Introduction to pathological anatomy: the subject and tasks of pathological anatomy. Research methods in pathological anatomy.

Introduction to pathological anatomy: the subject and tasks of pathological anatomy Pathological anatomy: content, tasks, research methods.

1 What does the term pathology mean?

2 Define pathological anatomy

3 What is a pathological process?

4 What is called a disease?

5 Why is Rudolf Virchow considered the founder of modern pathological anatomy?

6 What are the levels of disease research in modern pathology

7 What does modern pathological anatomy study in the study of diseases?

8 What is called pathomorphosis?

9 What does the term thanatogenesis mean?

10 What does the term iatrogenia (iatrogenic pathology) mean?

11 Name the groups of subjects studied by the pathologist

12 Name the types of intravital substrates obtained from patients.

13 What is the subject of a post-mortem examination (autopsy, section)?

14 What are the levels of study of cadaveric material?

15 What additional research methods does the pathologist attract at autopsy?

16 Name the main purpose of the autopsy of a deceased patient.

17 Determine the value of the autopsy of the deceased patient.

18 For what purpose is the material taken during the patient's lifetime for microscopic examination?

19 What kind of examination is the surgical and biopsy material subjected to? What is called a biopsy?

20 Define a biopsy.

21 Why does a pathologist examine surgical material?

22 Why is a minor operation performed and biopsy material taken with it?

23 Why is an urgent histological examination performed during surgery?

24 Name the time spent on the preparation of a histological preparation for an urgent histological examination

25 Name the most commonly used material for histological examination by a gynecologist

26 Name the widely used universal histological coloration of tissue sections

27 Name sources for cytological examination

28 What does Papanicolaou reaction mean?

29 How is aspiration puncture of organs performed in oncological practice?

30 What is the Pap-NET screening system?

31 What is the immunohistochemical method of investigation?

32 What are the types of antigens that the immunohistochemical method is used to detect?

33 How is the antigen determined using the immunohistochemical method?

34 Why are monoclonal antibodies used?

35 What does the term marker indicate?

36 What are molecular biology methods used for?

37 What are the main molecular biology techniques used in the histological section?

38 What is the flow cytometry method used for?

39 How is the in situ hybridization technique applied?

40 What is the in situ hybridization technique used for?

41 What is transmission electron microscopy?

42 What is scanning electron microscopy?

43 What is electron microscopy used for?

44 What slices are used in electron microscopy?

What does the term pathogenesis mean?

45 How thick are the slices used in microscopic examination?

46 What is the purpose of electron microscopy?

47 What is the experimental material used for by the pathologist?

48 What are experimental studies in vivo?

49 What are experimental in vitro studies?

50 What is the basis of modern pathology?

51 Where are the genetic variations associated with diseases detected at the present stage located? 52 Finding out which factors underlying diseases is the main theme of modern medicine.

53 What mechanisms of development and progression of the disease are studied at the current level?

54 Why is pathological anatomy important for practical medicine in our time?

55 Why do clinicians need research by pathologists?

56 What is devoted to the field of pathological anatomy in medicine?

57 What is the cadaveric material taken for examination by a pathologist?

58 What is the main purpose of an autopsy

59 What does a pathologist study before an autopsy?

60 Who should be present at the autopsy other than the pathologist?

61 What is the size of the piece taken for biopsy examination?

62 What is investigated in oncology using electron microscopy?

63. Why does a future doctor need a pathological anatomy?

64. What contributes to the formation of clinical thinking of the student in the study of pathological anatomy? 65 Что позволяет понять патология?

