

## **GENERAL AND CLINICAL PATHOLOGY**

Training Course: Year 3 and 4

Semesters of study: **V - General Pathology**, VI and VII - Clinical Pathology

Exam:

after semester V - General Pathology

after VII semester - Clinical Pathology

Workload of the auditorium sessions: 210 hours

Lecturer: associate professor

### *Auditorium*

<i>Type of auditorium</i>	<i>Hour workload</i>					<i>Credits</i>
	<i>weekly</i>	<i>V sem.</i>	<i>VI sem.</i>	<i>VII sem.</i>	<i>Total</i>	
<b>Lectures</b>	2	30	30	30	90	<b>13,2</b>
<b>Practicals</b>	2	60	30	30	120	
<b>Total hours</b>	<b>4 hours</b>	<b>90 h</b>	<b>60 h</b>	<b>60 h</b>	<b>210 h</b>	

**SUMMARY:** intracellular accumulation of lipids, proteins and pigments; adaptative processes accumulation of fibrinoid, hyaline, amyloid, calcium salts and sodium urat in the intercellular matrix, necrosis, disturbances in blood circulation, inflammation, immunity pathology, tumors. Pathology of the cardiovascular system, respiratory pathology, pathology of the haematopoietic system, pathology of the digestive system. Pathology of the urinary system, reproductive system pathology, endocrine pathology, pathology of the nervous system, musculoskeletal pathology, infectious diseases.

**PURPOSE OF COURSE:** Study of basic pathological processes and structural changes in each nosological units.

Acquisition of detailed morphological knowledge of all sections of the clinical pathology which allow construction of high medical knowledge.

**OBJECTIVES OF THE COURSE:**

Acquisition of detailed morphological knowledge of the basic pathological processes in all sections of clinical pathology.

Learning in detail the theoretical basis of emergence, growth and development of tumors.

Use the terminology of precancerous, benign and malignant tumors.

Use the principles of making biopsy, completing forms and learn skills for objective correlation with the clinical findings.

Development of high medical knowledge.

Teaching methods: lectures, seminars, workshops.

**TECHNICAL TOOLS AND EQUIPMENT FOR THE PURPOSE IN TEACHING:** microscopes, permanent microscopic slides, gross preparations, audiovisual equipment, exercise books.

**MONITORING AND EVALUATION:**

Current control - oral examination, tests sections, colloquia, final test on macroscopic and microscopic preparations preceding the semester exams.

Final test - entry microscopic test, entry written test, written examination, oral examination (interview).

**METHODS OF CONTROL OF KNOWLEDGE:** tests in all sections.

**REQUIRED SKILLS:**

Theoretical knowledge - acquiring and discussions:

– general pathological processes: inflammation, degeneration, disturbances in blood circulation, adaptativni processes.

– tumor pathology - etiology, pathogenesis, classification of neoplastic diseases.

– etiology, pathogenesis and morphological changes in individual nosological units of all organs and

systems.

– formulating and organizing the clinical and pathological - anatomical diagnosis, pathogenetic basis and according to WHO requirements.

Ability to:

– Work with a light microscope.

– correctly making materials for cytological examination and biopsy.

– introduction to how to fix the materials according to the pathological processes and organ localization.

– correctly and completely fill slips for cytological examination and biopsy.

– acquiring knowledge of the organization, operation and capabilities of the pathology department.

– to read and interpret appropriate patho-anatomical responses.

### **COURSE PROGRAMME (V semester)**

LECTURE № 1 - 2 hours: Introduction to Pathology. Cell pathology.

Reversible cell damage (cell edema accumulation of proteins and carbohydrates).

LECTURE № 2 - 2 hours: Disorders of lipid metabolism. Tumorismoses.

LECTURE № 3 - 2 hours: Disorders of exchanges of pigments.

LECTURE № 4 - 2 hours: Pathology of connective tissue.

Disturbances in the amount of collagen and elastin. Accumulation of inorganic substances. Deposition of fibrinoid. Hyaline. Amyloidosis.

LECTURE № 5 - 2 hours. Cell death. Adaptive processes

Apoptosis and necrosis. Atrophy, hypertrophy and hyperplasia, metaplasia, dysplasia.

LECTURE № 6 - 2 hours: Disturbances in blood circulation.

Arterial hyperemia. Venous plethora. Bleeding and hemorrhage. Hemorrhage.

LECTURE № 7 - 2 hours: Disturbances in blood circulation.

Rheological disturbances. Thrombosis. Disseminated intravascular coagulation (DIC syndrome).

LECTURE № 8 - 2 hours: Disturbances in blood circulation.

Embolism. Shock. Lymph circulation disorders. Changes in the amount of fluid.

LECTURE № 9 - 2 hours: Inflammation.

Definition. Etiology. Phases. Morphogenesis and pathogenesis of inflammation. Exudative inflammation.

LECTURE № 10 - 2 hours: Productive inflammation.

Morphological characteristics of diffuse interstitial and granulomatous inflammation productive.

LECTURE № 11 - 2 hours: Regeneration. Pathology of immunity.

LECTURE № 12 - 2 hours: Tumors.

Definition and nature of tumor growth. Carcinogenesis. Biological manifestations of benign and malignant tumors. Terminology.

LECTURE № 13 - 2 hours: Tumors.  
Cell Biology. Morphological characteristics. Diagnostics.

LECTURE № 14 - 2 hours: Tumors.  
Classification. Tumors of epithelial origin.

LECTURE № 15 - 2 hours: Tumors.  
Soft tissue tumors. Pigmented tumors. Teratoma.

### **PROGRAM OF PRACTICALS ( V semester )**

EXERCISE № 1-2 hours: Scope, objectives and methods of pathology.  
Biopsy method: indications, types (intraoperative frozen section, excision, puncture, operational, punching (punch) biopsy, Pap smears) – technology, fixation and processing. Use and limitations.

EXERCISE № 2-2 hours: Review of normal histology: brain, liver, lung, spleen, lymph node, kidney, heart, skin and colon.

