OAP-PA1-T PATHOLOGY 1 - GENERAL PATHOLOGY

Course director: **DR. BÉLA KAJTÁR**, assistant professor
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8 credit ▪ **semester exam** ▪ **Pre-clinical subject for the** module ▪ **autumn semester** ▪ recommended semester: **5**

Number of hours/semester: **56** lectures **+ 28** practices **+ 28** seminars = total of **112** hours

Course headcount limitations (min.-max.): **5 – 999** *Prerequisites:* **see your** Recommended Curriculum

The subject can only be registered in case of a PASSED and valid health aptitude test!

Topic

Basic pathological cellular responses underlying the various disease processes are taught during this course. These are discussed in the following chapters: cell death, degeneration, intra- and extracellular accumulation, growth disturbances, acute and chronic inflammatory changes, disorders of circulation, genetic disorders, diseases of immunity and neoplasia (general oncology). The most important and frequent diseases in the various chapters are going to be discussed in detail in order to provide students with comprehensive knowledge to understand autopsy practices as soon as possible. Cardiovascular pathology and pathology of the respiratory tract are two chapters of specific pathology that are also discussed during the course.

The driving principle behind this course is to have the students understand the disease concepts as the unity of macroscopy, microscopy, clinical symptoms and laboratory changes; factors that shape the clinicopathological thinking about diseases.

The main educational task of the subject:

The general pathology course will form the very basis for the systemic / organ pathology as well as the subsequent clinical studies by teaching the etiology, pathogenesis and pathomechanism together with the gross morphological and microscopical changes of the various diseases. During this activity the principal and methodology of the diagnostic pathology will be covered.

Conditions for acceptance of the semester

Absences exceeding 15% of each the histopathology and autopsy practical classes (two absences are allowed of each) in either semester will result in not signing the gradebook. Maximum absence: two (2x45 min.) Histology and two (2x45min.) Autopsy practises.

Mid-term exams

There will be no interim tests or exams during the course. One macropreparation, one histological preparation and a theoretical question will be given to the students at the examination by the end of the first semester.

Making up for missed classes

Each missed seminar has to be made up for with another group in the same week.

Reading material

- *Obligatory literature*

  Reading material
  V. Kumar: Robbins Basic Pathology, 9th edition, Saunders Company, 2012

- *Literature developed by the Department*

  Lecture handouts are available on the webpage of the department.

- *Notes*

- *Recommended literature*

Lectures

1 The objectives of pathology. Autopsy and surgical pathology. Pathology as a subject.
Dr. Tornóczki Tamás

2 Postmortal changes. Cell injury and cell death. Causes of cell injury. Necrosis. Ultrastructural, light microscopical and gross changes
Dr. Tornóczki Tamás

