

**TOPICS FOR PRACTICAL LESSONS,
DISCIPLINE MEDICAL IMAGING
For the IVth year students Faculty of Medicine, university year 2025-2026**

1. Medical imaging in cardiology.

1. Radiological methods in the diagnosis of heart diseases (standard radiography, cardiac catheterization and angiography, computed tomography). Indications. Advantages, disadvantages, limits.
2. Transthoracic echocardiography. Standard views. Acoustic windows. Transesophageal echocardiography. Indications. Advantages, disadvantages.
3. Methods of nuclear medicine in the diagnosis of cardiovascular pathology. Indications, contraindications. Radionuclides used. Peculiarities of acquisition.
4. Magnetic resonance imaging in cardiovascular pathology. Basic indications. Advantages, disadvantages. Absolute and relative contraindications.
5. Imaging diagnosis of ischemic heart disease.
6. Imaging diagnosis of rheumatic valvulopathy.
7. Imaging diagnosis of pericarditis.

2. Medical imaging in nephrology.

1. Computed tomography in the diagnosis of renal pathology. Scanning phases. Indications.
2. Imaging methods of investigation in renal pathology of inflammatory origin.
3. Acute pyelonephritis, chronic pyelonephritis. Differential diagnosis.
4. Imaging diagnosis in acute and chronic renal failure.
5. Imaging evaluation of renal transplant.

3. Medical imaging in urology.

1. Spiral computed tomography in the assessment of urogenital system pathology. Scanning phases. Advantages, disadvantages, indications, contraindications.
2. Magnetic resonance imaging of the kidney, prostate. Advantages, disadvantages, indications, contraindications.
3. Ultrasound investigation of kidneys, prostate. Advantages, disadvantages, limitations of the method.
4. Renal Angiography. Advantages, disadvantages, indications, contraindications.
5. Imaging diagnosis of congenital urogenital malformations.
6. Imaging diagnosis in urogenital system trauma. Imaging methods of first choice, differential diagnosis.
7. Diagnostic imaging of urolithiasis.
8. The differential imaging diagnosis of urinary tract tumors (nephroblastoma, hypernephroma, basinet, ureter, bladder tumors).
9. The imaging diagnosis of prostate tumors.

4. Medical imaging in pulmonology.

1. Computerized tomography of the chest in pulmonary pathology.
2. The role of MRI, ultrasonography, nuclear medicine methods and angiography in the diagnosis of pulmonary pathology.
3. Algorithm of differential diagnosis of pneumonia (franco-lobar pneumonia, interstitial pneumonia, bronchopneumonia, destructive pneumonia, autoimmune processes).
4. Pulmonary node: notion, classification. Algorithm of differential diagnosis in pulmonary nodules.
5. Pulmonary atelectasis: notion, classification, algorithm of differential imaging diagnosis.
6. Pleural effusion, differential imaging diagnosis.
7. Pneumothorax, differential imaging diagnosis.

5. Medical imaging in pneumophthiziology.

1. Elemental radiological changes in primary pulmonary tuberculosis. The imaging diagnostic algorithm for pulmonary tuberculosis.
2. Imaging semiology of disseminated pulmonary tuberculosis (standard radiography, tomosynthesis, computed tomography).
3. Imaging semiology of infiltrative pulmonary tuberculosis (standard radiography, tomosynthesis, computed tomography).
4. Imaging semiology of nodular pulmonary tuberculosis (standard radiography, tomosynthesis, computed tomography).

5. Imaging semiology of fibro-cavitary pulmonary tuberculosis (standard radiography, tomosynthesis, computed tomography).
6. Imaging semiology of tuberculous tracheobronchial adenopathy (standard radiography, tomosynthesis, computed tomography).
7. Imaging semiology in tuberculous pleurisy. Differential diagnosis.
8. Imaging semiology in bronchial tuberculosis.
9. Imaging semiology in complications of pulmonary tuberculosis. Interpretation of pathological opacities in pulmonary tuberculosis.

6. Medical imaging in ophthalmology.

1. Principles of radiological investigations in ophthalmology. The methods used, the technique of making. Advantages disadvantages. Indications, contraindications. The method. The Komberg-Baltin method. Investigation methods with metal probe.
2. Imaging anatomy of the orbit and the eyeball.
3. Computer tomography in ophthalmology. Advantages, disadvantages.
4. MRI in ophthalmology. Advantages, disadvantages. Indications, contraindications.
5. Algorithm of imaging diagnosis of intra-orbital foreign bodies.
6. Algorithm of imaging diagnosis in the trauma of the orbit and the eyeball.
7. Algorithm of imaging diagnosis in the masses of the orbit and the eyeball.
8. Algorithm of imaging diagnosis in the pathology of the optic nerve.

7. Medical imaging in neurology.

1. Computerized tomography of the skull. Indications, pathological signs. Cerebral angiography. Performing imaging techniques in neuroimaging. Comparative analysis of CT and IMR in neuroimaging.
2. Nuclear medicine methods used in pathology of the nervous system.
3. Algorithm of imaging diagnosis in ischemic stroke.
4. Algorithm of imaging diagnosis in hemorrhagic stroke.
5. Pathology of the spinal cord. Differential imaging diagnosis.
6. Algorithm of imaging diagnosis of intraaxial and extraaxial neoplasms.
7. Differential imaging diagnosis in intervertebral disc herniation.
8. Computed tomography in cerebral trauma.

8. Medical imaging in traumatology and orthopedics.

1. Methodology of imaging examination in osteo-articular trauma (standard radiography, CT, MRI, ultrasonography). Differential diagnostic algorithm.
2. Radioimaging diagnosis of congenital hip dislocation.
3. Radioimaging diagnosis of bone tumors.
4. Radioimaging diagnosis in osteoarticular tuberculosis.
5. Radioimaging diagnosis in avascular necrosis of the femoral head.

9. Medical imaging in endocrinology.

1. Radiological methods in the diagnosis of endocrine system pathology (standard radiography, computed tomography, ultrasonography, nuclear medicine, MRI). Indications. Advantages, disadvantages, limitations.
2. Algorithm of imaging diagnosis in thyroid gland pathology.
3. Algorithm of imaging diagnosis in pathology of the adrenal glands.
4. Algorithm of imaging diagnosis in pituitary pathology.

10. Medical imaging in rheumatology.

1. Principles of radiological investigations in rheumatology. Methods used, technique of performance. Advantages disadvantages. Indications, contraindications.
2. Imaging semiology in rheumatoid arthritis. Differential diagnosis.
3. Imaging semiology in gout. Differential diagnosis.
4. Imaging semiology in osteoarthritis. Differential diagnosis.
5. Imaging semiology in systemic lupus erythematosus. Differential diagnosis.