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ASSESSMENT MATERIALS FOR INTERMEDIATE ATTESTATION IN THE DISCIPLINE

CARDIOVASCULAR SURGERY AND FUNCTIONAL DIAGNOSTICS

Code, training area	31.05.01 General medicine
Orientation (profile)	General medicine
The form of education	full - time
Department-developer	Cardiology
Graduated department	Internal diseases

Typical test tasks for the Control work

1. Regulatory framework in functional diagnostics. Professional features of the field
2. Anatomy of the cardiovascular system. Physiology of blood circulation.
3. Functional methods of diagnosing heart and vascular diseases. Indications and contraindications for various diagnostic methods
4. Anesthesia in cardiovascular surgery
5. Artificial circulation and hypothermia.
6. Methods of myocardial protection
7. General issues of congenital heart defects. Congenital cardiopathies.
8. Congenital heart defects of the "pale" type with increased pulmonary blood flow
9. CHD "pale" type with normal pulmonary blood flow
10. CHD "blue" type with reduced pulmonary blood flow
11. "Blue" type CHD with increased or reduced pulmonary blood flow
12. Congenital cardiopathies.
13. Mitral valve defects.
14. Aortic valve defects.
15. Multiple valve defects.
16. Use of X-ray surgical methods in the treatment of acquired heart defects.

17. Valvular infectious endocarditis.
18. Donor Recipient. Recipient selection.
19. Recipient priority for heart transplantation. Donor.
20. Brain death. Indications and contraindications for heart transplantation.
21. Heart transplantation
22. Heart and lung transplantation (cardio-pulmonary complex)
23. Surgical technique
24. Hemodynamics and pathophysiology of the transplanted heart
25. Chronic complications after heart transplantation.
26. Holter ECG monitoring. Procedure. Patient requirements. ECG analysis. Interpretation of the obtained data.
27. Types of cardiac arrhythmias. Diagnostics. Treatment
28. Indications for surgical treatment
29. Implantation of an pacemaker. Indications. Contraindications. Technique of performance
30. ICD. Indications. Contraindications.
31. EFI, RFA. Indications. Contraindications. Technique of performance
32. IHD. Clinic, diagnostics, pathogenesis.
33. Indications for surgical treatment of IHD. Conditions for performing myocardial revascularization surgery
34. Non-surgical methods of treating IHD. Indications for surgical treatment of IHD. Conditions for performing myocardial revascularization surgery.
35. Application of radiosurgical methods in the treatment of IHD
36. Surgical treatment of post-infarction aneurysm

The list of tasks for the Credit

Tasks for Topic 1. Special examination methods and artificial circulation

1. The patient is 52 years old and complains of shortness of breath at rest, swelling of the extremities, and abdominal enlargement. She suffered from polyarthritis as a child. At the age of 26, she was diagnosed with a heart defect. For the past 10 years, she has experienced palpitations and shortness of breath during physical activity. For the past 2 years, she has been experiencing swelling and abdominal enlargement. She has been hospitalized frequently.

Objectively, she has a height of 165 cm and a weight of 89 kg. She has swelling and brown pigmentation on her lower legs. The lungs are stiff, and there are no wheezing sounds. The respiratory rate is 22 per minute. The neck veins are swollen, and there is a widespread pulsation in the heart area, to the left of the sternum. The heart is enlarged in all directions. The heart sounds are muffled and arrhythmic, with a 1st heart sound that is louder at the apex, and a systolic murmur at the base of the sternum that is more coarse and louder during inhalation. Heart rate 115 beats/min, pulse 90 beats/min, blood pressure 110/80 mmHg. The abdomen is enlarged, and ascites is detected. The liver is 15 cm below the edge of the costal arch, firm, with a sharp edge, and painful on palpation. ECG shows atrial fibrillation, right-sided axis deviation, and signs of right ventricular hypertrophy. X-ray shows cardiomegaly, mitral configuration of the heart shadow, and significant enhancement of the pulmonary pattern. On Echocardiography: Combined mitral valve defect with predominance of stenosis, mitral orifice area 1.6 m². Mitral insufficiency stage 2. Truncus arteriosus insufficiency stage 2-3. Systolic pressure in the pulmonary artery 65 mmHg.

2. A 32-year-old patient was admitted with complaints of shortness of breath when walking. She had frequent tonsillitis since childhood. At the age of 15, her joints were painful and swollen. At the age of 20, she was diagnosed with heart disease, and she had shortness of breath when walking for six months.

Objectively, her general condition was of moderate severity. Her lungs had vesicular breathing, and there were no wheezing sounds. Her respiratory rate was 18 per minute. The heart borders are expanded to the left by 2 cm, there is a rough systolic murmur, accent 2 tone in the second intercostal space on the left, the pulse is 72 beats per minute, and the blood pressure is 120/70 mmHg. The liver is not enlarged, and there are no edema. ECG: PQ-0.24 sec.