3 Patterns of necrosis: coagulation and liquefactive necrosis. Organ examples.
Dr. Tornóczki Tamás

4 Clinicopathology of AMI
Dr. Tornóczki Tamás

5 Caseous necrosis and adiponecrosis. Apoptosis: morphology, pathomechanism.
Dr. Tornóczki Tamás

6 Degeneration and accumulation I
Dr. Vida Livia

7 Degeneration and accumulation II
Dr. Vida Livia

8 Degeneration and accumulation III
Dr. Vida Livia
9 Degeneration and accumulation IV
Dr. Vida Livia
10 Degeneration and accumulation V
Dr. Vida Livia
11 Exogenous and endogenous pigments I
Dr. Vida Livia
12 Exogenous and endogenous pigments II
Dr. Vida Livia
13 Calficiation and lithiasis
Dr. Vida Livia
14 Classification of cells according to the mitotic capacity
Dr. Kereskai László
15 Progressive changes I: hyperplasia. Prostatic hyperplasia. Glandular cystic hyperplasia of the endometrium
Dr. Kereskai László
16 Progressive changes II: hypertrophy. Left and right ventricular hypertrophy and their hemodynamic significance
Dr. Kereskai László
17 Edema
Dr. Kajtár Béla
18 Hyperemia, congestio
Dr. Kajtár Béla
19 Haemorrhages
Dr. Kajtár Béla
20 Thrombosis and embolisation
Dr. Kajtár Béla
21 Hypertension
Dr. Kajtár Béla
22 Shock
Dr. Kajtár Béla
23 Definition of acute inflammation, cellular and vascular reactions
Dr. Kajtár Béla
24 Mediators of acute inflammation
Dr. Kajtár Béla
25 Resolution of acute inflammation, reparation
Dr. Kajtár Béla
26 Clinicopathological forms of acute inflammation Kajtár Béla Dr.
Dr. Kajtár Béla
27 Chronic inflammation Kajtár Béla Dr.
Dr. Kajtár Béla
28 Granuloma, granulomatous inflammation Kajtár Béla Dr.
Dr. Kajtár Béla
29 Tuberculosis Kajtár Béla Dr.
Dr. Kajtár Béla
30 Type I-IV. hypersensitivities and related disorders
Dr. Kereskai László
31 Transplantation immunity
Dr. Kereskai László
32 Pathogenesis of autoimmune diseases
Dr. Kereskai László
33 Systemic lupus erythematodes (SLE)
Dr. Kereskai László
34 Aquired immunodeficiency syndrome (AIDS)
Dr. Kereskai László
35 Benign and malignant behaviour of tumours. Terminology (nomenclature) of neoplasms. Definition of metaplasia, dysplasia and their relation to neoplasia. Organ examples. Hamartoma and choristoma.
Dr. Tornóczki Tamás
36 General characteristics of benign and malignant tumours. Anaplasia. Rate of tumour cell growth. Local spread and metastasis of malignant neoplasms. Types of metastases. Epidemiology of tumors. Incidence and mortality. Changes in cancer related death.

Dr. Tornóczki Tamás

37 Oncogenes, protooncogenes, oncoproteins. Growth factor and growth factor receptor oncogenes (RET, KIT, PDGFR). Overexpression of normal growth factor receptors (ERBB1, ERBB2). Organ examples.
Dr. Tornóczki Tamás

38 Oncogenes and oncoproteins in signal transduction: RAS and RASsignal proteins. Examples for oncogene with nonreceptor tyrosine kinase function.
Dr. Tornóczki Tamás

39 The myc oncogene. Types and their changes and role in tumours (cmyc, nmyc). Cell cycle regulators: p16 gene.
Dr. Tornóczki Tamás

40 Tumour suppressor genes: RB and p53. Their role in tumorigenesis. Organ examples.
Dr. Tornóczki Tamás

41 Tumour suppressor genes: NF1, NF2, VHL, WT1 and WT2. Related syndromes.
Dr. Tornóczki Tamás

42 Chemical and radiation cancerogenesis. The multistep carcinogenesis of colorectal adenocarcinoma.
Dr. Tornóczki Tamás

43 Microbial carcinogenesis: RNA and DNA viruses. Helicobacter pylori.
Dr. Tornóczki Tamás

44 Clinical aspects of neoplasia. Paraneoplastic syndromes, tumour markers. Grading and staging. Laboratory diagnosis of cancer.
Dr. Tornóczki Tamás

45 Ischemic heart diseases, sudden cardiac death, angina pectoris, chronic ischemic heart disease
Dr. Tornóczki Tamás

46 Pathology of heart valves, myocarditides
Dr. Tornóczki Tamás

47 Cardiomyopathies, tumours of the heart and pericardial disorders
Dr. Tornóczki Tamás

48 Congenital heart diseases
Dr. Tornóczki Tamás

49 Vasculitides. Vascular tumours. Aneurysms.
Dr. Tornóczki Tamás

50 Pathology of upper airways
Dr. Smuk Gábor

51 Congenital anomalies of the lung, pulmonary edema, atelectasis, acute lung injury
Dr. Smuk Gábor

52 Lower airway infections
Dr. Smuk Gábor

53 Chronic obstructive lung diseases
Dr. Smuk Gábor

54 Chronic restrictive lung diseases
Dr. Smuk Gábor

55 Tumours of the lung
Dr. Smuk Gábor

56 Pleural and mediastinal disorders
Dr. Smuk Gábor

Practices

1-28 One autopsy case per week, with detailed clinicopathological discussion

Seminars

1 Week 1: Introduction, postmortal changes -
Preparations: Postmortem emphysema of the liver;
Slides: Normal and postmortal pancreas

