PROGRAMME ON PATHOPHYSIOLOGY

I. GENERAL PATHOPHYSIOLOGY

SUBJECT OF PATHOPHYSIOLOGY


Health and disease. Periods of a disease (latent, beginning of disease, manifestations of a disease, outcomes of diseases).

DISORDERS OF MICROCIRCULATION


INFLAMMATION


Leukocyte recruitment: margination, adherence to vascular wall, emigration through vascular wall, chemotaxis. Phagocytosis. Stages: chemotaxis, adherence to bacteria, absorption (phagosome formation), digestion (phagolysosome formation). Pus. Composition. Proliferation and regeneration. Types to regenerations. Categorization of inflammation: according to velocities of development (acute, subacute, chronic), according to dominating stage (alterative, exudative, proliferate), according to the exudate type (serous, festering, fibrinous, hemorrhagic and others).

Local signs of inflammation (rubor, tumor, dolor, color, functio laesae) and mechanisms their development. General reactions at the inflammation (fever, leukocytosis, increase growing of settling an red blood cells and others).
Inflammation mediators (histamine, bradykinine, complement system, prostaglandins, leukotrienes). Role of mediators. Outcomes of inflammation. Factors, influencing upon the current of inflammation. Biological role of inflammation.

**THERMAL REGULATORY DYSFUNCTION. FEVER. HYPERTHERMIA, HYPOTHERMIA**

Fever. Causes and mechanisms of fever development, its biological role, etiopathogenesis and consequences of hyperthermia and hypothermia influence on the organism.


**REACTIVITY AND RESISTANCE. IMMUNOLOGICAL DISORDERS. CATEGORIZATION. AIDS.**

Reactivity. Types of reactivity (typical, group, individual). Physiological and pathophysiological reactivity. Specific and nonspecific mechanisms of reactivity.

Degree of reactivity (normoergic, hyperergic and hypergic). Resistance. Local and common resistance, hereditary and acquired resistance. Factors, which determine the reactivity and resistance (heredity, constitution, sex, environmental and social factors). Immunological disorders. Categorization. AIDS. Etiology. Clinical symptoms and mechanisms of their development.

**ALLERGY**

Allergy. Causes. Allergens, their categorization and description. Types of allergic reactions. Pathogenesis of allergic reactions of different types. Stages of allergy: (immunological stage, pathochemical stage, pathophysiological stage). Allergic mediators. Sensibilization. Experimental model of anaphylactic shock on guinea pig. Description of allergic disorders (allergic rhinitis (pollinosis), bronchial asthma, e.g.). Desensibilization (hyposensibilization).

**PATHOPHYSIOLOGY OF METABOLISM. STARVATION**


Consequences of total and partial starvation (carbohydrates, lipids and protein deficite). Protein-calorie malnutrition. Particularities in children (Kwashiorkor).

**PATHOLOGY OF CARBOHYDRATE METABOLISM**
Causes and consequences of carbohydrate digestion disturbances. 
Symptoms. Lactase deficiency. 
Causes and consequences of carbohydrate intermediary metabolism. Causes and consequences of lipid intermediary metabolism. 

PATHOLOGY OF LIPID METHABOLISM 

PATHOLOGY OF PROTEIN METHABOLISM. 
Gout. Pathogenesis. Symptoms and therapy. 

PATHOLOGY OF WATER-MINERAL BALANCE 
Edema, classification. Factors influencing edema development. Pathogenesis of cardiac, renal, hepatic, inflammatory, allergic, toxic edema. 
Disturbances of mineral metabolism (Na⁺, K⁺, Ca²⁺). 

CLASSIFICATION OF ACID-BASE DISTURBANCES

**PATHOLOGY OF VITAMINES METHABOLISM**


**CELL PATHOLOGY**


**HYPOXIA. HYPEROXIA**


**ROLE OF HEREDITY IN PATHOLOGY**


EXTREME CONDITIONS. STRESS. SHOCK. COMA. COLLAPSE

TUMOR GROWING
The tumor growth. Malignant and nonmalignant tumors. Description.
Pathogenesis of tumor growth. Stages: transformation, promotion, progression.
Antitumor activity of human organism.

RADIATION SICKNESS
Radiation. Issues and power of different radiation rays. Units of radiation assay.

II. PATHOPHYSIOLOGY OF ORGANS AND SYSTEMS

PATHOPHYSIOLOGY OF BLOOD
DISORDERS OF CIRCULATIVE BLOOD VOLUME (HYPERVOLEMIA, HYPVOLEMIA). BLEEDING
Erythrocytosis. Polycythemia vera or Wakes’s disease.
ANEMIAS
Clinical symptoms of anemia and mechanisms of their development. Categorization of anemias by: etiopathogenesis, color parameter, severity of anemia, regenerative possibility, type of hematopoiesis, erythrocyte’s size.

