

REQUIREMENTS

Semmelweis University, Faculty of General Medicine – single, long-cycle medical training programme Name of the host institution (and any contributing institutions): Department of Pathology and Experimental Cancer Research			
Name of the subject: Pathology II. in English: Pathology II. in German: Credit value: 7 Semester: 1 <i>(as defined in the curriculum)</i>			
Total number of classes per week: 7	lectures: 3	practical lessons: 4	seminars: 0
Type of subject: <u>compulsory</u> optional elective (PLEASE UNDERLINE AS APPLICABLE)			
Academic year: 2023/2024. II.			
Language of instruction, for optional or elective subjects: english			
Course code: AOKPTK023_2A <i>(In the case of a new subject, this cell is filled in by the Dean's Office, following approval)</i>			
Course coordinator: Dr. András Matolcsy Place of work, phone number: Department of Pathology and Experimental Cancer Research, +36-1-317-1074 Position: director Date and number of habilitation: 118-6/1997			
Objectives of the course and its place in the medical curriculum: The aim of teaching the pathology subject is to familiarize the students with pathological changes and the pathomechanism of diseases. In the course of the training, students get to know the examination methods and diagnostic procedures of pathology and gain insight into clinicopathological thinking. The training takes place in the form of classroom lectures, histological, dissection and organ demonstration exercises.			
Place of instruction (address of lecture hall or seminar room etc.): Department of Pathology and Experimental Cancer Research			
Competencies acquired through the completion of the course: Knowledge of the development and course of diseases, knowledge of the nomenclature of diseases, recognition and knowledge of basic histopathological and macroscopic changes, knowledge of clinicopathological correlations.			
Prerequisites for course registration and completion: Pathology I.			

Conditions for concurrent course registration and permission thereof in the case of a multi-semester subject: CV course: it is possible in specially justified cases, with the director's approval

Student headcount conditions for starting the course (minimum, maximum) and method of student selection: maximum 135 students, groups EM 10,11,12,14,15,16,17,18,19

Detailed course description:

(Theoretical and practical instruction must be broken down into lessons (weeks), numbered separately. Please provide the names of lecturers in both types of lessons, indicating guest lecturers. This information is not to be attached separately. CVs of guest lecturers, however, must be attached.)

Hematopathology

1. Matolcsy Methods of hematology diagnostics. Classification of Anemia
2. Matolcsy Diseases of the Myeloid system
3. Matolcsy Diseases of the Lymphoid system

Pathology of the respiratory tract

4. Pápay Lesions of the upper respiratory tract. Pulmonary infections
5. Pápay Obstructive and Restrictive pulmonary diseases.
6. Pápay Lung tumors. Pleural lesions.

Gastrointestinal pathology

7. Fintha Pathology of the Oral cavity, Salivary gland, Oesophagus, Stomach and Small intestine
8. Fintha Pathology of the Large intestine and the Peritoneum
9. Zalatnai Pathology of the Pancreas. Diabetes mellitus

Pathology of the liver and biliary tract

10. Nagy Infectious and inflammatory disorders. Hepatic failure. Liver cirrhosis.
11. Nagy Jaundice and cholestasis Alcohol- drug-induced, metabolic and inherited liver diseases. Tumors of Liver. Disorders of the Gallbladder and Biliary tract

Pathology of the kidney and the urinary tract

12. Matolcsy Malformations. Clinical manifestations of renal disease. Glomerular diseases
13. Matolcsy Diseases affecting tubules and interstitium. Diseases involving blood vessels
14. Matolcsy Urinary outflow obstruction. Renal tumors. Pathology of the urinary bladder

Pathology of the male genital tract

15. Rác Pathology of the Penis, Scrotum, Funiculus
16. Rác Pathology of the Testis, Epididymis, Prostate

Pathology of the female genital tract

17. Rókusz Pathology of the vulva, Vagina, Cervix
18. Rókusz Pathology of the uterus, Tuba uterine, Ovarium
19. Fónyad Pathology of the Breast and Pregnancy