EXERCISE № 3-2 hours: Acute reversible cell damage: cell swelling, accumulation of carbohydrates and proteins.

I. Histological samples: Balloon degeneration of hepatocytes (Hepatitis viralis). Protein accumulation in the epithelium of the renal tubules - H-E.

II. Macroscopic samples: Diabetic glomerulosclerosis.

EXERCISE № 4-2 hours: Accumulation of lipids. Accumulation of exogenous pigments.

I. Histological samples: Steatotic liver - fat accumulation in hepatocytes - H-E. Steatotic liver - Sudan III. Coal dust in lungs.

II. Macroscopic samples: Fatty degeneration of the liver. "Tiger" heart. Lipomatosis of the heart. Lipomatosis of the pancreas. Coal dust in lungs. Tattoos.

EXERCISE № 5-2 hours: Intracellular accumulation. Accumulation of endogenous pigments.

I. Histological samples: Haemosiderosis in lungs (brown induration of lungs) - H-E. Haemosiderosis in lungs – PERLS reaction Jaundice in liver - H-E. Jaundice in kidney - H-E. Naevus - H-E.

II. Macroscopic samples: Livers in Cooley's anemia. Cholangiohepatitis - jaundice. Pancreas - haemosiderosis. Pancreas & thyroid & liver with metastatic melanoma.

EXERCISE № 6-2 hours: Injuries of the intercellular matrix. Accumulation of fibrinoid and hyaline.

I. Histological samples: Rheumatic valve- H-E, toluidine blue. Corpus albicans in ovary - H-E. Arteriosclerotic nephrosclerosis - HE. Benign hypertension (brain) - N-E.

II. Macroscopic samples Rheumatic heart disease: mitral stenosis. Arteriosclerotic nephrosclerosis. Glazed spleen. Pinpoint hemorrhages in the brain.

EXERCISE № 7-2 hours: Intercellular matrix. Accumulation of amyloid, calcium salts and sodium ureic acids.

I. Histological samples: Amyloidosis in kidney - CONGO RED. Amyloidosis in spleen - sago - H-E. Amyloidosis in liver - H-E. Calcification of aorta - H-E. Ureic acid tophi - H-E.

II. Macroscopic samples of Amyloidosis: spleen - sago and lardaceous; kidney - a big white kidney. Amyloid sclerosis of kidney. Atherosclerosis of the aorta with calcification. Uric acid infarction of the kidney.

EXERCISE № 8 - 2 hours: Cell death: apoptosis and necrosis

I. Histological samples: Necrosis in spleen (anemic infarction of spleen) - N-E. Necrosis in brain (anemic infarction of brain) - H-E. Steatonecrosis in pancreas (necrotic pancreatitis) - H-E. Caseous necrosis in lymph nodes in tuberculosis (TBC in lymph nodes) - H-E.

II. Macroscopic samples - Anemic infarction of the spleen. Anemic infarction of the kidney. Anemic infarction of the brain. Brain pseudocyst. Lymph node with tuberculosis. Gangrene of the toe. Acute necrotizing pancreatitis.

EXERCISE № 9 - 2 hours: Compensatory-adaptive processes: atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia.

I. Histological samples: Hypertrophy of myocardium- HE. Hyperplasia of uterine mucosa - HE. Hyperplasia of prostate - H-E. Atrophy of liver- H-E. Atrophy of myocardium - H-E.

II. Macroscopic samples: Tongue in acromegaly. Dilatation of the left ventricle in chronic myocarditis. Hypertensive heart. Hypertrophy of the prostate with bladder stones. Atrophy of the myocardium. Internal hydrocephalus.

EXERCISE № 10 - 2 hours: REVISION OF CELL INJURY AND ADAPTIVE PROCESSES

EXERCISE № 11 - 2 hours: **MCQ AND PRACTICAL TEST №1:**  
**ON TOPICS FROM CELL INJURY AND ADAPTIVE PROCESSES**

EXERCISE № 12 - 2 hours: Disturbances of blood flow: hyperemia, edema, and hemorrhage.

I. Histological samples: Cyanotic liver - HE. Nutmeg liver - H-E. Pin point hemorrhages in brain - H-E. Oedema of skin - H-E. Oedema in lungs - H-E.

II. Macroscopic samples Nutmeg liver. Cardiac liver fibrosis. Bleeding in the brain. 4. Brown induration of lung.

EXERCISE № 13 - 2 hours: Circulatory disorders: ischemia, thrombosis, embolism, heart attack.

I. Histological preparations: Mixed thrombus - H-E. Anemic infarction of kidney - H-E. Hemorrhagic infarction of the lungs- H-E. Fat embolism in lungs - Sudan III.

II. Macroscopic samples: Recent myocardial infarction. Anemic infarction of kidney. Infarct of the spleen. Ischemic infarction of the brain. Thrombus in aorta. Round thrombus in the left ventricle. Pulmonary thromboembolism. Hemorrhagic infarction of the lung. Mesenteric thrombosis.

EXERCISE № 14 - 2 hours: **Colloquium : Cell injury and Hemodynamic disorders**  
**(MCQ and written part)**

EXERCISE № 15 - 2 hours: Inflammation: Basic morphological changes. Mediators of inflammation. Classification. Types of exudative inflammation.

I. Histological samples: Fibrinous pericarditis - H-E. Purulent leptomeningitis - H-E. Phlegmonous appendicitis - H-E. Acute absceding myocarditis - H-E.

II. Macroscopic samples fibrinous pericarditis. "Armoured" heart. Purulent leptomeningitis. Phlegmonous appendicitis.

EXERCISE № 16 - 2 hours: Productive inflammation.

I. Histological samples: Granulation tissue - H-E. Nasal polyp - H-E. "foreign body" type granuloma - H-E. Hydatid cyst - H-E. Giant cell epulis - H-E.

II. Macroscopic samples Hydatid cyst of the spleen. Hydatid cyst in liver. Trichinella. Nasal polyp.

EXERCISE № 17 - 2 hours: Granulomatous inflammation.

