SUBJECT CARD

Faculty of Medicine and Health Sciences
Field of studies: Medicine
Form of studies: Full-time course
Degree: long-cycle Master's programme
Specializations: No specialization
Academic year: 2022/2023

GENERAL PATHOLOGY	
SUBJECT NAME	**General pathology**
NUMBER OF ECTS POINTS:	6
LANGUAGE OF INSTRUCTION	English
TEACHER(S)	prof. nadzw. dr hab. n. med. Piotr Kopiński dr n. med. Grzegorz Królczyk dr n. med. Natalia Grabska dr n. med. Tomasz Senderek lek. med. Katarzyna Gąsior lek. med. Magdalena Doręgowska prof. nadzw. dr hab. n. med. Agata Bałdys-Waligórska prof. nadzw. dr hab. n. med. Katarzyna Taran prof. zw. dr hab. n. med. Filip Gołkowski
PERSON RESPONSIBLE	prof. nadzw. dr hab. n. med. Piotr Kopiński
NUMBER OF HOURS	
LECTURES	32
CLASSES	25
SEMINARS	34
GENERAL OBJECTIVES	
OBJECTIVE 1	Getting to know about factors that disorder the balance of the organism, the mechanisms of these factors action and the ways of systemic disorders compensation.
OBJECTIVE 2	Understanding of the disease as a dynamic process involving causes, natural development, outcome and complications in the terms of somatic (morphological as well as functional), psychological and social changes.
OBJECTIVE 3	Connecting the changes in the pathologic process with specific morphologic changes that can be observed and can be macro- and microscopically classified.

GENERAL PATHOLOGY	
LEARNING OUTCOMES	
MK1	Knowledge: Student can explain basic mechanisms of damage of cells and tissues. Knows the etiology of hemodynamic retrograde and progressive changes. Gives and comments on the definition of shock and multiple organ failure (MOF). Differentiates the causes of shock. Classifies the clinical course of specific and non-specific inflammations, refers them to specific morphological images, including microscopic observations. Describes the process of tissue and organ regeneration.
MK2	Knowledge: Student represents the exogenic and endogenic pathogens. Lists the clinical forms of the most common diseases of specific systems and organs, including water and electrolyte disorders, diseases of the nervous and endocrine systems.
MK3	Knowledge: Student notices the components of the inflammation in infectious, allergic, neoplastic, atherosclerotic and neurodegenerative diseases.
MK4	Knowledge: Student understands diseases of nervous and endocrine systems, as a deep system disintegration activity.
MK5	Knowledge: Student recognizes the death as the end of a human's life, can point its symptoms and understands instructions and basic methoric and ethic rules of a post-mortem autopsy.
MK6	Knowledge: Student recognizes the unity of phenomena described in parallel within the scope of PM (pathomorphological area) and the scope of PF (pathophysiological area) of the studied subject.
MK7	Knowledge: Student knows the pathological macro- and microscopic images and the clinical course of pathomorphological changes in selected organs.
MS1	Skills: Student interprets environmental threats and genetic predisposition, which may act as pathogens and modify susceptibility to the disease.
MS2	Skills: Student applies pathomorphological nomenclature.
MS3	Skills: Student analyzes reactive, defense, inflammatory and adaptive phenomena caused by an etiological factor. Recognizes compensation aspects of related disorders.
MS4	Skills: Student associates images of tissue and organ damage with clinical manifestations of the disease, patient history and results of laboratory tests.