Pathology of the Endocrine System

20. Zalatnai Hypophysis, Thyroid gland
21. Zalatnai Parathyroid gland, Adrenals, MEN

Pathology of musculoskeletal system

22. Sápi Pathology of Musculoskeletal system

Pathology of the nervous system

23. Scheich Malformations, cerebrovascular diseases, edema, herniation, and hydrocephalus. CNS tumors
24. Scheich Diseases of myelin, neurodegenerative disorders. Infections

Pathology of the skin

25. Fónyad Non-neoplastic diseases of the Skin
26. Fónyad Neoplastic Skin diseases
27. Matolcsy Pathology competition discussion, student staff meeting, take home message

Practical topics:

1. week Hematopathology I.
2. week Hematopathology II:
3. week Pulmonology
4. week Gastroenterology I.
5. week Gastroenterology II:
6. week Hepatology, Pancreas
7. week Nephrology

8. week Male genital system, pregnancy
9. week Female genital system, breast
10. week Endocrine organs, skin
11. week Musculoskeletal system
12. week Nervous system
13. week Consultation
14. week Consultation

Practical instructors:

1. Dr. Judit Pápay
2. Dr. Ildikó Krencz
3. Dr. Attila Fintha
4. Dr. Anna Jakab
5. Dr. Réka Mózes
6. Dr. Ágnes Nagy
7. Dr. Ágota Szepesi
8. Dr. Ivett Teleki
9. Dr. Péter Nagy
10. Dr. Gertrud Forika
11. Dr. Márton Sági
12. Dr. Judit Csomor
13. Dr. Noémi Jákob
14. Dr. Balázs Csernus
15. Dr. Katalin Pálos
16. Dr. Alex Jenei
17. Dr. Árpád Szállási
18. Dr. Attila Zalatnai
19. Dr. Zoltán Lippai
20. Dr. Tamás Székely
21. Dr. Ambrus Gángó
22. Dr. Richárd Kiss
23. Dr. László Fónyad
24. Dr. Bence Ferenc
25. Dr. Gergely Rác

Related subjects due to interdisciplinary fields (both compulsory and elective) and potential overlaps between subjects:

Overlap with almost all chapters of the Translation Medicine -Pathophysiology subject, except ECG.

Attendance requirements; conditions under which students can make up for absences and the method of absence justification:

Attendance at at least 75% of the lectures is mandatory (TVSZ. 29§.5), the lectures are part of the material that can be counted in the exams. We keep a random attendance sheet at the lectures. At least 75% attendance and participation in practical sessions is mandatory (TVSZ. 29§.2.a), the practice tutors fill out an attendance form at the beginning of each practice. Over the course of the semester, absences that exceed three practical sessions in the autopsy room, three absences in more than three histology-organ demonstration practical sessions, and one absence in more than one consultation practical session must be made up in the semester. A histology-organ demonstration practice can only be replaced with a practice on the same topic. Autopsy and consultation practice can be replaced at any time, with any group. Absences from more than three autopsy and histology-organ demonstration sessions, as well as one consultation practice session, must be confirmed in writing by the practice tutors or the department registrar.

Form of assessment in the study period:

(including the number, topics and scheduling of oral and written tests, their share in the overall evaluation, make-up tests and improvement tests)

During the semester period, we do not hold mandatory subject partial performance evaluations, there are no oral and written tests and practical marks. During the semesters, the practical tutors are constantly informed about the students' preparedness. In consultation with the students of the group and the demonstrator, the practical tutors can carry out a mid-year competence and subject knowledge level assessment of various forms (oral report, presentation, test, essay, demonstration, homework, project task), however, the result of this is not followed by a practical mark, and the semester is not a condition signature and cannot be taken into account in the results of the comprehensive examination.

Number and type of assignments for individual work and the deadline for submission:

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Requirements to obtain the teacher's signature:

At least 75% attendance and participation in practical sessions and lectures. In the course of a semester, you can miss the three autopsy room practices, three histology-organ demonstration practices and one consultation practice without a certificate. The other practices must be replaced, the practical tutor of the replaced practice will provide a certificate. (Histology and organ demonstration practice can only be replaced with the same practice. Autopsy room and consultation practice can be replaced at any time, with any group).