I. Histological preparations: Necrosis caseosa lymphonodi (Lymphadenitis tuberculosa caseosa).  
Mesaortitis luetica - H-E. Gumi luetici - H-E. Actinomycosis - H-E.

II. Macroscopic swamples Cavity of the lung. Miliary tuberculosis of the lung. Tuberculous leptomeningitis. Lymph node tuberculosis. Tuberculosis of the kidney. Luetic aneurysm of the aorta.

EXERCISE № 18 - 2 hours: Regeneration. Pathology of immunity.

I. Histological samples: Regeneration of bone marrow - H-E. Granulation - H-E. Scarring of myocardium - H-E; Van Gieson. Hashimoto diseases. Rheumatoid arthritis. Nodosal polyarteritis - toluidine blue.

II. Macroscopic samples: Regeneration of bone marrow. Heart- postinfarction scarring, chronic aneurysm with superimposed thrombus. Lymphomatous goiter (Hashimoto). Rheumatoid arthritis.

EXERCISE № 19 - 2 hours: REVISION of hemodynamic disorders, inflammation and immunity

EXERCISE № 20 - 2 hours: **MCQ : Inflammation. Pathology of immunity.**

**PRACTICAL TEST № 2: Inflammation. Pathology of immunity. Hemodynamic disorders.**

EXERCISE № 21 - 2 hours: Dissection.

EXERCISE № 22 - 2 hours: Tumors. Benign and malignant tumors of the surface epithelium.

I. Histological samples: Papiloma in oral cavity. Basal cell carcinoma . Squamos cell carcinoma. Urothelial carcinoma.

II. Macroscopic samples: basal cell carcinoma. Lung cancer. Bladder cancer. Breast cancer. Cancer of the cervix.

EXERCISE № 23 - 2 hours: Benign and malignant tumors of glandular epithelium.

I. Histological preparations: Pleomorhic adenoma of parotis (tumor "mixtus"). Gastric adenocarcinoma. 'Gelatinous' adenocarcinoma.

II. Macroscopic preparations fibroadenoma of the breast. Breast cancer. Stomach Cancer: ulcerative, excavative types. Cancer of the colon. Endometrial cancer.

EXERCISE № 24 - 2 hours: Tumors. Benign and malignant soft tissue tumors.

I. Histological samples: Lipoma - H-E. Cavernous haemangioma of liver - H-E. Capillary haemangioma of skin - H-E. Leiomyoma in uterus - H-E, Van Gieson. Leiomyosarcoma - H-E.

II. Macroscopic samples: 1. Lipomas. 2. Hibernoma. 3. Cavernous haemangioma of the liver. 4. Adrenal adenoma. 5. Uterine leiomyomas.

EXERCISE № 25 - 2 hours: Pigment tumors. Teratoma.

I. Histological samples: Naevus. Melanoma malignum. Mature teratoma

II. Macroscopic samples: Malignant melanoma - skin. Metastases from malignant melanoma in the liver, brai, etc. Mature teratoma (dermoid cyst) of the ovary.

EXERCISE № 26 - 2 hours: REVISION - TUMORS

EXERCISE № 27 - 2 hours: **MCQ : TUMORS**

**PRACTICAL TEST № 3: TUMORS**

EXERCISE № 28 - 2 hours: Principles of setting a pathological diagnosis

EXERCISE № 29 - 2 hours: Dissection.

EXERCISE № 30-2 hours: Dissection.

**PROGRAM COURSE (VI semester)**

LECTURE № 1 - 2 hours: Pathology of the Cardiovascular System. Atherosclerosis.

LECTURE № 2 - 2 hours: A: Pathology of the Cardiovascular System. Hypertension. Ischemic heart disease. Chronic pulmonary heart.

LECTURE № 3 - 2 hours: Pathology of the Cardiovascular System  
Rheumatism. Infectious and non infectious endocarditis.

LECTURE № 4 - 2 hours: Pathology of the Cardiovascular System  
Myocarditis. Cardiomyopathies. Pericarditis. Congenital heart defects.

LECTURE № 5 - 2 hours: Connective tissue disease  
Systemic lupus. Rheumatoid arthritis. Systemic vasculitis.

LECTURE № 6 - 2 hours: Pathology of the respiratory system  
Diseases of the nose, paranasal sinuses, pharynx and larynx. Bronchitis. Bronchiectatic disease.

LECTURE № 7 - 2 hours: Pathology of the respiratory system  
Pneumonia. Abscess and gangrene of the lung. Allergic diseases of the lung.

LECTURE № 8 - 2 hours: Pathology of hemopoetic system  
Anemia. Erithremia. Thrombocytopenias. Agranulocytosis. Acute and chronic leukemia.

LECTURE № 9 - 2 hours: Pathology of hemopoetic system  
Multiple myeloma. Malignant lymphomas.

LECTURE № 10 - 2 hours: Pathology of the digestive system  
Pathology of the oral cavity and esophagus.

LECTURE № 11 - 2 hours: Pathology of the digestive system  
Pathology of the stomach and duodenum.

LECTURE № 12 - 2 hours: Pathology of the digestive system  
Enteritis and enterocolitis. Appendicitis. Mesenteric thrombosis. Colonic tumors. Bowel obstruction.

LECTURE № 13 - 2 hours: Pathology of liver.  
Hepatitis

LECTURE № 14 - 2 hours: Pathology of liver  
Liver cirrhosis. Liver Cancer.

LECTURE № 15 - 2 hours: Pathology of the bile ducts and pancreas.

## **PROGRAM OF PRACTICAL EXERCISES (VI semester)**

EXERCISE № 1 - 2 hours: CLINICO-MORPHOLOGICAL OBSERVATION

EXERCISE № 2-2 hours: Diseases of the cardiovascular system: atherosclerosis, hypertension.

I. Histological samples: Atherosclerosis of aortae - HE, Sudan III. Benign hypertension in brain.

Arteriolosclerotic nephrosclerosis. Pin point haemorrhages in brain.

