

4th Year exam tests
For the discipline Medical Imaging

1. Cardio-thoracic ratio is:

- a. relation between cardiac convexities
- b. relation between maximal transverse diameter of the heart shadow and this of the chest
- c. relation between maximal and minimal diameter of the chest
- d. relation between diameter of the left ventricle and this of the chest
- e. relation between diameter of the ascending aorta and this of the chest

2. The calculation of the cardiothoracic ratio is performed using the data obtained by the following method of imaging investigation:

- a. Echocardiography M-mode
- b. 2D echocardiography
- c. standard chest radiograph frontal view
- d. Computed tomography angiography
- e. chest radiograph left lateral view

3. Magnetic resonance imaging is absolutely contraindicated in case of:

- a) The presence of a cardiac pacemaker
- b) Pregnancy
- c) Presence of implanted metallic-magnetic devices
- d) Intubated patients, on mechanical ventilation
- e) Claustrophobia

4. Magnetic resonance imaging is relatively contraindicated in case of:

- a) Severe arrhythmia
- b) Presence of cardiac pacemaker
- c) Presence of implanted ferro-magnetic devices
- d) Intubated patients, on mechanical ventilation
- e) Claustrophobia

5. In the Eco Doppler investigation, the red color means:

- a) Arterial blood
- b) Venous blood
- c) Direction of blood flow to the transducer
- d) Direction of blood flow from the transducer
- e) Turbulent flow

6. In Eco Doppler investigation, the blue color means:

- a) Arterial blood
- b) Venous blood
- c) Direction of blood flow to the transducer
- d) Direction of blood flow from the transducer
- e) Turbulent flow

7. The echocardiographic method used for the determination of the stenosis degree is:

- a) ECOCG module
- b) 2D ECOCG
- c) Pulsatil Doppler

- d) Continuous Doppler
- e) Color Doppler

8. Pulmonary arterial hypervolemia can be detected in case of:

- a) Mitral stenosis
- b) Atrial septal defect
- c) Tetralogy of Fallot
- d) Aortic stenosis
- e) Ventricular septal defect

9. Pulmonary arterial hypovolemia can be detected in case of:

- a) Mitral stenosis
- b) Atrial septal defect
- c) Tetralogy of Fallot
- d) Aortic stenosis
- e) Ventricular septal defect

10. Pulmonary venous congestion (stasis) can be detected in case of:

- a) Mitral stenosis
- b) Mitral regurgitation
- c) Tetralogy of Fallot
- d) Extensive myocardial infarction
- e) Ventricular septal defect

11. In which of the listed pathologies can develop pulmonary arterial hypertension:

- a) Mitral stenosis
- b) Extensive myocardial infarction
- c) Tetralogy of Fallot
- d) Aortic stenosis
- e) Ventricular septal defect

12. In selective angiopulmonography, the contrast medium is introduced:

- a) through the catheter in the left ventricle
- b) through the catheter in one of the branches of the pulmonary artery
- c) in the peripheral vein
- d) through the catheter into the aorta
- e) through the catheter in the right ventricle

13. In conventional coronary angiography, the contrast medium is introduced:

- a) through the catheter in the left ventricle
- b) through the catheter in the right ventricle
- c) in the peripheral vein
- d) through the catheter into the aorta
- e) through the catheter in the coronary arteries

14. In computed tomography angiography, the contrast media is introduced:

- a) through the catheter in the left ventricle
- b) through the catheter in the right ventricle
- c) in the peripheral vein
- d) through the catheter into aorta

e) through the catheter in the coronary arteries

15. What radiological changes are characteristic for pulmonary venous congestion:

- a) Pulmonary vascular pattern is decreased
- b) Pulmonary vascular pattern is enhanced
- c) Pulmonary hilum is dilated
- d) Kerley lines
- e) Homogenization of pulmonary hilum

16. In pulmonary arterial hypervolemia, chest radiography reveals:

- a) Decrease of pulmonary vascular pattern
- b) Increase of pulmonary vascular pattern
- c) Prominent pulmonary artery convexity
- d) Homogenization of pulmonary hilum
- e) Dilation of pulmonary hilum

17. In pulmonary arterial hypertension, chest radiography reveals:

- a) Narrowing of peripheral pulmonary arteries
- b) Dilation of peripheral pulmonary arteries
- c) Prominent pulmonary artery convexity
- d) Narrowing of pulmonary hilum
- e) Dilation of pulmonary hilum

18. In pulmonary arterial hypovolemia, chest radiography reveals:

- a) Decreased pulmonary vascular pattern
- b) Increased pulmonary vascular pattern
- c) Changes of pulmonary artery convexity
- d) Decreased transparency of the lung fields
- e) Dilation of pulmonary hilum

19. Current indications for cardiac catheterization and angiography are:

- a) Direct estimation of intracardiac and pulmonary blood pressure
- b) Exploration of aorta and its branches
- c) Mitral valve investigation
- d) Exploration of peripheral pulmonary vessels
- e) Exploration of coronary arteries

20. Current indications for computed tomography angiography are as follows:

- a) Direct estimation of intracardiac and pulmonary blood pressure
- b) Exploration of aorta and coronary vessels
- c) Mitral valve investigation
- d) Assessment of myocardial viability
- e) Exploration of peripheral systemic arteries

21. The limitations for computed tomography angiography are as follows:

- a) Sinus bradycardia
- b) Severe calcinosis of coronary arteries
- c) Mitral regurgitation
- d) Atrial fibrillation
- e) Pulmonary artery stenosis

22. The limitations for computed tomography angiography are as follows:

- a) Sinus bradycardia
- b) Tachycardia > 100 / min with beta-blockers contraindicated
- c) Insufficient duration of apnea
- d) Atrial fibrillation
- e) Obesity

23. To perform computed tomography angiography, the patient must be able to:

- a) Raise the arms above the head
- b) Take a deep breath
- c) Hold the expiration
- d) Bend the legs at the knees
- e) To remain motionless

24. In severe coronary artery calcinosis, the method of choice for assessing their condition is:

- a) Echocardiography
- b) Computed tomography angiography
- c) Magnetic resonance imaging
- d) Angiogram
- e) Myocardial scintigraphy

25. Transesophageal echocardiography is indicated in case of:

- a) The senile age of the patient
- b) The young age of the patient
- c) Suspicion of infectious endocarditis of the heart valve prosthesis
- d) Intraoperative control of mitral valve plastic repair quality
- e) Exudative pericarditis

26. Which of the following changes will be detected in case of severe mitral valve stenosis:

- a) Dilatation of the right atrium
- b) Dilatation of the left atrium
- c) Dilatation of the left ventricle
- d) Increased pulmonary blood pressure
- e) Normal pulmonary blood pressure

27. The imaging method of choice in case of exudative pericarditis is:

- a) Postero-anterior chest radiograph
- b) Transthoracic echocardiography
- c) Transesophageal echocardiography
- d) Computed tomography angiography
- e) SPECT (single photon emission computed tomography)

28. The imaging method of choice in case of rheumatic valvulopathy is:

- a) Postero-anterior chest radiograph
- b) Transthoracic echocardiography
- c) Magnetic resonance imaging
- d) Computed tomography angiography
- e) SPECT (single photon emission computed tomography)

29. Which of the following imaging methods is indicated for the purpose of assessing the condition of the coronary arteries:

- a) Postero-anterior chest radiograph
- b) Transthoracic echocardiography
- c) Computed tomography angiography
- d) Angiogram
- e) SPECT (single photon emission computed tomography)

30. Which of the following imaging methods is indicated for the purpose of evaluating myocardial perfusion and metabolism:

- a) Postero-anterior chest radiograph
- b) SPECT (single photon emission computed tomography)
- c) Transesophageal echocardiography
- d) Transthoracic echocardiography
- e) Magnetic resonance imaging

31. The SPECT method (single photon emission computed tomography) in cardiovascular pathology is indicated in case of:

- a) Ischemic heart disease
- b) Congenital mitral valve disease
- c) Aneurysm of the ascending aorta
- d) Coarctation of aorta
- e) Pulmonary arterial hypertension

32. The main goal of the SPECT investigation (single photon emission computed tomography) in ischemic heart disease is to determine:

- a) Degree of the coronary arteries stenosis
- b) Degree of the coronary arteries calcination
- c) Number of the affected arteries
- d) Myocardial viability of the ischemic area
- e) Prediction of left ventricular function after revascularization

33. SPECT investigation (single photon emission computed tomography) is indicated for diagnosing ischemic heart disease in case of:

- a) Left bundle branch block
- b) Coronary arteries calcinosis
- c) Typical clinic with normal ECG
- d) Atypical clinic with ECG deviations
- e) Right bundle branch block

