

1. The unit of measurement for absorbed dose is:

- a) Roentgen
- b) Curie
- c) Gray
- d) Sievert
- e) Becquerel

2. The more tonal steps between the lightest and darkest sectors of a radiological film, the more the radiographic image becomes:

- a) More contrasted
- b) Less contrasted
- c) Unchanged
- d) The radiological image is similar in all situations
- e) The tonal spectrum does not reflect the image contrast

3. In assessing the quality of the radiographic image, consider:

- a) Image contrast
- b) Image sharpness
- c) Resolution
- d) Examination position and incidence
- e) Film dimensions

4. X-ray hardness is greater when:

- a) Wavelength is larger
- b) Wavelength is smaller
- c) Does not depend on wavelength
- d) Exposure time is longer
- e) Exposure time is shorter

5. Obtaining an ultrasonographic image is possible due to the following processes:

- a) Absorption of ultrasound waves
- b) Ultrasound interaction with bone structures
- c) Receiving reflected signals
- d) Dispersion of ultrasound waves
- e) Reflection of ultrasound from anatomical structures

6. Ultrasound is characterized by a frequency higher than:

- a) 15 kHz
- b) 20000 kHz
- c) 1 MHz
- d) 30 Hz
- e) 100 Hz

7. With increased frequency, wavelength:

- a) Decreases
- b) Does not change
- c) Increases
- d) Changes depending on intensity
- e) Changes depending on amplitude

8. Ultrasound propagation speed is maximum in:

- a) Air
- b) Hydrogen
- c) Water
- d) Adipose tissue
- e) Carbon dioxide

9. Sound is:

- a) Electromagnetic wave
- b) Particle
- c) Photon
- d) Mechanical acoustic wave
- e) Ionizing radiation

10. From what moment should a pregnant woman be relieved from work at a radiological apparatus:

- a) When she declares she is pregnant
- b) When visible signs of pregnancy appear
- c) From the moment of medical confirmation of pregnancy
- d) At the employee's request
- e) Not relieved

11. Who is responsible for the radiation safety of all participants in a radiological investigation:

- a) Department head
- b) Radiologist
- c) Radiology technician
- d) Medical institution administration
- e) Patient

12. Imaging methods include the following:

- a) Radioscopy
- b) Ultrasound
- c) Endoscopy
- d) Scintigraphy
- e) Laparoscopy

13. Which of the following are electromagnetic waves:

- a) X-rays
- b) Gamma rays
- c) Ultrasound
- d) Radio waves
- e) Infrared rays

14. Which of the following are ionizing radiations:

- a) X-rays
- b) Gamma rays
- c) Ultrasound
- d) Radio waves
- e) Infrared rays

15. Which of the following imaging methods use X-rays:

- a) Scintigraphy
- b) Irrigoscopy
- c) Doppler ultrasound
- d) Computed Tomography
- e) Tomosynthesis

16. Which of the following imaging methods use Gamma rays:

- a) Scintigraphy
- b) Radiography
- c) Color Doppler
- d) Computed Tomography
- e) Tomosynthesis

17. Which of the following imaging methods use radio waves:

- a) Magnetic Resonance Imaging
- b) Radioscopy
- c) Ultrasound
- d) Computed Tomography
- e) Tomosynthesis

18. Which of the following imaging methods use ultrasound:

- a) Ultrasound
- b) Irrigoscopy
- c) Pulsed Doppler
- d) Computed Tomography
- e) Tomoscintigraphy

19. The source of Gamma rays is:

- a) Piezoelectric crystal
- b) Radiological tube
- c) Radionuclide
- d) Magnet
- e) Human body

20. The source of ultrasound is:

- a) Piezoelectric crystal
- b) Radiological tube
- c) Radionuclide
- d) Magnet
- e) Human body

21. The source of radio waves is:

- a) Piezoelectric crystal
- b) Radiological tube
- c) Radionuclide
- d) Radio frequency antenna
- e) Human body

22. The source of X-rays is:

- a) Piezoelectric crystal
- b) Radiological tube
- c) Radionuclide
- d) Magnet
- e) Human body

23. Which of the following are radionegative contrast substances:

- a) Barium sulfate
- b) Air
- c) Radiopharmaceutical preparation
- d) Carbon dioxide
- e) Iodine-based contrast substances

24. Which of the following are radiopaque contrast substances:

- a) Barium sulfate
- b) Air
- c) Radiopharmaceutical preparation
- d) Carbon dioxide
- e) Iodine-based contrast substances

25. X-ray absorption depends on:

- a) Structure elasticity
- b) Structure density
- c) Structure localization
- d) Structure thickness
- e) Number of hydrogen protons in tissue

26. Tomography is:

- a) Image of a section
- b) 3-dimensional reconstruction of an organ
- c) Summary planar image of a region
- d) Endoscopic image
- e) 4-dimensional reconstruction of an organ

27. Which of the listed imaging methods allow obtaining tomographic images:

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

28. Structures with high density in the radiological image are called:

- a) Opacity
- b) Hyperdense
- c) Hyperechoic
- d) Hyperintense
- e) Hyperthermic

29. Structures with low density in the radiological image are called:

- a) Hyperlucency
- b) Hypodense
- c) Hypoechoic
- d) Hypointense
- e) Hypothermic

30. Structures with high density in computed tomography are called:

- a) Opacity
- b) Hyperdense
- c) Hyperechoic
- d) Hyperintense
- e) Hyperthermic

31. Structures with low density in computed tomography are called:

- a) Hyperlucent
- b) Hypodense
- c) Hypoechoic
- d) Hypointense
- e) Hypothermic

32. Structures with higher density in ultrasonography are called:

- a) Opacities
- b) Hyperdense
- c) Hyperechoic
- d) Hyperintense
- e) Hyperthermic

33. Structures with lower density in ultrasonography are called:

- a) Hyperlucent
- b) Hypodense
- c) Hypoechoic
- d) Hypointense
- e) Anechoic

34. Contraindications for MRI (Magnetic Resonance Imaging) include:

- a) Breastfeeding period
- b) Pregnancy
- c) Presence of metallic foreign bodies in the human body
- d) Presence of cutaneous lesions in the investigation area
- e) Intubated patients on artificial ventilation

35. Which of the listed represents a contraindication for CT (Computed Tomography):

- a) Breastfeeding period
- b) Pregnancy
- c) Presence of metallic foreign bodies in the human body
- d) Presence of cutaneous lesions in the investigation area
- e) Pulmonary emphysema

36. A contraindication for ultrasonographic investigation is:

- a) Breastfeeding period

- b) Pregnancy
- c) Presence of metallic foreign bodies in the human body
- d) The method has no contraindications
- e) Obesity

37. Conventional angiography is performed using contrast substance:

- a) Insoluble radiopaque
- b) Radionegative
- c) Water-soluble radiopaque
- d) Lipid-soluble radiopaque
- e) Radiopharmaceutical preparation

38. Radiological investigation of the large intestine with barium sulfate introduced per rectum is called:

- a) Colonoscopy
- b) Irrigoscopy
- c) Endoscopy
- d) Radioscopy
- e) Barium transit

39. Radionuclide is:

- a) Radiopaque contrast substance
- b) Radionegative contrast substance
- c) Radiopharmaceutical preparation
- d) Radioactive isotope
- e) Biological substance with tropism towards a specific tissue

