (10 mg/day), Beclomethasone inhalations (800 mcg/day), Salbutamol (8-10 inhalations/day). Periodically stops attacks with IV aminophylline and Prednisolone.

Objectively: The general condition is of moderate severity. NPV - 22 per minute. The chest is regular in shape and symmetrical. Percussion tone over the lungs with a boxy tint. Vesicular breathing, scattered dry wheezing on both sides. Heart sounds are rhythmic and clear. Heart rate - 96 beats per minute. Blood pressure - 135/80 mm Hg. No pathology was detected from other organs and systems.

Results of chest x-ray: pulmonary fields of increased transparency. Focal and infiltrative changes are not determined. Sinuses are free. The mediastinal shadow is of normal shape and size. The abdomen is soft, painless, the liver is at the edge of the costal arch, elastic, painless. The spleen is not palpable. The kidneys are not palpable, the effleurage symptom is negative on both sides. Physiological functions are not impaired. There is no peripheral edema.

Spirometry: Vital capacity - 74%, FEV<sub>1</sub> - 45%, FEV<sub>1</sub>/FVC - 65% of the required values. Salbutamol test: Δ FEV<sub>1</sub> = 13%.

ECG: the electrical axis is deviated to the right, sinus rhythm, 80 beats per minute. The amplitude of the P waves in standard leads II and III is increased. In the chest leads, the transition zone is shifted to the left.

General sputum analysis: mucous; microscopy reveals single eosinophils and neutrophils in the field of view.

General blood test: leukocytes -  $8 \times 10^9/l$ , erythrocytes -  $5.0 \times 10^{12}/l$ , hemoglobin - 150 g/l, ESR - 3 mm/h.

1. Formulate a preliminary diagnosis? 2.

Prescribe medication?

*Sample answer:*

1. Bronchial asthma, mixed form, severe, uncontrolled. Complications: Respiratory failure stage II. Chronic cor pulmonale compensated. CHF I, FC II.

2. Given the severe uncontrolled course of bronchial asthma, the patient High doses of combined ICS/LABA+M blocker are recommended

cholinergic receptors (Formoterol/Budesonide 320 mcg/9 mcg 2 inhalations 2 times a day + Tiotropium bromide 18 mcg once a day in the morning (using a liquid inhaler)). For the treatment of chronic heart failure and cor pulmonale, the following should be prescribed: 1) a calcium channel blocker of the dihydropyridine series - Amlodipine, starting from 2.5-5 mg per day, depending on the tolerability of the drug and the occurrence of side effects (edema of the lower extremities and hypotension), 2) ACE inhibitor - Perindopril 2.5 mg 1 time per day under blood pressure control, 3) aldosterone antagonists - Spironolactone 25-50 mg in the morning.

If inhalation therapy is insufficiently effective, Prednisolone should be prescribed in tablet form at a dose of 40-50 mg per day for 5-7 days.

Task 10.

A 28-year-old patient complains of shortness of breath, severe pain in the heart for 2 days, weakness, increased temperature to 38.30C.

The patient associates the disease with pneumonia suffered 10 days ago. Objectively: sitting with the body tilted forward, pale skin, cyanosis of the lips. In the lungs - vesicular breathing, respiratory rate 24/min. The borders of the heart are not expanded, the tones are muffled, in the III-IV intercostal space on the left near the edge of the sternum there is a murmur of a soft timbre in systole and diastole. Heart rate 96/min. Blood pressure 110/70 mm Hg. Liver +1 cm, in the blood - leukocytes  $11.2 \times 10^9/l$ , ESR - 38 mm/h.

1. What is the most likely diagnosis?

2. What auscultatory phenomenon is typical for this disease in the patient?

*Sample answer:*

1. Acute fibrinous pericarditis of unknown etiology, probably viral. 2. Pericardial friction noise

Task 11.

A 42-year-old patient complains of severe weakness, dizziness, shortness of breath at the slightest physical exertion. About 2 weeks ago, I was on sick leave for 3 days with a diagnosis of acute respiratory viral infection. 5 days ago, the temperature rose again to low-grade levels, then constant pain in the chest of moderate intensity appeared, relieved by standing upright and taking analgin. For the last 2 days the pain has not bothered me, but there has been a feeling of heaviness in the right hypochondrium, pasty feet and legs. This morning, on the advice of my mother-in-law, I took 2 Furosemide tablets and excreted about 1.5 liters of urine. The condition worsened sharply, shortness of breath intensified, and when trying to stand up there was a short-term loss of consciousness. An emergency medical team was called.

On examination the condition is moderate. Conscious. Lies low. The shins are pasty. There is vesicular breathing in the lungs, no wheezing. The respiratory rate is 22 per minute, the neck veins are swollen. The apex beat is not detected. Heart sounds are muffled, heart rate is 128 per minute. The rhythm is correct, blood pressure is 110/70 mm Hg. Art., with usual figures - 130/80 mm Hg. Art. During inspiration, the systolic pressure decreases by 15 mmHg. Art. Liver + 4 cm, sensitive to palpation.

ECG shows sinustachycardia. The amplitude of the ventricular complex in all leads is reduced, the T wave in all leads is smoothed.

1. What is the most likely diagnosis?
2. What symptoms are mandatory for this disease?

*Sample answer:*

1. Acute exudative pericarditis. Cardiac tamponade. Stage IIB heart failure.

2. Heartache. Shortness of breath, which decreases when bending the body forward. A dry cough appears, sometimes vomiting due to the pressure of the exudate on the trachea, bronchi and phrenic nerve. Symptoms of cardiac tamponade: significant expansion of the heart shadow, a sharp increase in venous pressure (swelling of the jugular veins, especially noticeable in a horizontal position), decreased blood pressure, and the appearance of paradoxical pulsus.

Task 12.

A 25-year-old patient consulted his local doctor with complaints of pressing pain in the heart area, lasting for 2 days, worsening with breathing and lying in bed on his back, increased body temperature to 38 °C, chills, sweating, and weakness.

About 2 weeks ago, before the above-described complaints appeared after hypothermia, a cough and runny nose appeared, I did not see a doctor, I was working.

The patient's condition is moderate. The skin and visible mucous membranes are of normal color, the pharynx is clean, there is no hyperemia, the tonsils are not enlarged. Peripheral lymph nodes are not enlarged. Breathing through the nose is free. BH -20 per minute. When percussing the lungs, there is a clear pulmonary sound. Auscultation reveals vesicular breathing, no wheezing.

The heart area is not changed. The right border of the heart is at the right edge of the sternum, the left border is 1.5 cm medially from the midclavicular line, the upper border is the third intercostal space. The heart sounds are clear, in the fourth intercostal space on the left along the parasternal line a "scraping" noise is heard in a limited area, which intensifies with inspiration and when pressed with a stethoscope. Pulse - 128 per minute, the rhythm is correct. Blood pressure - 90/60 mm Hg. Belly is soft

painless on palpation. The liver is not enlarged, the spleen is not palpable. There is no swelling.

1. Formulate and justify the preliminary diagnosis? 2. Make a treatment plan?

*Sample answer:*

1. Acute fibrinous pericarditis. Characteristic in this case is the connection of the disease with hypothermia, the prolonged nature of pain in the heart associated with the act of breathing and changes in body position. Common symptoms include fever, chills, and sweating. A pathognomonic sign is a pericardial friction noise, which is characterized by limited localization, a "scraping" sound, lack of irradiation, aggravation at the height of inspiration and when pressing the chest with a stethoscope.

2. Hospitalization of the patient. Prescription of NSAIDs + colchicine, if there is no effect - prednisolone.

Task 13.

A 42-year-old patient was admitted to the hospital with complaints of shortness of breath on exertion and at rest, palpitations, weakness that occurs with little physical activity, decreased ability to work, heaviness in the right hypochondrium, and weight loss.

At the age of 30, he was treated for pulmonary tuberculosis. He considers himself sick for about a year, when shortness of breath and palpitations began to appear during physical activity. Over the past 2 months, my health has worsened and my shortness of breath has increased. Concerns about rapid fatigue and a significant decrease in working capacity. Treatment with cardiac glycosides and diuretics had no effect.

Objectively: low nutrition, pale, cyanosis of lips and ears. The number of respirations is 24 per minute at rest, 30 per minute - with little physical activity (5 squats). Swelling of the neck veins. In the lungs there is a percussion - pulmonary sound, vesicular breathing, no wheezing. The heart area is not changed. The right border of the heart is at the left edge of the sternum, the left border is 2 cm medially from the midclavicular line, the upper border is the lower border of the 3rd rib along the parasternal line. Heart sounds are muffled. Pulse - 108 per minute. The rhythm is correct. HELL

- 110/75 mmHg The abdomen is soft, sensitive to palpation in the right hypochondrium. The liver protrudes 5 cm from under the edge of the costal arch. The spleen is not palpable. There is no peripheral edema.

Blood test: Hb - 120 g/l, leukocytes -  $8.8 \times 10^9/l$ , band cells - 3%, segmented cells - 73%, lymphocytes - 15%, eosinophils - 2%, monocytes - 3%, ESR - 35 mm/h.

Urinalysis: relative density - 1015, leukocytes - 2-3 per field of view. Biochemical blood test: total protein - 65 g/l, bilirubin - 20 mmol/l, cholesterol - 4.5 mmol/l, urea - 8.8 mmol/l, creatinine - 127 mmol/l, potassium - 4.5 mEq/l.

Ultrasound of the abdominal organs: the right lobe of the liver is enlarged by 5 cm, diffusely heterogeneous structure, moderate dilatation of the portal vein, the spleen is not enlarged, a small amount of fluid in the abdominal cavity.

X-ray of the chest organs: the pulmonary fields are transparent, there are multiple petrifications in the hilar zones, Gohn's lesions on the right, interlobar moorings on the right. The borders of the heart are within normal limits; along the right contour of the cardiac shadow, ring-shaped calcification of the cardiac membrane and decreased pulsation are determined.

ECG: sinus rhythm, double-humped widened P waves, reduced QRS amplitude, negative T wave in leads II, III, aVF, V1-V3.

EchoCG: thickening, fusion, pericardial calcification, left ventricular diastolic dysfunction.

1. Guess the most likely diagnosis?

2. Patient management tactics?

*Sample answer:*

1. Constrictive pericarditis.
2. Consultation with a surgeon to decide on pericardiectomy.

#### Task 14.

An 18-year-old patient was admitted to the cardiology department with complaints of shortness of breath with slight physical exertion and at rest, a feeling of heaviness and pressure behind the sternum, palpitations, pain in the knee and ankle joints, an increase in body temperature to 38.5 °C, hoarseness of voice, cough.

From the anamnesis it is known that about a month ago she suffered from a sore throat. After 2 weeks, pain appeared in the knee and ankle joints, and the body temperature increased. Deterioration in health over the last 5 days, when the above complaints appeared and were of an increasing nature.

The patient's condition is serious. Orthopnea position. Cyanosis of lips, neck, fingers. Swelling of the neck veins. Redness, swelling and limited mobility in the knee and ankle joints. On the inner surface of the legs there is ring-shaped erythema. Lymph nodes are not increased. There is no peripheral edema. The chest is conical in shape. The number of respirations is 28 per minute. On percussion there is a clear pulmonary sound, on auscultation there is vesicular breathing, no wheezing.

There is a bulging of the chest in the area of the heart and smoothness of the intercostal spaces. The boundaries of relative dullness of the heart: right - 3 cm outward from the right edge of the sternum, left - along the anterior axillary line, upper - at the level of the second rib. The apical impulse is determined in the fourth intercostal space along the anterior axillary line.

On auscultation: heart sounds are muffled. Pulse - 128 per minute, low filling, rhythmic. Blood pressure - 80/50 mm Hg. The abdomen is of normal shape, soft, painless on palpation. With deep palpation, the sigmoid colon is determined, mobile, painless.

The liver protrudes 3 cm from under the costal arch, its edge is rounded and sensitive to palpation. The kidney area is not changed. Pasternatsky's symptom is negative. The spleen is not enlarged.

X-ray of the chest organs: the pulmonary fields are transparent, without focal and infiltrative changes. Expansion of the size of the heart shadow in all directions, especially up and to the right. The cardiac arches are not differentiated, the vascular bundle is shortened, and the pulsation is sharply weakened.

ECG: QRS voltage is sharply reduced, negative T wave in leads I, II, III, V2-V6. Blood test: Hb - 125 g/l, erythrocytes -  $4 \times 10^{12}/l$ , leukocytes -  $10.8 \times 10^9/l$ , stab - 5%, segmented - 68%, lymphocytes - 20%, eosinophils - 2%, monocytes - 5%, ESR - 42 mm/h, CRP - sharply positive, antistreptolysin-O titer - 1250 U, antihyaluronidase titer - 865 U.

Urinalysis: relative density - 1018, acidic reaction, leukocytes - 2-3 in the field of view.

Formulate and justify the clinical diagnosis?

*Sample answer:*

1. Rheumatism, active phase. III degree of activity. Rheumatic polyarthritis. Acute exudative pericarditis. Cardiac tamponade.

A history of sore throat, polyarthritis, ring-shaped erythema, increased ESR, high titer of anti-streptococcal antibodies, increased CRP allows a diagnosis of high-grade rheumatism, rheumatic polyarthritis.

Acute exudative pericarditis was established on the basis of the patient's complaints and objective examination, indicating an expansion of the borders of the heart. Confirmation is provided by X-ray data and characteristic changes on the ECG.

Cough, hoarseness, increasing shortness of breath, tachycardia, hypotension, swollen neck veins, and muffled heart sounds suggest cardiac tamponade.

#### Task 15.

Patient M., 72 years old, retired, consulted a local general practitioner with complaints of headaches, dizziness, tinnitus, and increased blood pressure to 210/120 mm Hg. Art.

Medical history: high blood pressure numbers appeared 2 years ago, he took Metoprolol, Hypothiazide, but it was not possible to achieve a significant reduction in blood pressure. For six months he has noticed fatigue when walking, pain in the legs that makes him stop (when walking less than 200 meters). Hospitalized to clarify the cause and select drug therapy.

Objectively: the condition is satisfactory. There is no swelling. Over the entire surface of the lungs there is a pulmonary sound from percussion; on auscultation there is vesicular breathing, no wheezing. The heart area is visually unchanged.

Boundaries of the heart:right - 1 cm outward from the right edge of the sternum, upper - II rib, left - 1.5 cm outward from the left SCL in the 5th intercostal space. Apical impulse in the 5th intercostal space, outward from the SCL, diffuse. Heart sounds are muffled and rhythmic. Emphasis of the second tone over the aorta, systolic murmur in the aorta without conduction to the vessels of the neck. Pulse - 76 beats per minute, rhythmic. The vascular wall outside the pulse wave is dense. Blood pressure - 195/115 mm Hg. Art. The abdomen is soft and painless. Liver along the edge of the costal arch. A systolic murmur is heard over the abdominal aorta. The symptom of effleurage is negative. Reduced pulsation in the arteries of the rear of both feet.

The following data were obtained from laboratory and instrumental studies. General blood test: hemoglobin - 145 g/l, erythrocytes -  $4.5 \times 10^{12}/l$ , leukocytes -  $7.9 \times 10^9/l$ , ESR - 12 mm/hour, color index - 1.0.

General urine analysis: specific gravity - 1020,protein - 0033 g/l, leukocytes - units. in the field of view, single hyaline cylinders.

Biochemical blood test: sugar - 5.2 mmol/l (3.5-6.1), cholesterol - 7.2 mmol/l (4.0), urea - 9.0 mmol/l (2.4-8 .3), creatinine - 0.13  $\mu\text{mol}/l$  (0.014-0.44), potassium - 5.4 mmol/l (3.4-5.3), sodium - 135 mmol/l (130-156).

Isotope renography: moderate decrease in the secretory and excretory functions of the right kidney.

Fundus examination: retinal vascular angiopathy.

ECHO-CG: RV - 2.1 cm (normal - 2.3), IVS - 1.25 cm (normal - 1.0 cm), LVAD - 1.25 cm (normal - 1.0 cm), LVAD - 5.8 cm (normal - 5.5), LVED - 3.7 cm (normal - 3.5). Ejection fraction - 54% (normal - 60-80%). Calcification of the mitral and aortic valves.

1. Identify the leading syndromes?

*Sample answer:*

1. Syndromes:

- arterial hypertension;
- cardiomegaly syndrome, predominantly of the left side;
- intermittent claudication syndrome.

#### Task 16.

The patient is 45 years old. Complaints of shortness of breath at rest, worsening when lying down. For 15 years, arterial hypertension up to 210/100 mm Hg. Art., suffered a myocardial infarction 3 years ago. He receives enalapril 10 mg 2 times a day, Concor 5 mg, aspirin.

Objectively: acrocyanosis. Orthopnea, RR - 36 per minute. In the lungs there are moist fine bubbling rales in the lower sections. Heart sounds are muffled, systolic murmur

at the apex, carried out to the axillary region, gallop rhythm. Pulse - 110 per minute, rhythmic, intense. Blood pressure - 230/140 mm Hg. Art. The liver protrudes 5 cm from under the edge of the costal arch. Swelling of the legs.

The ECG shows sinus tachycardia, cicatricial changes in the anteroseptal region. EchoCG – aorta 3.5 cm; left atrium 5.5 cm; CDR 7 cm; DAC 5.5 cm; IVS 1.4 cm; LVSD 1.4 cm. RV 4 cm.

Aortic, mitral, tricuspid valves are not changed.

Regurgitation on the mitral and tricuspid valves, grade 3. Extensive zone of akinesis of the anterior wall. The estimated pressure in the right ventricle is 50 mmHg.

1. Evaluate the auscultatory data?

2. Evaluate the results of EchoCG?

*Sample answer:*

1. Murmur of mitral insufficiency.

2. Dilatation of the left and right sections, left ventricular hypertrophy, relative mitral and tricuspid insufficiency, pulmonary hypertension, akinesis of the anterior wall.

Task 17.

A 30-year-old man presented with chest pain that occurs when walking and at rest, difficult to relieve with nitroglycerin, and short-term loss of consciousness during physical activity. Ill for 6 months.

Objectively: There is vesicular breathing in the lungs. The boundaries of relative cardiac dullness are not expanded. The sounds are rhythmic, systolic murmur with a separation from 1 tone at the apex, systolic murmur on the aorta, not carried out on the carotid arteries. Blood pressure - 110/70 mm Hg. Art. Pulse - 80 per minute, rhythmic. The liver is not enlarged. There is no swelling.

ECG – sinus rhythm, EOS deviation. to the left. Left ventricular hypertrophy.