2 Week 1: Introduction, postmortal changes -
Preparations: Postmortem emphysema of the liver;
Slides: Normal and postmortal pancreas

3 Week 2: Necrosis 1 -
Preparations: Anaemic infarct of the heart, Anaemic infarct of the spleen and splenomegaly, Haemorrhagic infarct of the small intestine;

Slides: Apoptosis in a reactive lymph node (follicular hyperplasia), Recent infarct of the heart, Hemorrhagic infarct of the lung, Encephalomalacia alba

4 Week 2: Necrosis 1 -

Preparations: Anaemic infarct of the heart, Anaemic infarct of the spleen and splenomegaly, Haemorrhagic infarct of the small intestine;

Slides: Apoptosis in a reactive lymph node (follicular hyperplasia), Recent infarct of the heart, Hemorrhagic infarct of the lung, Encephalomalacia alba

5 Week 3: Necrosis 2, Degeneration -

Preparations: Phthisis renalis (caseation), Gangraena sicca of the toes, Cerebral abscess, Acute pancreatitis with adiponecrosis, Steatosis hepatis, Aortic atherssclerosis with aneurysm;

Slides: Acute pancreatitis - adiponecrosis, Parenchymal degeneration in kidney, Steatosis hepatis

6 Week 3: Necrosis 2, Degeneration -

Preparations: Phthisis renalis (caseation), Gangraena sicca of the toes, Cerebral abscess, Acute pancreatitis with adiponecrosis, Steatosis hepatis, Aortic atherssclerosis with aneurysm;

Slides: Acute pancreatitis - adiponecrosis, Parenchymal degeneration in kidney, Steatosis hepatis

7 Week 4: Accumulation, lithiasis -

Preparations: Haemochromatosis, Systemic amyloidosis, Cholelithiasis, chronic cholecystitis and empyema, Table of frequent bilestones, Nodular calcified aortic stenosis;

Slides: Brown induration of the lung, Haemosiderosis of liver, Anthracosis of lymph node, Amyloidosis of the liver, Calcification in breast cancer (Kossa reaction), Gauchers disease

8 Week 4: Accumulation, lithiasis -

Preparations: Haemochromatosis, Systemic amyloidosis, Cholelithiasis, chronic cholecystitis and empyema, Table of frequent bilestones, Nodular calcified aortic stenosis;

Slides: Brown induration of the lung, Haemosiderosis of liver, Anthracosis of lymph node, Amyloidosis of the liver, Calcification in breast cancer (Kossa reaction), Gauchers disease

9 Week 5: Growth abnormalities -

Preparations: Cerebral atrophy, Concentric hypertrophy of the left ventricule of the heart, Dilatative hypertrophy of the left ventricule of the heart, Chronic cor pulmonale, Prostatic hyperplasia;

Slides: Normal and hypertrophic cardiac muscle, Prostatic hyperplasia, Glandular cystic hyperplasia of the endometrium

10 Week 5: Growth abnormalities -

Preparations: Cerebral atrophy, Concentric hypertrophy of the left ventricule of the heart, Dilatative hypertrophy of the left ventricule of the heart, Chronic cor pulmonale, Prostatic hyperplasia;

Slides: Normal and hypertrophic cardiac muscle, Prostatic hyperplasia, Glandular cystic hyperplasia of the endometrium

11 Week 6: Pathology of circulation -

Preparations: Cerebral apoplexy, Cerebral purpura, Abdominal aortic aneurysm - parietal thrombosis, Left atrial „ball" thrombus;

Slides: Pulmonary edema, Thrombus and postmortem blood clot, DIC (fibrinthrombi in kidney) (fibrin stain), Central hemorrhagic necrosis

12 Week 6: Pathology of circulation -

Preparations: Cerebral apoplexy, Cerebral purpura, Abdominal aortic aneurysm - parietal thrombosis, Left atrial „ball" thrombus;

Slides: Pulmonary edema, Thrombus and postmortem blood clot, DIC (fibrinthrombi in kidney) (fibrin stain), Central hemorrhagic necrosis

13 Week 7: Acute inflammation -

Preparations: Fibrinous pericarditis - cor villosum, Pseudomembranous colitis, Lobar pneumonia, Bronchopneumonia, Purulent meningitis, Pulmonary abscess;