40. Radiopharmaceutical preparation is:

- a) Radiopaque contrast substance
- b) Radionegative contrast substance
- c) Complex molecule with tropism towards a specific tissue, marked with radionuclide
- d) Substance with paramagnetic properties
- e) Biological substance with tropism towards a specific tissue

41. The unit of measurement for the activity of an ionizing radiation source in the International System is:

- a) Roentgen
- b) Curie
- c) Becquerel
- d) Sievert
- e) Gray

42. The unit of measurement for equivalent dose is:

- a) Roentgen
- b) Curie
- c) Becquerel
- d) Sievert
- e) Gray

43. The International System units for ionizing radiation are the following:

- a) Roentgen
- b) Rad
- c) Becquerel
- d) Sievert
- e) Gray

44. The Doppler ultrasound method is based on:

- a) Ultrasound reflection from soft tissues
- b) Ultrasound absorption at bone level
- c) Ultrasound reflection from moving objects
- d) Ultrasound reflection from stationary objects
- e) Ultrasound reflection from air-containing objects

45. Which properties of X-rays allow obtaining image on the radiosopic screen:

- a) Photographic chemical action
- b) Luminescent action
- c) Ionizing action
- d) Spreading in all directions
- e) Spreading at the speed of light

46. Which properties of X-rays allow obtaining image on radiographic film:

- a) Photographic chemical action
- b) Luminescent action
- c) Ionizing action
- d) Spreading in all directions
- e) Spreading at the speed of light

47. Currently, radioscopy is most frequently used for:

- a) Morphological exploration of the heart
- b) Exploring the digestive tract
- c) Exploring the liver and bile ducts
- d) Guiding invasive manipulations
- e) Functional exploration of the heart

48. In which tissue (organ) from those listed are X-rays absorbed the least:

- a) Bones
- b) Liver
- c) Adipose tissue
- d) Muscular tissue
- e) Spleen

49. What are the priorities of digital radiography compared to traditional radiography:

- a) Reducing patient radiation dose
- b) Eliminating the need for photochemical processing
- c) More economical use of chemical film processing agents
- d) Increasing patient radiation dose
- e) Ability to store images

50. The opacity symptom on the radiographic image appears in case of:

- a) Increased density
- b) Decreased density
- c) Reduced spatial resolution
- d) Increased contrast
- e) Decreased contrast

51. The hyperlucency symptom on the radiographic image appears in case of:

- a) Increased density
- b) Decreased density
- c) Reduced spatial resolution
- d) Increased contrast
- e) Decreased contrast

52. Select measures to protect patients in radiological investigations:

- a) Performing the investigation strictly on medical indication
- b) Performing the investigation at patient's request
- c) Using individual shielding means
- d) Increasing patient's duration in the investigation room
- e) Reducing patient's duration in the investigation room

53. Advantages of MRI Investigation Include:

- a) Better visualization of soft tissues
- b) Better visualization of bone structures
- c) Possibility of investigating pregnant women
- d) Possibility of investigating patients with metal implants
- e) Absence of ionizing radiation

54. Advantages of CT Investigation Include:

- a) Visualization of soft tissues
- b) Better visualization of bone structures
- c) Possibility of investigating pregnant women
- d) Possibility of investigating patients with metal implants
- e) Absence of ionizing radiation

55. Disadvantages of MRI Investigation Include:

- a) Long investigation duration
- b) Better visualization of bone structures
- c) Impossibility of investigating pregnant women
- d) Impossibility of investigating patients with metal implants
- e) Absence of ionizing radiation

56. Disadvantages of CT Investigation Include:

- a) Long investigation duration
- b) Better visualization of bone structures
- c) Contraindication for pregnant women
- d) Impossibility of investigating patients with metal implants
- e) Use of ionizing radiation

57. Disadvantages of Ultrasound Investigation Include:

- a) High radiation level



- b) Operator dependence
- c) Impossibility of investigating pregnant women
- d) Impossibility of investigating patients with metal implants
- e) Decreased visualization quality in obese patients

58. Localization of Pulmonary Pathological Process is Preferable to Do According to:

- a) Intercostal spaces
- b) Pulmonary zones
- c) Pulmonary structural elements (lung, lobe, segment)
- d) Lobes
- e) Pulmonary fields

59. Chest Radiography Clarity is Appreciated by the Contour of:

- a) Mediastinum
- b) Diaphragm
- c) Major vessels
- d) Ribs
- e) Pulmonary hilum

60. Ultrasonography in Respiratory System Exploration is Informative in the Case of:

- a) Inflammatory processes
- b) Lung cancer
- c) Exudative Pleurisy
- d) Atelectasis
- e) Pneumothorax

61. Criteria for the Correct Patient Position on Standard Chest Radiography Include:

- a) Clavicle position
- b) Pulmonary hilum position
- c) Scapula position
- d) Pulmonary drawing
- e) Sternum position

62. Which of the Following Statements Correspond to a Normal Standard Chest Radiography:

- a) The right pulmonary hilum is located between the anterior arches of the 2nd and 4th ribs
- b) The right pulmonary hilum is located between the posterior arches of the 2nd and 4th ribs
- c) Pulmonary drawing is more pronounced in apical regions
- d) Pulmonary drawing is more pronounced in basal regions
- e) The right pulmonary hilum is located higher than the left one

63. Pulmonary Nodular Opacities Can Have Dimensions of:

- a) 2 mm
- b) 8 mm
- c) 10 mm
- d) 30 mm
- e) 75 mm

64. For Differential Diagnosis in Total and Subtotal Pulmonary Opacity, It Is Necessary to Appreciate:

- a) Opacity dimensions
- b) Mediastinal position
- c) Pulmonary drawing condition
- d) Clavicle position
- e) Opacity structure

65. For Differential Diagnosis in Pulmonary Field Hyperlucency, It Is First Necessary to Evaluate:

- a) Mediastinal position
- b) Pulmonary hilums
- c) Pulmonary drawing
- d) Air bubble position in the stomach
- e) Clavicle position

66. Standard Chest Radiography is Performed in the Patient's Position:

- a) Orthostatic
- b) Dorsal decubitus
- c) Lateral decubitus
- d) Anterior to the screen
- e) Back to the screen

67. Hyperlucency in the Pulmonary Field Can Appear Due to:

- a) Presence of Free Air in the Pleural Cavity
- b) Presence of Liquid in the Pleural Cavity
- c) Absence of Pulmonary Tissue Pneumatization
- d) Increased Pulmonary Air Content
- e) Liquid Accumulation in Alveoli

68. Opacity in the Pulmonary Field Can Appear Due to:

- a) Pulmonary Tissue Densification
- b) Air Presence in the Pleural Cavity
- c) Absence of Pulmonary Tissue Pneumatization
- d) Increased Pulmonary Air Content
- e) Liquid Presence in the Pleural Cavity

69. Hyperlucency in the Pulmonary Field Can Appear in Case of:

- a) Bronchial Obstruction by Valve
- b) Total Bronchial Obstruction
- c) Reduced Pulmonary Drawing
- d) Partial Bronchial Obstruction
- e) Hydropneumothorax

70. Opacity in the Pulmonary Field Can Appear in Case of:

- a) Bronchial Obstruction by Valve
- b) Total Bronchial Obstruction
- c) Reduced Pulmonary Drawing
- d) Presence of Liquid in Alveoli
- e) Hydropneumothorax

71. Limited Opacity in the Lower Pulmonary Field, Homogeneous, with a Clear Horizontal Upper Contour Suggests:

- a) Presence of liquid in the pleural cavity
- b) Presence of air in the pleural cavity
- c) Simultaneous presence of air and liquid in the pleural cavity
- d) Pulmonary inflammatory process
- e) Pulmonary tissue densification

72. Which Statements are Characteristic for the Total or Subtotal Opacity Symptom in Pulmonary Atelectasis:

- a) Homogeneous
- b) Non-homogeneous
- c) Displaces mediastinal organs to the opposite side
- d) Displaces mediastinal organs towards the opacity
- e) Does not displace mediastinal organs

73. Which Bone Structures are Visible on the Frontal Chest Radiography:

- a) Thoracic vertebrae
- b) Ribs
- c) Sternum
- d) Clavicles
- e) Mandible

74. Total or Subtotal Opacity Displacing Mediastinal Organs to the Opposite Side is Characteristic of:

- a) Massive Exudative Pleurisy
- b) Diaphragmatic Hernia with Intestinal Contents
- c) Pulmonary Atelectasis
- d) Pulmonary Cirrhosis
- e) Acute Pulmonary Parenchyma Inflammation

75. Which Statements are Characteristic for Total or Subtotal Opacity Symptom in Exudative Pleurisy:

- a) Homogeneous
- b) Non-homogeneous
- c) Displaces Mediastinal Organs to the Opposite Side of the Opacity
- d) Displaces Mediastinal Organs Towards the Opacity
- e) Does Not Displace Mediastinal Organs

76. Which Statements are Characteristic for Total or Subtotal Opacity Symptom in Diaphragmatic Hernia with Intestinal Contents:

- a) Homogeneous
- b) Non-Homogeneous
- c) Displaces Mediastinal Organs to the Opposite Side of the Opacity
- d) Displaces Mediastinal Organs Towards the Opacity
- e) Does Not Displace Mediastinal Organs

77. Which Radiographic Changes Can Be Detected in Case of Pulmonary Field Opacity Caused by Free Liquid Accumulation in the Pleural Cavity:

- a) Unclear Contour
- b) Oblique Superior Contour
- c) Non-Homogeneous Structure
- d) Horizontal Superior Contour
- e) Homogeneous Structure

78. Round Opacity Symptom in the Pulmonary Field with a Clear, Well-Delimited Contour Can Be Caused by:

- a) Tuberculosis Cavity
- b) Free Liquid Accumulation in Pleural Cavity
- c) Metastasis
- d) Hydatid Cyst
- e) Benign Tumor Formation

79. Hydro-aeric Level Appears in:

- a) Hydrothorax
- b) Pneumothorax
- c) Hydropneumothorax
- d) Pulmonary Abscess Partially Evacuated
- e) Segmental Pneumonia

80. Diffusely Disseminated Nodular Opacities are Characteristic for:

- a) Miliary Tuberculosis
- b) Pneumoconiosis
- c) Pleurisy
- d) Pulmonary Abscess
- e) Segmental Pneumonia

81. Which methods can be used to determine the wall thickness of the digestive tract organs:

- a) ultrasonography
- b) primary double contrast
- c) computed tomography
- d) angiography
- e) plain abdominal X-ray

82. Pulmonary hyperlucency of lung fields, intercostal space dilation, diaphragm flattening, limitation of respiratory diaphragm excursion are characteristic for:

- a) pulmonary atelectasis
- b) pulmonary cirrhosis
- c) pulmonary emphysema
- d) miliary tuberculosis
- e) pulmonary arterial hypovolemia

83. The following radiological changes are characteristic for pulmonary emphysema:

- a) diaphragm flattening
- b) diaphragm ascension
- c) pulmonary pattern accentuation
- d) widening of intercostal spaces
- e) narrowing of intercostal spaces

84. Paracostal hyperlucency on the background of which pulmonary pattern is absent is characteristic for:

- a) pulmonary emphysema
- b) pneumothorax
- c) pulmonary vessel and bronchial dysplasia
- d) tuberculosis cavern
- e) small circulation hypovolemia

85. Pulmonary pattern accentuation occurs in the following pathological conditions:

- a) venous congestion in small circulation
- b) bronchial obstruction by valve
- c) pulmonary arterial hypovolemia
- d) pulmonary arterial hypertension
- e) pneumothorax

86. Pulmonary pattern deformation occurs in case of:

- a) bronchial obstruction by valve
- b) pulmonary arterial hypertension
- c) bronchiectatic disease
- d) pulmonary arterial hypovolemia
- e) hypoventilation

87. Standard chest X-ray is performed in the patient's vertical position with the aim of:

- a) patient comfort
- b) physiological representation of blood vessels
- c) facilitating diagnosis (gas moves cranially, liquid moves caudally)
- d) reducing patient radiation
- e) possibility of visualizing the sternum

88. A qualitatively performed standard chest X-ray must include:

- a) humeral bones
- b) apexes
- c) costodiaphragmatic sinuses
- d) lumbar vertebrae I-II
- e) liver

89. In case of total opacity with lung volume reduction, first of all occurs:

- a) mediastinum displacement to the opposite side
- b) mediastinum displacement towards the opacity
- c) maintaining the normal mediastinal position
- d) vertical lung diameter increase
- e) diaphragm displacement in caudal direction

90. For pulmonary hilum metastases, the following is primarily characteristic:

- a) pulmonary hilum dilation
- b) cranial hilum displacement
- c) caudal hilum displacement
- d) hilum homogenization

e) hilum narrowing

91. The first-intention investigation of the lungs is:

- a) Radiography
- b) Ultrasonography
- c) Scintigraphy
- d) Computed Tomography
- e) Magnetic Resonance Imaging

92. For pulmonary ventilation scintigraphy:

- a) contrast substance is introduced bronchially
- b) contrast substance is introduced intravenously
- c) contrast substance is introduced intra-arterially
- d) radiopharmaceutical preparation is inhaled
- e) radiopharmaceutical preparation is introduced intravenously

93. For pulmonary perfusion scintigraphy:

- a) contrast substance is introduced bronchially
- b) contrast substance is introduced intravenously
- c) contrast substance is introduced intra-arterially
- d) radiopharmaceutical preparation is inhaled
- e) radiopharmaceutical preparation is introduced intravenously

94. Pulmonary perfusion scintigraphy allows diagnosing:

- a) bronchial obstruction
- b) pulmonary artery thromboembolism
- c) peripheral lung cancer
- d) metastases
- e) pulmonary abscess

95. Pulmonary ventilation scintigraphy allows diagnosing:

- a) bronchial obstruction
- b) pulmonary artery thromboembolism
- c) peripheral lung cancer
- d) metastases
- e) pulmonary abscess

96. The anatomical substrate of the pulmonary pattern in normal conditions is composed of:

- a) bronchi
- b) pulmonary artery and vein branches
- c) lymphatic vessels
- d) pulmonary parenchyma
- e) bronchial artery branches

97. In pneumothorax, the collapsed lung moves:

- a) superior
- b) inferior
- c) medial
- d) lateral

e) does not move

98. A total or subtotal homogeneous opacity displacing mediastinal organs towards the opacity is characteristic for:

- a) massive exudative pleurisy
- b) diaphragmatic hernia with intestinal content
- c) pulmonary atelectasis
- d) pulmonary cirrhosis
- e) acute pulmonary parenchymal inflammation

99: A total or subtotal non-homogeneous opacity that displaces mediastinal organs to the opposite side is characteristic of:

- a) massive exudative pleural effusion
- b) diaphragmatic hernia with intestinal loops
- c) pulmonary atelectasis
- d) pulmonary cirrhosis
- e) acute inflammation of pulmonary parenchyma

100: A total or subtotal opacity that displaces mediastinal organs to the opposite side is characteristic of:

- a) massive exudative pleural effusion
- b) diaphragmatic hernia with intestinal loops
- c) pulmonary atelectasis
- d) pulmonary cirrhosis
- e) acute inflammation of pulmonary parenchyma

101: In venous congestion in the small circulation:

- a) reduction of pulmonary vascular pattern
- b) accentuation of pulmonary vascular pattern
- c) deformation of pulmonary vascular pattern
- d) unchanged pulmonary vascular pattern
- e) homogeneous pulmonary hila

102: In pulmonary arterial hypovolemia:

- a) reduction of pulmonary vascular pattern
- b) accentuation of pulmonary vascular pattern
- c) deformation of pulmonary vascular pattern
- d) unchanged pulmonary vascular pattern
- e) homogenous pulmonary hila

103: In bronchiectatic disease:

- a) reduction of pulmonary vascular pattern
- b) accentuation of pulmonary vascular pattern
- c) deformation of pulmonary vascular pattern
- d) unchanged pulmonary vascular pattern
- e) narrowing of pulmonary hila

104: In chronic bronchitis:

- a) reduction of pulmonary vascular pattern
- b) accentuation of pulmonary vascular pattern

- c) deformation of pulmonary vascular pattern
- d) unchanged pulmonary vascular pattern
- e) narrowing of pulmonary hila

105: For enlargement of lymph nodes in the pulmonary hilum on radiography, the following is characteristic:

- a) blurred hilum contour
- b) irregular hilum contour
- c) polycyclic hilum contour
- d) narrowing of pulmonary hilum
- e) dilatation of pulmonary hilum

106: Examination of cardiac structures in motion in Echocardiography is performed by applying the:

- a) A mode
- b) B mode
- c) M mode
- d) Doppler mode
- e) 3D mode

107: The correct order of heart arcs on the left on chest X-ray in posterior-anterior incidence is:

- a) aortic knob, descending aorta, left atrial auricle, left ventricle
- b) aortic knob, pulmonary artery trunk, left atrial auricle, left ventricle
- c) aortic knob, left pulmonary artery, left atrial auricle, left ventricle
- d) aortic knob, pulmonary artery trunk, left atrium, left ventricle
- e) aortic knob, descending aorta, pulmonary artery, left ventricle

108: The correct order of heart arches on the right on chest X-ray in posterior-anterior incidence is:

- a) right ventricle, descending aorta, superior vena cava
- b) right atrium, vascular structures (descending aorta, superior vena cava)
- c) right ventricle, right atrium
- d) right ventricle, right atrium, superior vena cava
- e) right atrium, vascular structures (superior vena cava, inferior vena cava)

109: Which ultrasound modality is used for heart exploration:

- a) A mode
- b) M mode
- c) B mode
- d) Pulsed Doppler
- e) Color Doppler

110: Which modality allows assessment of valvular stenosis degree:

- a) M mode echocardiography
- b) B mode echocardiography
- c) Pulsed Doppler
- d) Continuous Doppler
- e) Color Doppler



111: The red color of blood flow in Color Doppler investigation means:

- a) Oxygenated blood
- b) Deoxygenated blood
- c) Blood flow direction towards transducer
- d) Blood flow direction away from transducer
- e) Pathological blood flow

112: The blue color of blood flow in Color Doppler investigation means:

- a) Oxygenated blood
- b) Deoxygenated blood
- c) Blood jet direction towards transducer
- d) Blood jet direction away from transducer
- e) Pathological blood flow

113: Myocardial perfusion scintigraphy is informative in:

- a) Ischemic heart disease
- b) Mitral stenosis
- c) Exudative pericarditis
- d) Atrial septal defect
- e) Tetralogy of Fallot

114: Which heart compartment forms the lower arch on the right in frontal view:

- a) right ventricle
- b) right atrium
- c) inferior vena cava
- d) left ventricle
- e) left atrium

115: The waist of the heart is formed by:

- a) Left atrial auricle
- b) left atrium
- c) descending aorta
- d) pulmonary artery
- e) left ventricle

116: The triangular configuration of the heart is characterized by:

- a) bilateral dilatation of heart shadow
- b) pronounced waist of the heart
- c) prominence of pulmonary artery arch
- d) blurred heart arches
- e) atriobasal angle displaced caudally

117: The aortic configuration of the heart is characterized by:

- a) bilateral dilatation of heart shadow
- b) pronounced waist of the heart
- c) prominence of pulmonary artery arc
- d) blurred heart arcs
- e) atriobasal angle displaced caudally

118: Aortic configuration is characteristic for:

- a) Patent arterial duct
- b) Tetralogy of Fallot
- c) Mitral stenosis
- d) Aortic coarctation
- e) Aortic stenosis

119: Mitral configuration is characteristic for:

- a) Patent arterial duct
- b) Tetralogy of Fallot
- c) Mitral stenosis
- d) Aortic coarctation
- e) Aortic stenosis

120: In which situation is the right atriovascular angle displaced cranially:

- a) mitral stenosis
- b) aortic stenosis
- c) mitral insufficiency
- d) aortic insufficiency
- e) atrial septal defect

121: The normal heart configuration is characterized by:

- a) Left heart margin is situated 1.5-2 cm medial to left midclavicular line
- b) Left heart margin is situated 1.5-2 cm lateral to left midclavicular line
- c) Right atriovascular angle is located in the middle of right heart contour
- d) Right atriovascular angle is displaced cranially
- e) Waist of the heart is absent

122: Pulmonary transparency in patients with pulmonary venous stasis:

- a) increases peripherally
- b) increases over entire surface
- c) decreases over entire surface
- d) decreases peripherally
- e) does not change

123: Triangular heart configuration is characteristic for:

- a) Aberrant pulmonary veins
- b) Tetralogy of Fallot
- c) Mitral stenosis
- d) Polyvalvular heart disease
- e) Dilated cardiomyopathy

124: Which heart configuration is characteristic for exudative pericarditis with excessive exudate:

- a) mitral
- b) aortic
- c) triangular
- d) normal
- e) pulmonary

125: Pulmonary arterial hypertension can be detected in a patient with:

- a) systemic arterial hypertension
- b) mitral insufficiency
- c) patent arterial duct
- d) aortic coarctation
- e) ventricular septal defect

126: In which congenital cardiac malformations does pulmonary arterial hypovolemia occur:

- a) Tetralogy of Fallot
- b) ventricular septal defect
- c) pulmonary artery atresia
- d) patent arterial duct
- e) aortic coarctation

127: Components of Tetralogy of Fallot include:

- a) pulmonary artery stenosis
- b) atrial septal defect
- c) ventricular septal defect
- d) right ventricular hypertrophy
- e) dextroposition of aorta

128: In which heart configuration is observed pronounced waist of the heart, right atriovascular angle displaced caudally, prominent aortic knob:

- a) mitral
- b) aortic
- c) triangular
- d) normal
- e) not characteristic of any configuration

129: Abdominal X-ray on empty stomach can be indicated for:

- a) detection of foreign bodies and calculi
- b) control of patient preparation quality for subsequent examination with opaque substance
- c) determination of intestinal transit disorders
- d) determination of free gas in abdominal cavity
- e) detection of congenital malformations of digestive tube

130: Which radiological methods allow examination of mucosal relief status:

- a) Examination in thin layer with barium sulfate
- b) Examination in total repletion
- c) Primary double contrast
- d) Abdominal X-ray
- e) Examination with radiopharmaceutical preparation

131: Which of the enumerated methods allow obtaining information about gastric mucosal microrelief (areae gastrica):

- a) Pneumogastrography
- b) Use of pharmacodynamic preparations
- c) Primary double contrast

- d) Thin layer contrast
- e) Abdominal X-ray on empty

132: Patient preparation for radiological stomach examination includes the following:

- a) Radiological examination is performed on an empty stomach
- b) Cleansing enema the night before
- c) Refraining from smoking on the day of the examination
- d) Administering a laxative the night before
- e) Discontinuing medications that modify gastric physiology

133: Radiological examination of the stomach must be performed:

- a) In the morning
- b) At noon
- c) In the evening
- d) At the patient's convenience
- e) At any time of the day

134: The radiological method that allows visualization of digestive tract peristalsis is:

- a) Radioscopy
- b) Radiography
- c) Primary double contrast
- d) Angiography
- e) CT

135: In the duodenal bulb, the folds are:

- a) Longitudinal
- b) Transverse
- c) Chaotic
- d) Oblique
- e) No folds exist

136: In which situations can the cause of acute abdomen be detected using abdominal X-ray on empty:

- a) Acute appendicitis
- b) Perforation of a hollow organ
- c) Acute adnexitis
- d) Intestinal obstruction
- e) Sigmoid volvulus

137: To examine mucosal relief in the examined cavity, contrast agent is introduced in a quantity:

- a) Small
- b) Large
- c) Does not matter
- d) No contrast agent is introduced
- e) Water is introduced

138: The wall thickness of digestive tract organs can be determined using:

- a) Ultrasonography
- b) Primary double contrast

- c) Computed tomography
- d) Angiography
- e) Abdominal X-ray on empty

139. Which of the following radiological symptoms are encountered in case of ulceration in the wall of a digestive tract organ:

- a) "niche" sign
- b) "lacuna" sign
- c) "inflammation halo" sign
- d) "index finger" sign
- e) "apple core" sign

140. The average width of the normal esophagus during the filling phase does not exceed:

- a) 1 cm
- b) 2 cm
- c) 3 cm
- d) 4 cm
- e) 5 cm

141. The patient's condition is satisfactory. On the standard chest X-ray against the mediastinal background, a horizontal level opacity is determined. First of all, it is necessary:

- a) to examine the patient in lateral position
- b) to perform mediastinal tomography
- c) to examine the esophagus with an opaque substance
- d) to perform chest X-ray in 3 incidences
- e) to perform abdominal X-ray

142. A horizontal liquid level on the mediastinal background can be found in the following esophageal conditions:

- a) diverticulum
- b) staged spasms
- c) congenital short esophagus
- d) cardia achalasia
- e) benign tumor formation

143. In esophageal burns, esophageal stenosis more frequently forms at the level of:

- a) upper third
- b) middle third
- c) distal (abdominal) portion
- d) physiological narrowings
- e) cervical portion

144. The basic radiological symptom of esophageal atresia is:

- a) esophageal narrowing
- b) esophageal dilation
- c) determining a "blind sac"
- d) esophageal deformation

e) esophageal deformation or elongation

145. The abdominal portion of the esophagus described in the form of the "mouse tail" symptom is characteristic of:

- a) scleroderma
- b) esophageal cancer
- c) cardia achalasia
- d) esophageal diverticulum
- e) staged spasms

146. The gastric air bubble in patients with cardia achalasia of grade III-IV:

- a) is deformed
- b) is absent
- c) is reduced
- d) is enlarged
- e) is not modified

147. Stomach position changes are:

- a) ptosis
- b) elongation
- c) dilation
- d) displacement
- e) stenosis

148. In a patient with acute abdomen clinical picture, free gas was determined in the abdominal cavity on plain abdominal X-ray. The radiologist must:

- a) perform double contrast of the stomach
- b) examine the stomach with an opaque substance
- c) interrupt the investigation
- d) additionally perform lateral radiography
- e) examine the large intestine by irrigoscopy

149. Radiological symptoms of gastric ulcer include:

- a) niche
- b) mucosal fold interruption
- c) fold convergence
- d) inflammation halo
- e) lacuna

150. In case of suspected perforation of gastric or duodenal ulcer, it is necessary to perform first of all:

- a) radiological examination of the abdominal cavity without artificial contrast
- b) primary double contrast of the stomach
- c) examination of the stomach with iodine contrast substance
- d) examination of the stomach after additional air insufflation
- e) barium transit

151. The direct radiological symptom of an abscess in the abdominal cavity is:

- a) delimited opacity of the abdominal cavity
- b) displacement of organs near the opacity

- c) local paresis of intestinal loops
- d) horizontal liquid level in a delimited cavity
- e) presence of free air in the abdominal cavity

152. The angle of Treitz is located at the transition of:

- a) esophagus to stomach
- b) duodenum to jejunum
- c) jejunum to ileum
- d) ileum to cecum
- e) descending colon to sigmoid colon

153. With oral administration of contrast substance, the large intestine is normally contrasted completely, including the rectum, within:

- a) 1 hour
- b) 6 hours
- c) 12 hours
- d) 20-24 hours
- e) 36 hours

154. The determining radiological sign in mechanical obstruction of the large intestine is:

- a) horizontal liquid levels where width is greater than gas height
- b) horizontal liquid levels where width is smaller than gas height
- c) gas accumulation in the large intestine
- d) increased gas amount in small and large intestine
- e) free gas presence in the subdiaphragmatic region

155. The basic imaging methods for examining the digestive tract include:

- a) radioscopy
- b) radiography
- c) Fibrogastroscopy
- d) Laparoscopy
- e) ultrasonography

156. Radiological exploration of the digestive tract without contrast substance can detect the following:

- a) metal foreign bodies and calculi
- b) gastric ulcer
- c) esophageal diverticulum
- d) free gas in the abdominal cavity
- e) spastic colitis

157. Irrigoscopy is:

- a) Radiological examination of the small intestine
- b) Radiological examination of the large intestine
- c) Radiological examination of the duodenum
- d) Radiological examination of the stomach
- e) Radiological examination of the esophagus

158: To detect metallic foreign bodies in the abdominal cavity:

- a) Barium sulfate radioscopy
- b) Hypotonic duodenography
- c) Irrigoscopy
- d) Abdominal X-ray on empty
- e) Laparoscopy

159: Which of the following are functional changes of the digestive tract:

- a) Atony
- b) Stenosis
- c) Spasm
- d) Hypersecretion
- e) Atrophy

160: Which of the following are morphological changes of the digestive tract:

- a) Atony
- b) Stenosis
- c) Spasm
- d) Hypersecretion
- e) Atrophy

161: Achalasia is characterized by:

- a) Narrowing in the middle thoracic third of the esophagus
- b) Narrowing of the cardia
- c) Diffuse suprastenotic dilatation of the esophagus
- d) Stomach dilatation
- e) Absence of air bubble in the stomach

162: Diverticulum complications include:

- a) Diverticulitis
- b) Esophageal dilatation
- c) Diverticulosis
- d) Perforation
- e) Absence of air bubble in stomach

163: Diffuse esophageal spasms are radiologically characterized by:

- a) Bird lamp sign
- b) Apple stump sign
- c) Significant esophageal dilatation
- d) Esophagus in corkscrew shape
- e) Fold divergence

164: Morphological radiological signs of gastric ulcer include:

- a) Niche
- b) Incisura defect
- c) Diverticulum
- d) Fold convergence
- e) "Index finger" sign

165: The radiological sign of gastric polyp is:

- a) Niche
- b) Lacuna



- c) Inflammatory halo
- d) Fold convergence
- e) "Index finger" sign

166: Interruption of gastric folds is characteristic of:

- a) Chronic gastric ulcer
- b) Benign tumor formation
- c) Malignant tumor formation
- d) Gastric polyp
- e) Acute gastritis

167: Convergence of gastric folds is characteristic of:

- a) Chronic gastric ulcer
- b) Benign tumor formation
- c) Malignant tumor formation
- d) Gastric polyp
- e) Acute gastritis

168: The radiological symptom of gastric ulcer perforation is:

- a) Niche
- b) Pneumoperitoneum
- c) Inflammatory halo
- d) Fold convergence
- e) Pneumothorax

169: The determinant radiological sign in small intestine obstruction patient is:

- a) Hydro-aeric levels arranged centrally in abdominal region
- b) Hydro-aeric levels arranged peripherally in abdominal region
- c) Pneumoperitoneum
- d) Pneumothorax
- e) Absence of air bubble in stomach

170: The determinant radiological sign in large intestine obstruction patient is:

- a) Hydro-aeric levels arranged centrally in abdominal region
- b) Hydro-aeric levels arranged in frame, peripherally in abdominal region
- c) Pneumoperitoneum
- d) Pneumothorax
- e) Haustral disappearance

171. Radiological sign of hydro-aeric levels arranged centrally in the abdominal region are characteristic for:

- a) Perforated gastric ulcer
- b) Penetrating gastric ulcer
- c) Small bowel obstruction
- d) Large intestine obstruction
- e) Hemorrhagic colitis

172. Radiological sign of hydro-aeric levels arranged in a frame, peripherally in the abdominal region are characteristic for:

- a) Perforated gastric ulcer

- b) Penetrating gastric ulcer
- c) Small intestine obstruction
- d) Large bowel obstruction
- e) Hemorrhagic colitis

173. Radiological signs of colon cancer are:

- a) Concentric stenosis with irregular contour
- b) Diffuse stenosis
- c) Niche
- d) Absence of peristalsis in the affected segment
- e) Elongation of the colon

174. For which pathology is the "apple core" sign characteristic:

- a) Duodenal ulcer
- b) Gastric ulcer
- c) Colon cancer
- d) Ulcerative colitis
- e) Achalasia of the cardia

175. Disappearance of haustra and straightening of the large intestine wall are characteristic of:

- a) Diverticulosis
- b) Gastric ulcer
- c) Colon cancer
- d) Inflammatory process of the colon
- e) Duodenal ulcer

176. The most informative methods for detecting pancreatic volume formations are:

- a) Ultrasonography
- b) Computed Tomography
- c) Scintigraphy
- d) Endoscopic Retrograde Cholangiopancreatography
- e) Plain abdominal X-ray

177. The first-line examination method for patients with suspected biliary stones is:

- a) Plain abdominal X-ray
- b) Ultrasonography
- c) Endoscopic Retrograde Cholangiopancreatography
- d) Computed Tomography
- e) MRI

178. Which of the listed methods is the most informative in detecting splenic changes:

- a) Plain abdominal X-ray
- b) Diagnostic retroperitoneum
- c) Ultrasonography
- d) Angiography
- e) Scintigraphy

179. Hepatic scintigraphy is an imaging investigation method using:

- a) Radioactive substances
- b) Soluble iodinated substances
- c) Insoluble iodinated substances
- d) Barium sulfate
- e) Radiolucent substances

180. Liver ultrasound examination is an investigation method that is:

- a) Non-ionizing
- b) Invasive
- c) Radioactive
- d) Non-invasive
- e) Ionizing

181. The ultrasound image of the liver in normal subjects is:

- a) Homogeneous
- b) Non-homogeneous
- c) Micronodular
- d) Mixed
- e) Macronodular

182. The first-line imaging investigation of the liver is:

- a) Radiography
- b) Ultrasonography
- c) Scintigraphy
- d) Computed Tomography
- e) Magnetic Resonance Imaging

183. For hepatic scintigraphy:

- a) Contrast substance is introduced orally
- b) Contrast substance is introduced intravenously
- c) Radiopharmaceutical preparation is introduced orally
- d) Radiopharmaceutical preparation is introduced intravenously
- e) Contrast substance is introduced directly by puncture into the liver

184. The direct radiological symptom of a radiopaque biliary calculus is:

- a) Niche
- b) Lacuna
- c) Incision
- d) Imprint
- e) Opacity

185. Hepatic ultrasonography is a method that allows evaluation of:

- a) Liver morphology
- b) Liver function
- c) Gallbladder morphology
- d) Hepatocyte function
- e) Kupffer cell function

186. Liver scintigraphy is an imaging method that allows evaluation of:

- a) Liver morphology

- b) Gallbladder morphology
- c) Morpho-functional state of the liver
- d) Biliary stones
- e) Bilirubin levels in the blood

187. Computed tomography of the liver is an imaging method that allows evaluation of:

- a) Morphological
- b) Functional
- c) Biochemical
- d) Hepatocyte function
- e) Kupffer cell function

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- a) Contrast substance is introduced orally
- b) Contrast substance is introduced intravenously
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- b) Gallbladder morphology
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- a) Morphological
- b) Functional
- c) Biochemical
- d) Hepatocyte function
- e) Kupffer cell function

193. Which of the following are focal hepatic conditions:

- a) Hepatitis
- b) Hepatic cancer
- c) Hepatic abscess
- d) Liver cirrhosis
- e) Hepatic cyst

194. Which of the following are diffuse hepatic conditions:

- a) Hepatitis
- b) Hepatic cancer
- c) Hepatic abscess
- d) Liver cirrhosis
- e) Hepatic cyst

195. In an ultrasound image, a biliary stone appears:

- a) Opaque
- b) Hyperdense
- c) Hyperechoic
- d) Hyperintense
- e) Transparent

196. For biliary tree examination, contrast substance can be introduced:

- a) Intravenously
- b) By percutaneous liver puncture
- c) Intraoperatively through a Kehr tube
- d) Retrograde through a catheter inserted with the help of an endoscope
- e) Per rectum

197. In an ultrasound image, a biliary stone appears:

- a) Anechoic
- b) Hypoechoic
- c) Hyperechoic
- d) With a shadow cone
- e) With posterior enhancement phenomenon

198. In an ultrasound image, a normal gallbladder is characterized by:

- a) Variable shape
- b) Length 6-12 cm
- c) Oval shape
- d) Length 3-4 cm
- e) Wall thickness in the body region of 2 mm

199. In an ultrasound image, a normal gallbladder is characterized by:

- a) Hyperechoic content
- b) Anechoic content
- c) Oval shape
- d) Serrated contour
- e) Clear, regular contour

200. Considerable thickening of the gallbladder wall, detected by ultrasound, is characteristic of:

- a) Biliary stones
- b) Acute cholecystitis
- c) Chronic hepatitis
- d) Congenital gallbladder malformation
- e) Gallbladder dysfunction

201. Radiologically, osteosclerosis of tubular bones can manifest through:

- a) Bone thickening
- b) Narrowing of the medullary canal
- c) Thickening of the compact bone
- d) Bone thinning
- e) Bone deformation

202. In osteoporosis, changes occur in:

- a) Bone mass and structure
- b) Density of bone tissue
- c) Bone dimension
- d) Bone shape
- e) Periosteum

203. Osteodestruction is a phenomenon of:

- a) Bone destruction without replacement with a pathological product
- b) Bone destruction with replacement by a pathological product
- c) Bone destruction with replacement by fibrous tissue
- d) Bone destruction accompanied by sequestration
- e) Rarefaction of bone tissue

204. Osteolysis is a phenomenon of:

- a) Bone tissue densification
- b) Bone resorption with replacement by a pathological product
- c) Bone resorption with replacement by fibrous tissue
- d) Bone resorption accompanied by sequestration
- e) Rarefaction of bone tissue

205. Pathological dimensional bone changes include:

- a) Hyperostosis
- b) Scoliosis
- c) Atrophy
- d) Osteoporosis
- e) Osteodestruction

206. Sunburst periosteal reaction presents a pathognomonic sign for:

- a) Inflammatory processes
- b) Benign tumors
- c) Malignant tumors
- d) Progression of specific inflammation
- e) Recent bone trauma

207. Periosteal reaction in the "Codman's triangle" form is pathognomonic for:

- a) Inflammatory processes
- b) Benign tumors
- c) Malignant tumors
- d) Progression of specific inflammation
- e) Recent bone trauma

208. Radiological symptoms of ankylosis include:

- a) Absence of articular space
- b) Trabecular transition from one bone to another
- c) Reduction of articular space
- d) Sequestra
- e) Deformation of articular surfaces

209. Osteonecrosis can be caused by:

- a) thrombosis
- b) embolism
- c) physical overuse
- d) lack of calcium in food
- e) excess of calcium in food

210. Radiologically, osteonecrosis manifests through the following:

- a) Presence of a transparent area around the necrotic bone fragment
- b) Increased density of the affected bone fragment
- c) Presence of an opaque area around the necrotic bone fragment
- d) Decreased density of the affected bone fragment
- e) The necrotic bone fragment is not delimited from the rest of the bone

211. The basic symptoms of mechanical fractures in a radiological image are:

- a) hyperostosis
- b) atrophy
- c) fracture line
- d) displacement of fragments
- e) bone destruction

212. Radiological exploration in traumas is mandatory in the following plane:

- a) lateral
- b) oblique
- c) frontal and lateral
- d) only frontal
- e) lateral and oblique

213. Which of the listed variants of fractures are characteristic for children:

- a) multifragmentation
- b) transverse
- c) subperiosteal
- d) intra-articular
- e) oblique

214. Which of the listed variants of fractures are characteristic for children:

- a) subperiosteal
- b) epiphyseal fractures
- c) apophyseal fractures
- d) multifragmentation
- e) there are no such characteristics

215. In the case of uncomplicated fracture evolution, the visible appearance of bony callus in a radiological image occurs:

- a) after 10 days
- b) after 21 days
- c) after 30 days
- d) after 2-3 months
- e) after 6 months

216. Which of the listed variants of fractures are characteristic for elderly individuals:

- a) Comminutive, with sharp edges
- b) "Greenstick" fractures
- c) Prolonged consolidation duration
- d) Angular displacement
- e) Intra-articular

217. Complete restoration of the structure of a large tubular bone after a fracture can take up to:

- a) 2-3 days
- b) 2-3 weeks
- c) 3-4 weeks
- d) 6-8 months
- e) 1.5-2 years

218. Pathological fractures are characterized by the fact that they can occur in case of:

- a) Action of excessive force
- b) Action of a low-intensity traumatic agent
- c) Prolonged mechanical stress
- d) Viral infectious process
- e) Excess of calcium in diet

219. "Stress fractures" are characterized by the fact that they can occur in case of:

- a) Action of excessive force
- b) Action of a low-intensity traumatic agent
- c) Prolonged mechanical pressure
- d) Viral infectious process
- e) Excess of calcium in diet

220. Skull fractures are typically:

- a) Multifragmentation
- b) Incomplete
- c) Complete



- d) Depressed
- e) With lateral displacement of fragments

221. Spinal column fractures are typically:

- a) Comminutive
- b) "Greenstick"
- c) With angular displacement of fragments
- d) Compression
- e) With lateral displacement of fragments

222. The radiological picture of a dislocation is characterized by:

- a) Complete loss of alignment of joint surfaces
- b) Partial loss of alignment of joint surfaces
- c) Narrowed intra-articular space
- d) Irregular joint surfaces
- e) Sclerosis of joint surfaces of bones

223. Which of the listed imaging methods allows the detection of early-stage bone inflammatory processes:

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

224. "Simultaneous fractures" are called:

- a) multifragmentation fractures
- b) fractures of different bones occurring simultaneously
- c) multiple fractures of a single bone
- d) fractures in combination with dislocations
- e) fractures in combination with parenchymal organ injury

225. The basic imaging method for exploring bones and joints is:

- a) Magnetic Resonance Imaging
- b) Tomosynthesis
- c) Radiography
- d) Arthrography
- e) Ultrasonography

226. Skeletal scintigraphy is most commonly indicated for detecting:

- a) Fractures
- b) Metastases
- c) Osteomyelitis
- d) Skeletal developmental anomalies
- e) Biological age of the patient

227. Which of the following methods allows for better visualization of bone structures:

- a) Bone scintigraphy
- b) Ultrasonography
- c) Computed Tomography

- d) Magnetic Resonance Imaging
- e) Radiography

228. The fracture line can be:

- a) Longitudinal
- b) Lateral
- c) Transverse
- d) Angular
- e) Oblique

229. In the case of a fracture, the radiographic examination report should include information about:

- a) Fracture location
- b) Fracture line
- c) Displacement of fragments
- d) Age of the fracture
- e) Cause of the fracture

230. Longitudinal displacement of bone fragments can occur:

- a) By sliding
- b) By lateral displacement
- c) By compression
- d) By angulation
- e) By separation

231. A "greenstick" fracture is:

- a) A characteristic feature of fractures in children
- b) A characteristic feature of fractures in the elderly
- c) A characteristic feature of fractures of tubular bones
- d) A multifragmentary fracture
- e) A subperiosteal fracture

232. Which of the following statements are true:

- a) Bone callus appears before fibrous callus
- b) Bone callus appears after fibrous callus
- c) Bone callus becomes radiologically visible after 14 days
- d) Bone callus becomes radiologically visible after 21 days
- e) Pseudarthrosis is a normal stage in the fracture healing process