Type of assessment: (*comprehensive examination, end-term examination, term-grade, term-grade on a three-grade rating scale, coursework project, no examination*)

comprehensive examination

Examination requirements:

(*list of examination topics, subject areas of tests / examinations, lists of mandatory parameters, figures, concepts and calculations, practical skills and the optional topics for exam-equivalent coursework projects, their criteria of completion and assessment*)

GENERAL PATHOLOGY TOPICS „A”

NECROSIS, APOPTOSIS

- A/01. Causes, morphology and mechanism of necrosis
- A/02. Reperfusion injury
- A/03. Mechanisms of apoptosis and its pathological characteristics
- A/04. Coagulative necrosis and its organ manifestations
- A/05. Colliquative necrosis and its organ manifestations
- A/06. Hemorrhagic infarction and its organ manifestations
- A/07. Fat, caseous and fibrinoid necrosis and their organ manifestations
- A/08. Acute myocardial infarction
- A/09. Cerebral infarction

REVERSIBLE CELL INJURY, PATHOLOGIC ACCUMLATION, PIGMENTS, CALCIFICATION

- A/10. Reversible cell injury, types of degeneration and their organ manifestations
- A/11. Types of fatty degeneration and its organ manifestation
- A/12. Atherosclerosis
- A/13. Amyloidosis
- A/14. Cystic fibrosis
- A/15. Hyaline accumulation and its organ manifestations
- A/16. Anthracosis, lipofuscin, hemosiderin and melanin accumulation
- A/17. Dystrophic calcification and its organ manifestations
- A/18. Metastatic calcification and its organ manifestations
- A/19. Stone formation; urinary and biliary stones

CELLULAR ADAPTATION TO STRESS

- A/20. Pathomechanisms of atrophy and hypertrophy, examples
- A/21. Myocardial hypertrophy and its clinical forms
- A/22. Pathomechanisms of hyperplasia, examples
- A/23. Pathomechanisms of metaplasia and dysplasia, examples

HEMODYNAMIC DISORDERS, THROMBOSIS, HEMORRHAGE

- A/24. Pathomechanism of cardiac failure

A/25. Congestion and its organ manifestation

A/26. Causes and types of shock

A/27. Causes and types of edema

A/28. Causes and types of thrombosis

A/29. DIC

A/30. Types of emboli

A/31. Types of hemorrhages and their clinical presentations

A/32. Intracranial hemorrhages

INFLAMMATION

A/33. Characteristics of acute inflammation (cellular events, chemical mediators, systemic effects, stratification according to exudate, examples)

A/34. Pathomechanism and types of chronic inflammation, examples

DISEASES OF THE IMMUNE SYSTEM

A/35. Type I., Type II. hypersensitivity reactions and diseases mediated by these mechanisms

A/36. Type III., Type IV. hypersensitivity reactions and diseases mediated by these mechanisms

A/37. Rejection of transplants

A/38. Pathomechanisms of autoimmune diseases

A/39. Systemic lupus erythematosus, rheumatoid arthritis

A/40. Sjögren syndrome, Systemic sclerosis, Polyarteritis nodosa

A/41. Inherited and acquired immunodeficiencies

A/42. AIDS

GENETIC DISEASES

A/43. Diagnostics of genetic disorders

A/44. Autosomal dominant disorders

A/45. Familial hypercholesterolemia

A/46. Autosomal recessive and X-linked inheritance disorders

A/47. Cytogenetic disorders caused by chromosomal aberrations

A/48. Single-gene disorders with atypical patterns of inheritance

PEDIATRIC DISEASES

A/49. Pathogenesis of congenital anomalies

A/50. Disorders associated with prematurity (IRDS, NEC, Sudden Infant Death)

A/51. Fetal hydrops

ENVIRONMENTAL DISEASES

A/52. Pathology of smoking-related disorders

A/53. Pathology of alcohol-related disorders

A/54. Pathomechanism of obesity and its consequences; examples

ONCOLOGY AND CARDIOLOGY TOPICS „B”