Tasks for topic 2. VSD with increased pulmonary blood flow. VSD with reduced pulmonary blood flow

1. A 3-year-old child has persistent cyanosis and shortness of breath at rest. During play or any physical activity, the child often squats down, feeling relief. On examination, the skin is cyanotic, and the fingers are like drumsticks. The chest is swollen in the area of the sternum. A rough systolic murmur is heard in the area of the II-III intercostal space. The II tone is weakened in the pulmonary artery. In the blood, the number of red blood cells, the content of hemoglobin and hematocrit, ESR - 2 mm / hour. In radiography: revealed hypertrophy and prevalence of the right heart. The diagnosis of tetrad Fallot.

2. In the clinic, a mother with a child of 3 years old with complaints of insufficient dynamics of weight gain of the child, rapid fatigue during exercise, cyanosis of the nasolabial triangle when crying, frequent SARS. Auscultation reveals a rough systolic murmur along the left sternal border with an epicenter in the first intercostal space on the left, and an accent and splitting of the second tone over the pulmonary artery.

Tasks for topic 3. Valvular heart disease. Surgical treatment of cardiac arrhythmias

1. A 18-year-old patient complains of sweating, palpitations, weakness, and shortness of breath when walking. About 3 weeks ago, she had a sore throat.

On examination, she has a low-grade fever, a pulse of 92 beats per minute, a weakened first tone at the apex, and a gentle systolic murmur with an epicenter in the fifth intercostal space.

On the ECG, the PQ interval is 0.26 seconds.

On the ECG: systolic low-amplitude murmur at the apex, not associated with the 1st tone, decrease in the amplitude of the 1st tone, ESR - 26 mm/h.

2. The patient is 40 years old and has been under the supervision of a rheumatologist for a long time. Recently, shortness of breath has increased, and swelling has appeared in the legs. During the examination, there is a cyanotic blush on the cheeks and a pulsation in the epigastric region under the xiphoid process. The heart is enlarged to the left and upward, and there is a tremor over the apex. On auscultation, there is a loud 1st tone over the apex, a split 2nd tone, and an irregular heart rate. The liver is 3 cm below the costal arch, and there is swelling in the lower legs.

3. The patient has had a systolic murmur at the base of the heart since childhood. His blood pressure is 150/100 mmHg, and he often experiences nosebleeds. Chest X-ray: enlargement of the left ventricle, irregular, serrated lower edges of the 5th-7th ribs on both sides. Decreased pulsation in the legs.

4. A 42-year-old patient called an ambulance due to severe weakness, dizziness, and shortness of breath with minimal physical exertion. He had a common cold about 3 weeks ago. 5 days ago, a subfebrile fever reappeared, followed by constant pain behind the sternum of moderate intensity, relieved by standing upright and taking analgin. The last 2 do not bother with pain, but there is a feeling of heaviness in the right hypochondrium, pasty feet and shins. This morning I took 2 furosemide tablets, excreted about 1.5 liters of urine. His condition worsened, his shortness of breath increased, and he had a short-term loss of consciousness when he tried to stand up. On examination: condition of moderate severity, conscious. Lying low, the lower legs are pasty. In the lungs, breathing is vesicular, there are no wheezes. FEV - 22 per minute. Neck veins swollen. Apex push is not determined. Heart tones are deaf. Pulse - 128 beats per minute, blood pressure - 110/90 mm Hg. on inspiration, systolic blood pressure - decreases by 20 mm Hg. Liver +4 cm, sensitive to palpation. On the ECG, there is sinus tachycardia. The amplitude of the ventricular complexes is reduced in all leads, and the T wave is flattened in all chest leads.

Tasks for Topic 4. Fundamentals of Transplantology

A patient was brought to the hospital emergency department by an ambulance after a car accident - a head-on collision between two cars. The patient, who was the driver of one of the cars, suffered a severe blow to the chest from the steering wheel. The patient's condition is severe, and he is conscious. He is experiencing severe chest pain, and his heart sounds are muffled and rhythmic. There is a mild systolic murmur in the jugular vein, which extends to the neck vessels. His blood pressure is 80/40 mmHg.

Tasks for Topic 5. Functional Diagnostics and Telemedicine in Cardiovascular Surgery.