233. Scoliosis is:

- a) Lateral curvature of the vertebral column
- b) Sagittal curvature of the vertebral column
- c) Erasure of the curves of the vertebral column
- d) Curvature of a tubular bone
- e) Elongation of a tubular bone

234. Osteoporosis is:

- a) Demineralization of the bone matrix
- b) Increase in mineralization of the bone matrix
- c) Bone deformation

- d) Bone resorption
- e) Bone curvature

235. The formation of a bone sequestrum is the result of:

- a) Osteoporosis
- b) Osteolysis
- c) Osteodestruction
- d) Osteonecrosis
- e) Osteosclerosis

236. The lack of intra-articular space is characteristic of:

- a) Arthritis
- b) Arthrosis
- c) Ankylosis
- d) Osteomyelitis
- e) Subluxation

237. Erosion of articular surfaces is characteristic of:

- a) Arthritis
- b) Dislocation
- c) Ankylosis
- d) Osteomyelitis
- e) Subluxation

238. What can serve as a landmark for determining the location of the kidneys:

- a) Soft tissues
- b) Ribs
- c) Vertebral bodies
- d) Gastric body
- e) Liver

239. Which of the following statements are correct:

- a) The upper right renal pole is located higher than the left
- b) The upper left renal pole is located higher than the right
- c) The upper poles of both kidneys are at the same level
- d) The upper pole is above the diaphragm
- e) The lower poles of the kidneys are located in the lesser pelvis

240. The major axes of the kidneys in the norm are:

- a) Parallel to the vertebral column
- b) Intersect each other at an angle, open downwards
- c) Intersect each other at an angle, open upwards
- d) Parallel to the diaphragm
- e) Perpendicular to the vertebral column

241. The following imaging methods can be used for radiological investigation of the ureters:

- a) Cystography
- b) Abdominal X-ray
- c) Intravenous Urography

- d) Aortography
- e) CT

242. The following imaging methods can be used for investigating the urinary bladder:

- a) Cystography
- b) Irrigography
- c) Scintigraphy
- d) CT
- e) Abdominal X-ray

243. What contrast agents are used for the radiological investigation of the renal-urinary system:

- a) Barium sulfate
- b) Hydrophilic iodinated contrast agents
- c) Radiopharmaceuticals
- d) Gaseous agents
- e) Lipophilic contrast agents

244. Radiological detection of kidney enlargement can explain:

- a) Malignancy developing within it
- b) Development of a cyst within it
- c) Diffuse scarring processes
- d) Sclerosing processes
- e) Renal hypoplasia

245. What basic elements are studied in intravenous urography:

- a) Kidney
- b) Ureter
- c) Urinary bladder
- d) Urethra
- e) Renal arteries

246. How are the ureters contrasted in normal intravenous urography:

- a) Along their entire course
- b) In sections
- c) Not contrasted
- d) Only contrasted under compression
- e) Only contrasted in the vertical position of the patient

247. The characteristic signs of renal ectopia are:

- a) Low position of the kidney
- b) Short ureter
- c) Curved ureter
- d) Hydronephrosis
- e) Elongated ureter

248. Renal polycystosis is characterized by:

- a) Enlargement of the kidney
- b) Decrease in kidney volume

- c) Normal kidney size
- d) Deformation of the kidney
- e) Elongation of the ureter

249. The major importance in the differential diagnosis of renal dystopia and nephroptosis is:

- a) location of the renal pelvis
- b) length of the ureter
- c) level of origin of the renal artery
- d) shape of the urinary bladder
- e) size of the kidney

250. In patients with hydronephrosis, the primary investigation is:

- a) excretory urography
- b) angiography
- c) retrograde pyelography
- d) ultrasonography
- e) scintigraphy

251. Dilatation of the renal pelvis and calyces, renal parenchymal atrophy, and decrease in renal function are more characteristic of:

- a) solitary renal cyst
- b) renal tumor
- c) hydronephrosis
- d) chronic pyelonephritis
- e) shrunken kidney

252. Displacement of the ureter and renal pelvis, compressed and displaced calyces, with an avascular area seen on angiography. Ultrasonographically, a hypoechoic area and a defect in the renal parenchyma with well-defined contours are observed. These changes are more characteristic of:

- a) renal tumor
- b) chronic pyelonephritis
- c) solitary renal cyst
- d) hydronephrosis
- e) urolithiasis

253. A kidney of normal size, with a homogeneous opacity, moderately enlarged renal pelvis, well-defined contours of the kidney, and normal-sized calyces. This radiographic picture is more characteristic of:

- a) renal hypoplasia
- b) urolithiasis
- c) pyeloectasia
- d) renal tumor
- e) renal ectopia

254. The main radiodiagnostic method for detecting nephroptosis is:

- a) ultrasonography
- b) excretory urography
- c) retrograde pyelography

- d) antegrade pyelography
- e) abdominal X-ray

255. Which of the indicated imaging methods allows differential diagnosis between renal agenesis and renal aplasia:

- a) Plain abdominal radiography
- b) Excretory urography
- c) Angiography
- d) Ultrasonography
- e) Scintigraphy

256. Indicate the characteristic signs of nephroptosis:

- a) Lower position of the kidney
- b) Short ureter
- c) Curved ureter
- d) Hydronephrosis
- e) Kidney reduced in dimension

257. Indicate the characteristic signs of hydronephrosis:

- a) Pelvis enlarged in volume
- b) Pelvis reduced in volume
- c) Dilated calyces
- d) Spasmed calyces
- e) Curved ureter

258. Which symptoms are characteristic of renal cancer on intravenous urography:

- a) Kidney enlarged in dimension
- b) Small kidney with unchanged pelvicalyceal system
- c) Deformation of the pelvis, calyces
- d) Elongation of the ureter
- e) Descended kidney

259. For detecting radiolucent concretions in the upper urinary tract, the most informative method is:

- a) Cystography
- b) Plain abdominal radiography
- c) Tomosynthesis
- d) Ultrasonography
- e) Scintigraphy

260. Which of the following are congenital renal pathologies:

- a) Hydronephrosis
- b) Kidney ectopia
- c) Duplication of kidney
- d) Nephroptosis
- e) Horseshoe kidney

261. Which of the following are acquired renal pathologies:

- a) Hydronephrosis
- b) Kidney ectopia

- c) Duplication of kidney
- d) Nephroptosis
- e) Horseshoe kidney

262. Renal calculus can be detected using:

- a) Plain abdominal radiography
- b) Ultrasonography
- c) Computed Tomography
- d) Renal scintigraphy
- e) Urethrography

263. The first-intention investigation of the kidneys is:

- a) Radiography
- b) Ultrasonography
- c) Scintigraphy
- d) Computed Tomography
- e) Magnetic Resonance Imaging

264. For detecting nephroptosis, the main radiological diagnostic method is:

- a) Ultrasonography of the patient in vertical position
- b) Excretory urography
- c) Retrograde pyelography
- d) Antegrade pyelography
- e) Plain abdominal radiography

265. Longitudinal dislocations of fragments can be through:

- a) Sliding
- b) Separation (diastasis)
- c) Engagement
- d) Perpendicular dislocation to the bone axis
- e) Elongation

266. The spiculated periosteal reaction presents a pathognomonic sign for:

- a) Inflammatory processes
- b) Benign tumors
- c) Malignant tumors
- d) Progression of specific inflammation
- e) Recent bone trauma