34. In the Eco Doppler investigation, the yellow or green color means:

- a) Decreasing of blood flow velocity
- b) Increasing of blood flow velocity
- c) Direction of blood flow to the transducer
- d) Direction of blood flow from the transducer
- e) Turbulent flow

35. In the Eco Doppler color investigation, the basic colors for encoding blood flows are:

- a) Red
- b) Blue

- c) Green
- d) Yellow
- e) White

36. Which of the following is the main disadvantage of pulsatile Doppler mode:

- a) Possibility to estimate the blood flow velocity at any point chosen by the examiner
- b) Possibility to estimate high velocities
- c) Impossibility to estimate high velocities
- d) Impossibility to estimate the blood flow velocity at any point chosen by the examiner. Only the maximum velocity along the cursor line can be estimated
- e) Possibility to repeat the investigation as many times as needed

37. Which of the following is the main disadvantage of continuous Doppler mode:

- a) Possibility to estimate the blood flow velocity at any point chosen by the examiner
- b) Possibility to estimate high velocities
- c) Impossibility to estimate high velocities
- d) Impossibility to estimate the blood flow velocity at any point chosen by the examiner. Only the maximum velocity along the cursor line can be estimated
- e) Possibility to repeat the investigation as many times as needed

38. Which of the following are the advantages of pulsatile Doppler mode:

- a) Possibility to estimate the blood flow velocity at any point chosen by the examiner
- b) Possibility to estimate high velocities
- c) Impossibility to estimate high velocities
- d) Impossibility to estimate the blood flow velocity at any point chosen by the examiner. Only the maximum velocity along the cursor line can be estimated
- e) Possibility to repeat the investigation as many times as needed

39. Which of the following are the advantages of continuous Doppler mode:

- a) Possibility to estimate the blood flow velocity at any point chosen by the examiner
- b) Possibility to estimate high velocities
- c) Impossibility to estimate high velocities
- d) Impossibility to estimate the blood flow velocity at any point chosen by the examiner. Only the maximum velocity along the cursor line can be estimated
- e) Possibility to repeat the investigation as many times as needed

40. In radionuclide myocardial investigation, scanning protocols mandatory should include acquisition:

- a) Only at rest
- b) Only on physical exertion
- c) On patient request
- d) At rest and physical effort
- e) At rest and at "pharmacological" effort

41. In myocardial radionuclide investigation for the "pharmacological" effort are used:

- a) Anticoagulants
- b) Vasodilators
- c) Inhibitors of conversion enzymes
- d) Beta-blockers
- e) Diuretics

42. The pulmonary vascular pattern in the radiological image is determined by:

- a) the blood vessels of the small circuit
- b) blood vessels of the systemic circuit
- c) lymphatic vessels
- d) lung parenchyma
- e) bronchi and bronchioles

43. The purpose of standard chest radiographs in patients with cardiovascular disease is assessing:

- a) The dimensions of the heart
- b) The state of the blood circulation in the small circuit (pulmonary vascular pattern)
- c) The state of blood circulation in the systemic circuit
- d) Changes of cardiac hemodynamics
- e) Myocardial contractility

44. In case of suspected aortic dissection, the following imaging methods can be indicated:

- a) Computed tomography angiography
- b) Aortography
- c) Echocardiography
- d) SPECT (single photon emission computed tomography)
- e) Tomosynthesis

45. Standard radiography of the skull in neuroimaging allows to visualize:

- a) skull vault bone fractures
- b) intracerebral hemorrhages
- c) extracerebral hemorrhages
- d) intracerebral malformations
- e) cervical arteries malformations

46. On a standard radiograph of the skull we can determine:

- a) Skull base fractures
- b) Intracerebral tumors
- c) Fractures of the skull vault bones
- d) Pathological content accumulation in paranasal sinuses
- e) Cervical arteries atheromatous plaques

47. In case of brain tumor pathology, the standard radiography of the skull may show:

- a) Presence of intracerebral tumor mass
- b) Outbreaks of osteodestruction in the skull bones
- c) The appearance of vascular imprints determined by the enlargement of the epiploic vessels
- d) Displacement of the median structures
- e) Dehiscence of cranial sutures

48. The method of choice in visualizing of cranial vault bone fractures is:

- a) Magnetic Resonance Imaging
- b) Computed tomography
- c) Thermography
- d) Scintigraphy
- e) Ultrasonography

49. The sign of vascular fingerprints caused by enlarged epiploic vessels can be detected by the following imaging method:

- a) Ultrasonography
- b) Magnetic resonance imaging
- c) Computed tomography
- d) Standard radiography of the skull
- e) Target radiography of the sella turcica

50. Standard spinal radiography includes:

- a) Frontal view
- b) Lateral view
- c) Atlanto-axoid radiograph of the face, with open mouth
- d) Myelography
- e) Radiography with functional tests

51. The standard radiological investigation of the spine does NOT confirm:

- a) structural changes of the bones
- b) intramedullary tumors
- c) changes in vertebral statics
- d) vertebral fractures
- e) vertebral malformations

52. The standard radiological diagnosis of the spine reveals the following changes:

- a) structural changes of the bones
- b) intramedullary tumors
- c) changes in vertebral statics
- d) vertebral fractures
- e) vertebral malformations

53. Cerebral angiography indications include:

- a) diagnosis of cerebral artery aneurysms
- b) diagnosis of cerebral arteriovenous malformations
- c) diagnosis of hydrocephalus
- d) determining intracerebral hemorrhage source
- e) determination of inflammatory processes

54. Cervical Doppler examination includes the study of following arteries:

- a) external carotid artery
- b) subclavian artery
- c) common carotid artery
- d) internal carotid arteries
- e) submandibular artery

55. Cervical Doppler examination does NOT include the study of following arteries:

- a) external carotid artery
- b) subclavian artery
- c) common carotid artery
- d) internal carotid arteries
- e) submandibular artery

56. Indications for cervical Doppler examination are as follows, except:

- a) diagnosis of cervical artery stenosis
- b) diagnosis of arteriovenous fistulas
- c) diagnosis of carotid dissection
- d) diagnosis of orthostatic hypotension
- e) diagnosis of systemic hypertension

57. Transfontanellar brain ultrasonography has the following characteristics:

- a) high cost compared to other imaging methods
- b) non-invasive
- c) non-irradiant
- d) fast in terms of execution
- e) operator dependent

58. Transcranial Doppler ultrasonography is performed through:

- a) temporal area
- b) orbits
- c) occipital foramen
- d) bone sutures
- e) retroauricular areas

59. The indications for transcranial Doppler are:

- a) determining the changes at the carotid artery bifurcation level
- b) determination of intracerebral arterial changes
- c) determination of intracerebral hemorrhages
- d) determination of cervical arterial changes
- e) determination of extracerebral hemorrhages

60. Using contrast media in neuroimaging is indicated in:

- a) intracerebral tumors
- b) multiple sclerosis
- c) cerebral atrophy
- d) hydrocephalus
- e) craniocerebral trauma

61. Using contrast media in neuroimaging is NOT indicated in case of:

- a) intracerebral tumors
- b) multiple sclerosis
- c) cerebral atrophy
- d) hydrocephalus
- e) intracerebral arteriovenous malformations

62. Which of the following statements about contrast administration in neuroimaging are correct:

- a) the blood-brain barrier does not allow to contrast neurogenic structures
- b) the injection of the contrast substance variably modifies the density of different anatomical and pathological structures
- c) the alteration of the blood-brain barrier does not allow the contrast of some pathological structures

- d) injection of the contrast substance increases the difference in visualization between the white matter and gray
- e) vascular structures, pituitary, epiphysis, choroid plexuses are not influenced by the blood-brain barrier

63. Intracerebral mass syndrome includes:

- a) the presence of intracerebral mass
- b) changes in ventricular volume
- c) displacement of the interhemispheric fissure
- d) enlargement of the subarachnoid space
- e) fractures of the cervical vertebrae

64. Computed tomography without contrast media is indicated in the following cases:

- a) open cranio-cerebral trauma
- b) closed cranio-cerebral trauma
- c) post-traumatic sequelae
- d) extra- and intracerebral hemorrhages
- e) cerebral venous thrombosis

65. Brain computed tomography is the method of choice in the following cases:

- a) acute intracerebral hemorrhage
- b) orbital pathology
- c) craniocerebral malformations
- d) pituitary pathology
- e) eyeball pathology

66. In pathology of the spinal column computed tomography is indicated in the following cases:

- a) vertebral fractures
- b) degenerative-vertebral dystrophic changes
- c) spinal cord injury
- d) inflammatory medullary processes
- e) disc herniation

67. The administration of paramagnetic contrast agent in magnetic resonance imaging is indicated in the following cases, excepting:

- a) brain tumors
- b) brain infections
- c) arterio-venous malformations
- d) cerebral atrophic changes
- e) cranio-cerebral trauma

68. As a method of choice, magnetic resonance imaging is indicated in the following pathological processes of the craniocerebral region:

- a) pituitary pathology
- b) eyeball tumors
- c) pathology of the cerebral white matter
- d) extra- and intracerebral hemorrhages
- e) malformations of the facial bones

69. The indications for magnetic resonance imaging in craniocerebral pathology are as follows:

- a) bone trauma
- b) tumor pathology
- c) white matter diseases
- d) craniocerebral malformations
- e) infectious pathology

70. The indications for magnetic resonance imaging in craniocerebral pathology are as follows, excepting:

- a) bone trauma
- b) tumor pathology
- c) diseases of the white matter
- d) craniocerebral malformations
- e) infectious pathology

71. Indications for the magnetic resonance imaging investigation in spinal column pathology are the following:

- a) intervertebral disc herniation and protrusions
- b) multiple sclerosis
- c) arterio-venous malformations
- d) tumor pathology
- e) assessment of the degree of osteoporosis

72. Which of the following statements regarding imaging diagnosis of spinal column trauma are correct:

- a) Magnetic resonance imaging is the method of choice in determining spinal cord ruptures
- b) Magnetic resonance imaging is the method of choice in determining spinal cord compression
- c) Computed tomography is the method of choice in determining spinal cord compression
- d) Computed tomography is the method of choice in determining the vertebral bone fragment located in the medullary canal
- e) Magnetic resonance imaging is the method of choice in determining the vertebral bone fragment located in the medullary canal

73. Acute intracerebral ischemic focus can be determined by the following imaging method:

- a) Magnetic resonance imaging
- b) Computed tomography
- c) Scintigraphy
- d) Doppler examination
- e) Standard radiography of the skull

74. The acute intracerebral hemorrhagic focus can be determined by the following imaging method:

- a) Ultrasonography
- b) Angiography
- c) Computed tomography
- d) Magnetic resonance imaging
- e) Myelography

75. In diagnosis of craniocerebral trauma which of the following methods are used:

- a) Standard radiography
- b) Computed tomography

- c) Electroencephalography
- d) Magnetic resonance imaging
- e) Scintigraphy

76. In case of craniocerebral trauma, computed tomography is indicated to determine:

- a) Presence of hemorrhage and intracerebral hematomas
- b) Hydrocephalus and pneumocephaly
- c) Deviations of the midline structures
- d) Pathological changes in the temporomandibular joint
- e) Pathological changes in the spinal cord

77. Magnetic resonance imaging in craniocerebral trauma is useful for:

- a) evaluation of brainstem lesions, white matter lesions
- b) assessment of post-traumatic sequelae
- c) prognosis determination
- d) is not informative in case of craniocerebral trauma
- e) evaluation of cranial vault bone fractures

78. Which of the following statements about magnetic resonance imaging in craniocerebral trauma is correct:

- a) It is not the method of choice in the case of lesions with neurosurgical indication. These are determined better and faster on computed tomography.
- b) Does not require non-magnetic resuscitation materials
- c) It is the method of choice in case of bone fractures of the maxillofacial area
- d) It has no limits in the diagnosis of craniocerebral trauma
- e) Allows a better and faster investigation in the case of lesions with neurosurgical indication

79. Select signs of epidural hematoma on computed tomography:

- a) Appearance of biconvex lens
- b) Localization immediately below the internal lamina
- c) It appears as a hypodense area
- d) Examination in the bone window reveals cranial fractures
- e) Pathology localization cannot be specified

80. Select imaging features of the subdural hematoma:

- a) With hemispherical topography, fronto-temporo-parietal, arranged hemispherically, immediately below the dura mater
- b) Frequent with occipital localization, with definite contour, well defined
- c) It is hyperdense
- d) It has a sickle-shaped shape, concave inwards
- e) Computed tomography does not allow the determination of hematoma volume

81. Which of the following statements characterize subarachnoid hemorrhage on computed tomography:

- a) Location at the level of the hemispherical grooves, cerebral cisterns, brainstem
- b) Subdural localization
- c) It is hyperdense
- d) It is always associated with dilation of the lateral ventricles.
- e) It is hypodense

82. Which of the following radioimaging methods are used in the diagnosis of osteoarticular trauma:

- a) Arthroscopy
- b) Standard radiography
- c) Computed tomography
- d) Arthrography
- e) Magnetic Resonance Imaging

83. Standard radiography in patients with osteoarticular trauma is performed in:

- a) Frontal and lateral views
- b) Only frontal view
- c) Only lateral view
- d) In two views, not including the joints in the examination area
- e) At least one joint of the injured segment must be included in the examination area

84. What is the most informative imaging method in diagnosis ligament ruptures:

- a) Scintigraphy
- b) Magnetic resonance imaging
- c) Computed tomography
- d) Tomosynthesis
- e) Arthrography

85. Depending on the fracture line, it may be classified:

- a) oblique
- b) transversal
- c) in the form of the letter "T"
- d) lateral
- e) longitudinal

86. Which of the following statements regarding spine fractures is correct:

- a) at the level of the first two cervical vertebrae, the trauma results more frequently with the dislocation of the atlas on the axis, usually followed by the odontoid fracture
- b) the odontoid fracture can be well highlighted on the profile radiograph and on the transbuccal incidence
- c) odontoid fracture cannot be detected on profile radiography and transbuccal incidence
- d) fractures of the last cervical vertebrae translate into "wedge" compressions of the vertebral body
- e) apophyseal fractures usually result in pseudarthrosis

87. Skull fractures are characterized by:

- a) Early formation of bone callus
- b) Diastatic fractures
- c) Depressive fractures (clogging)
- d) Linear fractures
- e) Angular displacement of fragments

88. Which of the following imaging methods are informative for assessing luxations (joint dislocations):

- a) Standard radiography
- b) Arthrography

- c) Scintigraphy
- d) Computed tomography
- e) Magnetic resonance imaging

89. The longitudinal displacement of the fractured bone fragments can be:

- a) By elongation
- b) By sliding
- c) By angulation
- d) By interlocking
- e) By rotation

90. The method of choice for diagnosing early-stage of femoral head aseptic necrosis is:

- a) standard radiography
- b) computed tomography
- c) bone scintigraphy
- d) magnetic resonance imaging
- e) ultrasonography

91. In case of femoral head aseptic necrosis, magnetic resonance imaging investigation reveals:

- a) bone edema
- b) contour irregularities of the cortex
- c) intraosseous cystic formations
- d) changes in the intra-articular space
- e) deviation of the pelvic axis

92. The radiological image of rheumatoid arthritis includes:

- a) Soft tissue edema
- b) Juxtaarticular osteoporosis
- c) Bone erosions
- d) Marginal osteophytosis
- e) Bone erosions in "rat bite"

93. The radiological picture of rheumatoid arthritis includes:

- a) Subchondral sclerosis
- b) Narrowing of radiological articular space
- c) Ankylosis of the intercarpal joints
- d) Dilation of radiological articular space
- e) Aseptic necrosis.

94. Useful imaging methods for diagnosing rheumatoid arthritis are:

- a) Standard palmo-plantar radiography
- b) Computed tomography of the joint
- c) Joint ultrasonography
- d) Magnetic Resonance Imaging of Joints
- e) Arthrography

95. The characteristic deformities of the hands in rheumatoid arthritis are:

- a) Boutonniere deformities
- b) Ulnar deviation of the fingers
- c) Bone erosions in "rat bite".

- d) Swan neck deformity
- e) Ankylosis of the distal interphalangeal joints

96. For a positive diagnosis of rheumatoid arthritis, the clinical signs should persist no less than:

- a) 3 weeks
- b) 4 weeks
- c) 6 weeks
- d) 8 weeks
- e) 12 weeks

97. For the first degree of rheumatoid arthritis progression, the following clinical-radiological changes are characteristic:

- a) juxtaarticular osteoporosis, no other changes
- b) juxtaarticular osteoporosis, intercostal muscle atrophy, extraarticular tissue damage
- c) osteoporosis, joint deformity, muscle atrophy, extraarticular soft tissue changes
- d) bony or fibrous ankylosis
- e) radiological signs of cartilage destruction.

98. For the second degree of rheumatoid arthritis progression, the following clinical-radiological changes are characteristic:

- a) juxtaarticular osteoporosis, no other changes
- b) juxtaarticular osteoporosis, intercostal muscle atrophy, extraarticular tissue damage
- c) osteoporosis, joint deformity, muscle atrophy, extraarticular soft tissue changes
- d) bony or fibrous ankylosis
- e) radiological signs of cartilage destruction.