II. Macroscopic samples: 1. Arteriosclerotic nephrosclerosis . 2. Hypertensive heart. 3.

Arteriolosclerotic nephrosclerosis. 4. Obturative thrombus in the abdominal aorta. 5. Pinpoint bleeding in the brain white.6. Large hematoma in the cerebral hemisphere. 7.' White softening' of brain. 8.

Pseudocyst of the brain.

EXERCISE № 3 - 2 hours: Diseases of the cardiovascular system. Myocardial infarction.

Miokardiofibrosis. Cardiomyopathies.

I. Histological samples: Hypertrophy of myocardium. Recent myocardial infarction. Scarring of myocardium- H-E, Van Gieson. Anemic infarction of brain.

II. Macroscopic samples: 1. Recent myocardial infarction. 2. Hypertrophy of the left ventricle. 3.

Hypertrophy and dilatation of the left ventricle. 4. White softening of brain. 5. Coronary artery bypass.

EXERCISE № 4 - 2 hours: Diseases of the cardiovascular system. Endocarditis. Myocarditis.

Pericarditis. Systemic connective tissue diseases.

I. Histological preparations: 1. Endocarditis fibrosa. 2. Myocarditis rheumatica. 3. Pericarditis fibrinosa. 4. Polyarteriitis nodosa - H-E.

II. Macroscopic preparations: 1. Fibrinous pericarditis. 2. Fibrotic mitral valve endocarditis. 3.

Stenosis and mitral insufficiency with round left atrial thrombus. 4. Ulcero-polypotic endocarditis. 5.

Kidney – nodosal poliarteriitis.

EXERCISE № 5-2 hours: **REVISION and PRAKTICAL TEST № 1:**  
***Pathology of Cardiovascular System***

EXERCISE № 6-2 hours: **Colloquium №1 : Pathology of Cardiovascular System**  
***(MCQ and written part )***

EXERCISE № 7-2 hours: Diseases of the respiratory system. Inflammatory diseases of the lung and pleura. Emphysema. Pleurisy.

I. Histological preparations: Acute and chronic bronchitis. Emphysema.

II. Macroscopic samples: 1. Chronic bronchitis.2. Pulmonary emphysema. 3. Pleural fibrosis.

EXERCISE № 8-2 hours: Diseases of the respiratory system. Pneumonia.

I. Histological preparations: Bronchopneumonia acuta abscedens. Bronchopneumonia acuta mycotica. Pneumonia crouposa. Interstitial pneumonia.

II. Macroscopic samples: 1. Absceding pneumonia.2.Pneumonia in the stage of gray hepatisation.

EXERCISE № 9-2 hours: Diseases of the respiratory system. Pneumoconiosis. Neoplasms.

I. Histological samples: Silicosis pulmonis (nodular form). Squamous carcinoma of the lung.

Undifferentiated, small cell carcinoma of the lungs. Bronhioloalveolar cancer.

II. Macroscopic samples: 1. Carbon duct in lungs.2. Silicosis of the lung. 3. Lung cancer.

EXERCISE № 10 - 2 hours: **REVISION. MCQ and PRAKTICAL TEST № 2 :**  
***Pathology of the respiratory system.***

EXERCISE № 11 - 2 hours: Diseases of the haematopoietic system. Anemia. Leukemia. Diseases of the lymph nodes. Lymphomas.

I. Histological samples: 1. Regeneration of bone marrow - H-E. 2. Chronic lympholeucemic infiltrates in liver- H-E. 3. Myeloleucemic infiltrates in liver - H-E. 4. Hodgkin's disease - HE. 5. Non Hodgkin's lymphoma - H-E. 6. Plasmocytoma - H-E

II. Macroscopic samples. . 1. Chronic lympholeucemic infiltrates in liver 2. Myeloleucemic infiltrates in liver.

EXERCISE № 12 - 2 hours: Diseases of the oral cavity.

I. Histological samples: 1. Leucoplakia - H-E. 2. Giant cell epulis - H-E. 3. Adamantinoma - H-E. 4. Pleomorphic adenoma of parotid - H-E. 5. Chronic tonsillitis - H-E.

II. Macroscopic samples: Pleomorphic adenoma of salivary gland – mixed tumor.

EXERCISE № 13 - 2 hours: Diseases of the gastrointestinal tract: stomach, small and large intestines. Ulcer of stomach and duodenum. Complications. Benign and malignant tumors of the stomach. Chronic ulcers, hemorrhagic colitis (CUHK). Tumors of the intestines.

I. Histological samples: 1. Gastritis chr. atrophicans - H-E. 2. Ulcus chronicum ventriculi exacerbata - N. F. 3. Gastric adenocarcinoma - H-E. 4. Duodenal ulcer - H-E. 5. Appendicitis phlegmonosa - H-E.

II. Macroscopic samples: 1. Hypertrophic gastritis. 2. Acute ulcers of the stomach. 3. Chronic gastric ulcer perforation. 4. Chronic ulcers of the stomach and duodenum 5. Gastric cancer - polypoid, ulcerated, scirrhous. 6. Phlegmonous appendicitis. 7. Diverticulum of the esophagus.

EXERCISE № 14 - 2 hours: Diseases of the liver, gallbladder and pancreas.

Acute toxic liver dystrophy. Acute and chronic hepatitis. Liver cirrhosis. Diseases of the gallbladder and bile ducts. Acute pancreatitis and pancreatic cancer.

I. Histological samples: 1. Acute toxic necrosis of liver - H-E. 2. Micronodular cirrhosis - H-E. 3. Chronic cholecystitis - H-E. 4. Steatonecrosis pancreatis (pancreatitis ac. necroticans) - N-E.

II. Macroscopic samples: 1. Micronodular cirrhosis of liver 2. Cholelithiasis. 3. Gangrenous cholecystitis. 4. Acute pancreatic necrosis.

EXERCISE № 15 - 2 hours: **REVISION. MCQ and PRAKTICAL TEST №3:**  
**Pathology of Hematopoietic System. Pathology of Digestive system.**

### **PROGRAM COURSE (VII semester)**

LECTURE № 1-2 hours: Pathology of the urinary system  
Anatomy and physiology of urinary system. Primary glomerulopathies.