GENERAL PATHOLOGY	
MC1	Social Competences: Student works in a group, cooperates with other students in the preparation of presentations and solving tasks.
INTRODUCTORY REQUIREMENTS	
Adequate knowledge of gross anatomy, physiology and histology	
COURSE PROGRAM	**DETAILED DESCRIPTION OF THE TOPIC BLOCKS**
LECTURE 1	Introduction to Pathomorphology (PM). Pathomorphology subject, aims and division of general PM (hemodynamic disorders, cellular injury, cell death, cellular adaptations processes, reparative processes, neoplasia, inflammation, infectious and parasitic diseases, environmental pathology, immunopathology, genetic diseases, diseases of infancy and childhood). **Area A, 2 hours**
LECTURE 2	Pathology tools and report. Pathology tools (routine stain H&E and selective staining, IHC, molecular techniques, fluorescence, electron microscope). Report. **Area A, 2 hours**
LECTURE 3	Thanatology & autopsy procedures. Aging. Chosen aspects of thanatology, classic and a new modified definition of death. Post mortem examination as a medical procedure, definition of autopsy, autopsy aims, types and techniques. Health and safety regulations. **Area A, 2 hours**
LECTURE 4	Neoplasia part 1 – basic. Neoplasia – definition, nomenclature and division. Benign vs. malignant neoplasms. Natural history of cancer (primary focus, infiltration, metastasis, recurrence) in gross and microscopic pictures. Molecular background and hallmarks of cancer. Carcinogenesis, precancerous conditions (intraepthelial neoplasia), CIN, SIL, preinvasive (in situ) and invasive carcinoma. **Area A, 2 hours**
LECTURE 5	Neoplasia part 2 – diagnostics. Modern cancer diagnostics (immunohistochemistry, molecular techniques, microarrays). Biomarkers (prognostic and predictive factors), grading, staging, TNM, pTNM. Cancer report. Cancer screening, monitoring and prophylactics. **Area A, 2 hours**
LECTURE 6	Environmental pathology. Immunopathology. Environmental diseases - definitions, etiopathogenesis, examples, gross and micro pictures. Smoking, alcohol and drug abuse. Behavioral causes of diseases and death. Immunopathology - autoimmune diseases, amyloidosis - definitions, etiopathogenesis, examples, gross and micro pictures. Amyloidosis as a medical problem- diagnosis and prognosis. **Area A, 2 hours**

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LECTURE 7	Pathology of the developmental age. General aspects of pathology of developmental age, pediatric neoplasia (solid tumors, small round cell tumors SRCTs, SIOP classifications, the utility of immunohistochemistry and molecular techniques in differential diagnosis). **Area A, 2 hours**
LECTURE 8	Inflammation. Inflammatory processes- definitions, etiopathogenesis, cell types in inflammatory processes, divisions of inflammatory processes (chronic and acute, proliferative, destructive and exudative inflammations). Pathogen types. Medical aspects of traveling. **Area A, 4 hours**
LECTURE 9	Endocrine system pathology. General aspects of endocrine system pathology. Pathology of thyroid gland, thyroid cancer. Biopsy as a medical procedure (types, utility and limitations). **Area A, 2 hours**
LECTURE 10	Basic concepts of pathophysiology. Inflammation - definition, causes and inflammatory mediators. Febrile status and biologic consequences. Non-cardiogenic shock. Reversible or irreversible shock. Compensatory mechanisms in shock. Systemic inflammatory response syndrome (SIRS). Multiple organ failure (MOF). **Area B, 2 hours**
LECTURE 11	Nervous system disorders. Upper and lower motor neuron disorders. Pathophysiology of selected diseases: myasthenia, botulism, Lambert-Eaton myasthenic syndrome, cholinergic crisis, Brown-Sequard syndrome. Manifestation of cerebellar disease. **Area B, 2 hours**
LECTURE 12	Cardiovascular disorders. Acute and chronic heart failure (HF). Congestive HF. Cardiogenic shock. Compensatory mechanisms of left and right ventricular failure. Takotsubo syndrome. **Area B, 2 hours**
LECTURE 13	Atherosclerosis: mechanisms of atheroma generation. Atherosclerosis in pathology. New approach – atherosclerosis as an inflammatory process. **Area B, 2 hours**
LECTURE 14	The molecular and biochemical basis of neoplasia. Genetic changes in neoplasia. Proto-oncogenes and tumor suppressor genes in physiology and in neoplasia. Environmental causes of neoplasia. Natural course of neoplastic disease. Cellular changes in neoplasia. Carcinogenesis phases: initiation, promotion, progression. Molecular basis of metastatic process. Immunological aspects of neoplasia, the process of immunoediting. **Area B, 2 hours**
LECTURE 15	Disorders of anterior pituitary. Simmond's syndrome. Clinical stages related to growth hormone over-secretion. Dwarfism. Obesity and clinical consequences. Pathophysiology of chronic malnutrition and clinical consequences. **Area B, 2 hours**