A deep Q wave is recorded in I, avL, V5-6.

1. What diseases should be differentiated between?

2. What research is needed?

*Sample answer:*

1. Aortic stenosis, mitral regurgitation, mitral valve prolapse.

2. EchoCG.

Task 18.

Patient 30 years old. Complaints of shortness of breath with little physical activity. Frequent bronchitis in childhood.

Objectively: cyanosis of the lips. In the lungs, breathing is vesicular. Pulsation of the neck veins. The sounds are rhythmic, systolic murmur in the 2nd intercostal space to the left of the sternum, splitting of the 2nd tone on the pulmonary artery. Heart rate 80/min. Blood pressure 100/70 mmHg. The liver protrudes 3 cm from under the edge of the costal arch. Swelling of the legs. ECG – sinus rhythm, vertical position of e.o.s. Incomplete blockade of the right bundle branch.

X-ray of the chest organs - pulmonary hypervolemia.

1. What do hepatomegaly and edema indicate?

2. What research is needed for diagnosis?

*Sample answer:*

1. About right ventricular failure.

2. EchoCG.

Task 19.

A 66-year-old patient has been suffering from attacks of angina pectoris during moderate physical activity for 4 years. Since that time he has known about arterial hypertension. I did not receive regular therapy. In the morning I woke up due to a sharp burning pain in the chest that

was not relieved by nitroglycerin. Called an ambulance doctor in 2



hours from the onset of the pain syndrome, when the burning pain behind the sternum intensified, began to radiate to the left arm and shortness of breath and interruptions in the functioning of the heart appeared.

On examination, the condition is moderate, shortness of breath at rest. The skin is covered with sticky sweat, cold to the touch, acrocyanosis. Pulse - 92 per minute, arrhythmic, 5-6 extrasystoles per minute, blood pressure - 160/90 mm Hg. Art. Heart sounds are dull, accent 2 tones above the pulmonary artery. The respiratory rate is 28 per minute. Moist rales are heard in the lower parts of the lungs. The liver is at the edge of the costal arch, there is no peripheral edema. The patient was urgently hospitalized in the intensive care unit.

On the ECG: sinus rhythm, in leads V<sub>1-4</sub> - ST segment elevation 3 mm above the isoline, single polytopic ventricular extrasystole with a complete compensatory pause. Leukocytosis - 10,000. Troponin - 16 μmol/l.

What is your presumptive diagnosis?

*Sample answer:*

Heart attack myocardium of the anterior wall of the left ventricle, the most acute stage. Ventricular extrasystole 3 (Lown, Wolf). OSSN according to Killip II.

Task 20.

Patient A., 57 years old, a store salesperson, was hospitalized on December 11, 2019 with complaints of intense burning pain throughout the chest for 7.5 hours, radiating to the left shoulder, neck, lower jaw, elbow, and also complained for sweating, palpitations, weakness, shortness of breath at rest, cough.

History of the disease: height - 178cm, weight - 105 kg. I do not smoke. My father suffered a myocardial infarction at the age of 49. Since the age of 35, the patient has noted an increase in blood pressure to 180/100 mmHg. Art. She has been examined and takes Perindopril 10 mg at night and Metoprolol succinate 100 mg in the morning. In 2016, she noted a condition characterized by loss of motor activity in the right upper limb for 3 hours, then spontaneously motor function was restored. The patient has been suffering from type 2 diabetes mellitus since 2004 and takes Metformin 1000 mg/day. Uses a glucometer, blood sugar is within 9.5 mmol/l. Since May 2019, she has been experiencing attacks of pressing pain in the chest during physical activity (walking on level ground up to 600 meters) lasting up to 5 minutes, which were relieved after stopping walking. She was treated on an outpatient and inpatient basis, diagnosed with coronary heart disease, and was additionally prescribed Acetylsalicylic acid 75 mg/day, Rosuvastatin 10 mg/day, and short-acting nitrates as needed. In August 2019, a planned coronary angiography was performed, revealing an isolated lesion of the anterior descending (AD) coronary artery - 95% stenosis in the middle third. Due to the severity of the lesion, stenting of the LAD stenosis with a drug-eluting stent was immediately performed. After discharge, the patient was recommended to continue taking therapy, including Aspirin, Metoprolol succinate, Perindopril, Rosuvastatin and Metformin, as well as Clopidogrel 75 mg/day for one year. Two days before the real deterioration, the patient stopped taking Clopidogrel, justifying this by bleeding gums. The deterioration of the condition in the form of the appearance of intense pain in the chest at rest appeared at 06-00. The patient independently took 4 tablets of Nitroglycerin without effect and at 12-00 after the appearance of shortness of breath and weakness, she sought medical help. Called emergency medical services (EMS).

When examined by an EMS doctor, the condition is serious due to pain in the chest, shortness of breath, hypotension (BP - 100/60, heart rate - 98 per minute). An electrocardiogram (ECG) was recorded. The patient was taken to the emergency department with unrelieved pain.

Objectively: the condition is severe due to pain in the chest, shortness of breath, and hypotension.

On examination, the skin is marbled, cold, and distinctly moist. Shortness of breath persists at rest, the respiratory rate is up to 28 per minute, the patient takes a forced half-sitting position. Auscultation reveals moist fine bubbling rales over all pulmonary fields. The pulse on the radial arteries is markedly weakened, thread-like, 120 beats per minute. Auscultation in the region of the heart weakens the first sound, tachycardia up to 120 per minute, a systolic murmur is heard at the apex. Blood pressure in the right upper limb is 80/50 mmHg. Art., on the left upper limb - 75/50 mm Hg. Art. There is no swelling in the lower extremities.

According to the ECG in the emergency department, there was no dynamics, compared to the SMP film. Additional examination methods. General blood test: hemoglobin - 139 g/l, leukocytes –  $11 \times 10^9/l$ , erythrocytes –  $4.8 \times 10^{12}/l$ , ESR – 8 mm/hour.

Biochemical blood test: sugar - 22 mmol/l, creatine kinase total fraction - 1900 U/l, creatine kinase-MB fraction - 102 U/l, troponin T - 2.9 ng/ml; total cholesterol – 6.2 mmol/l, low-density lipoprotein cholesterol – 4.1 mmol/l; Blood pH is 7.2.

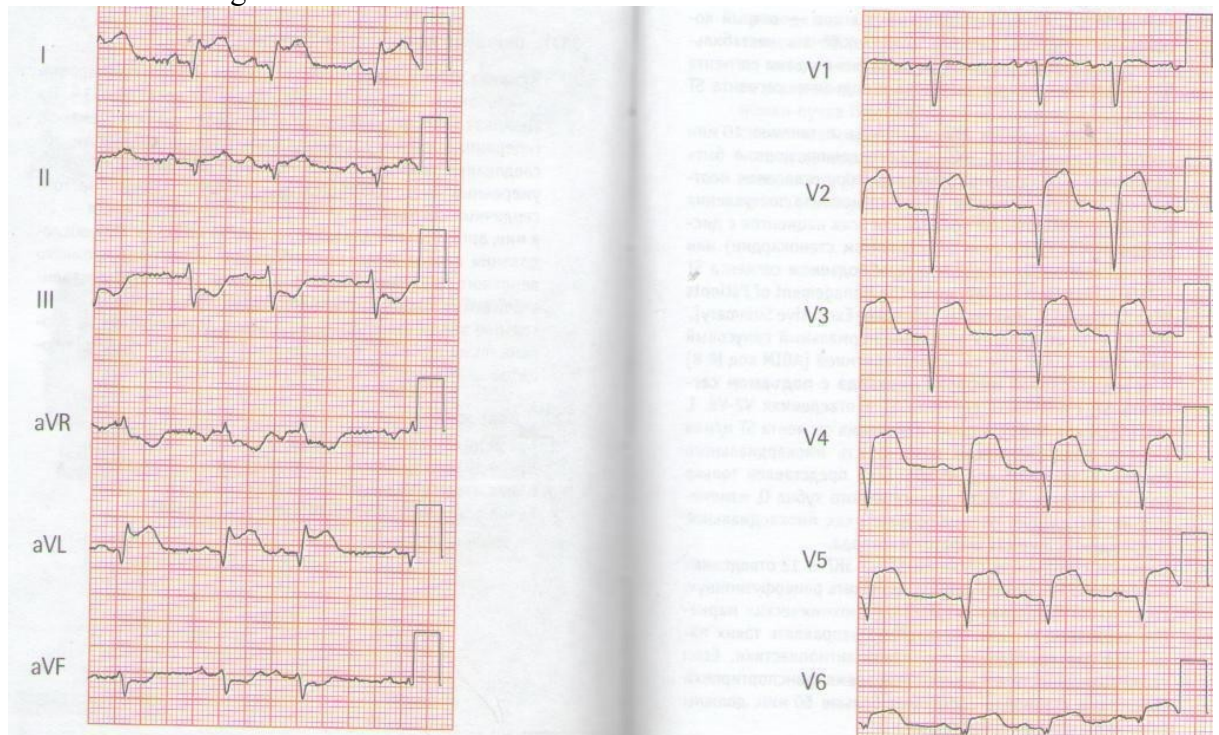
According to echocardiography, the left ventricular ejection fraction is 38%, severe mitral-papillary dysfunction, regurgitation at the mitral valve III, left ventricular myocardial hypertrophy. According to invasive hemodynamic measurements, central venous pressure is 260 mmH<sub>2</sub>O. Art. (N - 90-110 mm water column).

Pulmonary capillary wedge pressure is 23 mm Hg. Art. (N - 10-18 mm Hg).

Cardiac index – 1.9 l/min/m<sup>2</sup> (N - 2.5-4.5 l/min/m<sup>2</sup>).

Saturation – 69% (N - 80-100).

X-ray shows stage III venous congestion in the lungs, the heart shadow is expanded to the left. ECG at the EMS stage.



1. Formulate a diagnosis?

*Sample answer:*

1. Main diagnosis: IHD. Myocardial infarction, Q-non-forming, anterior widespread (with ST segment elevation), complicated by acute mitral-papillary dysfunction, pulmonary edema, cardiogenic shock, Killip IV OSHF.

Planned percutaneous coronary intervention with LAD stenting in August 2014.

Background: Stage III hypertension, uncontrolled hypertension, risk 4 (very high). Transient ischemic attack in 2016. Dyslipidemia, left ventricular hypertrophy, obesity. Diabetes mellitus type 2, decompensation.

#### Task 21.

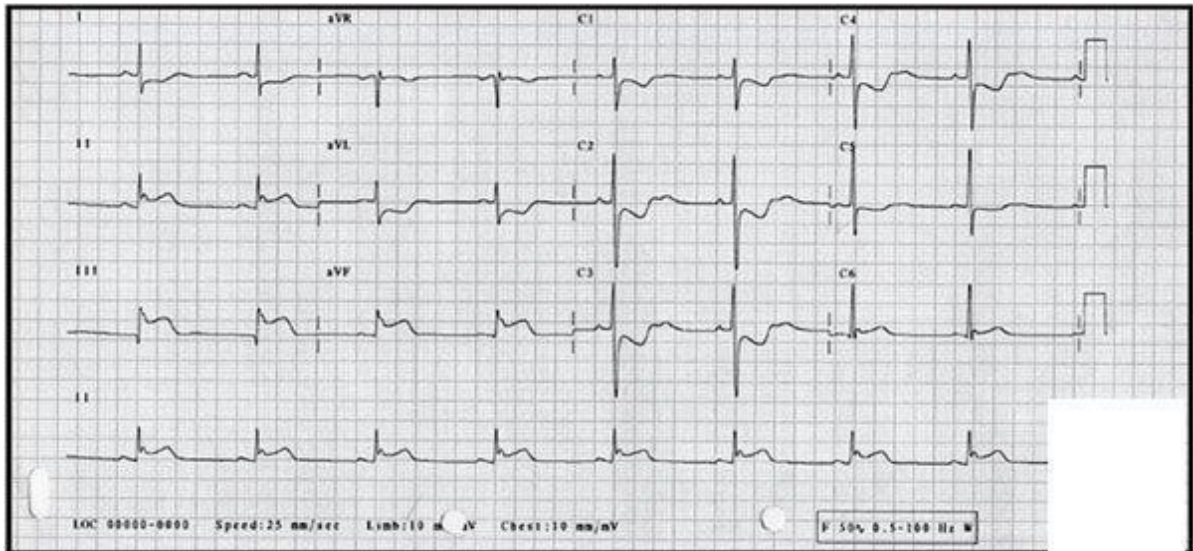
Patient I., 62 years old, university teacher. Today, while at rest, about 3 hours ago, for no apparent reason, shortness of breath of a mixed nature appeared and began to increase. The patient is hospitalized.

History of the disease: he has been suffering from hypertension for about 5 years. Takes antihypertensive drugs irregularly.

Objectively: upon admission, the condition was of moderate severity, orthopnea, pale skin, acrocyanosis. The respiratory rate is 26 per minute. On auscultation, moist fine bubbling rales are heard over all parts of the lungs. Percussion, the borders of the heart are expanded to the left, the pulse on the radial artery is 100 per minute, rhythmic, heart sounds are muffled, rhythmic, heart rate - 100 per minute, blood pressure - 130/90 mm Hg. Art. The abdomen is soft, painless, the size of the liver according to Kurlov is 9×8×7 cm.

Soon after admission, the patient's condition sharply worsened: a productive cough appeared, shortness of breath intensified, and the number of moist rales over all pulmonary fields increased.

#### ECG



1. Identify the syndromes determine the leading one (explain the pathophysiological mechanism of its occurrence)?

2. Formulate a diagnosis?

*Sample answer:*

1. Syndromes: acute left ventricular failure, arterial hypertension; electrocardiographic syndrome of acute subepicardial injury. The leading syndrome is acute left ventricular failure, the basis of which is a decrease in systolic function due to acute damage to the left ventricular myocardium.

2. IHD: posterior inferior myocardial infarction, atypical (asthmatic) onset, complicated by pulmonary edema. OSSN according to Killip III. Background: Hypertension stage III. Risk 4 (very high).

#### Task 22.

A 52-year-old patient, a driver, was brought to the emergency room by ambulance with complaints of sharp pressing pain in the chest, radiating to both arms and the left shoulder blade, lasting more than 4 hours. The pain is not relieved by taking Nitroglycerin and injections

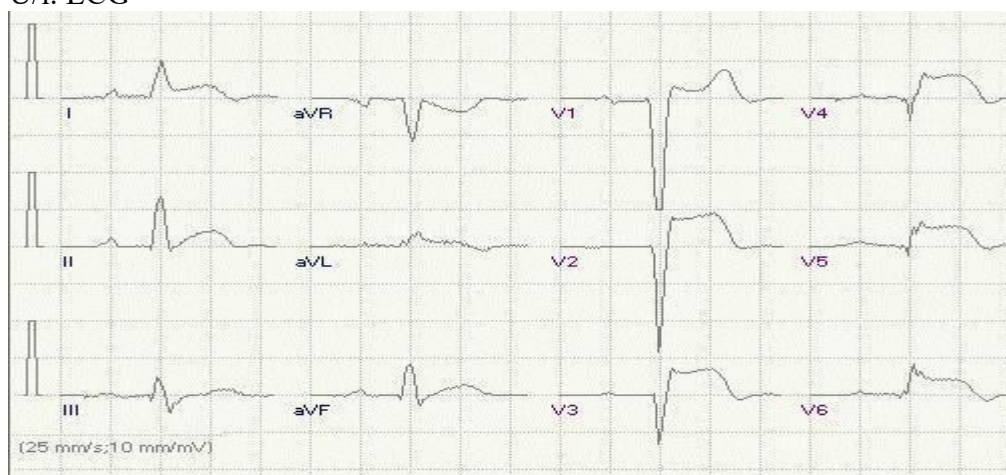
analgesics, accompanied by severe weakness, fear of death, and severe sweating.

From the anamnesis it was revealed that the patient had been bothered for about 10 years by paroxysmal headaches, tinnitus, dizziness, “flickering spots” before the eyes, short-term stabbing pains in the heart area, without irradiation. An increase in blood pressure to 160/100 mm Hg was often noted. Art., sometimes – up to 200/120 mm Hg. Art. He was examined on an outpatient basis 3 years ago - a diagnosis of hypertension was established, he did not adhere to these recommendations, and did not take the prescribed therapy.

Objectively: the skin is pale, acrocyanosis. RR - 26 per minute, shallow breathing. Percussion reveals a clear pulmonary sound over all pulmonary fields; upon auscultation, harsh breathing, a large number of moist rales in the subscapular areas. The pulse is the same in both hands, rhythmic, weak filling and tension. Heart rate - 120 per minute, blood pressure - 80/60 mm Hg. Art. Heart sounds are dull, rhythmic; the accent of the second tone is not determined. The abdomen is soft, painless, the liver is not enlarged. There is no swelling of the lower extremities.

In the analyses: CPK-MB - 98

U/I. ECG



1. Formulate a diagnosis;
2. Prescribe treatment.

*Sample answer:*

1. Main diagnosis: IHD: anterior myocardial infarction  
common, complicated by cardiogenic shock, interstitial pulmonary edema. OASN according to Killip IV.

Background: Stage III hypertension, uncontrolled hypertension, risk 4 (very high).

2. Treatment plan: narcotic analgesics (Morphine) IV, oxygen therapy, inotropic support (Dopamine, Norepinephrine), including mechanical (ECMO, intra-aortic balloon counterpulsation), anticoagulants (Heparin), antiplatelet agents (Aspirin + Ticagrelol), statins (Rosuvastatin), diuretics (Furasemide). Perform urgent PCI of all affected arteries. If PCI is not possible, perform thrombolytic therapy.

Task 23.

Patient T., 48 years old, was admitted to the department with complaints of severe pain behind the sternum, radiating to both arms, under the left shoulder blade, intractable with nitroglycerin, which decreased slightly after the administration of promedol. Over the past 10 days, he has noted periodic chest pain of less intensity and duration. On examination: the condition is serious, the skin is pale, covered with cold sweat.

Pulse 120 per minute, weak filling and tension. Heart rate 120/min, muffled heart sounds.

Blood pressure 80/40 mm Hg. Art., BH 28 per min. In the lungs, breathing is vesicular. The liver is not enlarged, there is no edema.

ECG in leads I, II, aVL, V2 - V6, arcuate rise in the ST interval, negative T wave in these leads.

1. Formulate a preliminary diagnosis?
2. Pathogenetic mechanisms of the developed condition?

*Sample answer:*

1. Diagnosis: IHD: Acute myocardial infarction in the area of the anterolateral wall of the left ventricle, complicated by cardiogenic shock. OSSN according to Killip II.