LECTURE № 2-2 hours: Pathology of the urinary system  
Tubulo-interstitial disease.

LECTURE № 3-2 hours: Pathology of the urinary system  
Acute and chronic renal failure. Nephrosclerotic kidney. Nephrolithiasis. Pathology of the bladder.

LECTURE № 4-2 hours: Pathology of the female reproductive system  
Diseases of the vagina, cervix and uterine body.

LECTURE № 5-2 hours: Pathology of the female reproductive system  
Ovarian tumors. Pathology of pregnancy. Diseases of the breast.



LECTURE № 6-2 hours: Pathology of the male reproductive system

LECTURE № 7-2 hours: Pathology of the endocrine system  
Diseases of the pituitary and adrenal.

LECTURE № 8-2 hours: Pathology of the endocrine system  
Diseases of thyroid and endocrine pancreas.

LECTURE № 9-2 hours: Pathology of the nervous system  
Inflammatory diseases of the nervous system.

LECTURE № 10 - 2 hours: Pathology of the nervous system  
Tumors of neuroepithelial tissue of nerve sheaths, the meninges and their kindred fabrics.

LECTURE № 11 - 2 hours: Pathology of bones and joints.  
Osteoporosis. Osteomalacia. Metabolic and inflammatory bone diseases. Arthritis. Arthrosis.

LECTURE № 12 - 2 hours: Infectious diseases. Sepsis. AIDS.

LECTURE № 13 - 2 hours: Infectious diseases. TB

LECTURE № 14 - 2 hours: Infectious diseases. Lues

LECTURE № 15 - 2 hours: PRINCIPLES OF CONSTRUCTION AND COMPARISON OF  
CLINICAL AND PATHOLOGICAL DIAGNOSIS.

### **PROGRAM OF PRACTICALS (VII semester)**

EXERCISE № 1-2 hours: Clinical and morphological observation

EXERCISE № 2-2 hours: Glomerulonephritis.

Definition, etiology and pathogenesis. Classification. Morphological changes in the basic types of glomerulonephritis.

I. Histological samples: 1. Crescentic glomerulonephritis (subacute). 2. Mesangiocapillary glomerulonephritis. 3. Glomerulonephritic nephrosclerosis.

II. Macroscopic samples: acute glomerulonephritis. Subacute glomerulonephritis. Nephrosclerosis. Minimal change disease.

EXERCISE № 3-2 hours: Pyelonephritis. Nephrosclerotic kidney. Tumors of the kidneys and bladder.

I. Histological samples: Acute pyelonephritis (absceding). Chronic pyelonephritis. Carcinoma of kidney. Bladder cancer.

II. Macroscopic samples: 1. Nephrosclerotic kidney. 2. Diabetic glomerulosclerosis. 3. Amyloid nephrosclerosis and a big white kidney. 4. Calculi in pyonephrosis. 5. Carcinoma of the kidney. 6. Wilm's tumor. 7. Polycystic kidney. 8. Bilateral hydronephrosis.

EXERCISE № 4-2 hours: **REVISION and PRAKTICAL TEST № 4:**  
***Pathology of urinary system***

EXERCISE № 5-2 hours: Pathology of pregnancy. Diseases of the female reproductive system.

A. Benign and malignant tumors of the cervix and uterine body. 2. Abortion, glandular hyperplasia of the endometrium.

I. Histological samples: Abortion - H-E. Mola hydatidosa - H-E. Chorionepithelioma (choriocarcinoma). CA planocellularae coli uteri - H-E. Adenocarcinoma corporis uteri - H-E.  
II. Macroscopic samples: 1. Uterus with fetus. 2. Abortion. 3. Ectopic pregnancy. 4. Hydatidiform mole. 5. Choriocarcinoma. 6. Uterine polyp. 7. Uterus with fibroids. 8. Polyp of the cervix. 9. Endometrial carcinoma. 10. Sarcoma of the uterus.

EXERCISE № 6-2 hours: Tumors of the ovary. Diseases of the breast.

I. Histological samples: 1. Papillary cystadenoma of ovary - H-E. 2. Mucinous cystadenocarcinoma of ovary. 3. Dysplasia of breast - H-E. 4. Fibroadenoma of breast - H-E. 5. Ductal carcinoma (invasive) - H-E. 6. Scirrhus carcinoma of breast - H-E.  
II. Macroscopic samples: Breast cancer. Fibroadenoma of the breast. Cystadenoma of the ovary. Krukenberg's metastases in the ovaries.

EXERCISE № 7-2 hours: Diseases of the male reproductive system.

Prostatic hyperplasia. Tumors of the testis.

I. Histological samples: Hyperplasia of prostate. Adenocarcinoma of prostate. Seminoma testis. Teratoma.

II. Macroscopic samples: hypertrophy of the prostate. Prostate cancer. Seminoma of the testis. Mature teratoma - (ovary).

EXERCISE № 8-2 hours: **REVISION and PRAKTICAL TEST № 5**

***Pathology of female reproductive system. Pathology of male reproductive system.***

EXERCISE № 9-2 hours: **Colloquium № 2: "Urinary and reproductive systems"**

EXERCISE № 10-2 hours: Diseases of the endocrine system. Diseases of the thyroid gland. Diabetes.

I. Histological samples: Struma colloidosa - H-E. Struma basedowiana (Struma toxica). Thyreoiditis chronica (struma lymphomatosa - Hashimoto) - H-E. Glomerulosclerosis diabetica - H-E. Adenoma gl. hypophyseae (eosinophilic).

II. Macroscopic samples Nodular colloid goiter. Graves' goiter. Acromegaly - language. Pituitary adenoma. Diabetic glomerulosclerosis. Adrenal adenoma.

EXERCISE № 11 -2 hours: Inflammatory diseases of the nervous system.

I. Histological samples: Leptomeningitis purulenta - H-E. Polioencephalitis acuta - H-E. Poliomyelitis anterior acuta - H-E. Leptomeningitis tuberculosa - H-E.