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LECTURE 16	Calcium, phosphorus, and magnesium balance disorders. Primary and secondary hyperparathyroidism. Osteoporosis: definition, causes and pathologic mechanisms. Pathophysiology of rickets and osteomalacia. Mechanisms of renal osteodystrophy. **Area B, 2 hours**
CLASS 1	Hemodynamic disorders. Hemodynamic disorders – definition, division and etiopathogenesis, examples with macro- and micro pictures analysis (hemorrhage, hyperemia, congestion, edema, shock, infarct, thrombosis, thrombus, cruor, embolism). **Area A, 2 hours**
CLASS 2	Cell injury, cell death, cellular adaptations and reparative processes. Cell injury, cell death and cellular adaptations and reparative processes – definitions, divisions, etiopathogenesis, examples with macro- and micro pictures analysis (steatosis, atrophy and lipofuscin storage, necrosis, apoptosis, granulation tissue and granulomas). **Area A, 2 hours**
CLASS 3	Cellular adaptations processes. Hyperplasia, hypertrophy, metaplasia – definitions, divisions, etiopathogenesis, examples with macro- and micro pictures analysis. **Area A, 2 hours**
CLASS 4	Neoplasia Tumors of epithelial origin - definitions, etiopathogenesis, examples, macro- and micro pictures analysis. Cytological features of atypia. **Area A, 2 hours**
CLASS 5	Neoplasia Tumors of non-epithelial origin- definitions, etiopathogenesis, examples, macro- and micro pictures analysis. **Area A, 2 hours**
CLASS 6	Inflammation, infectious and parasitic diseases. Inflammatory processes, mechanisms, divisions of inflammatory processes – examples with macro- and micro pictures analysis (acute and chronic inflammation, infectious diseases: viral, bacterial, fungal, parasitic). **Area A, 4 hours**
CLASS 7	Endocrine system pathology. Thyroid gland pathology (goiter, cancer, thyroiditis). Pathology of the breast (breast cancer). **Area A, 1 hour**
SEMINAR 1	Inflammation: mechanisms, mediators and cells involved. Allergy: definition and types of hypersensitivity. Cellular and humoral immunity Pathophysiology of selected immune disorders: allergic rhinitis. Primary immunodeficiency diseases: Bruton disease, SCID. AIDS. **Area B, 3 hours**
SEMINAR 2	Pain pathophysiology. Epilepsy. Stroke: ischemic and hemorrhagic one. Mechanisms of brain edema. Neurotoxicity. Stroke, including its complications. **Area B, 3 hours**

GENERAL PATHOLOGY	
SEMINAR 3	Neurodegenerative disorders: Alzheimer's disease and multi-infarct dementia (MID). Basal ganglia disorders: Parkinson's disease. Huntington's disease. Amyotrophic lateral sclerosis. **Area B, 3 hours**
SEMINAR 4	Cardiovascular disorders. Coronary artery disease: definition, classification. Pathologic mechanisms of cardiac ischemia. Myocardial hibernation. Pericardial disease. Arrhythmias: bradycardia/tachycardia and pathologic mechanisms. Atrial Fibrillation. Syncope and MAS. **Area B, 3 hours**
SEMINAR 5	Pathophysiology of arterial hypertension: definition, classification and clinical manifestation. The vicious circle in hypertension. Hypertensive crisis. Congenital valvular heart disease. Pathophysiology of left-to-right shunts in congenital heart diseases. Dissecting aneurysm of aorta. Abdominal aortic aneurysm. Disorders of peripheral arteries. **Area B, 3 hours**
SEMINAR 6	Water and electrolyte balance - summary. Acid and base abnormalities and compensatory mechanisms. Hypo- hyper-natremia and kalemia. The causes of pH disorders, compensation mechanisms - summary. Dehydration and over-hydration. SIADH. Mechanisms of oedema – local and systemic ones. **Area B, 3 hours**
SEMINAR 7	Symptoms and signs of thyroid disease. Hyperthyroidism, hypothyroidism – clinical manifestation. Goiter. Pathophysiology of selected disorders: Graves-Basedow disease, toxic and non-toxic goiter, Hashimoto disease, thyroid gland disease related to iodide deficiency. Autoimmunity in thyroid disorders. **Area B, 3 hours**
SEMINAR 8	Cushing's syndrome. Consequences of chronic steroid therapy (iatrogenic Cushing's syndrome). Adrenocortical insufficiency. Hyperaldosteronism. Hypoaldosteronism. Adrenogenital syndrome. Diseases of the adrenal medulla. **Area B, 3 hours**
SEMINAR 9 (DISCUSSION SESSION)	The summary of and practical issues of hemodynamic disorders, cellular injury, cell death, cellular adaptations, reparative processes and autopsy procedures. According to the detailed syllabus for appropriate tutorials and lectures. **Area A, 3 hours**
SEMINAR 10 (DISCUSSION SESSION)	The summary of and practical issues of neoplasia and inflammatory processes. Pathology tools and report. According to the detailed syllabus for appropriate tutorials and lectures. **Area A, 3 hours**
SEMINAR 11 (DISCUSSION SESSION)	The summary of and practical issues of neoplasia and inflammatory processes. Pathology tools and report. According to the detailed syllabus for appropriate tutorial and lectures. **Area A, 2 hours**