1. A 42-year-old patient called an ambulance due to severe weakness, dizziness, and shortness of breath during minimal physical activity. About 3 weeks ago, he had a common cold. 5 days ago, he developed a low-grade fever, followed by persistent chest pain of moderate intensity, which improved when he stood up and took an analgesic. For the past 2 days, he has not experienced any pain, but he has noticed a feeling of heaviness in his right upper quadrant and swelling in his feet and legs. This morning, he took 2 tablets of furosemide and passed about 1.5 liters of urine. His condition worsened, and he developed short-term loss of consciousness when he tried to stand up. On examination, his condition was moderate, and he was conscious. He was lying low, and his lower legs were swollen. His breathing was vesicular, and there were no wheezing sounds. His respiratory rate was 22 breaths per minute. His neck veins were swollen. His apical impulse was not visible. His heart sounds were muffled. Pulse - 128 beats per minute, blood pressure - 110/90 mmHg. On inspiration, systolic blood pressure decreases by 20 mmHg. The liver is 4 cm larger and sensitive to palpation. The ECG shows sinus tachycardia. The amplitude of the ventricular complexes is reduced in all leads, and the T wave is flattened in all chest leads.

2. A 38-year-old patient was admitted to the hospital by an ambulance with complaints of a wound on the left chest and pain in the wound area. According to the patient's history, he had been stabbed in the chest 1.5 hours earlier. On examination, the patient's condition was severe, he was conscious, his skin was pale and cold to the touch, and his neck veins were swollen. His blood pressure was 100/70 mmHg, and his heart rate was 120 beats per minute. FHR – 24 per minute.

On examination, the left half of the chest lags behind in the act of breathing, over the left half of the chest breathing is not carried out. Auscultatively, the heart tones are rhythmic, muffled. On the left half of the chest in the III intercostal space along the parasternal line there is a wound of 2x1 cm, moderately bleeding. On an overview chest X-ray, there is an expansion of the heart borders, hemotorax on the left.

Tasks for Topic 6. Ultrasonic and Tomographic Methods of Research in Cardiovascular Surgery

Patient K-iy, 16 years old. Complaints - fatigue, shortness of breath during physical exertion (fast walking, running).

From the disease history, it is known that the diagnosis of "hypertrophic cardiomyopathy" was established at the age of 8 days.

The family history of heart disease is not burdened. During the examination (ECG, ECHO) of 9 blood relatives of patient K. in 3 generations, no convincing data was found to indicate the presence of hereditary pathology of the cardiovascular system.

According to the ECG, From the age of 2 months, the patient has a violation of rhythm (ventricular extrasystole of the III degree according to LOW) and cardiac conduction - AV block of the first degree, block of the anterior-upper branch of the left leg of the bundle of His, extrasystole. By the age of 7, sinus bradycardia with a heart rate of 68 beats/min, signs of hypertrophy of all parts of the heart, impaired intraventricular conduction, and impaired repolarization processes.

In the dynamics of Echocardiography data, there is an increase in asymmetric hypertrophy of the left ventricular myocardium with a maximum thickness of up to 21 mm in the anterior part of the interventricular septum and the anterior wall of the left ventricle, as well as the formation of two-level obstruction of the left ventricular outflow tract and obstruction of the right ventricular outflow tract, and impaired diastolic function of both ventricles. The mitral and aortic valves are thickened at the edges and bases. The left atrium is dilated.

During the examination of the organs and systems, a delay in physical development was detected, as well as widely spaced eyes (hyperteleorism). On the skin of the trunk and extremities, there were irregularly shaped and varying in size "coffee with milk" spots, and on the legs, there were dark brown small "coffee" spots (appeared at the age of seven). A surgical examination revealed an umbilical hernia and communicating hydrocele of the testicles.

Tasks for Topic 7. Endovascular Diagnostics in Cardiovascular Surgery

1. Patient 57 years old, an engineer, was brought by an ambulance team for intense chest pain that had been going on for more than 1 hour. The pain was pressing, squeezing, radiating to the neck, jaw, and left shoulder, and did not subside when the patient sat down or took nitroglycerin. The pain was not related to breathing. For 10 years, he has noted an increase in blood pressure to 190/110 mmHg. Objectively: BPD is 20 per minute, there is no wheezing in the lungs. The pulse is

80 beats. in min., rhythmic. Blood pressure is 150/90 mmHg. Otherwise, there are no special features.

2. A 54-year-old patient called an ambulance team due to complaints of intense pain behind the sternum, radiating to the interscapular region, headache, nausea. He has been suffering from hypertension for 6 years and does not regularly take antihypertensive drugs. Working pressure 140/80 mmHg. Deterioration within 6 hours: headache, nausea increased. About 40 minutes back, there were "tearing" pains behind the sternum, later with irradiation to the interscapular area. On taking nitroglycerin - increased headaches. When examined by the doctor of the ambulance team, the condition is of medium severity. Consciousness is clear. Hypertrophy of the skin of the face. There are no peripheral edema. In the lungs, breathing is vesicular, single dry scattered wheezing. Systolic noise over the aorta. Blood pressure - 230/120 mmHg. Pulse - 88 beats per minute. Pulsation in the left radial artery is weakened. The liver is at the edge of the costal arch. ECG - sinus rhythm, hypertrophy and overload of the left ventricle.