65. What did I.V. Davidovsky prove in the general biological significance of pathological reactions of the body?

66. What is the basis of biological feasibility?

67 Name the basic pattern underlying the functioning of the body

67 What is the basis of biological expediency?

68 What is the main pattern underlying the functioning of the body

69 What determines the specifics of each disease?

70 What principle of teaching pathological anatomy was introduced thanks to the initiative of I.V. Davidovsky?

71. What reactions of the body provide homeostasis?

72. Name the conditions for the decline in function in the disease.

73. What is the basis of decompensation and organ death?

74 What is called clinical thinking?

75 The task of the general course of pathological anatomy

76 Why is it necessary to study the general pathological reactions of the body?

77 What is studied in the section of private pathological anatomy?

78 What underlies the functioning of the body at all levels of its organization?

79 Why is pathological anatomy a "bridge" between fundamental and practical medicine?

80 What does the term etiology mean?

81 What does the term pathogenesis mean?

Unit 1. Disbalance of liquid media, disorders of blood and lymph circulation.
Disturbances of blood circulation (hyperemia, ischemia, stasis, bleeding). Disturbance of tissue fluid content.

1. List the types of circulatory disorders. P=8
2. List in Latin the types of external bleeding. P=6
3. List the names of bleeding, depending on the source. P=5
4. Name in Russian and in Latin the types of internal bleeding into serous cavities. P=3
5. List in Latin and translate into Russian the names of the mechanisms of bleeding. P=3
6. List the processes in the aorta that can cause bleeding. P=2
7. List the vessels from which bleeding per diapedesin is possible. P=3
8. List the causes of bleeding per diapedesin. P=3
9. List the diseases in which bleeding per diapedesin often develops. P=6
10. List the main types of hemorrhages. P=2
11. What is a hematoma? P=3
12. What is hyperemia? P=1
13. What is stasis? Specify its mechanisms P=5
14. List the types of local arterial hyperemia P=6
15. Indicate the cause of working hyperemia. P=1
16. What microscopic changes in organs occur in chronic venous plethora. P=2
17. List the changes in the lungs with brown induration. P=4
18. List the morphological changes that occur in the nutmeg liver. P=3
19. Name the changes in the serous cavities in chronic venous plethora. P=3
20. What is venous plethora (venous hyperemia, venous congestion)? P=3

21. In what circle of blood circulation does venous congestion develop in a patient with left ventricular heart failure? P=1
22. What morphological changes develop in the lungs in acute venous plethora? P=3
23. What is hemorrhagic infiltration? Name the mechanisms of development P=3
24. What is plasmorrhagia? P=2
25. List the mechanisms of bleeding development and name them in Latin. P=6
26. List the types of pathological arterial hyperemia. P=6
27. Name the mechanism of bleeding in stomach cancer. P=1
28. What is the name of a hemorrhage with tissue expansion and cavity formation P=1
29. What is the disease in which the risk of developing cerebral hemorrhage is highest? P=1
30. What is the favorable outcome of cerebral hemorrhage (hematoma) P=2

Situational tasks

1. With the rapid release of ascitic fluid, the patient lost consciousness. Explain this phenomenon. P=3
2. Rust-colored sputum was found in a patient with mitral heart disease. Explain the color of sputum. P=1
3. A young man died of leukemia. Autopsy revealed multiple small-focal hemorrhages in the skin, pleura, pericardium, endocardium, and brain. Name this syndrome, foci of hemorrhages and in Latin the mechanism of their occurrence. P=3
4. A patient with a festering wound developed bleeding from the wound 7 days after the injury. Explain its cause and name its mechanism in Latin. P=2
5. For a long time the woman suffered from hypertension. On autopsy in both hemispheres of the brain, multiple small-focal and point hemorrhages; in the subcortical nodes on the right there is a focus of hemorrhage with a diameter of 5 cm with an emerging cavity filled with coagulated blood. Name the types of hemorrhages, list in Latin the mechanism of development of small and large foci of hemorrhages. P=4
6. A 68-year-old patient suffered a myocardial infarction 4 years ago, and therefore there is postinfarction cardiosclerosis (connective tissue scar) in the posterior wall of the left ventricle. At the time of going to the doctor, he complains of increasing shortness of breath, cough with sputum of a “rusty”, “red” color. Explain the color of the patient's sputum. P=2
7. A 52-year-old patient was admitted to the intensive care unit with a diagnosis of central cancer of the upper lobe of the right lung. At the same time, the patient has massive hemoptysis. Name the type of this bleeding. P=1. Name the mechanism of development of this bleeding. P=1