II. Macroscopic samples: Purulent leptomeningitis. T.B.Leptomeningitis. Internal hydrocephalus.

EXERCISE № 12 - 2 hours: Tumors of the central nervous system, the sheaths of peripheral nerves and soft tissues.

I. Histological samples: Astrocytoma. Glioblastoma multiforme. Schwannoma (neurinoma). Meningioma.

II. Macroscopic samples: 1. Glioma of the brain. 2. Glioblastoma multiforme. 3. Neurinoma of n. statoacusticus. 4. Meningioma.

EXERCISE № 13 - 2 hours: Infectious diseases. Tuberculosis. Lues. Sepsis.

I. Histological samples: Millitary tuberculosis. Caseous necrosis in lymph nodes. Gummi luetici. Cytomegalovirus nephritis.

II. Macroscopic samples: 1. Tuberculosis of t kidney. 2. Cavity in lung. 3. Acinus tuberculosis. 4. Lymph node-caseous necrosis. 5. Luetic mesaortitis (aneurysm).

EXERCISE № 14 - 2 hours: **REVISION and PRAKTICAL TEST № 6:**

***Pathology of endocrine system. Pathology of nervous system. Infectious diseases.***

EXERCISE № 15 - 2 hours: **CLINICAL AND MORPHOLOGICAL OBSERVATION**

### ***Syllabus of general pathology***

1. Subject, tasks and methods of pathology.
2. Health and disease. Main categories in pathology (etiology, pathogenesis, Morphogenesis, sanogenesis, tanatogenesis).
3. Death: Clinical and biological. Signs of biological death.
4. Cell injury. Definition. Categories of cellular injury. Causal factors. Pathogenetic and morphogenetic mechanisms.
5. Cellular injury. Types of degeneration. Acute reversible cellular damage (cellular swelling). Hydropic degeneration.
6. Abnormal accumulation of substances in the cell. Mechanisms. Accumulation of protein (hyaline-drop degeneration, Lewy and Mallory bodies; Russel bodies) and carbohydrates. Methods of proof.
7. Disorders of the metabolism of lipids. Types of adipose degeneration. Accumulation of cholesterol and cholesterol esters. Methods of proof. Total obesity. Lipomatosis. Cachexia.
8. Lysosomal diseases (tesaurismoses) - features. Lipidoses (Gaucher disease, Niemann-Pick disease, Tay-Sacks, disease, Hand-Schuller-Christian) and glycogenoses.
9. Disturbances in the metabolism of the pigments. Classification. Accumulation of exogenous pigments.
10. Accumulations of iron-containing pigments (hemoglobinogenic).
11. Accumulation of iron-free hemoglobinogenic pigments. Jaundice.
12. Disturbances in the metabolism and accumulation of proteinogenic (tyrosine, tryptophan) and lipidogenic native pigments.
13. Abnormal accumulation of substances in the extracellular matrix Mucoïd edema. Fibrinoid. Hialinosis - types. Accumulation of fibrillary substances in the interstitium: scarring, fibrosis (sclerosis) and cirrhosis.
14. Amyloidosis. Common physical and chemical characteristics. Classification. Types according to their composition. Methods of proof.
15. Types of amyloidosis depending on cause and spread of the process. Organ deposits. Diagnosis.
16. Disturbances in the metabolism of calcium and copper. Abnormal accumulation of salts of the uric acid.
17. Cell death. Necrobiosis. Necrosis: definition, types (coagulation and kaseous; liquefactive), nuclear and cytoplasmic morphological changes.
18. Clinical and anatomical forms of necrosis (infarction, gangrene, decubitus, sequesters, mutilation, steatonecrosis, fibrinoid necrosis, 'noma'). Evolution and complications.
19. Apoptosis. Definition, differences between apoptosis and necrosis. Role of apoptosis.
20. Hemodynamic disorders: an overview, local and general hemodynamic disorders. Changes in the amount of blood. Arterial hyperemia.
21. Venous plethora (congestion). Acute and chronic left heart failure - morphological changes.
22. Venous plethora. Acute and chronic right heart failure - morphological changes. Local venous plethora.
23. Ischemia: definition, types, complications.
24. Bleeding and bleeding disorders. Plasmorrhagia. Terminology, mechanisms, outcome.
25. Rheological disorders: prestasis, stasis, 'sludge'-phenomenon.

26. Thrombosis. Order and Morphogenesis. Structure of thrombi. Difference between the thrombus and post-mortem blood clot.
27. Thrombosis. Types of blood clots, complications and evolution. Disseminated intravascular coagulopathy (DIC syndrome).
28. Embolism. Definition. Types of embolism by the way of their distribution: venous and arterial, orthograde, retrograde and paradoxical embolism.
29. Pulmonary thromboembolism: cause, proof, complications and outcomes.
30. Types of embolism, according to the substrate: air, gas, fat, amnial, bacterial, parasitic, tumor cell. Comparison between embolism and metastasis.
31. Infarction. Definition. Types. Morphological characteristics of anemic infarction.
32. Infarction. Definition. Types. Morphogenesis of hemorrhagic infarctions. Types of hemorrhagic infarctions.
33. Shock. Definition, pathogenetic types and organ morphological changes.
34. Disorders of lymph circulation: terminology and complications. Quantitative changes of tissue fluid. Oedema: definition, types. Pulmonary and cerebral edema. Dehydration.
35. Inflammation. Definition. Terminology. Main features. Etiologic factors.
36. Inflammation. Phases of inflammatory reaction. Pathogenesis and morphogenesis of inflammation. Plasma and cellular mediators.
37. Morphogenesis of acute ( exudative ) inflammation. Hemodynamic changes in microcirculation. Leukocyte migration and phagocytosis.
38. Cell types in the outbreak of acute and chronic inflammation.
39. Exudative inflammation. Morphology, complications and outcomes.
40. Productive inflammation: forms and morphological characteristics of diffuse productive inflammation.
41. Nonspecific and specific productive – ‘granulomatous’ inflammation. Morphology of foreign body granuloma, tubercle, luetic ‘gumma’, granulomas in leprosy and sarcoidosis, cat-scratch disease, toxoplasmosis, rhinoscleroma.
42. Pathology of immunity. Hypersensitivity reactions. Anaphylactic cytotoxic type immune reactions (first and second type reactions).
43. Pathology of immunity. Hypersensitivity reactions. Immune complexes reactions. Delayed type hypersensitivity (third and fourth type reactions).
44. Pathology of immunity - types. Autoimmune diseases. Congenital syndromes and acquired immune deficiency.
45. Adaptive processes: hypertrophy and hyperplasia, atrophy - definition, types, morphological characteristics.
46. Metaplasia - definition, types, morphological characteristics, complications.
47. Regeneration. Restitution and substitution. Factors affecting recovery processes. Wound healing. Regeneration of bone tissue.
48. Tumors: definition, incidence and prevalence. Biology of tumor growth ( irreversibility, relative autonomy, tumor impact on the whole body).
49. Tumors: Terminology. Classification. Tumor structure.
50. Etiology of tumors. Chemical, physical, genetic and viral carcinogenesis. Role of growth factors.
51. Morphogenesis of tumors. Monocentric and multicentric theories for their emergence. Proliferating and non-proliferating tumor fractions. Biological basis of invasion of malignant tumors. Metastasis.
52. Morphological characteristics of tumors. Differences between benign and malignant tumors. Tissue and cellular atypia.
53. Precancerous. Dysplasia. Carcinoma in situ.
54. Metastasis of tumors.