4. Violation of coronary blood flow, myocardial necrosis, decreased contractility of the left ventricle, a reflex effect of the pain mechanism, hemodynamic disturbances (left ventricular failure) cannot be excluded.

Task 24.

Man A., 57 years old, called a doctor to his home. Complains of intense pressing retrosternal pain radiating to the left arm and left shoulder blade. The above symptoms appeared about 2 hours ago after intense physical activity. I took 2 tablets of nitroglycerin on my own - no effect. I had never had pain of this nature before.

History of hypertension for the last 10 years with maximum blood pressure values of 200/100 mm Hg. I did not take medications regularly. Smokes 1 pack of cigarettes a day for 30 years. Gas-electric welder. Denies allergic reactions.

Upon objective examination: the skin is moist. There is a percussion sound in the lungs, vesicular breathing, no wheezing. Heart sounds are weakened, the rhythm is correct, blood pressure is 160/100 mm Hg. Art., heart rate – 88 beats per 1 minute. The abdomen is soft and painless. Stool and urine output are normal.

The ECG recorded sinus rhythm, ST segment elevation > 0.2 mV in leads II, III, aVF. Transport accessibility to an emergency cardiology hospital with the ability to perform primary percutaneous intervention is 30 minutes.

1. Guess the most likely diagnosis?
2. What amount of drug care should be provided to the patient at the prehospital stage?

*Sample answer:*

1. Preliminary diagnosis: Acute coronary syndrome with ST segment elevation in the lower wall of the left ventricle - myocardial infarction with ST segment elevation in the lower wall of the left ventricle.

Background diagnosis: Stage III hypertension, uncontrolled hypertension, risk 4 (very high).

Complication: Acute cardiovascular failure (ACHF) Killip I. 4. Drug treatment at the prehospital stage includes: pain relief syndrome - Nitroglycerin in a dose of 0.4-0.5 mg in the form of tablets under the tongue or an aerosol (spray) to control blood pressure, if ineffective - Morphine IV in fractions. Antithrombotic therapy: Chew Aspirin 250 mg, loading dose of Clopidogrel - 600 mg orally, direct anticoagulants IV bolus - Heparin 70-100 U/kg. Heparin use is discontinued after successful completion of the PCI procedure. Oxygen therapy.

To reduce the risk of complications and improve the prognosis, the patient is recommended to administer an intravenous beta-blocker (metoprolol 5 mg 2-3 times with an interval of at least 2 minutes) under the control of blood pressure and heart rate.

Task 25.

Man V., 59 years old, was hospitalized at the cardiology clinic from 09/01/2019 to 09/14/2019 for anterior Q-shaped myocardial infarction dated 09/01/2019. He was admitted with complaints of intense pressing retrosternal pain with irradiation in the area of the left shoulder blade, shortness of breath that occurred after a stressful situation.

From the anamnesis it is known that in the last 2 years the blood pressure periodically increased to a maximum of 160/90 mm Hg. He did not receive continuous drug therapy; he occasionally took captopril 25 mg. During physical activity, discomfort in the cardiac region and shortness of breath periodically occurred. He did not seek medical help. He has been smoking ½ pack of cigarettes a day for more than 30 years.

The family history is burdened. My father died of a myocardial infarction at the age of 60. The patient works as a tower crane operator.

Upon admission, coronary angiography was performed, occlusion of the anterior interventricular artery was detected, percutaneous transluminal coronary angioplasty (PTCA) and endoprosthesis of the anterior interventricular artery were performed.

Results of a biochemical blood test: total cholesterol - 6.36 mmol/l, LDL - 3.69 mmol/l, HDL - 1.25 mmol/l, TG - 2.26 mmol/l, fasting glucose - 4.5 mmol/l.

EchoCG: left ventricular hypertrophy, enlargement of the left atrium cavity. Local hypokinesia of the lateral wall of the left ventricle. Mitral regurgitation grade 2, tricuspid regurgitation grade 1. Impaired left ventricular diastolic function (VE/VA <1.0). PV – 50%.

The period of inpatient treatment was uneventful; after discharge, the patient was sent to a specialized cardiac rehabilitation hospital, where he remained until September 30, 2019.

Bicycle ergometry results: submaximal heart rate of 137 beats/min was achieved at a load of 100 W.

6-minute walk test results: 412 meters covered in 6 minutes.

On September 30, 2019, he showed up for an appointment at the clinic at his place of residence. Complaints of shortness of breath that occurs when walking quickly.

He constantly takes Aspirin 100 mg/day, Clopidogrel 75 mg/day, Atorvastatin 40 mg/day, Bisoprolol 2.5 mg/day, Lisinopril 5 mg 2 times a day.

On examination: condition is satisfactory. Body mass index – 37 kg/m<sup>2</sup>. The skin is clean and of normal color. In the lungs, breathing is vesicular, there are no wheezes. NPV 16 per minute. Heart sounds are weakened, the rhythm is correct. Heart rate – 70 beats per minute, blood pressure – 150/100 mm Hg. The abdomen is soft and painless on palpation in all parts. The liver and spleen are not enlarged. There is no swelling. There are no dysuric disorders. The symptom of tapping in the lumbar region is negative on both sides.

1. Guess the most likely diagnosis?

2. Do you need to adjust your drug therapy?

*Sample answer:*

1. IHD: angina pectoris II FC. Post-infarction atherosclerosis (09/01/2019). PTCA and endoprosthesis of the anterior interventricular artery (09/01/2019).

Background: Stage III hypertension, uncontrolled hypertension, risk 4 (very high). Obesity II degree. Hyperlipidemia.

Complication: CHF stage IIA, FC II.

2. Drug therapy: antiplatelet agents: aspirin (100 mg 1 time in the evening after meals) + ticagrelor (60 mg 2 times a day) for 1 year after myocardial infarction, ACE inhibitors: perindopril (10 mg) or ramipril (5 mg), beta-blockers: nebivolol (10 mg in the morning) or bisoprolol (5 mg in the morning), statins: rosuvastatin (10 mg in the evening) or atorvastatin (40 mg in the evening), in doses necessary to maintain target blood pressure, heart rate, LDL levels.

Task 26.

Man M., 65 years old, consulted a doctor on April 18, 2019 with complaints of periodically appearing pressing pain in the heart area during significant physical activity, which went away on its own.

From the anamnesis it is known that 3 months ago the patient suffered an acute inferior myocardial infarction with ST segment elevation. The patient underwent coronary angiography - a stenosis of the right coronary artery (RCA) of 90% was revealed (LAD stenosis 35%, OS 30%), and therefore transballoon angioplasty and stenting of the RCA with a drug-eluting stent were performed.

For a long time he suffers from hypertension with a maximum increase in blood pressure numbers up to 210/110 mm Hg. Art. Feeling good with blood pressure 120/70 mmHg. Art.

Bad habits: smoking 10 cigarettes a day for 20 years.

On examination: the condition is moderate. The skin is clean and hyperemic. Breathing in the lungs is harsh, there is no wheezing. Heart sounds are muffled and rhythmic. Heart rate – 70 beats. per minute, blood pressure – 190/100 mm Hg. The abdomen is soft and painless on palpation in all parts. The liver and spleen are not enlarged. There is no dysuria. The symptom of tapping in the lumbar region is negative.

Blood test results: total cholesterol – 5.4 mmol/l, TG – 1.6 mmol/l, HDL-C – 1.1 mmol/l; LDL cholesterol – 3.6 mmol/l.

Guess the most likely diagnosis?

*Sample answer:*

Diagnosis: IHD. Angina pectoris, FC I. Post-infarction atherosclerosis (01/18/2019). Transballoon angioplasty and stenting of the RCA from January 18, 2019.

Background diagnosis: Stage III hypertension, uncontrolled hypertension, risk 4 (very high). Dyslipidemia stage IIa Tobacco smoking.

CHF 0-I.

#### Task 27.

Woman B., 46 years old, an accountant, turned to her local doctor with complaints of attacks of pressing pain in the chest radiating to the left arm, occurring at rest, mainly at night and in the early morning hours (4-6 am). The attacks go away on their own within 3-4 minutes.

From the anamnesis it is known that attacks of chest pain have been bothering me for 3 months. He tolerates physical activity well, can climb to the 4th-5th floor without stopping, and does not experience pain attacks. The appearance of chest pain is associated with a stressful situation at work. Until now, she has not sought medical help.

Family history is aggravated on the maternal side.

On examination: condition is satisfactory. Height 172 cm, weight 66 kg, BMI 22.3 kg/m<sup>2</sup>. The skin is of normal color and normal moisture. In the lungs there is vesicular breathing. NPV 16 per minute. Heart sounds are clear, rhythmic, accent of the second tone over the projection of the aorta. Heart rate 64 beats. in 1 minute. Blood pressure 130/85 mm Hg. Art. The abdomen is soft and painless on palpation. The liver and spleen are not enlarged. There are no dysuric disorders.

Blood test results: fasting glucose – 5.1 mmol/l, creatinine – 76 µmol/l, total cholesterol – 6.3 mmol/l, TG – 2.2 mmol/l, HDL-C – 1.2 mmol/l, LDL-C – 4.2 mmol/l, AST – 28 units/l, ALT – 34 units/l.

ECG at rest: sinus rhythm, 60 beats per minute. EOS was not rejected.

1. Make a plan for additional examination of the patient?

*Sample answer:*

The patient is recommended: daily ECG monitoring; EchoCG; stress ECG with physical activity (with LVEF>50%); coronary angiography (CAG). The main diagnostic criterion for vasospastic angina is verified

with CAG, coronary artery spasm is spontaneous or during a pharmacological test. Provocative tests: cold test, intracoronary administration of Acetylcholine, Methacholine, Histamine, Dopamine.

#### Task 28.

Patient F., 47 years old, was admitted to the hospital from an outpatient appointment at the clinic, where he complained of compressive pain in the chest that occurs when walking at an average pace after 500 m or when climbing stairs to the 3rd floor, passing in 1-2 minutes peace.

Chest pain first appeared 2 years ago, but the patient did not associate its occurrence with heart disease and did not consult a doctor. The real deterioration occurred within a week, when attacks of chest pain became more frequent, began to occur at lower loads - when walking quietly after 50-100 m, attacks of compressive pain appeared at rest.

From the anamnesis it is known that the patient has hypertension with maximum blood pressure values of 170/100 mm Hg. Art. Smokes up to 1 pack of cigarettes per day for 20 years. The patient's mother and father suffer from arterial hypertension. There are cases of sudden death among relatives.

On examination: condition is satisfactory. Height 175 cm, weight 76 kg. The skin is of normal color and normal moisture. In the lungs there is vesicular breathing. NPV 16 per minute. Heart sounds are clear, rhythmic, accent of the second tone over the projection of the aorta. Heart rate 74 beats per minute. Blood pressure 160/100 mm Hg. Art. The abdomen is soft and painless on palpation. The liver and spleen are not enlarged. There are no dysuric disorders.

Blood test results: fasting glucose - 4.1 mmol/l, creatinine - 79  $\mu$ mol/l, AST - 28 units/l, ALT - 34 units/l.

1. What is the most likely diagnosis for this patient?
2. What are the treatment tactics?

*Sample answer:*

1. IHD: progressive angina.

Background diagnosis: Stage III hypertension, uncontrolled hypertension, risk 4 (very high).  
Complications: CHF 0.

2. Non-drug therapy (lifestyle modification, smoking cessation). Drug therapy: antiplatelet agents (aspirin 100 mg once a day in the evening or ticagrelol 60 mg 2 times a day);  $\beta$ -blockers (bisoprolol 2.5-5 mg 1 tablet in the morning or metoprolol 50-100 mg 1 time per day in the morning) under the control of blood pressure and heart rate; statins (rosuvastatin 10-20 mg or atorvastatin 20-40 mg once a day in the evening); ACEI (perindopril 5-10 mg or ramipril 10 mg once a day) or ARA II (valsartan 40-80 mg once a day); calcium channel blockers of the dihydropyridine series (amlodipine 5 mg once a day in the evening). Surgical treatment according to indications (transluminal balloon angioplasty).

#### Task 29.

A 57-year-old man suffers from coronary artery disease. Due to deterioration of his condition, he was admitted to the cardiology department. In order to identify the localization of atherosclerotic lesions of the coronary arteries and the severity of the process, coronary angiography was recommended. The day after the intervention, an increase in the level of serum creatinine to 130 mmol/l was noted (at admission it was 94 mmol/l). Another day later, the creatinine level reached 148 mmol/l, and diuresis in 6 hours was 240 ml. The patient's weight is 100 kg. The on-call nephrologist was called for consultation.

1. Formulate a preliminary diagnosis?
2. List the risk factors for AKI in this clinical case?



*Sample answer:*

1. Diagnosis: Renal post-contrast acute kidney injury, stage 1 (according to KDIGO 2012).
2. The patient has the following risk factors for AKI: male gender, history of atherosclerotic disease (CHD),

use of a contrast agent.

Task 30.

Male, 54 years old. He was admitted by emergency medical service with symptoms of ACS. During an objective examination, fine bubbling rales are heard in the lower parts of the lungs, respiratory rate is 23/min, blood pressure is 70/40 mm Hg, pulse is 110 beats/min. On EchoCG: EF 28, hypokinesia of the posterior and lateral walls of the LV. The next day, against the background of therapy, blood pressure was 90/50 mm Hg, respiratory rate 100/min, echocardiography showed EF 30, blood test showed: potassium 5.5 mmol/l, creatinine 160 µmol/l, volume of urine excreted per 6 hours 200 ml. On the 8th day after admission, potassium 6.5 mmol/l, creatinine 320 µmol/l, urea 29 mmol/l, volume of urine excreted in 6 hours 200 ml.

1. Formulate a preliminary diagnosis?
2. What signs helped you suspect the diagnosis?

*Sample answer:*

1. Acute kidney disease, stage 1.
2. The diagnosis of ABP was suspected due to the presence of risk factors in the patient against the background of an increase in creatinine by more than 26 µmol/L over 48 hours and a decrease in urine output of less than 0.5 ml/kg/6 hours and persistent oliguria for more than 6 days.

Task 31.

Woman, 52 years old. Suffering from type 2 diabetes mellitus for 6 years, receiving treatment for the last 5 years (Diabeton MB 60 mg 1 tablet in the morning, Metformin 500 mg - 1 tablet in the evening), the level of glycosylated hemoglobin is 6.7%. Height 166 cm, 92 kg. At the last visit to the endocrinologist, the TAM was recorded as albumin 0.33 g/l, a blood test showed potassium 5.8 mmol/l, uric acid 540 µmol/l, creatinine 98 µmol/l. At a repeat visit after 3 months, the level of albumin in the urine remained at the same level, potassium 5.5 mmol/l, creatinine 101 µmol/l, the woman began to notice pasty legs and a periodic increase in blood pressure to 160/100 mm Hg.

Formulate a preliminary diagnosis?

*Sample answer:*

Main diagnosis: Type 2 diabetes mellitus, target HbA1c level <6.5%. Complications: Diabetic nephropathy, CKD C3a (GFR according to CKD-EPI 57 ml/min/1.73 m<sup>2</sup>)

A3.

Associated: Arterial hypertension stage 3, stage II, risk 4 (very high). Hypertensive nephropathy. CHF 0. Nutritional-constitutional obesity 1 tbsp. Hyperuricemia.

Task 32.

Woman, 28 years old, admitted to the rheumatology department with complaints of swelling of the lower extremities, shortness of breath, a butterfly-shaped rash on the face, and red urine. Blood pressure 140/90 mm Hg. In the UAC there is anemia, thrombocytopenia; in a blood test - creatinine 220 µmol/l; in OAM, albuminuria (2.8 g/l), altered red blood cells throughout the entire field of view. Diuresis is normal. Positive test for antinuclear factor. Based on the results of nephrobiopsy, the patient was diagnosed with SLE with kidney damage of the diffuse proliferative glomerulonephritis type (class IV), and pathogenetic therapy was prescribed. During the treatment, the patient's condition improved, and protein loss in the urine decreased (albuminuria 0.5 g/l). After 6 months of observation, creatinine was 140 µmol/l. She was referred for consultation to a nephrologist.

Formulate a preliminary diagnosis?

*Sample answer:*

Main diagnosis: Systemic lupus erythematosus, subacute course, moderate degree of activity, “lupus nephritis” (nephrotic form) class IV, type diffuse proliferative glomerulonephritis in the stage of incomplete remission.

Complications: chronic kidney disease C3b (GFR according to CKD-EPI 57 ml/min/1.73 m<sup>2</sup>) A3.

Task 33.

A 49-year-old woman has been suffering from rheumatoid arthritis for 20 years. During this time, exacerbations are observed 3-4 times a year, accompanied by severe pain, edema and swelling of the affected joints, as well as limited mobility in them. Therefore, the patient receives various NSAIDs in courses lasting 2-4 weeks. Fearing the development of an exacerbation of the disease, she takes various NSAIDs, including those with minimal symptoms.

As part of the basic therapy, he receives methotrexate 7.5 mg once a week. Due to the ineffectiveness of therapy, she turned to a rheumatologist, who, during examination, found 0.4 g/l of protein in the TAM, 15 leukocytes in the field of view; In a blood test, creatinine is 135 µmol/l, urea is 11 mmol/l. The level of RF in the blood is increased, ESR is 36, CRP is 11. Culture for microflora is negative. Referred to a nephrologist for consultation.

Formulate a preliminary diagnosis?

*Sample answer:*

Main diagnosis: Rheumatoid arthritis, seropositive, active phase, stage II activity.

Associated: Chronic tubulointerstitial nephritis of drug origin (NSAID nephropathy). Chronic kidney disease stage C3b (GFR according to CKD-EPI 40 ml/min/1.73 m<sup>2</sup>). A3.

Task 34.

A woman went to the doctor B., 33 years old, with complaints of dull, bursting pain around the navel and left side of the abdomen, occurring 3 hours after eating, bloating and strong rumbling in the abdomen, profuse loose stools up to 4 times a day, weakness, increased fatigue, weight loss.

The above symptoms have been bothering me for 2 years; the deterioration of the condition is provoked by eating spicy food.

Objectively: Body temperature - 37.4 0C. The condition is satisfactory. The skin and visible mucous membranes are clean, pale, dry. In the corners of the mouth, “jams” are identified. The subcutaneous fat layer is underdeveloped. There is no pathology in the lungs or heart. The tongue is moist, thickly coated with white coating. The abdomen is soft, moderately painful in the umbilical area.

An examination by an ophthalmologist revealed iridocyclitis.

On fibrocolonoscopy: hyperemia, edema, absence of mucous pattern, microabscesses, pinpoint hemorrhages.

1. Formulate a preliminary diagnosis?

2. Determine treatment tactics?

*Sample answer:*

1. Ulcerative colitis, chronic continuous course, left-sided lesion, moderate attack.

Extraintestinal manifestations (iritocyclitis).

2. Treatment plan:

1) oral mesalazine 3-4.8 g/day in combination with mesalazine in enemas 2-4 g/day.

2) If there is no effect, oral administration is indicated

systemic glucocorticosteroids at a dose of 60 mg of prednisolone for 8 weeks.

- 3) A combination with azathioprine 2 mg/kg is indicated.
- 4) If there is no effect from GCS within 2 weeks, biological therapy (infliximab, adalimumab, golimumab or vedolizumab) is indicated.
- 5) Antibacterial agents: ciprofloxacin 400 mg 2 times a day + metronidazole 1.5 g for 7-10 days.

Task 35.

Male F., 36 years old. When contacting the clinic, he complains of loose stool mixed with blood up to 12 times a day, cramping pain in the lower abdomen before defecation, weight loss of 8 kg in 3.5 months.

From the anamnesis, the presence of blood in the stool and unformed stools for 3.5 months.

The temperature did not rise. He denies contact with infectious patients and has not traveled outside the region. I smoked 1 pack of cigarettes a day for 10 years and stopped a year ago.

Denies alcohol abuse or intravenous drug addiction. There are no relatives with gastrointestinal diseases. Works as a manager, no professional hazards.

Objectively: the condition is satisfactory. Temperature 36.7 °C. The skin is pale and moist. Height – 175 cm, weight – 58 kg. There is vesicular breathing in the lungs, there are no adverse breath sounds. NPV – 18 per minute. On auscultation, the heart rhythm is correct, the tone ratio is normal, and there are no murmurs. Heart rate – 98 beats per minute. Blood pressure – 110/70 mm Hg. Art. Upon examination, the abdomen is symmetrical and participates in the act of breathing. On palpation, it is soft and painful in the left flank and left iliac region. Liver according to Kurlov – 9×8×7 cm. Dimensions of the spleen – 6×4 cm. Urination is free and painless.

Complete blood count: erythrocytes –  $2.7 \times 10^{12}$ , Hb – 108 g/l, color index – 0.6, platelets –  $270 \times 10^9$ , leukocytes –  $7.0 \times 10^9$ , eosinophils – 1%, band neutrophils – 2% , segmented neutrophils – 65%, lymphocytes – 27%, monocytes – 5%, ESR – 22 mm/h.

Coprogram: unformed feces, mucus +++, leukocytes – 10-15 per field of view, erythrocytes – 5-6 per field of view.

Fiber colonoscopy: the mucosa of the descending colon, sigmoid and rectum is diffusely hyperemic, bleeds easily upon contact with the colonoscope, the vascular pattern is blurred. Multiple erosions covered with fibrin were revealed in the rectosigmoid region.

1. Guess the most likely diagnosis?
2. Which groups of drugs are indicated for treating a patient in this situation?

*Sample answer:*

1. Ulcerative colitis, left-sided lesion, acute course with gradual onset, moderate severity. Moderate anemia.

2. Drug treatment: Mesalazine 4-5 g orally in combination with Mesalazine rectally (suppositories, foam, microenemas) 2-4 g per day for 6-8 weeks. If iron deficiency is confirmed, replacement therapy (Sorbifer - 1 x 2 times a day, in case of intolerance - parenteral forms).

Task 36.

Patient S., 30 years old, a programmer, went to the clinic to see a therapist with complaints of dull, aching, low-intensity pain in the lower abdomen closer to the left flank, occurring before defecation, or intensifying immediately after bowel movement, lasting about 30-40 minutes, liquefied stool mixed with mucus and small amounts of scarlet blood, stool frequency up to 5-6 times a day, including at night, false urge to defecate with discharge from the rectum of only mucus mixed with scarlet blood, a feeling of rumbling, seething in the abdomen during the day, weight loss of 6 kg over the past 4 months.

From the anamnesis: he first noticed bowel dysfunction 5 months ago after a trip to the south in the summer and associated this symptom with eating habits (consuming large quantities of vegetables and fruits). Diarrhea persisted and progressed even after returning from vacation. I took smecta and mezim on my own with insignificant and unstable effects. After 1.5 months, he noted the appearance of mucus and streaks of blood in the stool, then mild pain appeared on the left flank of the abdomen. Started taking no-shpa. On the advice of a relative, 2 weeks ago I took chloramphenicol, 3 tablets a day, for 5 days; against this background, diarrhea and abdominal pain increased significantly, and the amount of blood in the stool increased, which was the reason for contacting a local doctor. He put off seeking medical help because he believed that he had some kind of infectious intestinal disease and was afraid of hospitalization in the infectious diseases department, preferring to treat himself. In the past, during the student period, there were repeated episodes of loose stools, the occurrence of which the patient associated with the consumption of allegedly poor-quality products. As a rule, he treated himself independently, using decoctions of astringents.

On examination: conditions satisfactory, temperature - 36.8 °C, height - 178 cm, weight - 61 kg, skin and visible mucous membranes are pale pink in color. Breathing is vesicular in all parts, there is no wheezing. NPV – 18 per 1 min. On auscultation, heart sounds are muffled and the rhythm is correct. Heart rate – 92 per 1 min. Blood pressure – 120/85 mm Hg. The tongue is moderately diffusely coated with a grayish coating, moist. The abdomen participates in breathing, is moderately evenly swollen, soft on superficial palpation, moderate pain is detected along the left flank of the abdomen, on deep palpation there is distinct pain in the left iliac region, where the spasmodic, densely elastic, painful sigmoid colon is palpated; the remaining parts of the colon are painless. Palpation of the epigastric and subcostal areas is painless. Blistering symptoms are negative. Dimensions of the liver and spleen according to Kurlov: 10x8x7 cm and 6x4 cm, respectively. The edge of the liver is not determined. The symptom of effleurage in the lumbar region is negative.

In the tests: red blood cells =  $3.02 \times 10^{12}/l$ , Hb = 103 g/l, MCH - 23p/g, MCHC – 300 g/l, leukocytes =  $12.6 \times 10^9/l$ . ESR = 38 mm/hour.

Coprogram: liquefied, unformed feces, muscle fibers, intracellular starch in a small amount, leukocytes up to 30-40 in the field of view, red blood cells in a significant amount, mucus in a large amount. Fecal calprotectin 532 mcg/g.

Total serum protein 62.3 g/l, albumin – 49.3%, globulins 50.7%, CRP – 95 mg/l.

Sigmoidoscopy without preparation: the device is inserted up to 18 cm. The rectal mucosa is diffusely hyperemic, edematous, severe contact bleeding, multiple erosions, in places confluent, covered with fibrin. There is mucus in the intestinal lumen, blood-stained, and liquid stool in small quantities.

Guess the most likely diagnosis?

*Sample answer:*

Ulcerative colitis newly diagnosed, distal form, moderate activity.  
Mild chronic posthemorrhagic anemia.

Task 37.

Patient B., 28 years old, a military man, complains of pain in the right iliac region of a constant nature (at night he often wakes up from pain). Against this background, attacks of colic-type pain periodically occur. Concerns about severe weakness, weight loss, diarrhea - stool 3-4 times a day in the form of liquid gruel, without pathological impurities, copious. Notes an increase in temperature to 37.6 °C daily, especially in the evening.

History of the disease: fell ill 1 year ago, when suddenly, in the midst of complete health, intense pain appeared in the right iliac region, temperature increased to 38.0 °C. He was taken to the emergency department, where he was examined by a surgeon and diagnosed with acute appendicitis. A blood test revealed leukocytosis, and the patient was taken for surgery.

During the inspection, a thickened ileum with an edematous loose wall and enlarged mesenteric lymph nodes were discovered. The vermiform appendix is not changed. An appendectomy was performed. In the postoperative period, hyperthermia appeared up to 38.5 °C; with the introduction of antibiotics, the temperature dropped to low-grade levels, but did not completely disappear. The pain in the right iliac region persisted and became dull and constant. The patient began to notice an increase in stool frequency, at first up to 2 times a day, then 3-4 times; the stool initially had the character of a thick porridge ("cow feces"), then it became liquid. Small amounts of mucus and blood periodically appeared in the stool. Weakness gradually increased, and during the year of illness the patient lost 6 kg of body weight.

Objectively: low nutrition, the skin is somewhat dry, turgor is reduced. Peripheral lymph nodes are not palpable. Lungs and heart without pathological changes. Pulse - 80 beats per minute, blood pressure - 110/70 mm Hg. Art. The tongue is covered with a white coating. The abdomen is involved in breathing, in its usual configuration. On palpation, pain is noted in the right lower quadrant; a compacted, painful cecum and slightly higher, swollen, rumbling loops of the small intestine are palpated here. For the rest of the course, no pathological changes were detected. Liver along the edge of the costal arch. The spleen is not palpable.

Laboratory and instrumental studies obtained the following data: General blood test: hemoglobin - 117 g/l, ESR - 34 mm/hour, red blood cells -  $3.2 \times 10^{12}/l$ , leukocytes -  $12.6 \times 10^9/l$ , eosinophils - 2%, band neutrophils - 10%, segmented neutrophils - 51%, lymphocytes - 37%.

Biochemical blood test: total protein - 52 g/l, albumin - 55%, globulins: alpha 1 - 3.7%, alpha 2 - 10.0%, beta - 11.0%, gamma - 20.3%. Total bilirubin - 16.4 (direct - 3.1; free - 13.3) mmol/l, glucose - 5.5 mmol/l, cholesterol - 3.9 mmol/l, potassium - 3.5 mmol/l, sodium - 142 mmol/l, alkaline phosphatase - 310 U/L (norm up to 306).

Sigmoidoscopy: scars are identified in the perianal area, in one of them there is a fistula with scanty discharge. There are single cracks between the scars. The rectum and sigmoid colon were examined, the mucous membrane along its entire length was without pathological changes.

Irrigoscopy: barium suspension retrogradely fills all parts of the colon and the ileum for 15-20 cm. There are uneven narrowings of the distal ileum and uneven contours, absence of haustra in the cecum and ascending colon.

1. Formulate a preliminary diagnosis?

2. What group of drugs is used for pathogenetic therapy would you recommend to the patient as part of combination therapy?

*Sample answer:*

1. Preliminary diagnosis: Crohn's disease, ileocolitis with damage to the terminal ileum, chronic relapsing course, moderate-severe form, complicated by perianal lesions (fistula).

2. As anti-inflammatory therapy - glucocorticosteroids: Prednisolone 150 mg or more intravenously, then orally - 1 mg/kg of the patient's body weight: for example, 60 mg/day with a gradual reduction in dose to the minimum effective + derivatives 5 - ASA: Mesalazine (Pentasa) 2-6 g per day for a long time. In the absence of contraindications and availability, anti-cytokine therapy is recommended as early as possible: for example, Infliximab, Adalimumab, Golimumab, IV drips, courses.

In addition to anti-inflammatory therapy, pathogenetic therapy includes intestinal decontamination: Alpha-normix - 400 mg 3 times a day for 7-14 days, Metronidazole parenterally.

Correction of electrolyte disturbances, treatment of malabsorption, maldigestion.

#### Task 38.

Patient P., 30 years old, complains of sharp pain in the right iliac region, which arose acutely the previous day after a heavy meal at the holiday table. Also concerning are nausea, rumbling in the stomach, unstable stools, and an increase in temperature to 37.3 C.

Palpation of the abdomen reveals moderate local pain, as well as a dense tumor-like formation in this area.

Upon examination, a pararectal fistula was diagnosed in the anal area.

FCS revealed multiple aphthoid ulcers, diffusely located on the hyperemic mucous membrane of the ileum.

What is the preliminary diagnosis?

*Sample answer:*

Crohn's disease: ileocolitis with damage to the terminal ileum and cecum, penetrating form, complicated by infiltration of the abdominal cavity, perirectal fistula, moderate attack, chronic relapsing course.

#### Task 39.

Man B., 50 years old, consulted a therapist with complaints of increased fatigue, weakness, dull aching pain in the right hypochondrium, belching of air, nausea, loss of appetite, weight loss and occasional skin itching.

From the anamnesis it is known that the patient has been drinking alcohol (more than 60 g of ethanol per day) for 20 years. Five years ago, aching pain appeared in the area of the right hypochondrium, increased fatigue, nausea, and skin itching, which intensified in the evening. The patient did not seek medical help.

Periodically took antihistamines, baralgin, Creon 25,000 units. twice a day. There was no effect from the medications taken.

A real exacerbation over the past two weeks, when after drinking alcohol, weakness, almost constant dull pain in the right hypochondrium, nausea, belching of air, and loss of appetite appeared. There were no operations or blood transfusions.

On examination: condition is satisfactory. Height 175 cm, weight 79 kg. The skin is icteric in color, the sclera is icteric; Telangiectasias are detected on the face, chest, back, and shoulders. In the lungs, breathing is vesicular, there are no wheezes. BH – 16 per minute. Heart sounds are muffled, the rhythm is correct. Heart rate – 69 per 1 min; Blood pressure - 125/80 mm Hg. The tongue is wet and covered with a white coating. The abdomen is soft, and on superficial palpation it is moderately painful in the area of the right hypochondrium. Dimensions of the liver according to Kurlov: 12×8×7 cm. On deep palpation, the liver has a dense consistency and moderate pain. The spleen is not palpable. There is no dysuria. The symptom of tapping in the lumbar region is negative.

Research results:

Complete blood count: red blood cells –  $4.4 \times 10^{12}/l$ ; leukocytes –  $6.5 \times 10^9/l$ ; segmented neutrophils – 63%; band neutrophils – 1%; lymphocytes – 29%; monocytes – 4%; eosinophils – 2%; basophils – 1%; Hb – 147 g/l; platelets –  $218 \times 10^9/l$ ; ESR – 20 mm/h.

Blood biochemistry: total bilirubin – 27  $\mu\text{mol}/l$ ; indirect bilirubin – 24.5  $\mu\text{mol}/l$ ; direct bilirubin – 2.5  $\mu\text{mol}/l$ ; ALT – 215 U/L; AST – 218 units/l; GGTP – 89 units/l; alkaline phosphatase – 279 units/l; TG – 3.9 mmol/l; LDL cholesterol – 2.9 mmol/l; HDL cholesterol – 1.4 mmol/l; glucose – 5.1 mmol/l; creatinine – 65  $\mu\text{mol}/l$ ; urea – 2.9 mmol/l; albumin – 44 g/l; total protein

– 72.5 g/l; alpha-1-globulins – 3.3 g/l; alpha-2-globulins – 5.7 g/l; beta globulins – 7.2 g/l;  $\gamma$ -globulins – 12.5 g/l; alpha-fetoprotein – 3.1 units/l; ferritin – 55 mcg/l; transferrin – 2.7 g/l; potassium – 3.7 mmol/l; Na – 139.5 mmol/l; iron – 22.5  $\mu$ mol/l; amylase – 45 units/l; CS – 5.4 mmol/l. PTI – 86%.

Enzyme immunoassay (blood test for markers of hepatitis B, C): HBsAg (-); anti-HBs (-); anti-HBcIgG (-); HBeAg(-); anti-HBe (-); anti-HBcIgM (-); anti-HCV – negative  
Liver elastometry: stage F2 (according to the METAVIR scale), moderate fibrosis. Feces for occult blood - negative.

X-ray examination of the lungs: no pathological changes. ECG – without pathological changes.

General urine analysis: within normal limits.

1. Suggest the most likely diagnosis?

2. Prescribed treatment?

*Sample answer:*

1. Chronic hepatitis of alcoholic etiology, moderate degree of activity, stage F2 (moderate fibrosis).

2. Treatment: 1) It is recommended to follow a diet (exclude alcohol, fatty, fried, spicy, smoked, salty, coffee, carbonated drinks, cocoa); 2) ademetionine (Heptral), first parenterally, 5-10 ml (400-800 mg) intravenously or intramuscularly for 10-14 days, and then 400-800 mg (1-2 tablets) 2 times a day. The duration of treatment is on average 2 months; 3) metadoxine.

Task 40.

Patient A., 30 years old, at a therapist's appointment complains of general weakness, fatigue, lack of appetite, heaviness in the right hypochondrium, itching and an increase in body temperature to 37.7 °C.

The patient considers herself sick for several years, when weakness first appeared, fatigue began to increase, and performance decreased. Over the course of a year, he has been bothered by heaviness in the right hypochondrium, skin itching, and menstrual dysfunction. She periodically noted pain in the knee joints and an increase in body temperature to low-grade levels.

Objective examination: general condition is moderate, consciousness is clear. Reduced nutrition (height – 176 cm, weight – 56 kg). The skin has traces of scratching, the face and palms are hyperemic. The sclera are icteric, there are spider veins on the face, chest and neck, and small hemorrhagic rashes on the legs. Peripheral lymph nodes are not palpable. In the lungs there is vesicular breathing, no wheezing. BH - 20 per minute. The boundaries of the heart are within normal limits. Heart sounds are clear, the rhythm is correct. Pulse 86 beats per minute. Blood pressure - 120/80 mm Hg. Art. The tongue is moist, slightly coated with a yellowish coating. The abdomen is soft, moderately painful in the right hypochondrium. The liver protrudes 4 cm from under the edge of the costal arch, the edge is painful, with a dense elastic consistency. The spleen is not enlarged. The symptom of tapping in the lumbar region is negative.

Complete blood count: red blood cells  $3.9 \times 10^{12}/l$ , hemoglobin – 122 g/l, leukocytes  $6.3 \times 10^9/l$ , ESR – 55 mm/h.

Biochemical blood test: bilirubin - 120.0  $\mu$ mol/l (direct - 88.0  $\mu$ mol/l, indirect - 32.0  $\mu$ mol/l), cholesterol - 7.9 mmol/l, albumin - 36%,  $\gamma$ -globulins - up to 3 upper limit of normal (ULN), increase in ALT - up to 7 ULN, AST - up to 6 ULN, alkaline phosphatase - up to 2 ULN, glucose - 5.5 mmol/l, serum iron - 25  $\mu$ mol/l, LE cells in low titer, tissue antibodies to smooth muscle (SMA) - 1: 160. Markers of viral hepatitis B, C and D are negative.

What is the most likely diagnosis?

*Sample answer:*

Autoimmune hepatitis with moderate activity, type 1.

Task 41.

The patient is 18 years old. According to her mother, she has been suffering from jaundice since early childhood, and from the age of 12, paroxysmal pain appeared in the right hypochondrium, accompanied by increased jaundice.

Objectively: General condition is satisfactory. Subictericity of the sclera and skin. The chest organs are unremarkable. The abdomen is soft, painless on palpation. The liver and spleen are not enlarged.

Blood and urine tests are unchanged.

Bilirubin - 32.1 mmol/l, indirect - 28.5 mmol/l, AST - 0.32 mmol/l, ALT - 0.40 mmol/l.

1. Formulate a preliminary diagnosis?

2. Treatment tactics?

*Sample answer:*

1. Benign hyperbilirubinemia – Gilbert's disease.

2. Diet (table No. 5), phenobarbital.

Task 42.

Woman S., 48 years old. Previously, she often took antidepressants. For 2 years, he has been experiencing intolerance to fatty foods, dull pain in the right hypochondrium, periodically diffuse itching, bone pain, pain and swelling of the wrist, knee, interphalangeal joints, tooth loss, xanthelasma and dark brown pigmentation of the nails. For the last 3 months, increasing jaundice, dark urine.

The liver is 5 cm, dense, the edge is rounded. Spleen - 16×12 cm.

Blood test: bound bilirubin – 144 nmol/l, free – 57 μmol/l, AST – 216 nmol/l, ALT – 283 nmol/l, alkaline phosphatase – 222 μmol/l, cholesterol – 9.1 mmol/l, prothrombin – 65%, γ-globulins – 22%, AMA titer 1:80.

1. What is the leading syndrome in this patient?

2. Formulate a preliminary diagnosis?

3. What can contribute to the development of the disease?

*Sample answer:*

1. Cholestasis syndrome.

2. Primary biliary cirrhosis of the liver.

3. Taking antidepressants.

Task 43.

Patient A., 48 years old, complains of itchy skin, menstrual irregularities, yellowness of the skin, decreased appetite, weight loss, discomfort in the right upper quadrant of the abdomen.

Considers himself sick for 4 years. She was treated by a dermatologist for neurodermatitis and by a gynecologist for menopausal ovarian dysfunction.

The examination revealed subicteric sclera, pigment spots and multiple scratch marks on the skin of the body. In the lungs, breathing is vesicular, there are no wheezes. BH – 18 per minute. Heart sounds are clear and rhythmic. Heart rate – 78 beats per minute. The liver protrudes from under the edge of the costal arch by 7 cm, the edge is dense and painless. The spleen is not palpable. There is no dysuria. The effleurage symptom on both sides is negative.

Biochemical blood test: total bilirubin – 87.5 μmol/l, alkaline phosphatase – 413 U/l, GGTP – 62 U/l. In the general blood test: ESR – 25 mm/hour.

1. What is the most likely diagnosis?

2. What studies are needed to confirm the diagnosis? 3. What treatment should be prescribed to the patient?



*Sample answer:*

1. Primary biliary cirrhosis.
2. Treatment: The diet should be physiologically complete in terms of protein content (1.2-1.4 g/kg), carbohydrates (4-5 g/kg), with moderate restriction of fats (up to 1.2 g/kg); Ursodeoxycholic acid (UDCA) at a dose of 13 - 15 mg/kg/day once in the evening or in two doses; Glucocorticosteroids - prednisolone at a dose of 20-30 mg/day for 8 weeks with a gradual reduction in dose to 8-10 mg/day; Phenobarbital, cholestyramine (4-16 g/day) or cholestipol (5-30 g/day) - for the treatment of skin itching.

Task 44.

Patient S., 72 years old, a pensioner, went to the clinic to see a local general practitioner with complaints of dull, aching, low-intensity pain and a feeling of heaviness in the epigastric region 15-20 minutes after eating, nausea, and heartburn. Painful sensations intensify with errors in nutrition. Periodically, shortness of breath and pressing pain in the chest, which occurs during moderate physical exertion (climbing to the 2nd floor), are disturbed by taking nitramin and when the exercise stops.

From the anamnesis: pain in the epigastric region has been bothering me for the last 4-5 weeks, somewhat decreasing after taking noshpa and almagel. About a week ago, the patient noted an episode of black stools for 2 days. At the age of 49 years, he was diagnosed with duodenal ulcer, was treated in a hospital, and subsequent exacerbations of the disease were never recorded. The patient has not consulted a doctor about this for the past 10 years. The patient suffers from coronary artery disease, suffered a myocardial infarction 1.5 years ago, and 10 months ago underwent stenting of the coronary arteries (2 stents were installed). The patient is receiving drug treatment for coronary artery disease, including Thrombo-Ass and clopidogrel, and has stopped taking Crestor for the last 5 months.

On examination: condition is satisfactory, BMI – 27 kg/m<sup>2</sup>, skin and visible mucous membranes are pale pink in color. The shins are pasty. Breathing is vesicular in all parts, there is no wheezing. BH – 18 per 1 minute. Heart – tones are muffled, accent of 2 tones is on the aorta, the rhythm is correct. Heart rate – 92 per minute. Blood pressure – 130/85 mm Hg. The abdomen participates in breathing, is soft on palpation, moderate pain is detected in the epigastrium along the midline of the body and in the pyloroduodenal zone, the remaining parts of the abdomen are painless. Blistering symptoms are negative. Dimensions of the liver and spleen according to Kurlov: 11×9×8 cm and 6×4 cm, respectively. The edge of the liver of a dense elastic consistency is determined 2 cm below the costal arch, painless. Palpation of the colon is painless. The symptom of effleurage in the lumbar region is negative.

In the tests: red blood cells -  $3.11 \times 10^{12}/l$ , Hb - 103 g/l, MCH - 22p/g, MCHC – 300 g/l, leukocytes -  $5.6 \times 10^9/l$ . ESR - 8 mm/hour.

Total cholesterol - 7.8 mmol/l, triglycerides - 2.6 mmol/l.

ECG: sinus rhythm, 72 per minute; RI> RII> RIII, in leads I, avL, v1-4, the Q wave is > 1/3 of the R wave, the T wave is negative.

Guess the most likely diagnosis?

*Sample answer:*

NSAIDs – associated gastropathy: erosive and ulcerative lesions of the stomach, complicated by existing gastrointestinal

bleeding. Mild posthemorrhagic anemia. IHD: stable angina pectoris class II, PICS along the anterior wall and apex of the LV. Stenting of LCA, LCA, CHF III FC (NYHA)

Task 45.

Patient T., 48 years old, an electric welder, consulted a local general practitioner with complaints of frequent, severe heartburn after eating and at night, especially when

eating spicy, fatty or rich foods, frequent nausea in the morning, belching food after eating, usually when bending over or lying down, poor sleep due to heartburn.

From the anamnesis: from school age he noticed abdominal pain and poor appetite. He was treated independently, on the advice of relatives, periodically taking No-shpu and enzyme preparations with little effect. While serving in the army, he was treated in hospital for gastritis. Subsequently, he had no complaints from the digestive organs for a long time. He eats irregularly, works in shifts, and regularly has night shifts. He has been smoking 20 cigarettes a day since he was 13 years old. He practically does not drink alcohol. The described complaints appeared two years ago after a long period of significant physical exertion (building a house) and an episode of severe psycho-emotional stress (a fire in an apartment). I took almagel and omez on my own for 10-14 days with good effect. Over the next 2 years, I was often bothered by heartburn, but I did not consult a doctor; I used Almagel and Omez in short courses with a short-term effect. The last deterioration occurred within a month after an error in diet and alcoholism; After taking the usual set of medications for a week, my health showed positive dynamics, and therefore I stopped treatment. After 5 days the symptoms returned. Three days ago there was a single episode of black, loose stool. Subsequently, the stool was without any peculiarities.

On examination: condition is satisfactory.

Height – 175 cm, weight – 63 kg. Skin physiological coloring, moderate humidity, clean. Vesicular breathing in the lungs. BH – 18 per minute. Heart sounds are moderately muffled, the rhythm is correct. Heart rate – 80 per minute, blood pressure – 130/85 mm Hg. The tongue is thickly covered with a gray coating and is moist. The abdomen is soft, moderately painful high in the epigastrium to the left of the midline and in the pyloroduodenal area. Palpation of other parts of the abdomen is practically painless. Liver 10.5×8×7 cm. The edge is rounded, elastic consistency, painless. Blistering symptoms are negative. The spleen is not palpable, percussion 7×5 cm. The symptom of tapping in the lumbar region is negative.

In the tests: red blood cells –  $4.0 \times 10^{12}/l$ , hemoglobin – 122 g/l, MCH – 26p/g, MCHC – 346 g/l, leukocytes –  $5.2 \times 10^9/l$ : basophils – 0%, eosinophils – 1%, band cells – 2%, segmented cells – 68%, lymphocytes – 23%, monocytes – 6%. ESR – 5 mm/hour.

A stool occult blood test is positive.

FGDS - the esophagus is passable. The mucous membrane of the lower third of the esophagus is clearly hyperemic with multiple small erosions occupying up to half the diameter of the esophagus. The cardiac sphincter does not close completely. The gastric mucosa prolapses into the esophagus. The stomach contains a significant amount of secretion mixed with bile. The mucous membrane of the body of the stomach is slightly swollen, pink, with trunk-type folds. The antrum mucosa is focally hyperemic with multiple flat erosions. The pylorus is gaping. The duodenal bulb is not deformed. The mucous membrane is pink and shiny. The postbulbar region is without features.

Guess the most likely diagnosis?

*Sample answer:*

GERD: erosive esophagitis stage 2 according to Savari-Miller. Cardia failure. Sliding hiatal hernia, stage 1. Chronic antral gastritis with erosions in the acute stage (Hp status unknown).

Episode of spontaneously stopped bleeding from the upper gastrointestinal tract from (date). Pylorus deficiency.

Task 46.

Man A., 56 years old, is in the clinic with a diagnosis of liver cirrhosis and portal hypertension. The condition began to progressively worsen. Moderate tachycardia and normal blood pressure were replaced by severe tachycardia and a decrease in blood pressure to 75/40 mm Hg. Dyspnea increased and diuresis decreased significantly. The skin is pale, cold to the touch, profusely covered with sticky cold sweat. Heart sounds are muffled. The pulse is very rapid and weak. Central venous pressure 11 mm water column. Bloody vomiting was noted twice. Hb decreased to 52 g/l, Ht – 21%.

1. Formulate and justify the presumptive diagnosis?
2. What are the treatment methods? When is blood transfusion necessary?

*Sample answer:*

1. Bleeding from the veins of the esophagus. Hemorrhagic shock.
2. Blackmore probe. The use of blood products during antishock therapy. Use of aminocaproic acid, adroxone, tranexamic acid, fresh frozen plasma. Transfusion of blood products when hemoglobin decreases below 80 g/l and hematocrit below 30.

Task 47.

Man E., 42 years old, felt severe pain in the upper abdomen, which he compared to the blow of a dagger. The pain appeared during physical activity, there was no vomiting. He has been suffering from stomach ulcers for many years, for which he has been treated in therapeutic clinics many times. An ambulance was called, and the paramedic who arrived examined the patient. The patient is pale, covered with cold sweat, a pained expression on his face, a forced position - lying on his side, legs brought to his stomach, pulse 80 beats per minute, the tongue is dry, coated with a slightly white coating. The abdomen does not participate in the act of breathing; palpation reveals sharp muscle tension, soreness, and a positive Shchetkin-Blumberg sign.

Formulate a presumptive diagnosis?

*Sample answer:*

Perforated gastric ulcer.

Task 48.

Calling a local therapist to a 20-year-old patient on the 3rd day of illness. Complaints of constant pain throughout the abdomen, which at the beginning of the disease were localized in the right iliac region.

Objectively: the condition is serious, body temperature is 38.7 0C. Repeated vomiting of stagnant contents. Facial features are pointed, skin is pale. The mucous membranes are dry, the tongue is covered with a gray coating. Pulse 120 beats per minute. The abdomen is swollen and does not participate in the act of breathing. On palpation there is widespread pain and muscle tension throughout the entire anterior abdominal wall.

1. Compose algorithm for providing emergency care to a patient at the prehospital stage?
2. What actions are contraindicated in this situation?

*Sample answer:*

Necessary:

- a) apply an ice pack to the anterior abdominal wall (reduce pain, slow down the development of a purulent-infectious process).
- b) insert a thin nasogastric tube for aspiration of gastric contents (prevention of vomiting, reduction of endotoxemia).
- c) transport the patient on a stretcher in a lying position.
- d) carry out oxygen therapy through nasal catheters in an ambulance (reducing the symptoms of respiratory failure, improving blood oxygenation, redox processes in the body).

Contraindicated:

- administration of analgesics (mask clinical symptoms).
- applying heat to the abdomen (activates the purulent-inflammatory process).
- the use of drugs and fluids enterally (provokes vomiting).
- the use of enemas (worsen the general condition, provoke perforation of intestines).

Task 49.

Patient S., 44 years old, complains to the therapist about yellowing of the sclera and skin, weakness, dark urine, aversion to food, and mild nausea.

Considers himself sick for about 14 days. During this time, the body temperature remained in the range of 37.1–37.4 °C, joints ached, appetite disappeared, and in the last 3 days he noted dark urine, yellowness of the sclera and skin. I took analgin and vitamins. Three months ago I was treated in the neurological department for a functional disorder of the nervous system, receiving medications in the form of tablets, subcutaneous and intravenous injections.

The general condition is moderate. Body temperature 36.9 °C.

Objectively: the sclera and skin are moderately icteric. Peripheral lymph nodes are not changed. Pulse – 55 beats per minute, blood pressure – 110/60 mm Hg. Art. Vesicular breathing. The abdomen is soft, slightly painful in the epigastrium. The liver protrudes from under the edge of the costal arch by 3 cm, the lower pole of the spleen is palpated. Urine is dark brown, feces are gray.

Specify the main syndromes and establish a preliminary diagnosis?

*Sample answer:*

The patient has infectious intoxication syndrome, arthralgic syndrome (joint pain), dyspeptic syndrome (decreased appetite, mild nausea); cholestatic syndrome (yellowness of the skin and sclera, dark urine, acholic stool); hepatosplenomegaly. Taking into account the epidemiological data (the presence of an injection during a period that fits the incubation period), it can be assumed that the patient has acute viral hepatitis, with a parenteral mechanism of transmission (B or C), an icteric form, a peak period, a moderate course.

Task 50.

In patient A., 55 years old, HBsAg was detected in the blood during an examination for epidemic indications.

From the anamnesis it was established that HBsAg was first detected a year ago, when the patient was treated in hospital for gastric ulcer. For several years he has been experiencing rapid fatigue, decreased ability to work, and a feeling of heaviness in the right hypochondrium. Denies previous viral hepatitis.

The condition is satisfactory. Body mass index - 28 kg/m<sup>2</sup>. The skin is of normal color and clean. In the lungs there is vesicular breathing, no wheezing. Heart sounds are clear and rhythmic. Heart rate - 62 beats per minute, blood pressure - 130/80 mm Hg. Art. On palpation, the abdomen is soft and painless. The liver is 2 cm below the costal arch, dimensions according to Kurlov 12x10x9 cm

A general blood and urine test revealed no abnormalities.

HBsAg +, HBeAg (+), HBV DNA 3000 IU/ml.

A biochemical blood test shows an increase in ALT 5 times higher than normal, AST 4 times higher than normal, with normal values of total protein, prothrombin, cholesterol, urea, creatinine, and bilirubin.

According to ultrasound data of the hepatopancreatoduodenal zone, the diameter of the portal and splenic veins was within normal values. The area of the spleen is 45 cm<sup>2</sup>. Liver elastography: corresponds to fibrosis F2 (according to the METAVIR scale).

1. What is the most likely diagnosis?

2. Justify the prescription of drug and non-drug treatment for this patient?

*Sample answer:*

1. Chronic viral hepatitis B HBeAg-positive, moderate activity, stage F2 (according to the METAVIR scale), moderate fibrosis.

2. Treatment:

1) Non-drug therapy includes following a diet excluding alcohol, fatty, fried, spicy, smoked and salty foods, coffee, carbonated drinks and cocoa.

2) Purposeantiviral therapy: nucleoside/nucleotide analogues (Entecavir (nucleoside analogue of guanosine) orally at a dose of 0.5 mg/day for 48 weeks).

ALT activity should be assessed every 3 months during treatment and after its completion. When treating with nucleoside/nucleotide analogues, HBV DNA levels should be monitored every 3 months for at least the first year of treatment.

Task 51.

Man S., 46 years old, complains for general weakness, increased fatigue, decreased performance, almost constant dull pain in the right hypochondrium, nausea and sleep disturbance.

Considers himself sick for two years, when general weakness, increased fatigue, a feeling of heaviness in the right hypochondrium, and periodic increases in temperature to subfebrile levels first appeared. He did not seek medical help. When pain syndrome appeared, I took Essentiale-Forte 2 capsules 3 times a day, enzyme preparations (Creon 10,000 units 2 times a day) and no-shpa. I did not notice any improvement in my health. A real exacerbation during the month, when after suffering from the flu the pain in the right hypochondrium intensified, and general weakness increased. There were no operations or blood transfusions. He does not abuse alcohol, did not take hepatotoxic drugs, and was a donor.

On examination: conditions satisfactory. Height – 165 cm, weight – 70 kg, BMI – 25.7 kg/m<sup>2</sup>. The skin is icteric in color, the sclera is icteric, and telangiectasia is detected on the chest, shoulders and back. In the lungs, breathing is vesicular, there are no wheezes, respiratory rate is 16 per minute. Heart sounds are rhythmic and muffled. Heart rate - 74 per 1 min; Blood pressure - 130/80 mm Hg. The tongue is wet and covered with a white coating. The abdomen is soft, moderately painful on palpation in the area of the right hypochondrium. Dimensions of the liver according to Kurlov: 12 (+3) × 8 × 7 cm. On deep palpation, the liver has a dense consistency and moderate pain on palpation is determined. The spleen is not enlarged. There is no dysuria. The symptom of tapping in the lumbar region is negative.

Research results:

Complete blood count: red blood cells –  $4.6 \times 10^{12}/l$ ; leukocytes –  $6.7 \times 10^9/l$ ; segmented neutrophils – 63%; band neutrophils – 1%; lymphocytes – 29%; monocytes - 4%; eosinophils – 2%; basophils – 1%; Hb – 144 g/l; platelets –  $242 \times 10^9/l$ ; ESR – 22 mm/h.