8. A 56-year-old patient died from decompensated chronic cardiovascular insufficiency with atherosclerotic aortic valve disease. At autopsy, among other changes, in the liver - nutmeg cirrhosis. List the microscopic pathological changes in muscat cirrhosis. P=3
9. An autopsy revealed massive blood clots in the stomach and intestines, a deep defect with rough edges in the wall of the stomach on the lesser curvature, and a gaping vessel in the bottom of the defect. What pathological process was found at autopsy? P=2

Unit 2. Disbalance of liquid media, disorders of blood and lymph circulation. Thrombosis. Embolism.
1. Define thrombosis. P=3
2. List the local factors contributing to the formation of blood clots. P=2
3. Name two main processes leading to damage to the vessel wall P=2
4. Name the stages of thrombosis P=4
5. Name the main components of a white blood clot P=3
6. List the macroscopic components of a thrombus P=3
7. List the components of a hyaline thrombus. P=4
8. Name the thrombi depending on their relation to the lumen of the vessel. P=2
9. Give a definition of the term "spherical thrombus" P=3
10. What are the consequences of portal vein thrombosis. P=3
11. List the outcomes of thrombosis. P=7
12. Define an embolism. P=4
13. Classify embolisms depending on the main directions of embolus movement. P=3
14. What is a retrograde embolism? P=3
15. Classify embolisms according to the nature of the embolus. P=7
16. Give the most frequent localizations of blood clots, in which the development of thromboembolism is possible. P=4
17. List the most common localizations of blood clots that serve as sources of pulmonary embolism P=3
18. What is thromboembolic syndrome? P=4
19. Name the factors involved in the development of sudden death in thromboembolism of the pulmonary artery trunk. P=3
20. Give the main causes of fat embolism. P=3
21. What are the possible outcomes of pulmonary fat embolism. P=2
22. In what cases is a fatal outcome possible with a fat embolism. P=2
23. List the main types of tissue embolism. P=3
24. Name the veins, the damage of which can serve as a source of air embolism. P=4
25. Name the stages of DIC. P=4
26. Under what diseases (conditions) does acute generalized DIC develop? P=6

27. What is the main morphological manifestation of DIC? P=1 28. According to the morphological composition, what thrombi are formed in microcirculation vessels in DIC? P=4
29. Which organs are most often affected in DIC. P=3
30. What general pathological process can lead to obturating blood clots in the arteries. P=1
31. List the sources of thrombosis (localization of blood clots), which contribute to the development of thromboembolic syndrome in the arterial bed. P=4
32. List the vessels whose thrombosis can lead to the development of pulmonary embolism. (TELA). P=5
33. What is a microbial embolism? P=2
34. What are septic thrombi? P=4
35. List relatively favorable outcomes of thrombosis. P=5

Situational tasks

1. An elderly patient after resection of the stomach for cancer, when trying to turn on her side, suddenly developed suffocation, cyanosis of the upper body. With symptoms of acute heart failure, the patient died. An autopsy revealed thrombotic masses coiled into a ball, not soldered to the wall, in the trunk and main branches of the pulmonary artery. What pathological process are we talking about? P=1 Explain the mechanism of death of the patient. P=5
2. A woman had a sudden death a few hours after childbirth due to symptoms of acute right ventricular failure. At autopsy, when the right ventricle was punctured under water, air bubbles emerged from it, the blood in it turned out to be foamy. What pathological process are we talking about? R=2 What is its source? P=1 This is an air embolism. P=2
3. A patient suffering from soft tissue sarcoma of the left lower limb died. At autopsy, multiple rounded nodes of soft consistency were found in the lungs, which looked like “fish meat” on the section. Name the process that is characterized by the development of these nodes. P=1 What process preceded their development? P=2
4. A patient suffering from sigmoid colon cancer has died. Autopsy revealed multiple metastases. Where in the first place should they be looked for in lymphogenous and hematogenous spread? P=3
5. The patient died after extraction of a carious tooth against the background of osteomyelitis of the upper jaw and phlegmon of the soft tissues of the face. An autopsy revealed ulcers in many organs. What is the mechanism of development of these abscesses and how can these abscesses be called? Name the whole process, given its prevalence in the body. P=3
6. The patient's stomach was removed due to cancer. In the early postoperative period, the patient developed swelling of the right leg. 5 days after the operation, when trying to get up, the patient's condition changed dramatically: cyanosis of the