Slides: Fibrinous pericarditis - cor villosum, Pseudomembranous colitis, Bronchopneumonia, Lobar pneumonia, Purulent meningitis, Acute appendicitis

14 Week 7: Acute inflammation -

Preparations: Fibrinous pericarditis - cor villosum, Pseudomembranous colitis, Lobar pneumonia, Bronchopneumonia, Purulent meningitis, Pulmonary abscess;

Slides: Fibrinous pericarditis - cor villosum, Pseudomembranous colitis, Bronchopneumonia, Lobar pneumonia, Purulent meningitis, Acute appendicitis

15 Week 8: Chronic inflammation -

Preparations: Chronic cholecystitis, Sarcoidosis - BHL, Miliary tuberculosis of the lungs, Phtisis cavernosa;

Slides: Chronic cholecystitis, Sarcoidosis in lymph node, Foreign body granuloma, Miliary tuberculosisof the lung, Myocardial infarct with organisation

16 Week 8: Chronic inflammation -

Preparations: Chronic cholecystitis, Sarcoidosis - BHL, Miliary tuberculosis of the lungs, Phtisis cavernosa;

Slides: Chronic cholecystitis, Sarcoidosis in lymph node, Foreign body granuloma, Miliary tuberculosisof the lung, Myocardial infarct with organisation

17 Week 9: Oncopathology 1 -

Slides: Squamous metaplasia in bronchus, Cervical intraepithelial neoplasia CIN III, Polypus adenomatosus coli (p53), Squamous carcinoma of lower lip, Adenocarcinoma metastasis in lymph node, Anaplastic carcinoma (brain metastasis)

18 Week 9: Oncopathology 1 -

Slides: Squamous metaplasia in bronchus, Cervical intraepithelial neoplasia CIN III, Polypus adenomatosus coli (p53), Squamous carcinoma of lower lip, Adenocarcinoma metastasis in lymph node, Anaplastic carcinoma (brain metastasis)

19 Week 10: Oncopathology 2 -

Preparations: Fibroadenoma of breast, Carcinoma of the breast, Leiomyoma of uterus, Cysta dermoides, Rectal polyp, Rectal adenocarcinoma, Pulmonary metastases, Lymphangitis carcinomatosa

20 Week 10: Oncopathology 2 -

Preparations: Fibroadenoma of breast, Carcinoma of the breast, Leiomyoma of uterus, Cysta dermoides, Rectal polyp, Rectal adenocarcinoma, Pulmonary metastases, Lymphangitis carcinomatosa

21 Week 11: Cardiovascular pathology 1 -

Preprations: Aneurysma thrombotisatum ventriculi sinistri cordis, Endocarditis septica, Endocarditis chronica - mitral stenosis, Loeffler's endocarditis, Congestive cardiomyopathy, Hypertrophic cardiomyopathy;

Slides: Viral myocarditis, Hypertrophic cardiomyopathy

22 Week 11: Cardiovascular pathology 1 -

Preprations: Aneurysma thrombotisatum ventriculi sinistri cordis, Endocarditis septica, Endocarditis chronica - mitral stenosis, Loeffler's endocarditis, Congestive cardiomyopathy, Hypertrophic cardiomyopathy;

Slides: Viral myocarditis, Hypertrophic cardiomyopathy

23 Week 12: Cardiovascular pathology 2 -

Preparations: Foramen ovale late apertum, Rogers disease, Ductus Botalli persistens, Dissecting aortal aneurysm, Luetic aortitis, Cavernous hemangioma of the liver;

Slides: Arteritis temporalis, Haemangioma cavernosum hepatis, Kaposi sarcoma

24 Week 12: Cardiovascular pathology 2 -

Preparations: Foramen ovale late apertum, Rogers disease, Ductus Botalli persistens, Dissecting aortal aneurysm, Luetic aortitis, Cavernous hemangioma of the liver;

Slides: Arteritis temporalis, Haemangioma cavernosum hepatis, Kaposi sarcoma

25 Week 13: Pathology of the respiratory tract 1 -

Preparations: Supraglottic carcinoma of the larynx, NRDS, Bronchiectasis (foreign body in the bronchus);