Biochemical blood test: total bilirubin – 36  $\mu\text{mol}/l$ ; indirect bilirubin – 30.5  $\mu\text{mol}/l$ ; direct bilirubin – 5.5  $\mu\text{mol}/l$ ; ALT – 218 units/l; AST – 157 units/l; GGTP – 82 units/l; alkaline phosphatase – 142 units/l; glucose – 5.1 mmol/l; creatinine – 64  $\mu\text{mol}/l$ ; urea – 3.2 mmol/l; albumin – 38 g/l; total protein – 70.2 g/l; alpha-1-globulins – 2.8 g/l; alpha-2-globulins – 5.7 g/l; beta globulins – 6.7 g/l;  $\gamma$ -globulins – 17 g/l; TSH – 0.94 IU/l; alpha-fetoprotein – 3.3 units/l; ferritin – 55 mcg/l; transferrin – 2.4 g/l; potassium – 3.6 mmol/l; Na – 137 mmol/l; amylase – 42 units/l; iron – 20.7  $\mu\text{mol}/l$ ; CS – 5.2 mmol/l; ceruloplasmin – 188 mg/l. PTI – 57%.

Enzyme immunoassay (blood test for markers of hepatitis B, C): anti-HCV – positive; HBsAg (-); anti-HBs (-); anti-HBcIgG (-); HBeAg(-); anti-HBe (-);

anti-HBcIgM (-); anti-HIV – negative. HCV genotyping: genotype 1 – positive. Immunological study: concentration of Ig class G in blood serum -7.3 g/l. Molecular biological studies: PCR: HCV RNA – positive; quantitative analysis of HCV RNA – 31,000 IU/ml.

Liver elastometry: stage F4 (according to the METAVIR scale), liver cirrhosis was determined.

Ultrasound of the abdominal organs revealed hepatomegaly and diffuse dystrophic changes in the liver parenchyma.

A stool occult blood test is negative. General urine analysis: within normal limits.

X-ray examination of the lungs: no pathological changes. ECG – without pathological changes.

Guess the most likely diagnosis?

*Sample answer:*

Liver cirrhosis associated with HCV infection, class Apo

Child-Pugh(compensated).

Task 52.

Patient P., 42 years old, was hospitalized in a hospital on the referral of a general practitioner with complaints of weakness, drowsiness during the day, jaundice of the skin, a feeling of heaviness in the right hypochondrium, periodic nosebleeds after physical work, increased abdominal volume, swelling in the lower abdomen. limbs in the area of the feet and legs.

Heaviness in the right hypochondrium has been bothering me for the last 3 months. Over the past month, he has noted an increase in general weakness, an enlarged abdomen and jaundice. He has been drinking 200 ml of vodka daily for the last year and is being seen by a narcologist.

Denies drug use. There were no blood transfusions or surgical interventions. Objectively: the condition is of moderate severity. Consciousness is clear. Number Linking Test – 40 sec. Height – 178 cm, weight – 62 kg. Skin of normal moisture, icteric. Spider veins are visible in the chest and upper back area. The sclera of the eyes is icteric. Swelling of the feet and lower third of the legs. In the lungs, breathing is vesicular, there are no adverse respiratory sounds. NPV – 18 per minute. On auscultation, heart sounds are rhythmic and there are no murmurs. Heart rate – 78 beats per minute. Blood pressure – 110/70 mm Hg. Art. The tongue is wet, crimson, the papillae are smoothed.

The abdomen is increased in volume, the navel is smoothed, dilated, tortuous veins are visible on the anterior abdominal wall radially from the navel. In a lying position, the stomach is spread out. On palpation, it is soft and painful in the right hypochondrium. The dimensions of the liver according to Kurlov are 15×15×13 cm. The lower edge of the liver is dense and lumpy on palpation. The stool is formed, brown, without pathological impurities. The dimensions of the spleen are 15×12 cm.

Urination is free, painless, urine is dark yellow.

Complete blood count: red blood cells –  $4.1 \times 10^{12}/l$ ; Hb – 122 g/l; color index – 0.9%; platelets –  $98 \times 10^9/l$ , leukocytes –  $3.2 \times 10^9/l$ , eosinophils – 1%, band neutrophils – 4%, segmented neutrophils – 63%, lymphocytes – 29%, monocytes – 3%, ESR – 22 mm/h.

Biochemical tests: total bilirubin – 130  $\mu\text{mol}/l$ , direct bilirubin – 100  $\mu\text{mol}/l$ , ALT – 120 U/l, AST – 164 U/l. INR – 2, albumin – 28 g/l.

Fibroesogastroduodenoscopy: varicose veins of the esophagus, stage I.

Ultrasound of the abdominal organs: the anteroposterior size of the right lobe of the liver is 170 mm, the contours are clear and uneven. The parenchyma has unevenly diffusely increased echogenicity. The diameter of the portal vein is 16 mm. The gallbladder is of normal size, the contents are bile. The hepaticocholedochus is not dilated. The spleen is located usually, the structure is homogeneous, the parenchyma is of medium echogenicity. The area of the spleen is 36.1 cm<sup>2</sup>. Free fluid in the abdominal cavity.

1. Guess the most likely diagnosis?
2. Justify your diagnosis?

*Sample answer:*

1. Liver cirrhosis of alcoholic etiology, Child-Pugh class C. Portal hypertension (ascites, splenomegaly, grade I varicose veins of the esophagus). Hypersplenism (thrombocytopenia). Hepatic encephalopathy stage I.

2. The patient was diagnosed with jaundice, cytolysis, "liver signs": crimson palms, "Spider veins", portal hypertension syndrome (hepatosplenomegaly, ascites, varicose veins of the esophagus, anterior abdominal wall, dilatation of the portal vein), signs of liver failure (hypoalbuminemia, hypocoagulation). According to ultrasound data, the liver parenchyma has uneven diffusely increased echogenicity. Alcohol history indicates the most likely etiology of liver cirrhosis. Class C is set according to the Child-Pugh classification - 11 points. A decrease in the speed of the number-binding test indicates stage I hepatic encephalopathy. Thrombocytopenia in this situation is associated with hypersplenism.

#### Task 53.

Patient B, 58 years old, sought medical help with complaints of general weakness, malaise, nausea, a feeling of heaviness in the right hypochondrium, flatulence, skin itching, aching pain in the right hypochondrium, worsening after eating fatty foods and physical activity, and nosebleeds.

The anamnesis revealed the consumption of alcoholic beverages in large quantities for many years.

Objectively: body temperature 36.9 0C. The general condition is moderate. The skin and visible mucous membranes are yellowish in color; there are brown crusts in the right nasal passage. The tongue is smooth, moist and not coated. On the skin of the chest there are persistent local dilations of small vessels of the skin, consisting of a central part and radial branches of the vessels. The mammary glands are enlarged. Breathing is weakened in the lower-lateral parts of the lungs. BH 23v min. Heart sounds are rhythmic and muffled. Heart rate 92/min. Blood pressure 140/90mm Hg.

The abdomen is enlarged on palpation moderately painful in the right hypochondrium. The liver protrudes 5 cm from under the edge of the costal arch along the midclavicular line, moderately painful, dense, the surface is uneven. The spleen protrudes from under the edge of the costal arch by 2 cm, painless.

1. Formulate a preliminary diagnosis?
2. What are additional examination methods?

*Sample answer:*

1. Alcoholic cirrhosis of the liver, Child-Pugh class B.  
2. Blood test for markers of viral hepatitis, bilirubin, ALT, AST, total protein, protein fractions,  $\gamma$ -GTP, alkaline phosphatase, coagulogram, endoscopy, CT, ultrasound of the abdominal organs.

#### Task 54.

Patient K., 44 years old, came to the clinic with complaints of aching pain in the epigastric region, which occurs 20-30 minutes after eating; for nausea and vomiting of gastric contents, which occurs at the height of pain and brings relief; to decrease appetite.

From the medical history: for the first time similar complaints arose about 6 years ago, but the pain was relieved by taking Almagel and No-shpa. He had not previously sought medical help. Notes spring-autumn exacerbations of the disease. Feeling worse for about two days after drinking alcohol and fried foods.

Works as a taxi driver. He eats irregularly and often drinks alcohol. He has smoked up to 2 packs of cigarettes a day for 20 years. Family history: father has a stomach ulcer.

Objectively: general condition is relatively satisfactory. Asthenic, low nutrition. The skin and visible mucous membranes are pale pink. Peripheral lymph nodes are not enlarged. Breathing is vesicular, no wheezing. NPV – 16 per minute. Pulse of satisfactory filling and tension, 74 beats per minute. Blood pressure - 120/80 mm Hg. Art. Heart sounds are clear and rhythmic. Heart rate – 74 beats per minute. The tongue is covered with a white coating. The abdomen is soft on palpation, painful in the epigastric region, Mendel's sign is positive, Shchetkin-Blumberg's sign is negative. The spleen is not enlarged. The effleurage symptom is negative on both sides. Stool daily, without pathological impurities.

Data from additional research methods.

Complete blood count: hemoglobin – 130 g/l, erythrocytes –  $4.2 \times 10^{12}/l$ . - 1, leukocytes –  $6.5 \times 10^9/l$ , eosinophils – 1%, band neutrophils – 1%, segmented neutrophils – 60%, lymphocytes – 30%, monocytes – 8%, ESR – 10 mm/h.

General urine analysis: relative density - 1018, epithelium - 2-4 in the field of view, protein, casts, salts - not detected.

Biochemical blood test: glucose – 4.5 mmol/l, fibrinogen – 2.9 g/l, total protein – 68 g/l.

FGDS: the esophagus is freely passable, the mucous membrane is not changed, the cardiac sphincter closes. The stomach is of normal shape and size. The mucous membrane is hyperemic, the folds are of normal shape and size, in the cardiac section, along the greater curvature, an ulcerative defect of 1.0-1.5 cm is determined, with smooth edges, shallow, the bottom is covered with fibrin. The duodenal bulb is of normal shape and size, the mucous membrane is pale pink. *Helicobacter pylori* was detected.

1. Formulate a diagnosis?
2. What diseases should this pathology be differentiated from?

*Sample answer:*

1. Gastric ulcer, acute stage, newly diagnosed, HP-associated.
2. Chronic gastroduodenitis, symptomatic ulcers, chronic pancreatitis, chronic cholecystitis, malignant neoplasms of the stomach.

Task 55.

Patient V., 37 years old, complains of burning pain in the epigastric region, occurring on an empty stomach and at night, heartburn, nausea, and sometimes, at the height of the pain, vomiting, which brings relief.

These symptoms have been bothering me for 10 years and occur mainly in spring and autumn. He takes soda and Almagel on his own, which cause a positive effect. This exacerbation is associated with taking Voltaren for pain in the lumbar region.

Objectively: the condition is satisfactory, the skin is of normal color, moist. Pulse – 60 beats per minute, blood pressure – 100/70 mm Hg. Art. The tongue is moist, thickly coated with white coating. The abdomen is of normal shape, not swollen, and upon palpation it is sharply painful in the epigastric region. Stool with a tendency to constipation (1 time every 2 days).

Complete blood count: hemoglobin – 130 g/l, ESR – 10 mm/h, leukocytes –  $5.2 \times 10^9/l$ ; leukoformula: band neutrophils - 2%, segmented neutrophils - 66%, lymphocytes - 27%, monocytes - 5%.

Biochemical blood test: ALT – 40 units/l, AST – 32 units/l. Urine diastasis – 64 units.

EGDS: the esophagus is freely passable, the cardia is closed. The stomach on an empty stomach contains a large amount of light secretory fluid and mucus. Folds



mucous membranes the membranes of the stomach are thickened, tortuous, diffusely hyperemic. The duodenal bulb is deformed; a mucosal defect of up to 0.7 cm in diameter is detected on the posterior wall. The edges of the defect have clear boundaries, are hyperemic, and swollen. The bottom of the defect is covered with white fibrinous deposits. Postbulbar sections without pathology.

Helic test: basal level – 4 mm; load level – 10 mm; growth rate – 6 mm; HP (+).

1. Formulate a diagnosis?

2. Prescribe treatment?

*Sample answer:*

1. Peptic ulcer with localization of a medium-sized ulcer (0.7 cm) on the posterior wall of the duodenal bulb, acute phase. Cicatricial ulcerative deformity.

2. Treatment: three-component regimen: Omez 20 mg 2 times a day + Clarithromycin 500 mg 2 times a day + Amoxicillin 1000 mg 2 times a day (or Metronidazole 500 mg 3 times a day) (10 days).

If ineffective, use a four-component regimen: Omez 20 mg 2 times a day + Tetracycline 500 mg 4 times a day + Metronidazole 500 mg 3 times a day + De-nol 240 mg 2 times a day (10 days).

Task 56.

A 64-year-old man consulted a local general practitioner with complaints of pain in the epigastrium 20 minutes after eating, vomiting, which brought relief, and lost 7 kg in a month. Epigastric pain has been bothering me for about 2 months.

On examination: condition is satisfactory. The skin is of normal color and clean. In the lungs there is vesicular breathing, no wheezing. Heart sounds are clear, rhythmic, heart rate – 72 beats per minute, blood pressure - 120/80 mm Hg. Art. On palpation, the abdomen is soft, painful in the epigastrium. Liver along the edge of the costal arch. Dimensions - 10x9x8 cm. The spleen is not palpable.

A fibrogastroduodenoscopy was performed: in the middle third of the stomach there was an ulcerative defect 3 cm in diameter, a biopsy was taken.

1. Formulate a preliminary diagnosis?

2. Make a plan for additional examination?

*Sample answer:*

1. Gastric ulcer, newly diagnosed, exacerbation: ulcer of the body of the stomach 3 cm in diameter.

2. FGDS with a biopsy of 6-8 fragments (exclude stomach cancer, H. pylori). X-ray of the gastrointestinal tract with barium (to exclude complications of peptic ulcer).

Task 57.

A 48-year-old man, a programmer by profession, consulted a local general practitioner with complaints of pain in the epigastric region, mainly on an empty stomach and at night, causing him to wake up, as well as almost constant heartburn, a feeling of heaviness and fullness in the epigastric region after eating, heartburn, sour belching, nausea.

From the anamnesis it is known that the patient smokes a lot, abuses coffee, and eats irregularly. Exacerbations of chronic pharyngitis often occur. Ill for about three years. He was not examined, he was treated independently (he took herbal medicine).

On examination: condition is satisfactory. BMI - 32.0 kg/m<sup>2</sup>. The skin is clean and of normal color. Body temperature is normal. The pharynx - tonsils, the back wall of the pharynx are not hyperemic. In the lungs there is vesicular breathing, no wheezing. Heart sounds are muffled, rhythmic, heart rate - 70 beats per minute, blood pressure - 120/80 mm Hg. Art. The abdomen participates in the act of breathing, is soft on palpation, painful in the epigastric region,

There is no tension in the abdominal muscles, the symptom of tapping in the lumbar region is negative.

EGD: the esophagus is freely passable, the longitudinal folds are thickened, focal hyperemia of the mucous membrane of the distal esophagus, the cardia does not close completely. The stomach on an empty stomach contains a small amount of light secretory fluid and mucus. The folds of the gastric mucosa are thickened and tortuous. The duodenal bulb is deformed; a mucosal defect up to 0.5 cm in diameter is detected on the posterior wall. The edges of the defect have clear boundaries, are hyperemic, and swollen. The bottom of the defect is covered with white fibrinous deposits. Postbulbar sections without pathology. Urease test for the presence of *H. pylori* is positive.

Guess the most likely diagnosis?

*Sample answer:*

Duodenal ulcer associated with *Helicobacter pylori*, single small (0.5 cm) ulcer of the posterior wall of the duodenal bulb, newly diagnosed, cicatricial ulcerative deformity of the duodenal bulb. Gastroesophageal reflux disease (GERD), stage I. Chronic pharyngitis stage of remission. Obesity 1 tbsp.

Task 58.

Patient S., 55 years old, consulted a local general practitioner with complaints of nausea, acute night and hunger pain in the epigastrium, decreasing after eating, nausea, vomiting “coffee grounds,” and occasional black “tarry” stools. She is being treated for rheumatoid arthritis; she has been taking Indomethacin for a long time (more than 3 months), 1 tablet 3 times a day. I have not noted these complaints before and have not consulted a doctor.

Objectively: the condition is of moderate severity. The skin is pale. Reduced nutrition. The tongue is covered with a white coating and is moist. In the lungs, breathing is vesicular, respiratory rate is 16 per minute. Heart sounds are clear, rhythmic, heart rate - 88 beats per minute, blood pressure - 110/70 mm Hg. Art. The abdomen is tense, sharply painful locally in the Shofar area. Symptoms of peritoneal irritation are negative. Black “tarry” stool. Urination is not impaired.

Clinical blood test: hemoglobin – 100 g/l; erythrocytes –  $3.0 \times 10^{12}/l$ ; leukocytes  $8.4 \times 10^9/l$ ; stab - 4%; segmented – 61%; eosinophils – 1%; lymphocytes – 30%; monocytes – 4%; ESR – 20 mm/hour.

1. Guess the most likely diagnosis?

2. Which group of antiulcer drugs would you recommend to the patient in initial therapy?

Justify your choice?

*Sample answer:*

1. Gastric ulcer complicated by bleeding while taking NSAIDs.

2. Proton pump inhibitors are the drugs of choice for ulcers caused by NSAIDs (Esomeprazole 40 mg once a day, since this drug has better pharmacokinetics and pharmacodynamics and is not influenced by genetic polymorphism).

Task 59.

A 57-year-old patient complained of weakness, weight loss of 10 kg over 2 months, discomfort when swallowing food in the epigastric region, difficulty passing solid food through the esophagus. The patient has a history of chronic gastritis for 8 years. Smokes, abuses alcohol.

1. What disease can you think of in this case?

2. Draw up and justify a plan for additional examination of the patient?

*Sample answer:*

1. Stomach cancer.

2. To clarify the localization of the process, it is necessary to perform fluoroscopy and radiography of the esophagus and stomach, fibrogastroduodenoscopy with biopsy. To determine possible metastasis, it is necessary to perform an ultrasound of the abdominal cavity and x-ray of the lungs.

Task 60.

Male 28 years old complained of an increase in body temperature to 39.5°C, chills, nosebleeds, bleeding gums, the appearance of “bruises” on the skin for no apparent reason, severe general weakness, and sweating.

Considers himself sick for 7 days when fever appears. I took paracetamol with short-term effect. Weakness gradually increased, followed by nosebleeds and bleeding gums.

From the life history: he denies the presence of chronic diseases, his anamnesis is not burdened with hereditary diseases. Has a special secondary education and works as a technologist. Served in the army on a submarine.

Objectively: the condition is of moderate severity. Body temperature 38 C. The skin is pale, with normal moisture. On the skin of the lower extremities - ecchymosis; petechiae on the skin of the shoulders, forearms; in the oral cavity – severe contact bleeding of the gums. On auscultation, breathing is vesicular, respiratory rate is 19 per minute. Heart sounds are muffled, the rhythm is correct. Heart rate – 92 beats per minute. Blood pressure – 100/65 mm Hg. Art. The abdomen is soft and painless on palpation. The edge of the liver is palpated 1 cm below the edge of the costal arch, dimensions according to Kurlov are 16 × 10 × 9 cm. The spleen is palpable, elastic, painless, percussion dimensions 10 × 8 cm.

General blood analysis: erythrocytes – 1.7×10<sup>12</sup>, Hb - 75 g/l, platelets - 27×10<sup>9</sup>, leukocytes – 33×10<sup>9</sup>, blasts - 35%, myelocytes - 0%, young neutrophils - 0%, band neutrophils - 7%, segmented neutrophils - 38, lymphocytes - 20%, ESR - 30 mm/h.

1. Formulate a preliminary diagnosis?

2. What complications are possible with this disease?

*Sample answer:*

1. Acute leukemia, debut. Moderate anemia.

2. Complications of acute leukemia include bleeding of various locations; ulcerative necrotic lesions of the mucous membranes of the gastrointestinal tract; infectious lesions; damage to the nervous system (specific infiltration of the central nervous system, hemorrhages).

Task 61.

At an appointment with a general practitioner at the clinic, a 63-year-old woman complains of painless tumor-like elastic formations on the side of the neck and in the axillary areas, as well as heaviness in the left hypochondrium, weakness, and increased sweating, which began to appear about a year ago and gradually increased.

Objectively: general condition is satisfactory. The skin and visible mucous membranes are of normal color. Conglomerates of symmetrically enlarged submandibular, cervical, axillary, inguinal lymph nodes are palpated; on palpation they are elastic, painless, the skin over them is unchanged up to 2-3 cm in diameter. In the lungs, breathing is vesicular, no wheezing is heard, respiratory rate is 18 per minute. Heart sounds are clear, heart rate is 78 beats per minute. Blood pressure - 120/80 mm Hg. Art. The abdomen is soft and painless. The edge of the liver does not protrude from under the edge of the costal arch. The spleen protrudes 2 cm from under the edge of the costal arch, the edge is elastic and painless.

Complete blood count: erythrocytes – 3.2×10<sup>12</sup>, HB – 129 g/l, platelets – 180×10<sup>9</sup>/l, leukocytes – 35×10<sup>9</sup>/l, band neutrophils – 2%, segmented neutrophils – 2%, lymphocytes – 92 %, monocytes – 4%, ESR – 30 mm/h, Botkin-Gumprecht shadows – 1-2 in the field of view.

What examinations need to be ordered to clarify the diagnosis?

*Sample answer:*

Biochemical blood tests. Sternal puncture (in the bone marrow puncture there is an increase in the number of lymphocytes of more than 30%), ultrasound of the abdominal organs (presence of splenomegaly, determine whether or not there is an increase in intra-abdominal and retroperitoneal lymph nodes). Chest X-ray (to determine if there is enlargement of the intrathoracic lymph nodes). Trepine biopsy, lymph node biopsy, bone marrow immunophenotyping (differential diagnosis with non-Hodgkin's lymphoma).

Task 62.

Patient M., 52 years old, came to the clinic with complaints of weakness, sweating, fatigue, heaviness in the left hypochondrium, decreased appetite, and a feeling of rapid satiety. These complaints appeared about 7 months ago and gradually increased.

Objectively: the edge of the spleen is palpable 6 cm below the costal arch, elastic, painless. In the lungs, breathing is vesicular, no wheezing is heard, respiratory rate is 16 per minute. Heart sounds are clear, heart rate is 75 beats per minute. Blood pressure - 130/80 mm Hg. Art. The abdomen is soft and painless. The edge of the liver does not protrude from under the edge of the costal arch. Blood test: hemoglobin - 97 g/l, color index - 0.91, leukocytes -  $57.3 \times 10^9/l$  (promyelocytes - 1%, neutrophilic myelocytes - 3%, neutrophilic metamyelocytes - 7%, neutrophilic band cells - 14%, neutrophil segmented - 58%, lymphocytes - 6%, eosinophils - 4%, basophils - 6%, monocytes - 1%), platelets -  $440 \times 10^9/l$ . Neutrophil alkaline phosphatase activity is reduced.

1. Suggest and justify the most likely diagnosis?

2. Name the signs of complete hematological remission in the treatment of this disease.

Justify your answer?

*Sample answer:*

1. The most likely diagnosis is "chronic myeloid leukemia", chronic stage. Mild hypochromic metaplastic anemia.

2. Signs of complete hematological remission: absence of clinical manifestations of the disease; leukocyte concentration less than  $10 \times 10^9/l$ ; absence of immature forms of granulocytes, starting with myelocytes.

Task 63.

A 35-year-old man complained of severe weakness, shortness of breath, night sweats, periodic increases in body temperature up to 38°C, bruises all over the body for no apparent reason, frequent nosebleeds, bleeding gums, and a feeling of heaviness in the right hypochondrium. Considers himself sick for about a month. Significant deterioration in health in the form of increasing weakness, additional fever, and increased nosebleeds over the last week. He undergoes medical examinations annually, the last one was 4 months ago, no pathology was detected.

Objectively: body temperature - 38.1°C. The skin and visible mucous membranes are pale, multiple petichiae and ecchymoses of various localizations at different stages of "flowering". Peripheral lymph nodes are not enlarged. There is a clear pulmonary sound above the lungs, vesicular breathing on auscultation. Blood pressure - 110/70 mm Hg. Art. The limits of relative cardiac dullness are within normal limits. Heart sounds are rhythmic, clear, 98 per minute. The abdomen is soft and painless, the liver and spleen are not enlarged. The effleurage symptom is negative on both sides, the kidneys are not palpable.

Laboratory.

General blood test: hemoglobin - 76 g/l, red blood cells -  $2.1 \times 10^{12}/l$ , color index - 0.75, platelets -  $21 \times 10^9/l$ , leukocytes -  $39 \times 10^9/l$ , blasts - 25%, eosinophils - 0%,

band neutrophils - 0%, segmented neutrophils - 71%, lymphocytes -4%, monocytes - 0%; ESR - 55 mm/h.

General urine analysis without pathological changes.

Biochemical blood test: total bilirubin - 18  $\mu\text{mol/l}$ , creatinine - 0.196 mmol/l, glucose - 4.3 mmol/l, total cholesterol - 5.9 mmol/l, potassium - 3.9 mmol/l, total protein - 76 g/l,

Coagulogram: APTT - 50 s (normal - 32-42 s), PTI - 105%, fibrinogen - 6 g/l. 1. What preliminary diagnosis can be made to the patient?

2. Justify your diagnosis?

*Sample answer:*

1. Acute leukemia (unspecified variant). Hypochromic anemia, moderate severity. Metaplastic nephropathy.

2. The patient has hemorrhagic (petechiae and ecchymoses, nosebleeds, bleeding gums, very low platelet count, increased aPTT), anemic (pallor of the skin, low erythrocyte and hemoglobin content), intoxication (weakness, sweating, shortness of breath, fever) syndromes. All syndromes are based on tumor progression with replacement of a pool of tumor cells by normal HSCs with the subsequent development of anemia and thrombocytopenia, a decrease in coagulation factors, and the development of tumor intoxication. Tumor progression is confirmed by pronounced leukocytosis and blastocytosis of peripheral blood.

Problem 64.

Patient A., 18 years old, was admitted to the therapeutic department on the 12th day of illness in a serious condition. She became acutely ill. The temperature rose to 39°C, and a sore throat appeared when swallowing. Then I noticed an enlargement of the cervical lymph nodes. She was treated as an outpatient, but her condition did not improve and her weakness increased.

Objectively: the patient's general condition is serious, she speaks with difficulty, the skin and mucous membranes are pale, there is a hemorrhagic rash on the skin, multiple petechiae and ecchymoses. Body temperature up to 40°C. The cervical, posterior cervical and submandibular lymph nodes are enlarged up to 1 cm in size and painful. The gums are loosened. The pharynx is hyperemic, the tonsils are enlarged, swollen, covered with purulent plaque, and there are necrotic ulcers. In the lungs there is a pulmonary sound on percussion, vesicular breathing on auscultation. The boundaries of the heart are not changed. Pulse - 120 per minute, rhythmic. The tongue is red. The abdomen is soft and painless. The spleen and liver are not palpable.

Blood test: red blood cells -  $1.5 \times 10^{12}/\text{l}$ , hemoglobin - 67 g/l, reticulocytes - 0.1%, color index - 1.0; platelets -  $5.0 \times 10^9/\text{l}$ ; leukocytes -  $0.8 \times 10^9/\text{l}$ ; eosinophils - 0%, band neutrophils - 1%, segmented neutrophils - 7%, s. - 90%, monocytes - 2%, ESR - 72 mm/hour. Sternal punctate: total number of myelokaryocytes -  $6.8 \times 10^9/\text{l}$ . There are no granulocytes. Blast cell groups account for 70%.

1. What is your presumptive diagnosis?

2. What complications of the underlying disease do you expect?

*Sample answer:*

1. Acute lymphoblastic leukemia, aleukemic form. Necrotizing tonsillitis.

2. Complications of the underlying disease: necrotizing pharyngitis, hemorrhagic diathesis, pancytopenia, agranulocytosis, possible development of neuroleukemia.

Task 65.

Patient D., 58 years old, was admitted to the cardiology department with complaints of shortness of breath that occurs during normal physical activity and resolves with rest, weakness, and increased fatigue. From the anamnesis it is known that at the age of 51 he suffered a myocardial infarction. Over the past year, the patient noted the appearance of shortness of breath, first when

intense, then with normal physical activity. The patient's father died at the age of 52 from heart disease.

On examination: the condition is moderate. Height 170 cm, weight 75 kg. The skin is of normal color. Acrocyanosis of the lips. The chest is conical, symmetrical. Respiration rate - 20 per minute. With comparative percussion in symmetrical areas of the chest, a clear pulmonary sound is determined. On auscultation, vesicular breathing is heard over the lungs. The boundaries of relative dullness of the heart: right - the right edge of the sternum, left - in the 5th intercostal space 1.5 cm outward from the left midclavicular line, upper - the upper edge of the 3rd rib. On auscultation of the heart, the sounds are weakened and there are no murmurs. The heart rhythm is correct. Heart rate - 94 per minute Blood pressure 125/80 mm Hg. The abdomen is soft and painless. Liver dimensions according to Kurlov: 9x8x7 cm.

General blood test: hemoglobin - 150 g/l, leukocytes -  $6.8 \times 10^9/l$ , erythrocytes -  $4.6 \times 10^{12}/l$ , eosinophils - 1%, band cells - 2%, segmented cells - 67%, lymphocytes - 22%, monocytes - 8 %, ESR - 6 mm/h.

General urine analysis: relative density 1019, acidic reaction; protein, glucose are absent; 0 red blood cells in the field of view, 1-2 leukocytes in the field of view.

A biochemical blood test showed a cholesterol level of 6.6 mmol/l.

EchoCG: the size of the left atrium is 3.6 cm (normal is up to 4 cm). The end-diastolic size of the left ventricle is 5.8 cm (normal is 4.9-5.5 cm). Ejection fraction 39% (norm - 50-70%). The thickness of the posterior wall of the left ventricle and the interventricular septum is 1.0 cm. Zones of akinesis are noted in the area of the infarction.

1. Identify the clinical syndromes present in the patient?
2. Formulate a diagnosis?

*Sample answer:*

1. Left ventricular chronic heart failure syndrome. This is indicated by complaints of shortness of breath during normal physical activity, which goes away at rest, weakness, increased fatigue, as well as examination data: acrocyanosis and tachycardia.

2. IHD: post-infarction atherosclerosis. CHF with reduced ejection fraction (LVEF 39%), stage IIA, FC II.

#### Task 66.

Patient E., 72 years old, was admitted to the cardiology department with complaints of shortness of breath when walking on level ground for a distance of 100 m and climbing one flight of stairs, weakness, fatigue, swelling of the legs and feet. From the anamnesis it is known that for about 22 years he suffered from hypertension with maximum increases in blood pressure up to 220/110 mm Hg. Art. Does not receive regular treatment. Suffering from type 2 diabetes mellitus.

On examination: the condition is moderate. Height 155 cm, weight 102 kg. The skin is of normal color. Slight swelling of the legs and feet. The chest is conical, symmetrical. Respiration rate - 18 per minute. Auscultation over the lungs reveals hard breathing, no wheezing. The boundaries of relative dullness of the heart: right - the right edge of the sternum, left - in the 5th intercostal space 2.5 cm outward from the left midclavicular line, upper - the upper edge of the 3rd rib. On auscultation of the heart, the tones are clear, an accent of the second tone is heard in the second intercostal space to the right of the sternum, there are no noises. The heart rhythm is correct, heart rate is 96 per minute. Blood pressure 180/100 mm Hg. The abdomen is soft and painless. Liver dimensions according to Kurlov: 12x11x8 cm. Abdominal circumference 120 cm.

General blood test: hemoglobin - 132 g/l, leukocytes -  $7.4 \times 10^9/l$ , erythrocytes -  $4.1 \times 10^{12}/l$ , eosinophils - 2%, band cells - 5%, segmented cells - 68%, lymphocytes - 20%, monocytes - 5 %, ESR - 14 mm/h.

General urine analysis: relative density 1011, acidic reaction, protein 75 mg/day, no glucose, 0 red blood cells in the field of view, 1-2 leukocytes in the field of view.

In a biochemical blood test -cholesterol level 8.3 mmol/l, glucose 7.8 mmol/l. ECG: sum of R V56 and SV12 >35 mm.

1. Formulate a diagnosis?

2. Prescribe treatment?

*Sample answer:*

1. Hypertension stage 2, stage III, the risk is very high. Osl.: CHF stage II B, FC III.

2. ACE inhibitors (perindopril 2 mg/day, increasing to 4 mg/day);  $\beta$ -blockers (bisoprolol starting from 1.25 mg 1 time per day with a gradual increase in dose to the maximum tolerated under blood pressure control), BMCR (spironolactone 50 mg), NGLT-2 (Empagliflozin 10 mg or Dapagliflozin 10 mg 1 time per day), diuretics (furosemide 40 mg), statins.

Task 67.

Patient B., 38 years old, was admitted to the cardiology department with complaints of shortness of breath with slight physical exertion, fatigue, weakness, episodes of suffocation that occur in a horizontal position, swelling of the legs and feet.

From the anamnesis it is known that at the age of 17 years, rheumatic heart disease was diagnosed - mitral valve insufficiency.

On examination: the condition is serious. Swelling of the legs and feet. The chest is conical, symmetrical. Respiration rate is 24 per minute. With comparative percussion, a clear pulmonary sound is determined in symmetrical areas of the chest; dullness of the percussion sound is noted on the right below the angle of the scapula. When auscultating over the lungs

- hard breathing, a small amount of moist, silent, fine-bubble wheezing is heard in the lower parts. On palpation of the chest, the apical impulse is detected in the VI intercostal space 3 cm outward from the left midclavicular line. The boundaries of relative dullness of the heart: right - the right edge of the sternum, left - 3 cm outward from the midclavicular line in the VI intercostal space, upper - the upper edge of the III rib. The auscultatory picture corresponds to the existing defect. The heart rhythm is incorrect, heart rate is 103 per minute. Blood pressure 110/65 mm Hg. The abdomen is enlarged in volume due to relaxed ascites, soft, painless. Dimensions of the liver according to Kurlov: 13x12x10 cm. The liver protrudes from under the edge of the costal arch by 3 cm, its edge is rounded, slightly painful.

General blood test: hemoglobin - 132 g/l, leukocytes -  $6.81 \times 10^9/l$ , erythrocytes -  $4.0 \times 10^{12}/l$ , eosinophils - 2%, band cells - 5%, segmented cells - 67%, lymphocytes - 21%, monocytes - 5%, ESR -12 mm/h.

General urine analysis: relative density 1010, acidic reaction; protein, glucose are absent; 0 red blood cells in the field of view, 1-2 leukocytes in the field of view.

X-ray of the chest organs: an increase in the shadow of the heart due to the left parts, congestion in the pulmonary circulation.

Formulate a diagnosis?

*Sample answer:*

Chronic rheumatic heart disease: rheumatic heart disease - mitral valve insufficiency. Atrial fibrillation, permanent form. CHF stage IIB, FC IV.

Task 68.

Patient K., 56 years old, was admitted to the hospital with complaints of shortness of breath at rest, predominantly of an inspiratory nature, swelling of the legs, aching pain in the heart, palpitations and irregular heartbeats, heaviness and aching pain in the right hypochondrium. Sick

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months ago for no apparent reason, when he noticed the appearance of shortness of breath with little physical activity. Despite outpatient treatment with diuretics and cardiac glycosides, the patient's condition progressively worsened, and therefore he was hospitalized.

It is revealed that the father and older brotherThe patients died of heart failure, although they did not suffer from hypertension or coronary heart disease.

Objectively: the general condition is serious. Orthopnoe. Shortness of breath at rest with a respiratory rate of 28 per minute. Satisfactory nutrition. The skin is pale. Acrocyanosis, weak diffuse cyanosis of the face. There is swelling and pulsation of the neck veins. Severe swelling of the feet and legs. The chest is of the correct shape. Percussion sound is dull in the lower parts of the lungs. Breathing is harsh, in the lower parts there are silent fine rales. The heart area is not externally changed. The apical impulse is diffuse, weakened, and is determined in the intercostal space along the anterior axillary line. The boundaries of relative dullness are significantly expanded in all directions: the right one - 2.0 cm outward from the right parasternal line, the upper one - in the 2nd intercostal space, the left one - coincides with the apical impulse. The heart sounds at the apex are muffled, the P tone is accentuated on the pulmonary artery. Pathological 3rd tone at the apex, there is also a soft systolic murmur. Pulse - 104 per minute, arrhythmic due to frequent (up to 10 per minute) extrasystoles, decreased filling and tension. Blood pressure - 95/70 mm Hg. The abdomen is soft, moderately painful in the right hypochondrium. The liver protrudes 3 cm from under the edge of the costal arch, rather dense, the edge is rounded.

Echocardiography: expansion of the heart cavities, slight thickening of the posterior wall of the left ventricle and interventricular septum. Reduction of left ventricular ejection fraction by up to 40%.