GENERAL PATHOLOGY	
DIDACTIC METHODS (APPLIED)	
	Lectures including interactive parts discussion sessions; Seminars / conversatories Small-group sessions (tutorials) including practical pathomorphology classes (case studies), demonstration & microscopic lab (micro pictures/slides/virtual slides) and autopsy
STUDENTS WORKLOAD	
CONTACT HOURS WITH THE ACADEMIC TEACHER	Following the study plan (i.e. lectures, tutorials, seminars, as well as discussions sessions): 81 hours
HOURS WITHOUT THE PARTICIPATION OF THE ACADEMIC TEACHER	Preparation for classes: 19 hours (including preparation for seminars, preparation of presentations, development of a given clinical case 19 hours) Preparation for the exam: 80 hours
TOTAL NUMBER OF HOURS FOR THE COURSE	180 hours
CONDITIONS FOR COURSE COMPLETION	
	Assessment without mark: Acting as admission to the exam, based on the student's preparation for individual exercises and seminars The condition of admission to the exam is: 1) Admission to module A area / passing all exercises and seminars 2) Passing all seminars from area B of the module, not later than one week before the first exam date Absences may be taken after presenting a reliable medical certificate (admissible approach to classes with another group, provided that the final number does not exceed 120% of the state according to the dean's office). Lack of three credits results in the obligation to complete all the material from the seminars with the subject manager or an assistant appointed by him.
METHODS OF ASSESMENT	
IN TERMS OF KNOWLEDGE	Ongoing questioning of students at exercises and seminars, the need to pass all exercises and seminars at the lecturer
IN TERMS OF SKILLS	Discussion of 2-3 case reports from area B
IN TERMS OF SOCIAL COMPETENCE	Activity during classes, grading group work

GENERAL PATHOLOGY	
SUMMATIVE (I & II)	EXAM: Multiple choice test Test questions with 4 answers to choose from, including one correct. 54-56% of questions from area A of the module and 44-46% of questions from area B of the module RETAKE EXAM: 8-10 open questions (including 4-6 questions from area A and 4-6 questions from area B)
GRADING SCALE	
Prerequisite	It is necessary to provide at least 50% of correct answers in Area A and 50% of correct answers in Area B within the first deadline.
3,0 (Satisfactory)	**55-60%** correct answers
3,5 (Satisfactory plus)	**61-68%** correct answers
4,0 (Good)	**69-75%** correct answers
4,5 (Good plus)	**76-80%** correct answers
5,0 (Very Good)	**81% -100%** correct answers
BASIC LITERATURE	
[1] Robbins & Cotran Pathologic Basis of Disease 8e ISBN-10: 1416031219 ISBN-13: 978-1416031215 [2] Pathophysiology of disease: an introduction to clinical medicine / edited by Gary D. Hammer, Stephen J. McPhee. – Seventh edition, 3rd printing. International edition. - New York (truncated): McGraw-Hill Education, print 2016. - (A Lange Medical Book). - ISBN: 978-0-07-180600-8 (PF).	
SUPPLEMENTARY LITERATURE	
[1] Robbins Basic Pathology 8e, ISBN 1416029737 / 9781416029731 [2] Leonard S. Lilly: Pathophysiology of Heart Disease: A Collaborative Project of Medical Students and Faculty. Wolters Kluwer Health Editors, 2015, 6e ISBN 9781496308696 Suggested self-assessment resource: Edward C. Klatt, Vinay Kumar Robbins and Cotran Review of Pathology http://www.pathologyoutlines.com	

Notes:
Area A cencerns pathomorphology classes
Area B cencerns pathophysiology classes