face developed, shortness of breath appeared, and death occurred. An autopsy revealed dark red bundles associated with the vessel wall in the deep veins of the right leg, similar masses were found in the lumen of the pulmonary artery. Name the immediate cause of death of the patient. P=2
7. A patient suffering from coronary heart disease suddenly developed sharp pains behind the sternum with irradiation to the left arm, which were not relieved by nitroglycerin. Death came on the 2nd day. An autopsy revealed an irregularly shaped yellowish lesion in the anterior wall of the left ventricle. The lumen of the right coronary artery is filled with dark red crumbling masses. Microscopic examination revealed that these masses consist of erythrocytes, leukocytes and fibrin. Name the pathological process found in the coronary artery. P=1 Determine this process by its composition and in relation to the lumen of the vessel. P=2
8. The patient died as a result of burn shock. Autopsy revealed: in the brain - blood clots in the capillaries, multiple small hemorrhages; in the liver - hemorrhages, necrosis of hepatocytes, fibrin thrombi in the central veins; in the lungs - fibrin and hyaline thrombi in the capillaries. Name the syndrome (complication) developed in the patient. P=1 List the stages of development of this syndrome. P=4

Topic 3. Injures and death of cells and tissues. Necrosis. Apoptosis. Infarction.
Cellular injuries. Necrosis. Infarction as a manifestation of ischemic injury. Apoptosis.

1. Define the concept of damage. P=3
2. Define the concept of necrosis. P=3
3. Define the concept of apoptosis. P=3
4. Specify the main morphological changes in the cell nucleus during necrosis. P=3
5. Specify the stages of necrosis morphogenesis. P=4
6. Specify the main changes in the cytoplasm of cells during necrosis. P=3
7. Indicate the types of necrosis depending on the features of their development mechanism. P=2
8. Indicate the types of necrosis depending on the cause of the development of the process. P=5
9. Indicate which necrosis, depending on the cause of their development, refers to direct necrosis. P=2
10. Indicate which necrosis, depending on the cause of their development, refers to indirect necrosis. P=3
11. Specify the clinical and morphological forms of necrosis. P=5
12. Specify variants of coagulative necrosis. P=4
13. Define the concept of gangrene. P=2
14. Specify the types of gangrene. P=2
15. Indicate under the influence of which putrefactive microorganisms necrosis develops according to the type of wet gangrene. P=5

16. Define the concept of sequestration. In what tissues is it observed? P=4 17. Specify the types of infarcts depending on the shape of the necrosis zone. P=2
18. Specify what type of infarction, depending on the appearance (color) of the necrosis zone, develops in the lungs (a), myocardium (b), spleen (c). P=3
19. What can be myocardial infarction in terms of prevalence in the layers of the heart. P=4
20. Specify the types of infarcts depending on the appearance (color) of the damaged area. P=3
21. Indicate in which organs the zone of developing infarction has a wedge-shaped shape P=3
22. Indicate in which organs the infarction develops according to the type of coagulation necrosis P=3
23. Indicate in which organs the zone of developing infarction has an irregular shape. P=3 24. Indicate what type of infarction according to the shape of the necrosis zone develops in the spleen (a), myocardium (b), lungs (c), intestines (d). P=4
25. Specify the reasons for the development of a heart attack P=4
26. Indicate in which organs white (ischemic) infarction develops most often. P=2
27. Indicate in which organs the infarction develops according to the type of colic necrosis. P=2
28. Indicate the shape of the infarction zone in case of main (a) and loose or mixed (b) types of branching of arteries. P=2
29. Indicate for which type of branching of the arteries the wedge-shaped shape of the infarction zone (a) and the zone of irregular shape (b) are typical. P=2
30. Indicate in which organs a white infarction with a hemorrhagic halo develops. P=2
31. Specify the outcomes of a heart attack. P=6
32. List the possible outcomes of necrosis. P=8 a) organization; b) encapsulation; c) petrification; d) ossification; e) aseptic autolysis; e) purulent fusion; g) cyst formation; h) mutilation P=8
33. Specify the main stages of apoptosis morphogenesis P=4
34. Indicate a favorable outcome of a heart attack P=1
35. What is noma? Where is it observed? P=4
36. What is the name of the inflammation that develops around dead tissues? P=1
37. Name the diseases in which caseous necrosis develops. P=4
38. Define the concept of a heart attack. P=4 39. What is the name of vascular necrosis? P=1
40. In which organs do infarcts have a wedge-shaped form? P=3