Slides: NRDS, Aspergillosis of the lung, CMV lung, Bronchial asthma

26 Week 13: Pathology of the respiratory tract 1 -

Preparations: Supraglottic carcinoma of the larynx, NRDS, Bronchiectasis (foreign body in the bronchus);

Slides: NRDS, Aspergillosis of the lung, CMV lung, Bronchial asthma

27 Week 14: Pathology of the respiratory tract 2 -

Preprations: Sliciosis, Bronchial carcinoma, Mesothelioma;

Slides: Silicosis, Microcellular carcinoma of the lung, Planocellular carcinoma of the lung, Lepidic adenocarcinoma

28 Week 14: Pathology of the respiratory tract 2 -
Preprations: Sliciosis, Bronchial carcinoma, Mesothelioma;
Slides: Silicosis, Microcellular carcinoma of the lung, Planocellular carcinoma of the lung, Lepidic adenocarcinoma

Exam topics/questions

PREPARATIONS
I. POSTMORTEM CHANGES, NECROSIS
1. Postmortem emphysema of the liver
2. Anaemic infarct of the heart
3. Anaemic infarct of the spleen and splenomegaly
4. Haemorrhagic infarct of the small intestine
5. Phthisis renalis (caseation)
6. Gangraena sicca of the toes
7. Cerebral abscess
8. Acute pancreatitis with adiponecrosis

II. DEGENERATION, ACCUMULATION, PIGMENTS, CALCIFICATION
9. Steatosis hepatis
10. Aortic athersclerosis with aneurysm
11. Haemochromatosis
12. Systemic amyloidosis
13. Cholelithiasis, chronic cholecystitis and empyema
14. Table of frequent bilestones
15. Nodular calcified aortic stenosis

III. GROWTH DISTURBANCES
16. Cerebral atrophy
17. Concentric hypertrophy of the left ventricule of the heart
18. Dilatative hypertrophy of the left ventricule of the heart
19. Chronic cor pulmonale
20. Prostatic hyperplasia

IV. PATHOLOGY OF CIRCULATION
21. Cerebral apoplexy
22. Abdominal aortic aneurysm, parietal thrombosis
23. Left atrial ball thrombus

V. INFLAMMATIONS
24. Fibrinous pericarditis - cor villosum
25. Pseudomembranous colitis
26. Lobar pneumonia
27. Bronchopneumonia
28. Purulent meningitis
29. Pulmonary abscess
30. Chronic cholecystitis
31. Sarcoidosis - BHL
32. Miliary tuberculosis of the lungs
33. Phthisis cavernosa

VI. ONCOPATHOLOGY
34. Fibroadenoma of breast
35. Carcinoma of the breast
36. Leiomyoma of uterus
37. Cysta dermoides
38. Rectal polyp
39. Rectal adenocarcinoma

40. Pulmonary metastases

VII. CARDIOVASCULAR PATHOLOGY
41. Aneurysma thrombotisatum ventriculi sinistri cordis
42. Endocarditis septica
43. Endocarditis chronica - mitral stenosis
44. Löffler's endocarditis
45. Congestive cardiomyopathy
46. Hypertrophic cardiomyopathy
47. Foramen ovale late apertum
48. Ventricular septal defect
49. Ductus Botalli persistens
50. Aortic dissection
51. Luetic aortitis
52. Cavernous hemangioma of the liver

VIII. PATHOLOGY OF THE RESPIRATORY TRACT
53. Supraglottic carcinoma of the larynx
54. NRDS
55. Bronchiectasis (foreign body in the bronchus)
56. Silicosis
57. Bronchial carcinoma
58. Mesothelioma

SLIDES

I. POSTMORTEM CHANGES, NECROSIS
1. Normal and postmortal pancreas
2. Apoptosis in a reactive lymph node (follicular hyperplasia)
3. Recent infarct of the heart
4. Hemorrhagic infarct of the lung
5. Encephalomalacia alba
6. Acute pancreatitis, adiponecrosis

II. DEGENERATION, ACCUMULATION, PIGMENTS, CALCIFICATION
7. Parenchymal degeneration in kidney
8. Steatosis hepatis
9. Brown induration of the lung
10. Hemosiderosis of liver
11. Anthracosis of lymph node
12. Amyloidosis of the liver
13. Calcification in breast cancer (Kossa reaction)
14. Gaucher's disease