1. Establish a preliminary diagnosis?
2. Carry out differential diagnosis?

*Sample answer:*

1. Dilated cardiomyopathy, CHF with moderately reduced ejection fraction (LVEF 40%), stage II B, FC IV.
2. Differential diagnosis should be carried out with Abramov-Fiedler myocarditis, diffuse infectious-allergic myocarditis, post-infarction cardiosclerosis, effusion pericarditis.

Task 69.

Patient K., 65 years old, was admitted to the cardiology department with complaints of shortness of breath at rest, worsening in a horizontal position, severe weakness, episodes of rapid heartbeat, interruptions in cardiac function, and a tendency to hypotension up to 100/70 mmHg.

From the anamnesis it is known that he had not previously sought medical help and did not receive constant therapy. According to the patient, he occasionally measured blood pressure, which for 10 years was about 140-150/90 mmHg. A real deterioration during the month, when about 1 month ago I noticed an intense attack of chest pain, which self-limited within 1 hour, in the following days I began to notice short-term attacks of burning pain in the chest with a slight load, which self-limited with rest, in subsequent days the frequency anginal attacks increased. In addition, about a week ago, an attack of rapid heartbeat developed, episodic "heart palpitations", he did not seek medical help, the wife began regularly giving bisoprolol 5 mg (which she herself took for palpitations), according to the patient, he no longer notes episodes of rapid heartbeat, but interruptions in heart function occasionally persist. About 3 days later, he noted the appearance of shortness of breath while lying down, the inability to "breathe in



horizontal position", over the next 3 days, the condition progressively worsened, and nevertheless decided to seek medical help and was hospitalized

On examination: the condition is serious. Height 170 cm, weight 75 kg. The skin is of normal color. Acrocyanosis of the lips. The chest is conical, symmetrical. Respiratory rate - 23 per minute. With comparative percussion in symmetrical areas of the chest, a clear pulmonary sound is determined. On auscultation, vesicular breathing is heard over the lungs; in the lower parts it is weakened. On auscultation of the heart, the sounds are weakened, arrhythmic, and there are no murmurs. The heart rhythm is irregular, arrhythmic. Heart rate - 110 per minute Blood pressure 100/70 mm Hg. The abdomen is soft and painless. Liver dimensions according to Kurlov: 9x8x7 cm. No swelling of the lower extremities

General blood test: hemoglobin - 150 g/l, leukocytes -  $9.8 \times 10^9/l$ , erythrocytes -  $4.6 \times 10^{12}/l$ , eosinophils - 1%, band cells - 2%, segmented cells - 67%, lymphocytes - 22%, monocytes - 8 %, ESR - 26 mm/h.

General urine analysis: relative density 1019, acidic reaction; protein, glucose are absent; 0 red blood cells in the field of view, 1-2 leukocytes in the field of view.

In the biochemical blood test - cholesterol level 6.6 mmol/l, creatinine 144  $\mu\text{mol}/l$ , urea 9.7 mmol/l, glucose 9.8 mmol/l

EchoCG: the size of the left atrium is 4.6 cm (normal is up to 4 cm). The end-diastolic size of the left ventricle is 6.8 cm (normal is 4.9-5.5 cm). Ejection fraction 35% (norm - 50-70%). The thickness of the posterior wall of the left ventricle and the interventricular septum is 1.0 cm. Zones of akinesis are noted in the area of the IVS, apex, pulmonary hypertension of the 1st degree. (pressure in the pancreas 45 mm Hg), bilateral hydrothorax (up to 22 mm of effusion on the right and left)

ECG: tachysystolic rhythm of atrial fibrillation, QS in leads V1-V4, negative T wave in leads V1-V4.

1. Formulate a diagnosis?
2. Is it necessary to restore the heart rhythm?

*Sample answer:*

1. IHD. post-infarction cardiosclerosis (NOS). Early post-infarction angina. Rhythm disturbances such as atrial fibrillation. pulmonary hypertension stage 1 bilateral hydrothorax. arterial hypertension stage III risk 4 (very high) CHF stage IIA, FC IV. Type 2 diabetes?

2. It is not possible to determine the duration of the development of rhythm disturbances in the patient, it follows that at the present time sinus rhythm SHOULD NOT be restored (high risk of developing acute cerebrovascular accident after 48 hours of an uncontrolled attack of arrhythmia); after stabilization of the patient's condition, it is necessary to undergo transesophageal echocardiography to exclude thrombosis in the ears of the heart, followed by resolving the issue of the need and advisability of restoring sinus rhythm.

Task 70.

A patient was admitted to the hospital with complaints of an increase in temperature within 2 weeks to 39.20, severe weakness. In the medical history since childhood, there was a congenital heart defect – bicuspid aortic valve. A month ago, an outpatient examination revealed viral hepatitis C.

Objectively: Condition is average gravity. On auscultation of the heart, there is a diastolic murmur in the aorta and at the Botkin-Erb point. Blood pressure 115/50 mm Hg. Art. Vesicular breathing in the lungs. No wheezing can be heard. Abdomen, soft, painless. Liver +2 cm.

Clinical blood test: L-19  $\times 10^9$ ; HB -99 g/l; ESR-63 mm/h; leukocyte formula p13 c58 l 22 m 13.

On ECHO-CG: loose mobile vegetations of large sizes on the aortic valve. Hemoculture: Staphylococcus aureus was isolated.

1. Make a preliminary diagnosis and justify it? 2. Prescribe treatment?

*Response standard:*

1. Main diagnosis: Acute staphylococcal secondary endocarditis. Related: Viral hepatitis C

Background: Aortic valve insufficiency

2. Oxacillin 12 g/day, IV in 4-6 injections for 4-6 weeks; consultation with a cardiovascular surgeon to resolve the issue of urgent cardiac sanitation.

Task 71.

Admitted to the hospital a 24-year-old man with complaints of fever 38.30 C, shortness of breath on exertion, palpitations. During an outpatient examination (FGL, ultrasound of the abdominal organs, CBC, OAM), the cause of the fever could not be determined. Hospitalized.

Objectively upon admission: The condition is of moderate severity. Consciousness is clear. Edema of the lower extremities. In the lungs, breathing is vesicular, wheezing is not heard. NPV = 22 per minute.

The borders of the heart are expanded to the left, auscultation above the xiphoid process reveals a weakening of the first tone, a rough systolic murmur extending up the left parasternal line to the 2nd intercostal space. Blood pressure - 110/ 60 mmHg.

The abdomen is soft, b/w. Liver +3 cm.

An ECHO-CG revealed an irregularly shaped formation on the tricuspid valve, measuring 0.9 x 0.5

In a personal conversation he indicated on intravenous drug use in the past, currently denies drug use.

1. Make a preliminary diagnosis? 2. Make a treatment plan?

*Response standard:*

1. Main diagnosis: Infectious endocarditis of drug addicts, with the formation of tricuspid insufficiency, subacute course.

Complication: CHF II A FC 3 according to NYHA.

2. Antibacterial therapy: Vancomycin 30-60 mg/kg/day, IV 2-3 injections + Gentamicin 3 mg/kg/day IV or IM in 2-3 doses.

Task 72.

Patient A., 33 years old, complains of weakness, lack of appetite, weight loss, shortness of breath with slight physical activity, worsening in a horizontal position, fever up to 37.6 0C, sweating. Sick for 1.5 months. There is a history of mitral commissurotomy. Objectively: the condition is of moderate severity, pale, low nutrition. Breathing is harsh, carried out in all departments. Heart sounds are loud and rapid. The pulse is 94 beats per minute, and a systolic murmur is heard at the apex. The abdomen participates in the act of breathing; upon superficial palpation it is soft and painless. Blood test: er. - 3.1 x 10<sup>12</sup>/l; Hb - 99 g/l; c.p. - 0.9; L - 18 x 10<sup>9</sup>/l, p - 15%, s62%, l 15%, m8%, ESR-28 mm/hour.

Urinalysis is unremarkable.

Blood test - CRP +++, total protein - 68g/l, total Bilirubin - 22 µm/l. 1. What is your preliminary diagnosis?

2. Plan for additional examination?

*Sample answer:*

1. Main diagnosis: Subacute secondary infective endocarditis with damage to the mitral valve.

Complication: CHF II A FC 3 according to NYHA.  
2. ECG, EchoCG, tank. blood cultures at least 3 times.

Task 73.

A 23-year-old man complains of an increase in temperature up to 40°C, inspiratory shortness of breath with little physical activity, and long-lasting pain in the heart area not associated with physical activity.

From the anamnesis it is known that he has been using heroin for 5 years. 2 weeks before hospitalization, he noted an increase in temperature to 40°C. The patient took NSAIDs as antipyretics.

On examination: pale skin, clean. Peripheral lymph nodes are not enlarged. Body temperature – 38.8°C. In the lungs, vesicular breathing is carried out in all sections. NPV – 19 per minute. The heart sounds are clear, at the base of the xiphoid process there is a systolic murmur, intensifying at the height of inspiration with breath holding. Blood pressure – 110/60 mm Hg. Art., heart rate – 100 beats per minute. The abdomen is soft and painless on palpation. The liver protrudes 2 cm from under the edge of the costal arch, the edge of the liver is smooth. Edema of the lower extremities. The effleurage symptom is negative on both sides. Urination is not impaired.

In the CBC: red blood cells –  $3.1 \times 10^{12}/l$ , hemoglobin – 124 g/l, leukocytes –  $16.8 \times 10^9/l$ , band neutrophils – 15%, ESR – 42 mm/h. In the biochemical blood test - serum albumin - 26 g/l, creatinine - 63  $\mu\text{mol}/l$ , GFR - 98 ml/min/1.73 m<sup>2</sup>, CRP – 123 mg/l In the general analysis of urine: specific gravity – 1016, red blood cells – 0-1 in the field of view.

When blood was cultured for sterility, *S. aureus*, sensitive to oxacillin and ceftriaxone, was isolated twice.

EchoCG: the size of the heart chambers is not enlarged. Mitral valve: the leaflets are sealed, the nature of the movement of the leaflets is multidirectional. Tricuspid valve: the leaflets are compacted, thickened, an average echo-density structure is visualized on the middle and anterior leaflets measuring 1.86 and 1.11×0.89 cm; the nature of the movement of the valves is multidirectional, tricuspid regurgitation of the III–IV degree.

1. Guess the most likely diagnosis?
2. Patient management tactics non-drug and drug therapy. Justify your choice?

*Response standard:*

1. Primary acute staphylococcal infective endocarditis.

Complication: Tricuspid valve insufficiency grade 3. CHF IIA, NYHA FC 3.

2. Immediate hospitalization. Avoid taking drugs. Oxacillin 12 g/day, IV in 4-6 injections for 4-6 weeks. Taking into account the pathology of the valves, there are indications for surgical treatment - tricuspid valve replacement surgery.

Task 74.

Patient L., 32 years old, was admitted to the clinic with complaints of increased body temperature to 38.7°C, swelling of the legs, increased abdominal volume, pain in the right hypochondrium, and pinpoint rashes on the legs. A few months ago I had a tooth extraction.

She considers herself sick for a month and a half when she first noted the above complaints.

I didn't ask for help. She took antipyretics on her own. Over the past two weeks, she has noted an increase in swelling in the legs, an increase in the volume of the abdomen, and the appearance of pain in the right hypochondrium. Objectively: condition of moderate severity, body temperature 37.9°C, pale skin with a icteric tint, elements of a hemorrhagic rash on the skin of the lower extremities, swelling of the feet and legs. Lymph nodes are not palpable. The breathing in the lungs is harsh, there is no wheezing. Percussion sound is clear

pulmonary, no local dullness is detected. On percussion of the heart, the right border is 4 cm to the right of the right edge of the sternum, other borders are within normal limits. On auscultation, heart sounds are rhythmic, heart rate is 105 per minute, there is a weakening of the first sound over the xiphoid process, and a systolic murmur that increases with inspiration. The abdomen is tense, painless, a positive symptom of fluctuation. Liver +6 cm from the edge of the costal arch. The edge of the spleen is palpated.

Complete blood count: hemoglobin - 106 g/l, erythrocytes -  $3.6 \times 10^{12}/l$ , leukocytes -  $18 \times 10^9/l$ , band neutrophils - 7%, segmented neutrophils - 80%, lymphocytes - 9%, monocytes - 3%, eosinophils - 1%, ESR - 49 mm/h. General urine analysis: yellow, transparent, normal pH, specific gravity - 1015, protein - no, leukocytes - 1-2 in the field of view, no red blood cells. Biochemical blood test: bilirubin - 38.8 mmol/l, AST - 75, ALT - 99, creatinine - 0.108 mmol/l, glucose - 5.7 mmol/l, cholesterol - 5.0 mmol/l, potassium - 4.2 mmol/l. Hemoculture: growth of *Staphylococcus aureus* in one of the 3 samples.

1. Formulate a diagnosis?
2. Define a treatment plan?

Sample answer:

1. Primary staphylococcal infective endocarditis, acute, localized on the tricuspid valve.

Complication: tricuspid valve insufficiency. CHF IIa, FC 2.

2. When isolating *Staphylococcus epidermidis* and *Staphylococcus aureus* caused by a methicillin-resistant strain of *Staphylococcus aureus*, (Flu)cloxacillin or oxacillin 12 g/day IV in 4-6 injections, 4-6 weeks is used in treatment.

Task 75.

Patient L. has been working as a teacher for 48 years and came to the clinic with complaints of pain in the metacarpophalangeal, proximal interphalangeal joints of the hands, wrist, shoulder, ankle joints, and metatarsophalangeal joints of the feet; weakness in the hands; morning stiffness until lunchtime; low-grade fever in the evenings, general weakness.

From the anamnesis. Considers himself sick for about 3 months, when pain in the joints appeared. She did not seek medical help, was treated with non-steroidal anti-inflammatory ointments, without improvement. Over the past month, pain and swelling have appeared in the joints of the hands, feet, wrists and ankles, morning stiffness during the day, and low-grade body temperature. I lost 6 kg during my illness.

General condition is satisfactory. The skin is clean, cyanosis, and no edema. Peripheral lymph nodes are not enlarged. Breathing is vesicular, no wheezing. NPV - 18 per minute. Heart sounds are clear, the rhythm is correct. Heart rate - 78 beats per minute. Blood pressure - 120/70 mm Hg. Art. The abdomen is soft and painless. The liver is at the edge of the costal arch.

Local status: reflexes are correct. II, III proximal interphalangeal joints and II, III metacarpophalangeal joints are painful and swollen. Pain in the wrist joints, shoulder joints. Right hand grip is 80%, left hand grip is 70%. Assessment of well-being on a visual analogue scale (VAS) - 60 mm.

Complete blood count: red blood cells -  $3.5 \times 10^{12}/l$ , hemoglobin - 131 g/l, leukocytes -  $8.6 \times 10^9/l$ , eosinophils - 1%, band neutrophils - 8%, segmented neutrophils - 55%, lymphocytes - 30%, monocytes - 6%, ESR - 54 mm/h.

Biochemical blood tests: glucose - 3.2 mmol/l, total bilirubin - 15  $\mu\text{mol}/l$ , creatinine - 54  $\mu\text{mol}/l$ ; total protein - 76 g/l, albumin - 50%, globulins:  $\alpha_1$  - 6%,  $\alpha_2$  - 14%,  $\beta$  - 12%,  $\gamma$  - 17%, CRP - 17.2 mg, fibrinogen - 5.8 g/l, uric acid - 0.24 mmol/l (normal 0.16-0.4 mmol/l).

Rheumatoid factor: ELISA - 62 IU/ml (normally up to 15 IU/ml). Antibodies to DNA are negative. ACCP >200 U/ml.

On x-rays of the hands and feet: the joint spaces are moderately narrowed at the level of the proximal joints of the hands. Single erosions are identified. The bone structure is changed due to epiphyseal osteoporosis at the level of the metacarpophalangeal joints, metatarsophalangeal joints, and single cyst-like clearings.

Guess the most likely diagnosis?

*Sample answer:*

Seropositive rheumatoid arthritis, ACCP-positive, early stage, highly active, erosive (radiographic stage 2), FC-2.

### CRITERIA for assessing competencies and rating scales

Grade “unsatisfactory” (not passed) or lack of competence	Grade "satisfactorily"(passed) or satisfactory (threshold) level of competence development	Grade"good" (passed) or a sufficient level of mastery of competence	“Excellent” (passed) or high level of competency development
The student’s inability to independently demonstrate knowledge when solving tasks, lack of independence in applying skills. The lack of confirmation of the development of competence indicates negative results in mastering the academic discipline.	The student demonstrates independence in applying knowledge, skills and abilities to solve educational tasks in full accordance with the model given by the teacher; for tasks the solution of which was demonstrated by the teacher, it should be considered that the competence is formed at a satisfactory level.	The student demonstrates independent application of knowledge, skills and abilities when solving tasks similar to the samples, which confirms the presence of developed competence at a higher level. The presence of such competence at a sufficient level indicates a firmly established practical skill	The student demonstrates the ability to be completely independent in choosing a way to solve non-standard tasks within the discipline using knowledge, skills and abilities acquired both in the course of mastering this discipline and related disciplines; competence should be considered developed at a high level.

***Criteria for assessing test control:***

percentage of correct answers	Marks
91-100	Great
81-90	Fine
70-80	satisfactorily
Less than 70	unsatisfactory

When grading tasks with multiple correct answers, one error is allowed.

***Criteria for assessing situational tasks:***

Mark	Descriptors			
	understand ingProble ms	analysis of the situation	solution skills situations	professional thinking
Great	complete understanding problems. Everything requirements, required for task,	high ability analyze  situation, draw conclusions	high ability select method  solutions Problems, confident skills	high level professional thinking

	completed		solutions to the situation	
Fine	<p>full understanding of the problem. All requirements for the task, completed</p>	<p>ability to analyze a situation and draw conclusions</p>	<p>ability to choose method of problem solving confidently</p> <p>problem solving skills</p>	<p>sufficient level of professional thinking. Allowed one or two inaccuracies in the answer</p>
satisfactorily	<p>partial understanding of the problem. Most of the job requirements completed</p>	<p>satisfactory ability to analyze a situation and draw conclusions</p>	<p>satisfactory solution skills in difficult situations</p> <p>With choosing a method of problem solving</p>	<p>sufficient level of professional thinking. More than two inaccuracies in the answer or an error in the sequence are allowed</p> <p>solutions</p>
unsatisfactory	<p>misunderstanding of the problem. Many of the requirements for the task, not completed. No answer. There was no attempt to solve the task</p>	<p>low ability to analyze the situation</p>	<p>insufficient skills in solving situations</p>	<p>absent</p>