МЕДИЦИНСКИ УНИВЕРСИТЕТ - ВАРНА
„Проф. д-р Параскев Стоянов“
Ул.“Марин Дринов“ 55, Варна 9002, България
Тел. : 052/ 65 00 57, Факс: 052/ 65 00 19
e-mail: uni@mu-varna.bg, www.mu-varna.bg

MEDICAL UNIVERSITY - VARNA
“Prof. Dr. Paraskev Stoyanov”
55, Marin Drinov Str., 9002 Varna, Bulgaria
Tel.: +359 52/ 65 00 57, Fax: + 359 52/ 65 00 19
e-mail: uni@mu-varna.bg, www.mu-varna.bg

RADIOLOGY, RADIONUCLIDE DIAGNOSTICS AND RADIOTHERAPY EXAMINATION SYLLABUS

I. RADIOLOGY

1. X-rays. Properties of x-rays. The x-ray image.
2. X-ray tube – production of x-rays. Radiography machines – principles. Different types of radiographic machines.
3. Contrast studies. Classification. Side effects of contrast materials. Treatment in contrast-induces reactions.
4. Computed tomography. CT- machines. CT-image. Main indications for CT, advantages and disadvantages of CT.
5. MRI. Basic principles, indications, advantages and disadvantages
6. Ultrasound. Diagnostic ultrasonography machine. Ultrasonographic image. Main indications for US, advantages and disadvantages of US
7. Interventional radiology – principles, methods.
8. Imaging methods for investigation of respiratory system
9. Imaging methods for investigation of cardio-vascular system
10. Imaging methods for investigation of gastro-intestinal system
11. Imaging methods for investigation of hepatobiliary-pancreatic system
12. Imaging methods for investigation of genitourinary system
13. Imaging methods for investigation of musculoskeletal system
14. Imaging methods for investigation of central nervous system system
15. Bronchial disease. Bronchitis. Bronchiectasias. Bronchial obstruction.
16. Pneumonia. Complication of pneumonia.
17. Pulmoary embolism and infarction.
18. Lung tuberculosis.
19. Lung tumors. Lung metastases.
20. Hydatid disease of the lung. Differential diagnosis of pulmonary round shadow/pulmonary nodule.
21.Occupational lung disease. Silicosis. Asbestosis.
22. Pleural diseases
23. Diseases of the diaphragm.
24. Mediastinal tumors.
25. Vascular changes in the lungs in cardiac disease. Pulmonary edema.
26. Congenital heart disease with left-right shunting.
27. Congenital heart disease with right-left shunting. CHD without shunting.
28. Acquired valve diseases.
29. Acquired diseases of aortha and peripheral vessels.
30. Plain abdominal radiogram. Pathological distribution of gas collections.
31. Plain abdominal radiogram. Abdominal calcifications.
32. Esophagus. Esophageal strictures. Dilation. Filling defects.
33. Gastric and duodenal ulcer.
34. Filling defects in the stomach. Gastric carcinoma. Benign gastric tumors.
35. Ulcerative colitis and Crohn disease. Other forms of intestinal inflammation.
36. Tumors of the colon.
37. Bowel diseases in neonatal and early childhood period
38. Liver. Focal malignant lesions.
39. Liver. Focal benign lesions.

40. Cholelithiasis. Complications of cholelithiasis
41. Biliary obstruction (mechanic icterus, jaundice). Diagnostic algorhythm.
42. Pancreatic tumors.
43. Pancreatitis
44. Nephrolithiasis. Hydronephrosis.
45. Acute and chronic inflammatory kidney disease.
46. Tumors of the urinary system.
47. Main pathologic processes in bones. Osteodensitometry.
48. Primary malignant bone tumors.
49. Primary benign bone tumors and tumor-like lesions.
50. Multifocal bone lesions.
51. Inflammatory bone diseases. Osteomyelitis.
52. Reumatoid arthritis.
53. Ankylosing spondilitis. Gout.
54. Tuberculous arthritis and spondilitis.
55. Degenerative joint diseases. Osteoarthritis (arthrosis). Degenerative diseases of the spine.
56. Avascular necroses. Perthes' disease.
57. Traumatic bone lesions. Peculiarities in childhood. Pathologic fractures. Developmental hip dysplasia.
58. Acute vascular diseases of the brain
59. Traumatic brain leions.
60. CNS tumors.

II. RADIONUCLIDE IMAGING

61. Main principles of radionuclide imaging. Types of radionuclide imaging. Machines – gamma-camera-planar.SPECT.SPECT//CT
62. Main principles of radionuclide imaging. Types of radionuclide imaging. Machines – PET and PET/CT
63. Radionuclides. Radiopharmaceutics. Main requirements. Advantages of short-living radionuclides. Radionuclide generators.
64. Radionuclide imaging of the thyroid .General characterization of different types of nodules.
65. Thyroid cancer. Principles of treatment and follow-up
66. Radionuclide imaging of parathyroid glands.
67. Radionuclide imaging of urinary system. Isotopic nephrography Dynamic renal scintigraphy. Types of pathological curves. Static scintigraphy.
68. Bone scintigraphy-types of examinations, indications and advantages. Malignant bone lesions.
69. scintigraphy-types of examinations, indications and advantages. Benign sceletas diseases.
70. Ventilationa and perfusion scintigraphy of lungs. Indications.
71. Myocardial perfusion scintigraphy. Main principles and indications. Myocardial PET.
72. Radionucluide imaging of the CNS. Brain SPECT-perfusion scintigraphy. Indications. Brain PET
73. Scintigraphic imaging in the diagnostics and DDX of Parcinsons diseases
74. FDG PET/CT- main principles. Patient preparation.
75. FDG PET/CT in lung tumors, tumors of the GIT and thyroid carcinoma.
76. FDG PET/CT in lymphoma, melanoma, gynecological tumors and tumors with unclear origin.

77. Radionuclide therapy-principles. Radionuclide therapy in thyroid diseases. Radionuclide therapy in bone metastases

III. RADIOTHERAPY

78. Ionising radiation in the treatment of malignancy.
79.Theories for biological effects of ionizing radiation.
80. Phases of biological effects of IR.
81.Application of x-ray in radiotherapy (superficial, semi-deep and deep radiotherapy). Indications.
82.Telegammatherapy. Accelerators. Characteristics of radiation and usage.
83.Brachitherapy. Types. Application in the treatment of malignant tumors.
84.International TNM classification of malignant tumors.
85.Radiotherapy – aims, methods.
86.Stages in planning and performing radiotherapy.
87. Radiation reactions and damage to organs and tissues – early and late.
88. Radiotherapy of breast carcinoma.
89. Radiotherapy of cervical carcinoma.
90. Radiotherapy of uterine body carcinoma.
91. Radiotherapy of seminoma.
92. Radiotherapy of skin carcinoma.
93. Radiotherapy of laryngeal carcinoma.
94. Radiotherapy of epypharingeal carcinoma.
95. Radiotherapy in Hodgkin lymphomas.

Literature:

1. Basic Radiology, Michael Y.M. Chen,MD; Thomas L. Pope,MD; David J. Ott, MD; 2nd edition year 2011
2. Diagnostic imaging, Peter Armstrong, 6th edition year 2009
3. Textbook of Radiology. David Sutton, Ch.-Liv., 2003
4. Lectures in diagnostic imaging.
5. On-line resourses – radiopaedia.org
6. http://radiopaedia.org/articles/