III. GROWTH DISTURBANCES
15. Normal and hypertrophic cardiac muscle
16. Prostatic hyperplasia
17. Glandular cystic hyperplasia of the endometrium

IV. PATHOLOGY OF CIRCULATION
18. Pulmonary edema
19. Thrombus and postmortem blood clot
20. DIC (fibrinthrombi in kidney) (fibrin stain)
21. Central hemorrhagic necrosis

V. INFLAMMATIONS
22. Acute pericarditis
23. Pseudomembranous colitis
24. Bronchopneumonia
25. Lobar pneumonia
26. Purulent meningitis
27. Acute appendicitis
28. Chronic cholecystitis
29. Sarcoidosis in lymph node
30. Foreign body granuloma
31. Miliary tuberculosisof the lung
32. Myocardial infarct with organisation

VI. ONCOPATHOLOGY
33. Squamous metaplasia in bronchus
34. Cervical intraepithelial neoplasia CIN III
35. Polypus adenomatosus coli (p53)
36. Squamous carcinoma of lower lip
37. Adenocarcinoma metastasis in lymph node
38. Anaplastic carcinoma (brain metastasis)

VII. CARDIOVASCULAR PATHOLOGY
39. Viral myocarditis
40. Hypertrophic cardiomyopathy
41. Arteritis temporalis
42. Hemangioma cavernosum hepatis
43. Kaposi sarcoma

VIII. PATHOLOGY OF RESPIRATORY TRACT
44. NRDS
45. Aspergillosis of the lung
46. CMV lung
47. Bronchial asthma
48. Silicosis
49. Microcellular carcinoma of the lung
50. Planocellular carcinoma of the lung
51. Lepidic adenocarcinoma

THEORETICAL QUESTIONS

I. POSTMORTEM CHANGES, NECROSIS
1. The objectives of pathology. Autopsy and surgical pathology. Pathology as a subject.
2. Postmortal changes. Cell injury and cell death. Causes of cell injury.
3. Necrosis. Ultrastructural, light microscopical and gross changes.
4. Patterns of necrosis: coagulation type. Organ examples.
5. Patterns of necrosis: liquefactive type. Organ examples.
6. Caseous necrosis and adiponecrosis.
7. Apoptosis: morphology, pathomechanism.

II. DEGENERATION, ACCUMULATION, PIGMENTS, CALCIFICATION
8. The definition and types of degenerations. Parenchymal and fatty degeneration. Organ examples.
9. Pathomorphology, pathogenesis and complications of atherosclerosis
10. Characteristics of pigments. Exogenous pigments and accumulation
11. Hemoglobinogenic pigments I. Different forms and causes of jaundice
12. Hemoglobinogenic pigments II. Pathological forms of iron storage (types, clinicopathological characteristics)
13. Endogenous non-hemoglobinogenic pigments: lipofuscin, melanin, alkaptonuria (ochronosis)
14. Dystrophic and metastatic calcification. Organ manifestations
15. Pathomechanism and clinicopathological forms of stone formation

16. Amyloidosis
17. Pathology of obesity and diabetes

III. GROWTH DISTURBANCES

18. Causes of atrophy; general gross morphology and microscopical characteristics. Pathomechanism of atrophy. Hypoplasia, aplasia, agenesia. Osteoporosis.
19. Definition, types and organ examples of hyperplasia
20. Definition of hypertrophy and characteristics
21. Left ventricular hypertrophy. Causes, sequential compensatory changes and functional consequences.
22. Cor pulmonale chronicum

IV. PATHOLOGY OF CIRCULATION

23. Definition of edema, pathomechanism (Starling law), clinical forms
24. Classification of haemorrhages based on pathomechanism, clinical forms. Congestion and hyperemia.
25. Thrombosis and embolus: definitions, casues, types and clinical consequences
26. Causes, types and pathomechanisms of shock. Disseminated intravascular coagulation (DIC).
27. Clinicopathological classification of hypertension and complications

