TOPICS FOR PRACTICAL LESSONS,
DISCIPLINE DENTAL RADIOLOGY
For the IIIrd year students Faculty of Stomatology, university year 2019-2020

I. Medical imaging. Component parts of medical imaging. Ionizing radiations. Radioprotection.

1. Medical imaging. Definition.
2. Component parts of medical imaging.
3. Ionizing radiation and its action on living organisms.
4. Dosimetry.
5. Units of measurement for radiation. International system of units.
6. Absorbed dose. Biological dose.
7. Radiological protection of the patient.
8. Radiological protection of personnel involved with ionizing radiation.

II. Radiological methods of investigation.

1. Radiology. Definition.
2. Nature of X-rays.
3. Construction and principle of function of X-ray tube.
4. X-ray properties.
5. Properties of a radiographic image.
6. Radiography. Definition.
7. Forming of radiographic image.
8. The laws of radiographic imaging.
9. Radiographic Image Quality Criteria.
10. Special radiologic methods.
11. Radiological contrast agents. Classification.
12. Adverse reactions on contrast agents.

III. Imaging methods of investigation: computed tomography, magnetic resonance imaging, ultrasonography, nuclear medicine.

1. Computed tomography. General principles. Advantages and disadvantages. Indications and contraindications.
2. Cone-beam computed tomography.
3. General principle of magnetic resonance imaging (MRI). Advantages and disadvantages.
4. Indications and contraindications for IRM examination.
5. Nature and properties of ultrasound.
6. Modes of ultrasound examination.
7. Methodology of ultrasound examination. Advantages and disadvantages.
8. General ultrasonographic semiology.
9. Doppler-ultrasonography. Principles and modes.
10. Basics of nuclear medicine. Atomic and nuclear structure. Nature and properties of α, β, γ-radiation.
11. Notion of Radionuclide and Radiopharmaceutical media (preparation), half-lives.
12. Requirements for radionuclide and radiopharmaceutical preparation.
13. The principle of obtaining and recording information in radionuclide diagnosis.
14. SPECT (Single Photon Emission Computed Tomography) and PET (Positron Emission Tomography). Basic principles.

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IV. Radiodiagnosis of locomotion apparatus pathology.

1. Imaging methods of examination of locomotion apparatus.
2. Fractures. Types of fractures according to the mechanism of production: mechanical fractures, stress fractures, direct fractures, indirect fractures, gunshot fractures, pathological fractures.
3. Types of fractures according to the number: single, multiple, comminuted, simultaneous.
4. Radiological semiology of fractures: line of fracture, displacement of fragments.
5. Evolution of fractures.
6. Complications of fractures.
7. Imaging semiology of dislocations (luxations) and subluxations.
8. Imaging seismology of changes in bone shape and dimensions (bone atrophy, bloody bone, bone deformities, bone hypertrophy).
9. Imaging semiology of structural changes (osteoporosis, osteosclerosis, osteodistruction, osteonecrosis, osteolysis).
10. Changes in periosteum (periostois, periostitis: linear, dantelar, acciform, Codman's triangle).
11. Modifications of soft tissues (volume, structure).
12. Radiological semiology of modifications of joints.

V. Imaging methods of examination in stomatology.

1. Radiological methods of examination in stomatology. Classification.
2. Intra-oral methods. Classification.
3. Contact radiography: by Dieck (retroalveolar), by Raper (interproximal). General execution technique according to the examined teeth. Indications.
4. Flim-occlusional radiography: by Belot, by Simpson. General execution technique according to the examined teeth. Indications.
5. Extra-oral methods.
6. Dental radiography in children.
7. Radiography of jaws (maxilla, mandible).
8. Contrast enhanced radiography (sialography, fistulography, that of maxillary sinus, carotid arteriography).
9. Ortopantotomography. Principles and general execution technique. Advantages and disadvantages. Performing defects.
10. Computed tomography. Cone beam computed tomography.
11. Ultrasonography. Magnetic resonance imaging. Nuclear medicine. Indications in stomatology.

VI. Normal radiological anatomy of teeth, maxillofacial area and temporo-mandibular joint.

1. Radiological anatomy of jaws. Regional and individual characteristics.
2. Normal relations between teeth and other anatomical structures: radiological signs.
3. Radiological image of a permanent tooth.
4. Radiological anatomy of different groups of teeth.
5. Radiological image of a milk tooth.
6. Another anatomical structures: cavum nasi, sutura intermaxilaris, foramen incisivum, sinus maxilaris, os zygomaticum, tuber maxillae, processus coronoideus, processus condylaris, protuberantia mentalis, foramen mentale, canalis mandibularis, linea obliqua externa, linea mylohyoidea, articulatio temporo-mandibularis.
7. Radiological anatomy of the temporal-mandibular joint.
8. Radiological anatomy of salivary glands.

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VII. Age particularities. Developmental anomalies of maxillofacial area.

1. Notion of dental embryology.
2. Particularities in children.
3. Particularities in eldery.
4. Abrasion, atrition, erosion, dental resorption.
5. Anomalies of number.
6. Anomalies of size: macrodonthy, microdonthy.
7. Anomalies of dentition: transposition.
8. Anomalies of structure: synodonthy, germination, taurodontism, dilaceration, dens in dens, invagination, amelogenesis imperfecta, dentinogenesis imperfecta, osteogenesis imperfecta, dental dysplasia, regional odontodyspasia, enamelom (enamel pearls).

VIII. Radio-imaging diagnosis of cranial and maxillofacial area trauma.

1. Classification of fractures of facial massif.
2. Fractures of maxilla: involving and not involving the teeth.
3. Classification of fractures by Le Fort: I, II, III.
4. Fractures of mandible: variations, particularities, radiographic signs.
5. Fractures of teeth.
6. Evolution of non-complicated fractures. Radiological signs.
7. Complications of fractures. Radiological diagnosis.
8. Dislocation of a tooth. Radiological diagnosis.

IX. Radio-imaging diagnosis of caries.

1. Radiological methods of examination.
2. Radiological evolution of caries.
3. Clinical and radiological classifications of caries.
4. Enamel, amelo-dentinal and dentin caries. Radiographic signs.
5. Penetrating, interproximal, occlusional caries. Radiographic signs.
6. Caries of neck and of root, caries of included dent. Radiographic signs.
7. Recidival and secondary caries. Radiographic signs.

X. Radio-imaging diagnosis of complications of caries.

1. Classification of complications of caries. Local complications– pulpitis and pulpar necrosis, apical periodontitis. Radiographic signs.
2. Periapical granulomua. Radiographic signs.
3. Modification of the root – resorbtion, hipercementosis.
4. Acute apical parodonititis.
5. Chronic apical parodonititis. Clinical variants and radiographic signs.
6. Causes of diagnostic errors.
7. Marginal parodontitis. Local forms. Generalized forms. Radiographic examination of marginal parodontitis.
8. Paradontosis. Definition. Degrees. Radiographic signs.

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XI. Teleradiography of the maxillofacial area. Imaging methods for diagnosis of maxillofacial area and temporo-mandibular joint pathology.

1. Teleradiography. General notions. Indications and fields of application.
2. Technique of teleradiography. Lateral teleradiography.
3. Cranio-facial teleradiography, bone-point markers, lines of sight, lines and plans for orientation reference.
4. Radio-imaging exploration techniques for temporo-mandibular joint. Parma incidence.
5. Radiological anatomy of temporo-mandibular joint.
6. Radiodiagnosis of temporo-mandibular joint arthritis.
7. Imaging diagnosis of temporal-mandibular joint luxation.
8. Radiodiagnosis of contractures of temporal-mandibular joint.

XII. Radiodiagnosis in implantology and parodontology. Radiodiagnosis in stomatololgical treatment.

1. Radiological aspects of implantology.
2. Incidences - quantity of available bone, frontal zone, lateral zone; mandible, frontal zone, quality of available bone (density), anatomical elements, radiologic toolings, another available imaging methods.
3. Radiographic errors, sources of errors.
4. Obturations. Radiographic signs.
5. Incrustations (radioopac and radiolucent materials).
6. Artificial crowns of teeth. Radiographic signs.
7. Bridges (radio-opaque and radiolucent materials).
8. Prosthesis (radiological aspects).
9. Pulpar combing.
10. Pulpotomy.
11. Treatment of tooth root - radiographic evaluation, relation between the tooth and other anatomical structures. Radiographic examination during radicular treatment – dilation of radicular channels, radicular obturations, complications. Control of results.
12. Apical resection.
13. Amputation of tooth root.
14. Dental extraction (normal alveola, complications).
15. Dental transplantation.

XIII. Radiodiagnosis of inflammatory diseases of the maxillofacial area. Radiodiagnosis of osteomyelitis.

1. Methods of examination.
2. Focal diseases and radiographic examination of teeth: pulpar focars, marginal focars.
3. Infection of maxillary bones: osteoperiostitis, alveolar osteitis, osteomyelitis.
4. Jaw abscesses.
5. Radiological classification of osteomyelitis.
6. Odontogenic osteomyelitis.
7. Complications of osteomyelitis.

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XIV. Radiodiagnosis of diseases of paranasal sinuses.

1. Imaging methods of examination for paranasal sinuses.
2. Radiological anatomy of paranasal sinuses.
3. Sinusitis. Notion.
4. Maxillary sinusitis and dental radiographic examination - odontogenous maxillar sinusits (acute, chronic), oro-sinusal communication, contrast investigations; root in maxillar sinus.
5. Cysts. Differential diagnosis between maxillar sinus and periapical cyct.
6. Tumors.

XV. Radiodiagnosis of cysts of the maxillofacial area.

1. Imaging methods of examination.
2. Classification of the cysts of maxillofacial area.
3. Odontogenous cysts (primordial, folicular, periodontal lateral).
4. Inflammatory cysts - radicular, rezidual, periodontal lateral cyst.
5. Disembiopathic cysts.
6. Non-odontogenous cysts: naso-palatine, naso-labial, globulo-maxillary.
7. Pseudocysts.

XVI. Radiodiagnosis of tumors of the maxillofacial area.

1. Radiological classification of tumors of maxillofacial area.
2. Benign tumors. General radiological semiology. Classification.
3. Odontogenous benign tumors.
4. Odontome.
5. Cementome.
6. Ameloblastome.
7. Non-odontogenous benign tumors.
8. Pseudotumors.
9. General characteristics of malignant bone tumors. Radiological semiology. Classification.
10. Odontogenous malignant tumors.
11. Non-odontogenous malignant tumors.
12. Secondary malignant tumors.

XVII. Radio-imaging diagnosis of salivary gland pathology.

1. Imaging methods of examination.
2. Pathology of salivary glands.
3. Lithiasis. Radiological signs.
4. Tumors of salivary glands.
5. Benin tumors.
6. Malignant tumors.
7. Chronic sialadenitis.
8. Limphoepitelial diseases.
9. Sialosis.

Şef catedră **Natalia Rotaru**