99. For the 4th degree of rheumatoid arthritis progression, the following clinical-radiological changes are characteristic:

- a) juxtaarticular osteoporosis, no other changes
- b) juxtaarticular osteoporosis, intercostal muscle atrophy, extraarticular tissue damage
- c) osteoporosis, joint deformity, muscle atrophy, extraarticular soft tissue changes
- d) bony or fibrous ankylosis
- e) radiological signs of cartilage destruction.

100. Soft tissue calcifications are specific for:

- a) Systemic lupus erythematosus
- b) Rheumatoid arthritis
- c) Juvenile rheumatoid arthritis
- d) gout
- e) Reactive arthritis

101. The ulnar deviation of the fingers due to the periarticular changes of the soft tissues is specific for:

- a) Rheumatoid arthritis
- b) Osteoarthritis
- c) Systemic lupus erythematosus
- d) Gout
- e) Reactive arthritis.

102. Ulnar deviation of the fingers due to bone erosion is specific for:

- a) Rheumatoid arthritis
- b) Osteoarthritis
- c) Systemic lupus erythematosus
- d) Gout
- e) Psoriatic arthritis

103. Aseptic bone necrosis caused by vasculitis is specific for:

- a) Rheumatoid arthritis
- b) Osteoarthritis
- c) Systemic lupus erythematosus
- d) Gout
- e) Juvenile rheumatoid arthritis

104. The radiological features of systemic lupus erythematosus includes:

- a) Epiphyseal diffuse osteoporosis
- b) Juxtaarticular osteoporosis
- c) Thickening of periarticular tissues
- d) Marginal bone erosion
- e) The presence of sesamoid bones

105. The radiological features of systemic lupus erythematosus includes:

- a) Ulnar deviation of the fingers due to the periarticular changes of the soft tissues
- b) Aseptic necrosis due to vasculitis
- c) Soft tissue calcifications
- d) Ulnar deviation of the fingers together with bone erosions
- e) Bone erosions in "rat bite"

106. Extraarticular imaging signs in systemic lupus erythematosus include:

- a) Lupus pneumonia
- b) Round pneumonia
- c) Discoidal atelectasis
- d) Lobar atelectasis
- e) Segmental atelectasis

107. Extraarticular imaging signs in systemic lupus erythematosus may include:

- a) Lobar pneumonia
- b) Hilar lymphadenopathy
- c) Mediastinal lymphadenopathy
- d) Exudative pleural effusion
- e) Pulmonary edema

108. Cardiovascular manifestations in systemic lupus erythematosus may include:

- a) Pulmonary artery stenosis
- b) Aortic stenosis
- c) Myocarditis
- d) Pericarditis
- e) Endocarditis

109. The radiological signs of Gout are:

- a) Joint effusion

- b) Erosions in "rat bite"
- c) Lithic lesions with adjacent sclerosis
- d) Juxtaarticular osteoporosis
- e) Marginal osteophytosis

110. The Tophi is the pathognomonic sign of:

- a) Rheumatoid arthritis
- b) Systemic lupus erythematosus
- c) Gout
- d) Juvenile rheumatoid arthritis
- e) Osteoarthritis

111. Grade I severity of osteoarthritis based on Kellgren and Lawrence classification has the following characteristics:

- a) Minimal changes (insignificant thinning of the intraarticular space, unique osteophytes)
- b) Uncertain signs of cystic restructuring of bone structure, linear osteosclerosis in the subchondral regions, the appearance of tiny marginal osteophytes
- c) Absence of radiological signs
- d) Moderate changes (moderate narrowing of the intra-articular space, multiple osteophytes)
- e) Significant changes (practically no intra-articular space is determined, massive osteophytes).

112. Grade II severity of osteoarthritis based on Kellgren and Lawrence classification has the following characteristics:

- a) Minimal changes (insignificant thinning of the intraarticular space, unique osteophytes)
- b) Uncertain signs of cystic restructuring of bone structure, linear osteosclerosis in the subchondral regions, the appearance of tiny marginal osteophytes
- c) Moderate changes (moderate narrowing of the intra-articular space, multiple osteophytes)
- d) Absence of radiological signs
- e) Significant changes (practically no intra-articular space is determined, massive osteophytes)

113. Grade III severity of osteoarthritis based on Kellgren and Lawrence classification has the following characteristics:

- a) Minimal changes (insignificant thinning of the intraarticular space, unique osteophytes)
- b) Uncertain signs of cystic restructuring of bone structure, linear osteosclerosis in the subchondral regions, the appearance of tiny marginal osteophytes
- c) Moderate changes (moderate narrowing of the intra-articular space, multiple osteophytes)
- d) Absence of radiological signs
- e) Significant changes (practically no intra-articular space is determined, massive osteophytes)

114. Grade IV severity of osteoarthritis based on Kellgren and Lawrence classification has the following characteristics:

- a) Minimal changes (insignificant thinning of the intra-articular space, unique osteophytes)

- b) Uncertain signs of cystic restructuring of bone structure, linear osteosclerosis in the subchondral regions, the appearance of tiny marginal osteophytes
- c) Moderate changes (moderate narrowing of the intra-articular space, multiple osteophytes)
- d) Absence of radiological signs
- e) Significant changes (practically no intra-articular space is determined, massive osteophytes)

115. The radiological signs of osteoarthritis includes:

- a) Degenerative bone erosions
- b) Subchondral cysts
- c) Juxtaarticular osteoporosis
- d) Narrowing of the articular radiological space
- e) Ulnar deviation of the fingers determined by periarticular changes

116. The radiological signs of osteoarthritis includes:

- a) Narrowing of the articular radiological space
- b) Subchondral sclerosis
- c) Osteophytosis
- d) Ulnar deviation of the fingers determined by bone erosions
- e) Muscle contractions

117. The most commonly used imaging method for assessing osteoarthritis is:

- a) Computed tomography
- b) Magnetic Resonance Imaging
- c) Standard radiography
- d) Ultrasonography
- e) Scintigraphy

118. The most informative imaging method in assessing articular cartilage changes is:

- a) Computed tomography
- b) Magnetic Resonance Imaging
- c) Standard radiography
- d) Fluoroscopy
- e) Tomosynthesis

119. The most commonly used imaging method for detecting joint fluid (effusion) is:

- a) Ultrasonography
- b) Computed tomography
- c) Tomosynthesis
- d) Magnetic Resonance Imaging
- e) Scintigraphy

120. Select the correct answers related to the tuberculosis complex:

- a) It is a form of primary tuberculosis
- b) It is a form of secondary tuberculosis
- c) It represents a lesion to the lung parenchyma
- d) It represents a pleural lesion
- e) It represents a lesion to the intrathoracic lymph nodes

121. Select the correct answers about tuberculous lymphadenopathy:

- a) It is a form of primary tuberculosis
- b) It is a form of secondary tuberculosis
- c) It represents a lesion to the lung parenchyma
- d) It represents a pleural lesion
- e) It represents a lesion to the intrathoracic lymph nodes

122. Which of the listed CT signs are specific to tuberculosis:

- a) Halo sign
- b) "Inverted halo" sign
- c) The sign of the silhouette
- d) The sign of the "budding tree" ("the budding branch")
- e) The sign of "miliary dissemination"

123. Which of the following CT signs can be found in the case of tuberculosis:

- a) "Pearl ring" sign
- b) The sign of "tree in bud"
- c) The sign of "rising air"
- d) The cobblestone sign
- e) The "ground glass" sign

124. What does represent the sign of the " tree in bud " on computer tomography:

- a) Small lung nodules
- b) Large pulmonary nodules
- c) Nodules near to the bronchial tree
- d) Centrolobular nodules
- e) Enlarged lymph nodes in volume

125. What is the morphological substrate of the " tree in bud " sign on computer tomography:

- a) filling the lumen of the bronchioles with air
- b) filling the lumen of the bronchioles with pus
- c) filling the lumen of the bronchioles with mucus
- d) filling the lumen of the bronchioles with caseous masses
- e) filling the lumen of the bronchioles with blood

126. In pulmonary tuberculosis, the sign of the "tree in bud" appears on the computer tomography because:

- a) the branched path of the terminal airways is visible, invisible on standard radiography
- b) the dilation of the terminal bronchi
- c) the lumen of the bronchioles is filled with pathological contents
- d) appear small lung nodules located peripherally in the lung parenchyma
- e) appear large lung nodules centrally located

127. In pulmonary tuberculosis, the sign of "acute miliary dissemination" on computed tomography appears:

- a) pulmonary macronodules
- b) nodules of different sizes (large and small)
- c) lung nodules smaller than 3 mm
- d) asymmetrically distributed caverns
- e) symmetrically distributed nodes "in the mirror"