V. INFLAMMATIONS

28. Vascular and cellular mechanisms of acute inflammations, mediators
29. Clinicopathological classification of acute inflammation. Organ examples.
30. Definition, causes, cellular and humoral mechanisms of chronic inflammation.
31. Pathogenesis and clinicopathology of tuberculosis
32. Granuloma, granulomatous inflammation

VI. IMMUNOPATHOLOGY

33. Type I. and type II. hypers ensitivity reactions, mechanisms and related disorders.
34. Type III. and type IV. hypersensitivity reactions, related disorders.
35. Pathogenesis of autoimmune disorders (rheumatoid arthritis, systemic sclerosis, Sjögren syndrome, SLE)
36. AIDS. Transplantation immunity

VII. ONCOPATHOLOGY

37. Neoplasia, nomenclature, definitions. Terminology (nomenclature) of neoplasms.
38. Definition of metaplasia, dysplasia and their relation to neoplasia. Organ examples. Hamartoma and choristoma.
39. General characteristics of benign and malignant tumours. Anaplasia. Rate of tumour cell growth. Local spread and metastasis of malignant neoplasms. Types of metastases.
40. Epidemiology of cancers. Incidence and mortality. Changes in death rates of can cers in the last decades.
41. Oncogenes, protooncogenes, oncoproteins. Growth factor and growth factor receptor oncogenes (RET, KIT, PDGFR). Overexpression of normal growth factor receptors (ERBB1, ERBB2). Organ examples.
42. Oncogenes and oncoproteins in signal transduction: RAS and RAS-signal proteins. Examples for oncogene with non-receptor tyrosine kinase function.
43. The myc oncogene. Types and their changes and role i n tumours (c-myc, n-myc). Cell cycle regulators: p16 gene.
44. Tumour suppressor genes I: RB and p53. Their role in tumorigenesis. Organ examples.
45. Tumour suppressor genes II: NF1, NF2, VHL, WT-1 and WT-2. Related syndromes.
46. Chemical and radiation cancerogenesis. The multistep carcinogenesis of colorectal adenocarcinoma.
47. Microbial carcinogenesis: RNA and DNA viruses. Helicobacter pylori.
48. Clinical aspects of neoplasm. Paraneoplastic syndromes, tumour markers.
49. Grading and staging. Laboratory diagnosis of cancer.

VIII. CARDIOVASCULAR PATHOLOGY

50. Angina pectoris, chronic ischemic heart disease, sudden cardiac death.
51. Clinicopathology of acute myocardial infarction.
52. Pathology of the valvular disorders (inflammatory and degenerative ones).
53. Cardiomyopathies. Tumors and tumor-like conditions of the heart.
54. Myocarditis. Pathology of the pericardium.
55. Congenital heart diseases.
56. Types and clinicopathology of the aneurysms.
57. Pathogenesis, classification and clinicopathology of vasculitides. Vascular tumours.

IX. PATHOLOGY OF RESPIRATORY TRACT

58. Diseases of the upper airways (inflammations, benign and malignant tumors of the sinonasal tract, inflammations and malignant tumors of the larynx)
59. Congenital anomalies of the lungs, atelectasis, acute lung injury
60. Infectious disorders of the lower airways (examples of nosocomial and community acquired pneumonia, atypical pneumonia, immunosuppression related infections)
61. General characteristics and types of chronic obstructive lung diseases
62. Chronic restrictive lung diseases I: IPF/UIP, NSIP, OP, hypersensitive pneumonitis
63. Chronic restrictive lung diseases II: pneumoconioses
64. Vascular diseases of the lung (types of pulmonary hypertension, Wegener granulomatosis, Goodpasture syndrome)
65. Malignant lung tumors
66. Pleural and mediastinal disorders

Comment: The Department of Pathology reserves the right of minor modifications in the curriculum

Information – The following skills of the Booklet for Clinical Skills shall be accomplished in the framework of the subject

Participants

Dr. Kajtár Béla (SOUO7C), Dr. Kálmán Endre (H4MBX2), Dr. Kaszás Bálint (C6EZUZ), Dr. Kereskai László (C0HFTF), Dr. Pap Anita (DO1ZZP), Dr. Semjén Dávid (D3T05F), Dr. Smuk Gábor (YWNUZF), Dr. Vida Livia (XJJ5MJ)