NEOPLASIA

B/01. General characteristics of neoplasms (benign, malignant tumors)

B/02. Classification of neoplasms on basis of histology

B/03. Characteristics of neoplasms, growth rate

B/04. Invasion and metastasis of neoplasms

B/05. Promotion mechanisms of oncogenes and their roles in carcinogenesis

B/06. Inhibitory mechanisms of tumor suppressor genes their and roles in carcinogenesis

B/07. EGFR, ABL and BCL2 genes and their roles in tumor development

- B/08. RB, p53 and APC genes and their roles in tumor development
- B/09. BRCA1, BRCA2 and ATM genes and their roles in tumor development
- B/10. DNA repair genes and their roles in carcinogenesis
- B/11. Cytogenetic aberrations and the role of telomeres in carcinogenesis
- B/12. Epigenetic changes (DNA methylaton, microRNAs) and their roles in carcinogenesis
- B/13. Inherited cancer syndromes (autosomal dominant, recessive and familiar)
- B/14. Viral and microbial oncogenesis
- B/15. Chemical and radiation carcinogenesis
- B/16. Tumor antigens
- B/17. Tumor immunity and immune surveillance
- B/18. Epidemiology of neoplasms
- B/19. Characteristics and morphology of preneoplastic disorders
- B/20. Grading and staging of cancer
- B/21. Effects of tumor on host (cancer cachexia, paraneoplastic syndromes)
- B/22. Tumors of childhood and their characteristics (neuroblastoma, retinoblastoma, Wilms tumor)
- B/23. Pathological, genetic, immunological and molecular diagnostics of tumors
- B/24. Tumor therapy (surgical, radiation, chemo, target molecular and immunotherapy)

PATHOLOGY OF CARDIOVASCULAR SYSTEM

- B/25. Left-sided heart failure
- B/26. Right-sided heart failure
- B/27. Congenital heart diseases
- B/28. Myocardial infarction, sudden cardiac death
- B/29. Angina pectoris, chronic ischemic heart disease
- B/30. Hypertensive heart disease
- B/31. Rheumatic fever and rheumatic myocarditis
- B/32. Degenerative valvular heart diseases (calcific aorta stenosis, mitral prolapse)
- B/33. Infective endocarditis (acute and subacute)
- B/34. Noninfective endocarditis (thrombotic endocarditis, Libman-Sacks endocarditis)
- B/35. Valvular dysfunctions and their consequences
- B/36. Myocarditis and cardiomyopathies
- B/37. Cor pulmonale
- B/38. Arteriosclerosis
- B/39. Aneurysms and aortic dissection
- B/40. Arteritis and phlebitis
- B/41. Varices, varicosities and disorders of the lymphatic vessels
- B/42. Cardiac and vascular tumors

SYSTEMIC PATHOLOGY TOPICS,,C”

PATHOLOGY OF HEMATOPOETIC AND LYMPHOID SYSTEM

- C/1. Diagnostic methods of hematology (biopsy, flow cytometry, histochemical, cytogenetic, molecular diagnosis)
- C/2. Anemias of diminished erythropoiesis
- C/3. Anemia of blood loss
- C/4. Non-neoplastic disorders of myeloid and lymphoid system
- C/5. CML and chronic myelofibrosis
- C/6. Polycythemia vera, essential thrombocythemia
- C/7. Disorders of the spleen and thymus
- C/8. Myelodysplastic syndromes
- C/9. Acute myeloid leukemia
- C/10. Precursor T- and B-cell lymphoblastic leukemia/lymphoma

- C/11. CLL and hairy cell leukemia
- C/12. Multiple myeloma and related plasma cell disorders
- C/13. Follicular lymphoma, mantle cell lymphoma, extranodal marginal zone lymphoma
- C/14. Diffuse large B cell lymphoma, Burkitt lymphoma
- C/15. Mycosis fungoides, peripheral T-cell lymphoma, anaplastic large cell lymphoma
- C/16. Hodgkin lymphoma
- C/17. Disorders which cause splenomegaly