55. Degree of differentiation and staging in the development of tumors. TNM-system.
56. Structure and shape of tumors - macroscopic and microscopic characteristics. Role of immunohistochemistry for the diagnosis of tumors.
57. Benign tumors of epithelial origin.
58. Malignant tumors of epithelial origin.
59. Benign soft tissue tumors.
60. Malignant soft tissue tumors.
61. Tumors of the central nervous system - general features, classification, basic representatives.
62. Tumors of the nerve sheath. Tumors of the meninges.
63. Tumors and tumor-like entities of melanocytes. Teratomas.

## **SYLLABUS FOR EXAMINATION OF CLINICAL PATHOLOGY**

1. Atherosclerosis. Risk factors. Pathogenesis and Morphogenesis.
2. Atherosclerosis. Stages. Organ damage.
3. Hypertension: types, etiology and pathogenesis.
4. Morphogenesis of vascular lesions in benign and malignant hypertension, organ damage.
5. Pulmonary hypertension - primary and secondary. Acute and chronic pulmonary heart.
6. Ischemic heart disease. Morphogenesis, classification, forms of angina. Sudden cardiac death.
7. Myocardial infarction. Risk factors. Species. Evolution and complications.
8. Systemic connective tissue disease - a common feature. Rheumatism: definition, etiology and pathogenesis, major events.
9. Rheumatic heart disease. Rheumatic endocarditis, morphological stages. Rheumatic myocarditis and pericarditis.
10. Rheumatic valvular defects: morphological characteristics, hemodynamic disorders and organ complications.
11. Infective endocarditis - acute and subacute: etiology, pathogenesis, morphology and complications.
12. Non-infectious endocarditis: Libman-Sachs endocarditis, mitral valve prolapse, degenerative calcification of aortic valve endocarditis, marantic type. Cardiomyopathy: dilated, hypertrophic and restrictive.
13. Myocarditis - infectious and noninfectious.
14. Diseases of the pericardium: pericarditis and pericardial effusion.
15. Congenital heart defects: septal defects and inter - ventricular septa, persistent ductus Botalli, coarctation of the aorta Congenital transposition of the trunk vessels.
16. Systemic lupus erythematosus: definition, etiology and pathogenesis, morphological amendments.
17. Rheumatoid arthritis: definition, pathogenesis, Morphogenesis of articular lesions skin and vascular changes, clinical course.
18. Systemic sclerosis. Dermatomyositis. Polymyositis. Sjogren syndrome.
19. Vasculitis. Temporal arteritis. Arteritis Takayasu. Polyarteritis nodosa.
20. Local vasculitis: infectious arteritis, Raynaud (trombangiitis obliterans) syndrome.
21. Aneurysms. Dissection of the aorta. Varices, phlebotrombosis and thrombophlebitis.
22. Inflammatory diseases and tumors of the nose and paranasal sinuses. Tumors of larynx.
23. Inflammatory diseases of the trachea and bronchi: acute tracheitis, bronchitis and bronchiolitis. Chronic bronchitis. Bronchiectasis.
24. Pneumonia: definition and overview. Lobar pneumonia: definition etiology, Morphogenesis, morphological stages, complications and outcomes.
25. Focal pneumonia: definition, etiology, pathogenesis, morphological features. Interstitial, and chronic viral pneumonia.
26. Abscess and gangrene of the lung. Atelectasis.

27. Chronic obstructive pulmonary disease. Pulmonary emphysema: a definition Classification, complications.
28. Bronchial asthma. Idiopathic pulmonary haemosiderosis.
29. Pneumoconiosis - an overview. Silicosis: forms and complications.
30. Lung cancer: incidence and prevalence, etiology, Morphogenesis, morphology. Metastasis. Complications.
31. Pleurisy and tumors of the pleura.
32. Inflammatory diseases of the oral cavity. Stomatitis, glossitis and angina: Complications of streptococcal infections.
33. Diseases of teeth and soft tissue apparatus: caries, pulpitis, periodontitis, radicular cyst, periodontal disease.
34. Tumors of the jaw bone and tumor-like processes of the soft tissues of oral cavity. Epulis.
35. Sialoadenitis and tumors of salivary glands.
36. Diseases of the esophagus:-hiatus hernia, diverticula, esophagitis, gastroesophageal reflux, Barrett's esophagus.
37. Tumors of the esophagus.
38. Acute and chronic gastritis. Etiology, Morphogenesis, clinical and morphological forms complications.
39. Acute and chronic ulcers of the stomach and duodenum. Definition etiology, pathogenesis and Morphogenesis. Morphological picture.
40. Chronic ulcers of the stomach and duodenum. Complications.
41. Benign tumors of the stomach - epithelial and mesenchymal. Early cancer stomach - morphology.
42. Malignant tumors of the stomach. Etiology, pathogenesis, classification, morphological characteristics, metastasis.
43. Inflammatory bowel disease: acute and chronic enteritis. Acute and chronic non-specific colitis. Ulcerative colitis. Crohn's disease.
44. Benign and malignant tumors of the colon.
45. Bowel obstruction. Peritonitis.
46. Acute appendicitis - morphology and complications. Tumors of the appendix.
47. Acute viral hepatitis: etiology, pathogenesis, morphological and biological features of hepatitis A, B and C.
48. Chronic hepatitis: etiology, classification, clinical and morphological forms of evolution.
49. Toxic hepatitis. Acute toxic degeneration of the liver.
50. Liver cirrhosis: definition, etiology, classification. Morphogenesis.
51. Liver cirrhosis: basic morphological types. Complications.
52. Cholecystitis: etiology, types, morphological characteristics, complications. Cholelithiasis.
53. Tumors of the liver, bile duct and gallbladder.
54. Inflammatory diseases and tumors of the exocrine pancreas.
55. Anemia: definition, etiology, classification. Acute and chronic posthemorrhagic anemia.
56. Pernicious, foal acid, and iron deficiency anemia. Aplastic anemia. Idiopathic thrombocytopenia.
57. Myelogenous malignancies. Acute myelogenous leukosis (leukemia). Chronic myelogenous leukosis.
58. Hyperplastic and inflammatory processes in the lymph nodes: chronic nonspecific and granulomatous lymphadenitis.
59. Malignancy of lymphoid tissue. Acute lymphoblastic leukemia / lymphoma. Chronic lymphocytic leukemia (small lymphocytic lymphoma).
60. Myeloma disease. Solitary myeloma (plasmacytoma).
61. General characteristics and classification approach for Non-Hodgkin's malignant lymphomas.
62. Hodgkin's disease: etiology and pathogenesis, classification, prognosis.
63. Primary glomerulopathy (glomerulonephritis). Pathogenesis and Morphogenesis. Diagnostic approach.

64. Glomerulonephritis occurring with nephritic syndrome: diffuse endocapillary proliferative glomerulonephritis. Rapidly progressive ('crescentic') glomerulonephritis. Goodpasture pulmonary-renal syndrome.
65. Glomerulonephritis occurring with nephrotic syndrome: minimal disease changes, focal segmental glomerulosclerosis, mesangiocapillary glomerulonephritis.
66. Glomerulonephritis occurring with nephrotic syndrome: IgA-nephropathy and Membranous nephropathy. Diffuse sclerosing glomerulonephritis.
67. Acute and chronic pyelonephritis: etiology, pathogenesis, morphology, complications.
68. Acute renal failure. Ischemic and nephrotoxic acute tubular necrosis.
69. Nephrolithiasis. Etiology. Types of concretion. Complications. Polycystic kidney.
70. Nephrosclerosis: classification approach macroscopic characteristic. Morphology chronic renal failure.
71. Tumors of the kidney and bladder.
72. Diseases of the cervix. Precancerous conditions (CPC). Carcinoma in situ. Microinvasive, invasive squamous and adeno-carcinoma. Morphological diagnosis. Prognosis.
73. Chronic endometritis, endometriosis, endometrial hyperplasia, etiology, morphology.
74. Benign and malignant tumors of the uterine body.
75. Ovarian tumors: classification, key representatives biological characteristics. Metastatic ovarian tumors.
76. Abortion and ectopic pregnancy: cause, morphology, complications.
77. Molar pregnancy and choriocarcinoma. Postnatal sepsis.
78. Inflammatory and fibrotic cystic changes of the breast.
79. Benign and malignant breast tumors: morphology and staging.
80. Tumors of the testis and epididymis.
81. Hyperplasia and tumors of the prostate gland. Complications.
82. Tumors of the anterior pituitary. *Hyperpituitarism*: Acromegaly. Gigantism. Cushing disease. *Hypopituitarism*: dwarfism. Sheehan syndrome Adiposo-genital dystrophy. Diabetes insipidus. Craniopharyngeoma.
83. Hyperplastic thyroid disease. Hyper-and hypothyroidism.
84. Hashimoto: etiology, pathogenesis, morphological characteristics.
85. Tumors of the thyroid gland.
86. Diseases of parathyroid glands. Hyper-and hypoparathyroidism.
87. Diseases of the adrenal gland: chronic and acute adrenal failure. Adrenal tumors.
88. Diabetes mellitus. Tumors of the endocrine pancreas.
89. Serous viral meningitis. Viral polioencephalitis. Demyelinating encephalomyelitis and neuropathy.
90. Bacterial meningitis and meningoencephalitis: epidemic cerebrospinal meningitis, purulent non-meningococcal leptomeningitis, tuberculous meningitis and meningoencephalitis.
91. Astroglial tumors - types. Glioblastoma multiforme. Morphological and biological characteristic.
92. Tumors of ependimal glia and plexus chorioideus. Medulloblastoma. Morphological and biological characteristic.
93. Tumors of the meninges and shwan cells. Types. Morphological and biological characteristic.
94. Hydrocephaly: definition, etiology, pathogenesis, classification.
95. Tuberculosis: general characteristics and classification. Primary tuberculosis.
96. Hematogenic tuberculosis. Secondary tuberculosis. Types. Complications.
97. Acquired syphilis: epidemiology, etiology, pathogenesis. Primary, secondary and tertiary lues. Neuro-lues. Congenital syphilis.
98. Sepsis.
99. AIDS.
100. Principles of construction and comparison of clinical and pathological diagnosis: diagnostic categories

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5. Workbook with training CD "Practicals in general pathology" edited by Prof. Benjamin Anavi, Department of General and Clinical Pathology, Medical University Plovdiv, 2018
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