Post-hemorrhagic anemia. Description, the picture of the blood in acute and chronic post-hemorrhagic anemia.


Vitamin B₁₂ and folic acid deficiency anemia. Etiology, pathogenesis. The picture of the blood. Addison-Biermer disease.

Hemolytic anemia. Types (congenital, autoimmune e.g.). The picture of the blood. Clinical symptoms. Newborn hemolytic anemia.

LEUKOCYTOSIS. LEUCOPENIA
Stages of leucopoiesis. Leukocyte’s description on different stages of leucopoiesis. Leukocyte’s functions (neutrophils, eosinophils, basophils, monocytes, lymphocytes).


Leukocyte’s formula. Nuclear shift of leukocyte’s formula to the left, to the right. Clinical importance of leukocyte’s formula calculation.

LEUKEMIA

Characteristic of morphological picture of blood in acute and chronic myeloid and lymphoid leukemia. Leukemia clinical syndromes.

Clinical syndromes in leukemia: anemic, hemorrhagic, infective, metastatic, and intoxicative. Leukemic reactions and pathogenesis.

PATHOLOGY OF HEMOSTASIS
Components of hemostasis (blood vessel, platelets, plasma coagulation factors), primary and secondary hemostasis. Disorders of hemostasis (thrombophyllic, hemorrhagic, thrombohemorrhagic hemostasitopathias).

Thrombosis
Outcomes and consequences. Mechanism of white and red thrombosis development. Causes and conditions of thrombosis development. Virchow’s triad (vascular injury, blood coagulant system activation, blood flow decrease).

Hemorrhagic disorders of hemostasis
Hemorrhagic disorders of hemostasis: disorders of blood vessels, disorders of platelets, coagulation disorders. Disorders of blood vessels. Reasons and
mechanisms of their development, clinical manifestations: scurvy, Henoch-Schonlein purpura, Rendu-Osler-Weber syndrome.


**PATHOPHYSIOLOGY OF NERVOUS SYSTEM**


**PATHOPHYSIOLOGY OF HIGH NERVOUS SYSTEM ACTIVITY**

Classification of types of high nervous system activity. A role of the generator of pathologically enhanced excitation, pathological system in occurrence of a pathology of the excitatory system. Common etiology of high nervous system activity disorders.


Influence of alcohol on the organism. The characteristic of manifestations of acute intoxication. Severity levels.


Infringements of intelligence, memory, emotions, behaviour, etc.


The characteristic of manifestations and causes of sleep-wakefulness cycle disorders.

**PATHOPHYSIOLOGY OF ENDOCRINE SYSTEM**


**PATHOPHYSIOLOGY OF CARDIOVASCULAR SYSTEM**


 Causes of death at a myocardium heart attack. Cardiogenic shock and acute pulmonary edema. Etiology and pathogenesis.

Clinical symptoms of insufficiency of blood circulation and substantiation of mechanisms of their development.

The characteristic of changes of heart hemodynamics in insufficiency of mitral valves and foramens stenoses.

**ARRHYTHMIAS**


HYPERTENSION. HYPOTENSION
Factors involved in regulation of blood pressure. Severity levels of an arterial hypertensia. Stages.
Hypotension. Causes.

PATHOLOGY OF RESPIRATORY SYSTEM
Pulmonary volumes and capacities. Respiratory failure (etiology, causes, symptoms). Types of alveolar ventilation disturbances. Obstructive and restrictive disturbances.
Pathogenesis of periodic breathing (Cheyne-Stokes, Biote, Cussmaul).

PATHOPHYSIOLOGY OF KIDNEY
Role of kidney in the organism. Etiology and pathogenesis of kidney disease.
Consequences of chronic glomerulonephritis.
Pyelonephritis. Ethiopathogenesis. The characteristic of infringements.
Nephrotic syndrome, Clinical manifestations. Pathogeny of hypostases in nephrotic syndrome.
Pathogenesis of nephritic and nephrotic oedema.
Renal insufficiency. Uraemia. Concept of hemodialysis (an artificial kidney).
Urolithic illness. Factors and the mechanisms promoting formation of stones.

PATHOPHYSIOLOGY OF THE LIVER
Studying of liver functions in experiments and clinic. Functional trials.


Jaundice. Kinds. The characteristic of infringements of a pigmental exchange at separate kinds of jaundices (haemolytic, liver, mechanical).

Cholemia. The basic mechanisms and manifestations of cholemia. Cholestasis. The causes of cholestasis. Disturbances in an organism at cholestatic syndrome.


**PATHOPHYSIOLOGY OF GASTROINTESTINAL TRACT**

Role of digestive organs. Aetiology of gastrointestinal disorders. A role of alcohol, smoking and other factors in their occurrence.


Digestion distresses in oral cavity (mastications, salivations, swallowings). The causes and consequences. Dental caries. Ethiopathogenesis, preventive maintenance.


Pancreatitis. Etiology and pathogenesis. Consequences.