PATHOLOGY OF THE RESPIRATORY TRACT

- C/18. Atelectasis and acute respiratory distress syndrome
- C/19. Obstructive lung diseases- COPD
- C/20. Obstructive lung diseases- bronchial asthma and bronchiectasis
- C/21. Chronic interstitial (restrictive) lung diseases
- C/22. Pulmonary diseases of vascular origin - pulmonary embolism, hemorrhage, and infarction
- C/23. Pulmonary hypertension
- C/24. Pulmonary infections (except tuberculosis)
- C/25. Granulomatous diseases of the lung
- C/26. Primary and metastatic tumors of the lung
- C/27. Pathology of the pleura and pericardium
- C/28. Lesions of the upper respiratory tract
- C/29. Tumors of nasal passages, nasopharynx and larynx

PATHOLOGY OF THE ORAL CAVITY AND THE GASTROINTESTINAL TRACT

- C/30. Pathology of lips, oral cavity and pharynx
- C/31. Salivary gland diseases
- C/32. Pathology of esophagus
- C/33. Gastritis
- C/34. Peptic ulcers
- C/35. Gastric tumors
- C/36. Developmental anomalies and vascular disorders of the GI tract
- C/37. Malabsorption
- C/38. Enterocolitis
- C/39. Colonic diverticulosis and bowel obstruction
- C/40. Inflammatory bowel diseases (ulcerative colitis, Crohn disease)
- C/41. Pathology of the appendix and peritoneum
- C/42. Tumors of the small and large intestines

PATHOLOGY OF THE LIVER, BILIARY TRACT, AND PANCREAS

- C/43. Liver failure
- C/44. Cholestatic liver syndromes (PBC, PSC)
- C/45. Pathophysiology of jaundice, defects of bilirubin and bile formation. Cholelithiasis
- C/46. Circulatory disorders of liver
- C/47. Acute and chronic hepatitis
- C/48. Alcohol- and drug-induced liver diseases
- C/49. Metabolic and inherited liver diseases
- C/50. Liver cirrhosis
- C/51. Tumors and tumor-like lesions of the liver
- C/52. Inflammations and tumors of the biliary system and gallbladder
- C/53. Pancreatitis
- C/54. Diabetes mellitus
- C/55. Tumors of the exocrine and endocrine pancreas

PATHOLOGY OF THE KIDNEY AND ITS COLLECTING SYSTEMS

- C/56. End-stage kidney and renal failure
- C/57. Developmental abnormalities and cystic diseases of the kidney
- C/58. Pathogenesis of glomerular diseases
- C/59. The nephritic syndrome
- C/60. The nephrotic syndrome
- C/61. Rapidly progressive glomerulonephritis
- C/62. Systemic diseases associated glomerular damage
- C/63. Vascular diseases of the kidney
- C/64. Diabetic nephropathy
- C/65. Acute tubular necrosis (ATN)
- C/66. Acute and chronic pyelonephritis
- C/67. Urolithiasis and urinary outflow obstructions
- C/68. Tumors of kidney
- C/69. Tumors of the urinary bladder and collecting system

PATHOLOGY OF THE FEMALE GENITAL SYSTEM AND BREAST

- C/70. Diseases of the vulva and vagina
- C/71. Pathology of the uterine cervix
- C/72. Endometritis, endometrial hyperplasia, endometriosis
- C/73. Tumors of the endometrium and myometrium
- C/74. Non-neoplastic diseases of the ovary and fallopian tube
- C/75. Ovarian tumors
- C/76. Pathology of pregnancy
- C/77. Benign epithelial lesions and benign tumors of the breast
- C/78. Malignant tumors of the breast

PATHOLOGY OF THE MALE GENITAL SYSTEM

- C/79. Diseases of the penis, scrotum and epididymis
- C/80. Inflammatory lesions of the testis and epididymis. Cryptorchidism and testicular atrophy.
- C/81. Tumors of the testis
- C/82. Prostatitis, benign prostatic hyperplasia
- C/83. Carcinoma of the prostate