41. List the organs in which heart attacks most often develop. P=6
42. What morphological changes develop in chronic ischemia? P=2
43. In what diseases does fibrinoid necrosis develop? P = 2

44. Name the stages of infarction development. P=3
45. In what diseases does fatty necrosis develop? P =3
46. Name the successive stages of cell damage with continued exposure to a pathogenic factor. P=4

Situational tasks

1. The patient was hospitalized with frostbite of the fingers of both hands IV degree. 2 weeks after frostbite, the line of separation of viable and necrotic tissues was clearly marked, the blackened phalanges and fingers acquired a dry appearance. A few weeks after frostbite, spontaneous separation of the phalanges and fingers began along the line of the joints. Name the pathological process taking into account its clinical and anatomical form and its variety. P=2 What is the outcome of the started process P=1
2. A patient with tuberculous spondylitis died of kidney failure. On autopsy, on a cut of the spinal column in the vertebral bodies, there are structureless, dry, crumbling foci of yellow-white color; some of them are in a state of meltdown. Name the process in the vertebrae, taking into account its clinical and anatomical form and its variety. P=2 In what diseases, except for tuberculosis, the same process can be observed? P=3
3. Patient A., aged 75, suffering from atherosclerosis, was taken to the city clinical hospital with a diagnosis of intestinal obstruction. During the operation, when opening the abdominal cavity, the loops of the small intestine are inflated, black in color, the mesenteric vessels are obturated with thrombotic masses. What process has developed in the patient's small intestine, which caused small intestine obstruction? P=2 Explain the origin of the black color of the intestinal tissues? P=2
4. In a patient who died from ischemic cerebral infarction, a decubitus was found in the section of the sacrum. What pathological process and what its clinical and anatomical variety are the changes that have developed in the area of the sacrum. P=2
How to classify this process depending on the cause of development? P=1
5. A 71-year-old patient suffering from atherosclerosis developed pain in the left foot. On examination, the foot is enlarged in volume, the tissues are purple-black, with an unpleasant odor, edematous, the epidermis is exfoliated. Give the name of the process, taking into account its type. P=2
Define this process. P=2
6. In a patient suffering from atherosclerosis of cerebral vessels, an autopsy in the right hemisphere of the brain in the region of the subcortical nuclei revealed an extensive focus of softening of gray tissue. Give the name of the process in the brain, taking into account its clinical and morphological form. P=2 Name its reasons. P=2 Name the favorable outcome of this process. P=1

7. A vermiform appendix measuring 12.0 cm x 3.0 cm, purple-black, was delivered for biopsy examination. Name the type of appendicitis, taking into account the type of necrosis that has developed in the appendix. P = 1
8. A lymph node with a size of 2.5 cm x 1.5 cm x 2.0 cm and a dense consistency was delivered to the pathoanatomical department for biopsy examination. On the cut, it is yellowish-gray in color, curdled masses occupy the entire l / node. Name the process taking into account its clinical and morphological form. P=1

Topic 4. Tissue and cell metabolism abnormality. Morphology of tissue cellular metabolism abnormality. Parenchymal dystrophies.

1. What is dystrophy? P=3
2. List parenchymal dysproteinoses. P=3
3. Indicate the time after which irreversible ischemic damage to cardiomyocytes occurs P=1
4. Specify how long it takes to diagnose irreversible ischemic damage to cardiomyocytes using conventional light microscopy P=1
5. List the causes of parenchymal dysproteinosis. P=6
6. Explain the two main mechanisms for the appearance of fatty inclusions in cardiomyocytes during hypoxia P=6
7. Give the figurative name of the liver in its fatty degeneration. P=1
8. Name the successive stages of cell damage during ongoing exposure to a pathogenic factor. P=4
9. Name the types of dystrophies depending on the type of impaired metabolism. P=4
10. Specify the morphological features of damage to cardiomyocytes in moderate and deep hypoxia. P=2
11. Describe the macroscopic picture of the liver in fatty degeneration: a) size -, b) consistency - , c) color - , d) figurative name - . P=4
12. List the cells in which hydropic dystrophy is often observed: a) ..., b) ..., c) ..., d) ..., e) ..., f) ... P=6
13. What is hydropic dystrophy? P=4
15. List parenchymal dysproteinoses. P=3
16. What are the three classes of dystrophy, depending on the location of the accumulating substances. P=3
17. List what determines the morphological manifestations of the cell's response to the impact of a pathogenic factor. P=2
18. What changes are typical for horny dystrophy? P=3
19. Specify principles of classification of dystrophies. P=4
20. Define infiltration as one of the mechanisms of dystrophies. P=3
21. List the main mechanisms of intracellular dysproteinoses P=4
22. Reasons for the development of fatty degeneration of the myocardium P=2

23. Define transformation as one of the mechanisms of dystrophies. P=3
24. Describe the appearance of the heart in fatty degeneration. A - chamber size, B - consistency, C - figurative name. P=3
25. Define perverted synthesis as one of the mechanisms of dystrophies. P=3

Situational tasks

1. An autopsy revealed the following changes in a deceased from anemia: the heart is flabby, enlarged, the cavities are enlarged, yellow-white striation is visible from the side of the endocardium. How to call these changes of the heart? P=2 What histochemical reaction can be used to confirm your conclusion? P=1 Give a figurative name of the process in the heart. P=1 Name the reason for the development of the process. P=1
2. An autopsy of a person who died from poisoning with thiophos (an organophosphorus compound) revealed the following changes in the liver: it is enlarged, flabby, clay-like,
ocher yellow. Name these changes. P=2
3. In a patient with viral hepatitis, in a piece of liver obtained by puncture biopsy, vacuoles filled with cytoplasmic fluid were found in the cytoplasm of hepatocytes. Name the process, explain the mechanism of its development P=3
How will liver function change in this case? P=1
4. Task 2 A 49-year-old man who abuses alcohol was admitted to the hospital with complaints of pain in the right hypochondrium. A liver biopsy was performed. Microscopic examination of the biopsy revealed homogeneous inclusions in hepatocytes and the lumen of the sinusoids, which had a bright pink color. Name the pathological process. P=1 Classify the process according to the type of disturbed exchange. P=1 Give the name of the discovered inclusions by the name of the scientist who described them. P=1
5. Anemia gradually developed in a 49-year-old woman with prolonged dysfunctional uterine bleeding. The examination revealed tachycardia, shortness of breath, expansion of the boundaries of the heart, deafness of heart tones. What process is in question in the myocardium? P=2 Name the possible outcomes. P=2 Determine the functional significance of changes in the heart muscle. P=1
6. A 38-year-old woman with diabetes mellitus underwent a puncture liver biopsy. What changes can be found in the patient's liver? P=1 Describe the leading mechanism of occurrence of this pathological process? P=1 How does the function of the liver change in the conditions of the revealed pathology? P=1 Name the possible outcomes of the pathological process (at the cellular level). P=2

Topic 4. Tissue and cell metabolism abnormality. Morphology of protein, lipid and carbohydrate abnomality. Stromal-vascular dystrophies.

1. List mesenchymal dysproteinoses. P=4
2. List the organs in which amyloid is most often deposited in acquired (secondary) amyloidosis. P=5
3. 3. What is hyalinosis? P=4
4. In what structures of the heart is mucoid swelling observed? P=3
5. List the causative factors of fibrinoid swelling. P=4
6. What is mesenchymal fatty degeneration? P=4
7. Define amyloidosis. P=4
8. List the possible outcomes of mucoid swelling. P=3
9. List the possible outcomes of hyalinosis. P=4
10. List the diseases accompanied by prolonged suppuration and decay of tissues, resulting in the development of amyloidosis. P=5
11. What is fibrinoid swelling? P=8
12. List the diseases in which hyalinosis of vessels and connective tissue is of great functional importance. P=3
13. What is mucoid swelling? P=5
14. What connective tissue structures change during mucoid swelling? P=1
15. List the main processes in the development of fibrinoid swelling P=3
16. List the possible outcomes of hyalinosis. P=4
17. Violation of what metabolism is observed in atherosclerosis? P=1
18. List the components of amyloid. P=2
19. List the outcomes of fibrinoid changes. P=3
20. In what organs is the hyalinosis of small arteries and arterioles most pronounced. P=5
21. In what structures of the pancreas amyloid is deposited. P=2
22. In what tissue structures hyalinosis most often develops. P=3
23. In what structures of the intestine amyloid is deposited. P=3
24. List the possible causes of death in patients with secondary amyloidosis. P=3
25. In what layers of the vascular wall is hyaline found and what does it lead to? P=5

Situational tasks

1. The patient suffered from bronchiectasis for many years. During the last year, protein was found in the urine up to 10%, hypoproteinemia was noted. At the end of the disease, azotemia developed, death was due to renal failure.
What process in the kidneys complicated the course of bronchiectasis? P=2 In what other organs could the same process develop at the same time? P=4
2. After a severe burn of the hand, the patient developed a rough scar, which eventually became vitreous, of a cartilaginous consistency. Microscopic examination of the biopsy of this scar: collagen fibers are thickened, homogenized, eosinophilic, with a small amount of fibrocytes. About what pathological

process in question? P=1 Define this process. P=4
3. The leaflets of the mitral valve, excised during the operation of its prosthetics, which was performed in a patient with rheumatic mitral heart disease, were delivered to the pathoanatomical department. Microscopic examination: the valve tissue has a pronounced basophilia. When stained with toluidine blue, it turns lilac-red. How can you call this process, explain its development. P=7
4. Microscopic examination of an atherosclerotic plaque in the aorta showed that its tissue has increased basophilia, and when stained with toluidine blue, it acquires a lilac-red color. How can you explain this phenomenon? P=7
5. A patient with fibrous-cavernous pulmonary tuberculosis died from uremia. How can this phenomenon be explained? P=3
6. After a severe burn of the flexor surface of the elbow joint, the patient developed a scar of cartilaginous consistency, which severely restricted movement. The scar was excised. On section, the scar tissue has a whitish translucent appearance. Microscopically - the fibers of the scar are sharply thickened, homogeneous in appearance, the number of fibrocytes is insignificant. What is the process? What is the name of this type of skin scar? P=2
7. Microscopic examination of the vessels of the brain of a patient who died from a hemorrhage in the subcortical nodes (clinically diagnosed with hypertension) revealed that their wall was sharply thickened, homogeneous, eosinophilic. The number of cellular elements in the vessel wall is extremely small. How can one name and explain the development of the described phenomenon? P=3

Topic 4. Tissue and cell metabolism abnormality. Metabolic disorders of pigments (chromoproteins). Endogenous pigments. Lipofuscin metabolism disorders. Disorders of nucleoprotein metabolism. Mineral metabolism disorders.

1. List the groups of endogenous pigments by origin. P=3
2. List iron-containing hemoglobinogenic pigments. P=3
3. In what organs is ferritin normally found in the greatest amount? P=4
4. List the hemoglobinogenic pigments that do not contain iron. P=3
5. List the properties of hemosiderin: a) physical state, b) color, c) place of formation (in tissue), d) presence of iron, e) terms of formation. P=5
6. Does bilirubin contain iron? What diseases (conditions) are most typical for subhepatic jaundice? P=5
7. What pigments are formed in the foci of hemorrhages? P=2
8. What hemoglobinogenic pigments are formed in an old hematoma? P=2
9. What is jaundice? P=4
10. What diseases and conditions often cause suprahepatic jaundice? P=5
11. Name the types of jaundice according to the mechanisms of development. P=3
12. Explain the pathogenesis of suprahepatic jaundice? Give it a synonym. P=3
13. The listed reasons for the development of obstructive jaundice. P=4

14. Define the concept of "holemia". P=2
15. What kind of jaundice is associated with conjugated hyperbilirubinemia? P=1
16. What explains renal failure in subhepatic (mechanical) jaundice? P=2
17. What is local hemosiderosis? P=2
18. When does local hemosiderosis occur? P=1
19. When does general hemosiderosis occur? P=1
20. In what organs is hemosiderin deposited during intravascular hemolysis of erythrocytes? P=3
21. What is the definition of hemochromatosis? P=3
22. Name the lipidogenic pigments. P=3
23. Name the causes of secondary lipofuscinosis. P=4
24. What type of mixed dystrophy in the myocardium can naturally be expected in a patient with stomach cancer? What is the figurative name of the heart? P=3
25. What types of depigmentation do you know? Name them (with synonyms). P=5
26. Name the processes, indicating their localization, which may precede melanoma. P=2
27. What is the name of the ultrastructural formations of cells in which melanin synthesis occurs? P=1 What is the mechanism of excessive formation of this pigment? P=3
28. In what cases is there an increased focal formation of melanin? P=2
29. Specify the possible causes of Addison's disease. P=5
30. Name the types of calcification. P=3
31. List the forms of calcification. P=3
32. What mechanism underlies metastatic calcification? P=1
33. What type of calcification develops in hypercalcemia? P=1 metastatic calcification P=1
34. Name the main mechanisms of dystrophic calcification. P=3
35. Give examples of arterial wall petrification related to local dystrophic calcification. P=2
36. What is metastatic calcification? Name its reasons P=4
37. Name the local causes of stone formation. P=3
38. Name the types of gallstones according to their composition. P=3
39. Name the types of urinary stones according to their composition. P=5

Situational tasks

1. At the autopsy of a patient who died from heart disease with symptoms of severe heart failure, it was found in the lungs: the lungs were compacted, brown in section. Specify the pigment formed in the lungs. What is this condition of the lungs called? P=3
2. A patient with cancer of the esophagus died from cachexia. On autopsy: the heart is reduced in size, the myocardium has a brown color. What are the changes

found in the heart called? P=2 In what other organs and tissues can such changes be found? P=2 What pigment caused the brown coloration of the organs? P=1
3. After repeated blood transfusions, a patient with leukemia developed anemia, icteric staining of the skin and sclera. Death came from a hemorrhage in the brain. At autopsy, the internal organs, as well as the bone marrow, had a rusty color. With the formation of what pigment is the change in the color of organs associated? P=1 What is the name of the pathological process underlying the detected changes? P=2 Explain the mechanism of its development? P=1 What type of jaundice has developed in the patient? P=1
4. The patient died of typhoid fever. An autopsy revealed calcified foci of waxy necrosis in the rectus abdominis muscles. Name the type of calcification? P=1
5. An autopsy of a deceased patient with cachexia revealed a decrease in the size of the liver and heart, their tissue was brown in section. Explain the brown color of the liver and myocardium. P=1
6. A patient with tuberculosis has skin hyperpigmentation, weight loss, hypotension, adrenal insufficiency. What syndrome should be suspected? What causes skin hyperpigmentation? P=2
7. A woman who has had syphilis has depigmented spots on the skin of her neck. What is the term for these changes? What metabolic disorder do they indicate? P=2
8. At autopsy of a child who had tuberculous bronchoadenitis, whitish, crumbling masses were found in the lymph nodes of the bifurcation of the trachea. Under microscopy, the Koss reaction is positive. Name the described outcome of lymphadenitis. Name the type of calcification. P=3