128. Primary tuberculosis is:

- a) observed in patients who have not previously been exposed to *M. tuberculosis*
- b) observed in patients previously sensitized to *M. tuberculosis*
- c) the most common in childhood
- d) the most common in adulthood
- e) the most common in the elderly

129. Radiologically, primary tuberculosis is manifested by:

- a) lesion of lung parenchyma
- b) mediastinal lymphadenitis
- c) Ranke complex
- d) miliary disease
- e) airway involvement

130. The radiological image of the Ghon focus represents:

- a) nodular opacity located mainly in the upper lung field
- b) nodular opacity located mainly in the middle or lower lung field
- c) parietal opacity suggestive of pleural effusion
- d) combination of enlarged or calcified lymph nodes and pleural effusion
- e) affection of the mediastinal lymph nodes

131. The Ranke complex includes:

- a) nodular opacity located mainly in the upper lung field
- b) nodular opacity located mainly in the middle or lower lung field
- c) lymphangitis
- d) combination of enlarged or calcified lymph nodes and pleural effusion
- e) affection of the mediastinal lymph nodes

132. Which of the following statements about miliary tuberculosis are correct:

- a) is radiologically manifested by multiple small opacities (2-3 mm)
- b) is manifested radiologically by nodular opacity at the initial site of involvement of the lung parenchyma at the time of the first infection
- c) manifests itself radiologically by intense and homogeneous pulmonary infiltration
- d) is found in the elderly, young children and immunocompromised persons
- e) is manifested radiologically by symmetrically diffused opacities disseminated in bilateral lung fields

133. Which of the following statements about secondary tuberculosis are correct:

- a) is observed in patients who have not previously been exposed to *M. tuberculosis*
- b) is observed in patients previously sensitized to *M. tuberculosis*
- c) is most common in infants and children
- d) is most common in adulthood
- e) the term is used to refer to both reinfection and reactivation of tuberculosis

134. Which of the following statements about primary tuberculosis are correct:

- a) it is usually self-limiting
- b) it is progressive, with cavitation
- c) frequently leads to extensive hematogenous dissemination in both lungs
- d) healing usually occurs with fibrosis and calcifications

e) may be manifested by mediastinal lymphadenopathy

135. Which of the following statements about secondary tuberculosis are correct:

- a) it is usually self-limiting
- b) it is progressive, with cavitation
- c) frequently leads to extensive hematogenous dissemination in both lungs
- d) healing usually occurs with fibrosis and calcifications
- e) may be manifested by mediastinal lymphadenopathy

136. Which of the following forms of tuberculosis is referring to secondary genesis:

- a) the primary tuberculous complex
- b) tuberculosis of the intrathoracic lymph nodes
- c) infiltrative pulmonary tuberculosis
- d) fibrocavitary tuberculosis
- e) nodular tuberculosis

137. Which of the indicated forms of tuberculosis is referring to primary genesis:

- a) the primary tuberculous complex
- b) tuberculosis of the intrathoracic lymph nodes
- c) infiltrative pulmonary tuberculosis
- d) the Ghon focus
- e) fibro-cavitary pulmonary tuberculosis

138. The dimensions of pulmonary foci in acute miliary tuberculosis are:

- a) small
- b) medium
- c) large
- d) medium and large
- e) varied

139. In chronic disseminated pulmonary tuberculosis, the radiological picture of the pulmonary foci is characterized by the following:

- a) the mediastinum is not displaced
- b) unilateral location
- c) asymmetric location
- d) symmetrical location
- e) traction of the mediastinum towards the region of maximum damage

140. The distribution of foci in acute miliary tuberculosis is:

- a) uniform
- b) uneven
- c) in costodiaphragmatic sinuses
- d) unilateral
- e) bilateral

141. The distribution of foci in subacute disseminated pulmonary tuberculosis is:

- a) uniform
- b) in costodiaphragmatic sinuses
- c) in group

- d) unilateral
- e) bilateral

142. The most extensive forms of infiltrative pulmonary tuberculosis include:

- a) lung fissure inflammation
- b) tuberculoma
- c) pulmonary lobe inflammation
- d) Assman round infiltrate
- e) caseous pneumonia

143. Limited forms of infiltrative pulmonary tuberculosis include:

- a) lung fissure inflammation
- b) tuberculoma
- c) pulmonary lobe inflammation
- d) Assman round infiltrate
- e) caseous pneumonia

144. What does represent fibro-cavitary tuberculosis:

- a) a recent form of tuberculosis
- b) a limited form of tuberculosis
- c) an extensive form of tuberculosis
- d) a chronic form of tuberculosis
- e) a form of tuberculosis characteristic for children

145. Radiological Redeker infiltrate appears as an opacity:

- a) round shaped with a diameter over 2 cm
- b) oval shaped with dimensions 1.5 x 2 cm
- c) in the shape of a cloud
- d) occupying an entire lobe
- e) in the shape of a marginal triangle

146. Destructive cavities in nodular pulmonary tuberculosis are characterized by:

- a) thin walls
- b) thickened walls
- c) relatively thin walls, but unevenly thickened
- d) presence of air-fluid level
- e) triangular shape

147. Radiological nebula infiltrate is presented as:

- a) round opacity with a diameter over 2 cm
- b) extended cloud-shaped opacity
- c) opacity occupying an entire lobe
- d) opacity in the shape of a marginal triangle
- e) oval opacity with dimensions 1.5 x 2 cm

148. Radiologically lobar infiltrate is characterized by:

- a) extended cloud-shaped opacity
- b) triangular shaped opacity
- c) opacity that occupies the entire area of a lobe
- d) round opacity with a diameter over 2 cm

e) oval opacity with dimensions 1.5 x 2 cm

149. For renal pathology evaluation are used the following imaging methods:

- a) intravenous urography
- b) hysterosalpingography
- c) simple reno-bladder radiography
- d) computed tomography
- e) lithotripsy

150. What of the listed imaging methods used for renal pathology evaluation, does not use ionizing radiation:

- a) Intravenous urography
- b) Magnetic resonance imaging
- c) Kidney ureter bladder radiography (KUB)
- d) Uretrography
- e) Ultrasonography

151. Ultrasonographic investigation for evaluation renal pathology is performed:

- a) transvaginal
- b) transabdominal
- c) transrectal
- d) in orthostatism
- e) in Trendelenburg position

152. The screening method in nephrolithiasis is:

- a) computed tomography without contrast
- b) magnetic resonance imaging
- c) ultrasonography
- d) computed tomography with contrast substance
- e) positron emission tomography

153. The most sensitive imaging method in detecting nephrolithiasis is:

- a) Computed tomography without contrast
- b) Magnetic resonance imaging
- c) Hysterosalpingography
- d) Simple abdominal radiography
- e) Positron emission tomography

154. What pathologies can be determined on a kidney ureter bladder radiography (KUB):

- a) Radiolucent stones
- b) Radiopaque stones
- c) Kidney tumors
- d) Renal cysts
- e) Chronic pyelonephritis

155. Cystography is:

- a) Ultrasound investigation of the urinary bladder
- b) Endoscopic investigation of the urinary bladder
- c) Radiological investigation of the urinary bladder

- d) Radiological investigation of the urethra
- e) Radiological investigation of the kidneys

156. Uretrography is contraindicated in case of:

- a) Urethral strictures
- b) Infertility
- c) Hydronephrosis
- d) Urethral infections
- e) Bladder cancer

157. Uretrography is indicated in case of:

- a) Urethral strictures
- b) Infertility
- c) Hydronephrosis
- d) Urethral infections
- e) Bladder cancer

158. What radio-imaging methods can determine nephrolithiasis:

- a) urethrography
- b) ultrasonography
- c) computed tomography
- d) simple reno-bladder radiography
- e) renal scintigraphy

159. For the diagnosis and imaging evaluation of the renal cyst category based on Bosniak classification is indicated:

- a) kidney ureter bladder radiography (KUB)
- b) Computed tomography
- c) Ultrasonography
- d) Scintigraphy
- e) Uretrography

160. An intravenous administration of the contrast agent made possible to visualize an increase in size renal shadow, its rotation and pushing by a mass, deforming of the calyx-pelvis system, amputation of calyces. What imaging method was performed:

- a) Magnetic resonance imaging
- b) Intravenous urography
- c) kidney ureter bladder radiography (KUB)
- d) Ultrasonography
- e) Positron emission tomography

161. In urological pathology angiography is indicated for:

- a) Detection of kidney stones
- b) Detection of ureteral strictures
- c) Evaluation of tumor vascularization
- d) Detection of urethral strictures
- e) Detection of renal vascular pathology

162. A liquid-containing mass is detected in a kidney. It is hypodense, without contrast uptake, +15 UH, what is characteristic for renal cyst. What imaging method was applied:

- a) intravenous urography
- b) ultrasonography
- c) computed tomography with contrast enhancement
- d) positron emission tomography
- e) magnetic resonance imaging

163. The most informative imaging method for differential diagnosis between ectopy and renal ptosis is:

- a) intravenous urography
- b) computed tomography with contrast enhancement
- c) ultrasonography
- d) magnetic resonance imaging
- e) computed tomography without contrast

164. Contraindications to intravenous urography include:

- a) urethral infections
- b) pregnancy
- c) blood creatinine level ≥ 5 mg / dl
- d) renal failure
- e) allergy to iodinated contrast media

165. Which of the following methods used for evaluation of renal pathology do not refer to radio-imaging methods:

- a) lithotripsy
- b) intravenous urography
- c) laparoscopy
- d) ultrasonography
- e) positron emission tomography by computed tomography

166. Which pathological change characteristic for renal trauma can be detected by contrast enhanced computed tomography:

- a) Kidney stones
- b) Extravasation of the contrast substance
- c) Duplication of the renal pelvis
- d) Multiple renal arteries
- e) Normal parenchymal index

167. The phases of contrast enhanced computed tomography in the evaluation of renal pathology are:

- a) Native
- b) Arterial
- c) Venous
- d) Portal
- e) Urographic

168. The most informative imaging method for differential diagnosis between agenesis and renal aplasia is:

- a) intravenous urography
- b) ultrasonography
- c) computed tomography without contrast

- d) computed tomography angiography
- e) scintigraphy

169. Select the characteristic imaging signs for hydronephrosis:

- a) renal pelvis reduced in volume
- b) renal pelvis increased in volume
- c) dilated calyces
- d) constricted calyces
- e) dilated ureters

170. The most informative imaging method to diagnose prostate cancer is:

- a) intravenous urography
- b) transabdominal ultrasonography
- c) computed tomography
- d) magnetic resonance imaging
- e) transrectal ultrasonography

171. In renal polycystosis, computed tomography without contrast reveals:

- a) enlargement of the kidney
- b) reduction in size of the kidney
- c) unchanged kidney size
- d) bilateral renal lesion
- e) unilateral renal lesion

172. The most rational imaging method to diagnose hydronephrosis is:

- a) ultrasonography
- b) kidney ureter bladder radiography (KUB)
- c) retrograde pyelography
- d) scintigraphy
- e) intravenous urography

173. The imaging investigation determined a kidney reduced in size with the renal artery present, an unclear contour of renal calyces, and delayed excretory function. The most likely diagnosis is:

- a) Kidney cancer
- b) Renal agenesis
- c) Renal hypoplasia
- d) Renal cyst
- e) Chronic pyelonephritis

174. Ultrasonographic investigation revealed the left testicle with an abnormal orientation and lack of blood flow on Doppler examination, while maintaining normal testicular echogenicity. The most likely diagnosis is:

- a) testicular torsion
- b) testicular cancer
- c) testicular aplasia
- d) testicular inflammation
- e) testicular trauma

175. In case of radiolucent renal stone, the most informative imaging methods are:

- a) kidney ureter bladder radiography (KUB)
- b) intravenous urography
- c) computed tomography
- d) magnetic resonance imaging
- e) scintigraphy

176. Select the limitations for ultrasonographic investigation of kidneys:

- a) cannot differentiate between benign and malignant renal formations
- b) renal stones with dimensions > 3-4 mm can be viewed
- c) sometimes it cannot differentiate between malignant tumors and renal abscesses
- d) impossibility to visualize the renal fascia
- e) the possibility of evaluating hydronephrosis

177. In the case of kidney cancer, intravenous urography reveals:

- a) Dilation of the pyelocaliceal system
- b) Filling defect at the level of the pyelocaliceal system with regular contour
- c) Filling defect at the level of the pyelocaliceal system with irregular contour
- d) Amputation of the calyces
- e) The pyelocaliceal system nondeformed

178. Which of the following imaging methods is most informative in assessing renal function:

- a) kidney ureter bladder radiography (KUB)
- b) Positron emission tomography by computed tomography
- c) Computed tomography without contrast
- d) Magnetic resonance imaging
- e) Uretrography

179. Imaging classification of renal cysts includes the following localization variants:

- a) Subcapsular
- b) Cortical
- c) Intracaliceal
- d) Medullary
- e) Parapelvical

180. The imaging method of choice for testicular torsion is:

- a) intravenous urography
- b) Doppler ultrasonography
- c) 2D ultrasonography without Doppler
- d) computed tomography with contrast substance
- e) magnetic resonance imaging

181. In assessing the degree of nephroptosis, the following are considered as landmarks:

- a) location of the lower kidney pole
- b) location of the upper kidney pole
- c) location of the medial kidney edge
- d) location of the lateral kidney edge
- e) location of the renal pelvis

182. Enlargement of the kidney in size can be determined in case of:

- a) development of diffuse scar processes

- b) development of a malignant process
- c) development of sclerosis processes
- d) renal artery hypoplasia
- e) development of a cyst

183. What imaging investigation is most rationally performed in patients with suspicion of acute pyelonephritis:

- a) retrograde pyelography
- b) ultrasonography
- c) kidney ureter bladder radiography (KUB)
- d) renal angiography
- e) scintigraphy

184. The following changes: moderate dilation of the pelvis and calyx, normal parenchymal index, the secretory function preserved, are characteristic for:

- a) shrunken kidney
- b) solitary renal cyst
- c) kidney tumor
- d) grade 4 hydronephrosis
- e) grade 1 hydronephrosis

185. Ultrasonographic examination in chronic glomerulonephritis most commonly reveals:

- a) low echogenicity
- b) increased parenchymal index
- c) the unchanged calyx-pelvis system
- d) the presence of a hyperechoic structure with the shadow sign
- e) dilation of the pelvis with the parenchymal index decreased

186. In which of the following cases, renal scintigraphy may be indicated:

- a) Chronic cystitis
- b) Kidney development abnormalities
- c) Kidney tumors
- d) Kidney infections
- e) Kidney trauma

187. What pathological changes can be determined by ultrasonography in case of chronic pyelonephritis:

- a) Hypoechocity
- b) Hyperechocity
- c) Reduced renal parenchyma
- d) Deformed pyelocaliceal system
- e) Decreased kidney size

188. Renal scintigraphy uses:

- a) barium sulphate
- b) technetium 99
- c) iodinated contrast agent
- d) lipid soluble contrast agent
- e) paramagnetic substance

189. Doppler investigation refers to:

- a) kidney ureter bladder radiography (KUB)
- b) ultrasonography
- c) magnetic resonance imaging
- d) scintigraphy
- e) computed tomography

190. In case of suspicion of glomerulonephritis, the imaging method of first choice is:

- a) Computed tomography with contrast
- b) Scintigraphy
- c) Intravenous urography
- d) Retrograde pyelography
- e) Ultrasonography

191. In case of renal insufficiency the following methods of investigation are used:

- a) renal scintigraphy
- b) ultrasonography
- c) kidney ureter bladder radiography (KUB)
- d) intravenous urography
- e) retrograde ureteropyelography

192. The normal renal contour is:

- a) regular - curvilinear, convex outwards
- b) regular - curvilinear, convex towards the spine
- c) irregular - nipple shaped
- d) polycyclic
- e) serrated

193. Which of the following statements is correct:

- a) The major axes of the kidneys are located parallel to the diaphragm
- b) The upper pole of the right kidney is located higher than that of the left one
- c) The upper pole of the left kidney is located higher than that of the right one
- d) The long axes of kidneys intersect with each other forming an angle open down
- e) The kidneys are located retroperitoneal

194. In nephrology the following imaging methods are used:

- a) laparoscopy
- b) ultrasonography
- c) cystoscopy
- d) computed tomography
- e) scintigraphy

195. In nephrology, the following radiological (using X-rays) investigation methods are used:

- a) scintigraphy
- b) intravenous urography
- c) computed tomography
- d) ultrasonography
- e) cystoscopy

196. Indicate the phases of computed tomography angiography of kidneys:

- a) arterial
- b) venous
- c) urographic
- d) native
- e) portal

197. The segments of the renal curve include:

- a) vascular
- b) parenchymal (filtration / secretion)
- c) excretory
- d) portal
- e) mixed

198. Which of the listed investigation methods used in ophthalmology has an ionizing action:

- a) radiography
- b) ophthalmoscopy
- c) magnetic resonance imaging
- d) ultrasonography
- e) clinical examination

199. Which of the following methods is contraindicated for patients with intraorbital metallic foreign bodies:

- a) radiography
- b) scintigraphy
- c) ultrasonography
- d) magnetic resonance imaging
- e) computed tomography

200. Which of the following methods is the most informative in case of eye trauma:

- a) standard radiography
- b) ultrasonography
- c) magnetic resonance imaging
- d) computed tomography
- e) scintigraphy

201. Which type of intraorbital foreign bodies have contraindications for magnetic resonance imaging investigation:

- a) wood sawdust
- b) metal sawdust
- c) plastic particles
- d) glass debris
- e) food particles

202. Which of the following methods is the best for detecting radiolucent intraorbital foreign bodies:

- a) radiography
- b) scintigraphy
- c) ultrasonography
- d) magnetic resonance imaging
- e) computed tomography

203. Which of the following is the imaging method of first choice for detecting radiopaque intraorbital foreign bodies:

- a) radiography
- b) scintigraphy
- c) ultrasonography
- d) magnetic resonance imaging
- e) tomosynthesis

204. Which of the indicated methods is the one of choice for the optic nerve evaluation:

- a) radiography
- b) scintigraphy
- c) ultrasonography
- d) magnetic resonance imaging
- e) computed tomography

205. Which of the following methods of investigation is optimal for orbital fractures evaluation:

- a) radiography
- b) scintigraphy
- c) ultrasonography
- d) magnetic resonance imaging
- e) computed tomography

206. Which of the following investigation methods is the fastest and most informative in case of ophthalmological emergency:

- a) radiography
- b) scintigraphy
- c) ultrasonography
- d) magnetic resonance imaging
- e) computed tomography

207. Which of the following methods gives the most information regarding the eyeball structures and adjacent soft tissues:

- a) radiography
- b) scintigraphy
- c) ultrasonography
- d) magnetic resonance imaging
- e) computed tomography

208. Which of the indicated imaging methods are used in ophthalmology:

- a) radiography
- b) scintigraphy
- c) iridography
- d) magnetic resonance imaging
- e) computed tomography

209. Magnetic resonance imaging will be indicated in case of:

- a) Intraorbital metallic foreign bodies
- b) Bone trauma involving the orbit
- c) Intraorbital radiolucent foreign bodies

- d) Optic nerve pathology
- e) Soft tissue pathology

210. Computed tomography in ophthalmological pathology will be indicated in case of:

- a) Intraorbital foreign bodies
- b) Bone trauma involving the orbit
- c) Grave's disease
- d) Corneal pathology
- e) Presence of gas in soft tissues

211. What are the basic views for radiographic investigation in the case of orbital trauma:

- a) postero-anterior
- b) axial
- c) medial
- d) lateral
- e) superior

212. Which of the following statements about radiographic investigation in case of orbital trauma are correct:

- a) It starts with the frontal and lateral incidence of the affected side
- b) It starts with the frontal and lateral incidence on the contralateral side
- c) Performing the axial view is mandatory
- d) The radiologist may perform a radiograph in another additional view if necessary
- e) Radiography is performed only in postero-anterior projection

213. Which of the following statements about the Focht method are correct:

- a) It is an examination in 2 projections
- b) X-rays are parallel to the radiographic film
- c) X-rays are perpendicular to the radiographic film
- d) The investigation is performed without anesthesia
- e) Anesthesia of the affected eye is mandatory

214. Which of the following statements about the Komberg-Baltin method are correct:

- a) The eye prosthesis is used
- b) The metallic probe is used
- c) The prosthesis includes metal components located at the level of 3, 6, 9, 12 o'clock
- d) It is a non-skeletal examination
- e) The prosthesis includes metal components located at the level of 1, 4, 7, 10 o'clock

215. Which of the indicated pathologies can be detected using magnetic resonance imaging:

- a) Nasal bone fractures
- b) Optic nerve pathology
- c) Oculomotor muscles pathology
- d) Eyeball pathology
- e) Orbital walls fractures

216. Which of the indicated fractures includes the orbit:

- a) Le Fort I
- b) Le Fort II
- c) Le Fort III

- d) Blow-in type
- e) Blow-out type

217. Indicate the characteristic signs of a blow-in orbital fracture:

- a) enophthalmos
- b) exophthalmos
- c) the position of the eyeball does not change
- d) the bone fragment is displaced inside the orbit
- e) the bone fragment is displaced out of orbit

218. Indicate the characteristic signs of a blow-out fracture:

- a) enophthalmos
- b) exophthalmos
- c) the position of the eyeball does not change
- d) the bone fragment is displaced inside the orbit
- e) the bone fragment is displaced out of orbit

219. In which of the listed patients the magnetic resonance imaging investigation is contraindicated:

- a) those with a cardiac pacemaker
- b) those with metallic stents
- c) those with metallic vascular clips
- d) those with radiolucent intraorbital foreign bodies
- e) those with optic nerve pathology

220. Which of the following statements about radiographic investigation in ophthalmology are correct:

- a) it uses ionizing radiation
- b) it does not use ionizing radiation
- c) it can be performed in different projections
- d) it is the method of first choice for detecting radiopaque foreign bodies
- e) it is the method of first choice for detection of radionegative foreign bodies

221. Which of the following statements about radiography in ophthalmology are incorrect:

- a) it uses Fastofski and Rese methods
- b) it uses Focht, Komberg-Baltin methods and the method with metallic probe
- c) the examination is performed in 2 standard projections
- d) the examination is performed in 5 standard projections
- e) the method does not allow other projections to be made if necessary

222. Which of the indicated pathological situations can be best evaluated with the help of Magnetic Resonance Imaging:

- a) intraorbital metal sawdust
- b) eyeball trauma
- c) optic nerve tumors
- d) ophthalmopathies of endocrine origin
- e) orbital walls fractures

223. Which of the following statements about magnetic resonance imaging in ophthalmology are NOT correct:

- a) It is fast
- b) It allows a perfect view of the soft tissues
- c) It is contraindicated in case of the presence of metallic foreign bodies
- d) It has no contraindications
- e) It is the method of first choice in most pathological situations

224. In case of pneumothorax, standard radiography reveals:

- a) Collapsed lung shifted to the hilum
- b) Hyperlucency of the affected hemithorax
- c) Complete collapse of the lung independent of the amount of air in the pleural cavity
- d) Total opacity without displacement of mediastinal organs
- e) Multiple rib fractures in all cases of pneumothorax

225. In which of the following conditions, multiple pulmonary opacities will be detected radiographically:

- a) tuberculosis
- b) lung metastasis
- c) interlobar pleural effusion
- d) benign tumor mass
- e) pulmonary atelectasis

226. In which of the following diseases the mediastinum will be displaced towards the total opacity in the lung field:

- a) pulmonary atelectasis
- b) pleural effusion
- c) pulmonary edema
- d) acute pneumonia
- e) fibrothorax after pneumonectomy

227. Which of the following conditions is manifested radiographically by the smallest type of opacity in lung field:

- a) lobar pneumonia
- b) pneumoconiosis
- c) segmental pneumonia
- d) miliary tuberculosis
- e) lobar pulmonary atelectasis

228. Which of the following conditions can be manifested radiologically by solitary round opacity in the lung field:

- a) segmental atelectasis
- b) tuberculoma
- c) Assman-Redeker infiltration
- d) benign tumor mass
- e) pleural effusion

229. Which of the following conditions is more frequently manifested by linear opacity in the pulmonary field:

- a) discoidal atelectasis
- b) tuberculoma
- c) aeric cyst

- d) septic pneumonia
- e) benign tumor

230. The upper contour of the opacity in case of hydrothorax is:

- a) horizontal
- b) oblique
- c) vertical
- d) irregular
- e) blurred

231. In which of the following conditions the mediastinum is displaced away from the total opacity in the lung field:

- a) pulmonary atelectasis
- b) pleural effusion
- c) pulmonary cirrhosis
- d) acute pneumonia
- e) pulmonary edema

232. Which of the following conditions is manifested by most extensive opacity in the lung field:

- a) fibrothorax after pneumonectomy
- b) the primary tuberculous complex
- c) segmental atelectasis
- d) acute pneumonia
- e) interlobar pleural effusion

233. Which of the following conditions is manifested by triangular opacity in the lung field:

- a) segmental atelectasis
- b) echinococcosis
- c) lung abscess
- d) cavernous tuberculosis
- e) segmental pneumonia

234. In case of pneumothorax, in the region of air accumulation it is observed:

- a) decreased pulmonary vascular pattern
- b) enhanced pulmonary vascular pattern
- c) absence of pulmonary vascular pattern
- d) increased lung field transparency
- e) reduced lung field transparency

235. Radiography without contrast media is used to examine:

- a) lungs
- b) blood vessels
- c) the brain
- d) the esophagus
- e) bones

236. Which of the following pathologies is manifested by highest intensity opacity in the lung field:

- a) eosinophilic infiltration

- b) segmental pneumonia
- c) lung cancer
- d) pleural effusion
- e) calcination

237. Which of the following pathologies is manifested by solitary opacity in the lung field:

- a) miliary tuberculosis
- b) pneumoconiosis
- c) polycystosis
- d) hemosiderosis
- e) lung cancer

238. Which of the following pathologies is manifested by ring shaped opacity with hydro-aeric level in lung field:

- a) pulmonary aeric cyst
- b) lung abscess
- c) tuberculoma
- d) non-destructive lung cancer
- e) pulmonary edema

239. Which of the following pathologies is more common located in apical areas of the lung:

- a) aspiration pneumonia
- b) pneumoconiosis
- c) tuberculosis
- d) pleural effusion
- e) pulmonary edema

240. Which of the following pathologies is manifested by ring shaped opacity in the lung field:

- a) pneumonia
- b) tuberculous cavern
- c) pulmonary atelectasis
- d) pulmonary edema
- e) pulmonary aeric cyst

241. The main indications for chest computed tomography include:

- a) staging of lung cancer
- b) detection of lung metastases
- c) evaluation of bronchiectasis
- d) evaluation of myocardial perfusion in ischemic heart disease
- e) diagnosis of thoracic vertebral fractures

242. Chest magnetic resonance imaging may be indicated for:

- a) staging of lung cancer
- b) detection of lung metastases
- c) evaluation of bronchiectasis
- d) evaluation of lymphadenopathy and mediastinal lesions
- e) evaluation of disc herniation of the thoracic spine

243. Angiopulmonography is indicated in suspicion of:

- a) peripheral lung cancer

- b) pulmonary artery thromboembolism
- c) complex congenital heart malformations associated with pulmonary artery hypoplasia
- d) bronchiectatic disease
- e) rib fractures

244. Scintigraphy in respiratory pathology is indicated in case of:

- a) detection of metastases
- b) pulmonary artery thromboembolism
- c) exudative pleural effusion
- d) lymphadenopathy
- e) rib fractures

245. Radiographically the "air bronchogram" can be detected in case of:

- a) bronchopneumonia
- b) pleural effusion
- c) lung cancer
- d) alveolar edema
- e) pneumothorax

246. The radiographic "air bronchogram" sign manifests itself as:

- a) bronchi with aerial content that appear more transparent on the background of the opacified lung parenchyma
- b) air collection between the chest wall and the lung parenchyma
- c) fluid collection between the chest wall and the lung parenchyma
- d) thickening of the interlobular septa
- e) dilation of the bronchial lumen

247. In which pathology a solitary opacity can be detected radiographically in the lung field:

- a) granuloma
- b) hamartoma
- c) miliary tuberculosis
- d) tuberculoma
- e) hydatid cyst

248. Which of the following statements about ultrasound investigation in endocrinology are correct:

- a) It allows the evaluation of the cervical lymph nodes
- b) It contributes to the assessment of lesions vascularization degree
- c) It provides functional information that cannot be obtained by other imaging methods
- d) It can be used to guide invasive manipulations
- e) It requires administration of the radiopharmaceutical agent

249. Which of the following statements about the use of nuclear medicine in the diagnosis of endocrine system pathology are correct:

- a) It provides information of the functional status in investigated organ
- b) It allows the identification of the pathological process in its early stages
- c) It does not involve ionizing radiation
- d) It involves ionizing radiation
- e) It allows the identification of the pathological process only in advanced stages

250. Thyroid gland ultrasonography can assess the following conditions:
- Detection of hyperthyroidism cases
 - Determination of the thyroid lesions composition (cystic or solid)
 - Numerical and structural determination (uni / bi / multicameral) of thyroid cysts
 - Location of the retrosternal thyroid goiter
 - Distinguishing solid thyroid carcinoma from the dominant thyroid nodule
251. The following imaging methods are used to scan the thyroid gland:
- Elastography
 - High resolution ultrasonography
 - Standard radiography of the cervical region
 - Scintigraphy
 - Magnetic resonance imaging
252. Which of the following statements are NOT characteristic for pituitary macroadenoma:
- It represents pituitary tumors larger than 10 mm in size
 - It causes the clinic of pituitary tumor syndrome
 - Contrast enhanced brain MRI is the gold standard for diagnosis
 - Surgical resection is the treatment of choice
 - There is malignization in 50% of cases
253. Select the characteristic features about pituitary prolactinoma:
- It is the most common hormone-active pituitary tumor
 - Contrast-enhanced brain MRI is the method of choice in confirming the diagnosis
 - Targeted sella turcica radiography is the method of choice in confirming the diagnosis
 - Ultrasonography is the method of choice in confirming the diagnosis
 - The gender ratio of women:men is 10:1
254. Select the correct statements regarding thyroid scintigraphy:
- Iodine 131 is used for the investigation
 - Tc-99 MDP is used for the investigation
 - It has a significant role in assessing the activity of hyperthyroidism
 - It provides only gland morphology data
 - It provides functional information
255. Select the true statements regarding the diagnostic algorithm of adrenal gland pathology:
- Simple abdominal radiography is the most informative method of diagnosis
 - Ultrasonography is useful in detecting only giant volume masses
 - Ultrasonography can differentiate parenchymal metastases from dysfunctional adenomas
 - Magnetic resonance imaging may differentiate parenchymal metastases from dysfunctional adenomas
 - Computed tomography is the gold standard for diagnosis
256. Select the statements that match the characteristics of the adrenal adenoma:
- It is the most common benign adrenal tumor
 - It requires a mandatory surgical resection
 - In 90% of cases, the lesion is bilateral
 - It is more common in women aged 50-70 years

- e) Hormone-secreting adenomas will have a clinical picture dominated by excess cortisol and / aldosterone, androgens

257. Radionuclide uptake in ACTH-dependent Cushing's syndrome (pituitary / ectopic) will be:

- a) Decreased bilateral
- b) Increased unilateral focally
- c) Increased bilateral diffusely
- d) Decreased unilateral
- e) Absent

258. Radionuclide uptake in ACTH-independent Cushing's syndrome (adrenocortical adenoma) will be:

- a) Decreased bilateral
- b) Increased unilateral focally
- c) Increased bilateral diffusely
- d) Decreased unilateral
- e) Absent

259. Radionuclide uptake in toxic diffuse goiter will be:

- a) Decreased bilateral
- b) Increased unilateral focally
- c) Increased bilateral diffusely
- d) Decreased unilaterally
- e) Absent

260. Radionuclide uptake in autoimmune thyroiditis will be:

- a) Decreased bilateral
- b) Increased unilateral focally
- c) Increased bilateral diffusely
- d) Decreased unilaterally
- e) Absent

261. Radionuclide uptake in drug-induced hyperthyroidism will be:

- a) Decreased bilateral
- b) Increased unilateral focally
- c) Increased bilateral diffusely
- d) Decreased unilaterally
- e) Absent

262. Patient preparation for contrast enhanced computed tomography to detect endocrine system pathology includes:

- a) Adequate hydration
- b) Parenteral administration of diuretics
- c) Discontinuation of nephrotoxic drugs administration
- d) Administration of the hypertonic solution
- e) Administration of NAC (N-acetylcysteine) one day before the investigation

263. Pituitary macroadenoma induces the compression effect on:

- a) Right frontal lobe
- b) Thalamus

- c) Foramen magnum
- d) Optical chiasm
- e) Basilar artery

264. Thyroid scintigraphy allows:

- a) Determination of the functional state of thyroid nodules
- b) Assessment of the exact dimensions of thyroid cysts
- c) Detection of extrathyroid metastases in thyroid carcinoma
- d) Determination of ectopic thyroid tissue
- e) Assessment of the thyroid nodules vascularization degree

265. Which of the following statements about imaging in the toxic goiter are correct:

- a) Ultrasonography reveals diffuse enlargement of the thyroid gland
- b) Standard radiography reveals diffuse enlargement of the thyroid gland
- c) Scintigraphy reveals multiple cold nodules
- d) Scintigraphy reveals diffuse bilaterally increased radionuclide uptake
- e) Standard radiography reveals multiple calcinations in the thyroid gland

266. What is the imaging method of choice for the diagnostic evaluation of thyroid nodules:

- a) Scintigraphy
- b) Magnetic resonance imaging
- c) Standard radiography
- d) Computed tomography
- e) Ultrasonography

267. Magnetic resonance imaging of the spine reveals:

- a) Intervertebral discs
- b) Nerves of the spine
- c) Spinal canal stenosis
- d) Cystic dilatations of the spinal canal
- e) Disorders of the vertebral bodies stability

268. Indicate the characteristic signs of a stone in the ultrasonographic image:

- a) it is a hyperechoic zone
- b) it is a hypoechoic zone
- c) it is an anechoic zone
- d) it forms a shadow cone
- e) it does not form a shadow cone