PATHOLOGY OF THE ENDOCRINE SYSTEM

- C/84. Hypo- and hyperfunctions of the hypothalamic-hypophysial system
- C/85. Thyroiditis, hypo- and hyperfunctions of the thyroid gland
- C/86. Tumors of thyroid gland
- C/87. Pathology of the parathyroid glands
- C/88. Hypo- and hyperfunctions and tumors of the adrenal gland
- C/89. Multiple endocrine neoplasia (MEN) and carcinoid syndrome

PATHOLOGY OF THE MUSCULOSKELETAL SYSTEM

- C/90. Congenital diseases of bone
- C/91. Acquired diseases of bone development (osteoporosis, rickets, osteomalacia)
- C/92. Osteomyelitis. Paget's disease
- C/93. Tumors and tumor-like lesions of the bone
- C/94. Degenerative and inflammatory joint diseases
- C/95. Muscular atrophy, dystrophies and myositis
- C/96. Tumors of skeletal and smooth muscles
- C/97. Fibroblast-myofibroblast differentiated soft tissue tumors
- C/98. Tumors of adipose tissue
- C/99. Soft tissue tumors of uncertain origin

PATHOLOGY OF THE SKIN

C/100. Blistering skin disorders (pemphigus, bullous pemphigoid, dermatitis herpetiformis)

C/101. Inflammatory skin diseases

C/102. Melanocytic tumors

C/103. Non-melanocytic skin tumors

PATHOLOGY OF THE NERVOUS SYSTEM

C/104. Pathology of increased intracranial pressure (edema, herniation and hydrocephalus)

C/105. Congenital malformations of the central nervous system

C/106. Cerebrovascular diseases (hypoxia, ischemia, infarction)

C/107. Neurodegenerative and prion diseases

C/108. Intracranial haemorrhages

C/109. Infections of the central nervous system (meningitis, encephalitis)

C/110. Diseases of myelin

C/111. Tumors of central and peripheral nervous system

Practical exam: Recognition and demonstration of the slides and macropreparations presented in the histological practice.

Autopsy exam: demonstrating the organ complexes presented in the autopsy room exercises and answering questions related to the seen alterations.

Theory exam: Description of a General pathology (A), an Oncology and Cardiology (B), and a Systemic pathology (C) topics.

Method and type of grading:

(Share of theoretical and practical examinations in the overall evaluation. Inclusion of the results of the end-of-term assessment. Possibilities of and conditions for offered grades.)

The final exam consists of a practical and a theoretical part, both of which are oral exams. The practical exam consists of an autopsy exam, two digital histological slides and a demonstration of a macropreparation. The student receives a separate mark for each practical exam section. An insufficient practical exam partial mark is not a deterrent, i.e. in this case the student can attempt the theoretical exam part. The practical exam is followed by the theoretical part of the exam. It takes place at the theoretical examination boards, the chairpersons of which are appointed by the head of the department. Another member of the committee, usually a resident physician, is appointed by the department registrar. The rigorous oral exam takes place based on the exam topics announced at the beginning of the academic year. The student draws a general pathology topic (topic A), an oncology and cardiology themed topic (topic B), and a systemic pathology (topic C). The student receives a separate mark for each theoretical exam topics. An insufficient theoretical exam transcript is in itself a disqualification. At the end of the theoretical part, the chairman of the examination board determines the final grade mark based on the practical and oral exam partial marks, which is usually - but not obligatory - the weighted average of the practical and theoretical exam partial marks.

List of course books, textbooks, study aids and literature facilitating the acquisition of knowledge to complete the course and included in the assessment, precisely indicating which requirement each item is related to (e.g., topic by topic) as well as a list of important technical and other applicable study aids:

Robbins&Kumar: Basic Pathology 10th Edition Medicina, 2019

András Matolcsy: Basic Pathology - A Socratic Approach. Medicine, 2016

Signature of habilitated instructor (course coordinator) announcing the course:

Signature of the director of the host institution:

Date of submission: