TOPICS FOR PRACTICAL LESSONS, 
DISCIPLINE RADIOLOGY
For the IIIrd year students Faculty of Medicine, university year 2018-2019

   1. Medical imaging – definition.
   2. Component parts of medical imaging.
   6. X-ray properties.

II. Radioprotection.
   1. Dosimetry.
   2. Units of measurement for radiation. International system of units.
   3. Absorbed dose. Biological dose.
   4. Radiological protection of the patient.
   5. Radiological protection of personnel involved with ionizing radiation.

III. Radiological methods of investigation.
   2. Radiography. Definition.
   3. Forming of radiographic image.
   4. The laws of radiographic imaging.
   5. Radiographic Image Quality Criteria.
   6. Advantages and disadvantages of fluoroscopy.
   7. Advantages and disadvantages of radiography.
   8. Special radiologic methods.
   10. Adverse reactions on contrast agents.

IV. Tomographic methods in radiology. Magnetic resonance imaging.
   1. Linear (conventional) tomography, principle.
   2. Tomosynthesis. Advantages and disadvantages.
   3. The main concepts of Computed Tomography (CT).
   5. Advantages and disadvantages of CT.
   6. The main concepts of Magnetic Resonance Imaging (MRI).
   7. Advantages and disadvantages of MRI.
   8. Indications and contraindications for MRI.

V. Ultrasonography. Nuclear medicine.
   2. Modes of ultrasound examination.
   4. General ultrasonographic semiology.
7. Notion of Radionuclide and Radiopharmaceutical media (preparation), half-lives.
8. Various ways of obtaining radionuclides and radiopharmaceuticals.
10. The principle of obtaining and recording information in radionuclide diagnosis.
11. SPECT (Single Photon Emission Computed Tomography) and PET (Positron Emission Tomography).

VI. Radiological investigation of the respiratory system. Normal radiological anatomy of thorax.
2. Chest wall.
3. Chest content.
4. Projection of lung lobes.
5. Lung segments.
7. Lung hilum. Definition.

VII. Radiological signs of pathology of respiratory system.
1. Main radiological syndromes of respiratory pathology.
2. Pulmonary opacity. Definition.
3. Classification of pulmonary opacities.
4. Total and subtotal opacity of the lung field.
5. Limited opacity in the lung field: intrapulmonary (lobar, segmental, subsegmental processes); extra pulmonary (hydrothorax, pleural densifications).
7. Nodular opacities, diffuse and limited dissemination.

VIII. Radiological signs of pathology of respiratory system.
1. Pulmonary hyperlucency. Definition.
2. Classification of pulmonary hyperlucencies.
5. Disorders of pulmonary vascular pattern in respiratory pathology.
6. Disorders of pulmonary hilum and mediastinal lymph nodes.
7. Radiological diagnosis in pulmonary emergencies.

IX. Cardio-vascular imaging.
1. Imaging methods of investigation of cardio-vascular system.
2. Radiological anatomy of the heart. Topometry.
3. Radiological investigations of the heart. Indications and contraindications.
7. Heart scintigraphy. Indications.
8. Heart MRI. Indications.

X. Radiological signs of cardio-vascular pathology.
1. Radiological criteria of enlargement of heart and great vessels.
2. Disorders of pulmonary vascular pattern in cardio-vascular pathology (hipovolemia, arterial hipervolemia, venous congestion, pulmonary arterial hypertension).
3. Pathological cardiac configurations.
4. Common pathological processes, leading to the pathological cardiac configurations.
5. Differential diagnosis in syndromes.

XI. Radiological investigation and normal radiological anatomy of digestive tube.
1. Imaging methods of investigation of digestive tube.
3. Contrast enhanced investigation of digestive tube.
4. Patient preparation for radiological examination of the stomach and duodenum.
6. Radiological anatomy of the esophagus.
7. Radiological anatomy of the stomach.
8. Radiological anatomy of the small intestine.
9. Radiological anatomy of the colon.

XII. Radiological signs of pathology of digestive tube.
1. Images “plus filling”: niche, diverticulum.
2. Images “minus filling”: gap (lacuna), amputation, incisory, notch.
9. Radiographic diagnosis in acute abdominal syndrome.

XIII. Radiological investigation of the liver, biliary system and pancreas.
1. Imaging methods of examination of the liver, gallbladder and bile ducts.
2. Radiological anatomy of the gallbladder.
3. Radiological investigations of the gallbladder and bile ducts.
4. Endoscopic retrograde cholangiopancreatography (ERCP).
5. Variants of cholangiography.
7. Ultrasonographic investigation of the gallbladder.
8. Ultrasonographic investigation of the liver. Normal liver.
9. Imaging symptoms of diffuse hepatic disorders.
10. Imaging symptoms of focal hepatic disorders.
11. Hepatic scintigraphy.
12. Imaging diagnosis of the diseases of pancreas.

XIV. Radiological diagnosis in traumatic lesions of bones and joints.
1. Imaging methods of investigation of locomotion apparatus.
2. Imaging methods of investigation in traumatic injuries of locomotion apparatus.
4. Imaging semiology of fractures: line of fracture, displacement of fragments.
5. Types of fractures according to the number: single, multiple, comminuted, simultaneous.
6. Types of fractures according to the fracture line trajectory: transversal, oblique, spiral, longitudinal.
8. Age particularities (in old persons and children) of traumatism.
9. Particularities of spinal column fractures.
13. Imaging semiology of dislocations (luxations) and subluxations.

XV. Imaging diagnosis of osteo-articular pathology of non-traumatic origin.
1. Imaging semiology of changes in bone shape and dimensions (bone atrophy, bloody bone, bone deformities, bone hypertrophy).
2. Imaging semiology of structural changes (osteoporosis, osteosclerosis, osteodistuction, osteonecrosis, osteolysis).
5. Radiological semiology of modifications of joints.

XVI. Diagnostic imaging of the urinary system.
1. Imaging methods of investigation of urinary system.
2. Simple abdominal radiograph.
3. Radiological anatomy of the urinary tract.
4. Patient preparation for contrast enhanced radiological examination of the urinary tract.
5. Intravenous urography. Indications and contraindications.
7. Radionuclide investigations of kidneys. Indications and contraindications.
8. Morphological modifications of kidneys (number, localization, shape, contour, dimensions, structure).
10. Syndrome of deaf kidney.
XVII. Diagnostic imaging of central and peripheral nervous system. Imaging diagnosis of the trauma of maxilla-facial area.
   1. Imaging methods of investigation of central and peripheral nervous system.
   2. Radiological semiology of nervous system disorders.
   3. Diagnostic imaging of traumatism of nervous system and face structures.
   4. Diagnostic imaging of tumors.
   5. Diagnostic imaging of inflammations of the nervous system and face structures.

Șef catedră

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