

Министерство здравоохранения республики Беларусь  
Учреждение образования  
«Гомельский государственный медицинский университет»

Кафедра патологической физиологии  
Обсуждено на заседании кафедры  
Протокол №7 от 30.08.2017

**МЕТОДИЧЕСКАЯ РАЗРАБОТКА**

Для проведения занятия со студентами  
3 курса ФПСЗС, обучающихся на английском языке  
по патологической физиологии

Тема: **Итоговое занятие №1**

Theme: **Control lesson №1**

Время 4 ак. часа

# QUESTIONS FOR CONTROL LESSON №1 ON PATHOPHYSIOLOGY FOR MEDICAL STUDENTS OF III YEAR

## I. GENERAL NOSOLOGY

1. Methods of pathophysiology. Modeling: types, capabilities and limitations. Moral and ethical aspects of experimentation on animals.
2. Concepts general nosology: pathological reaction, pathologic process, pathological state, pre-existing disease, disease. Criteria for the differences of the disease from health.
3. Classification of diseases. Stage of the disease and its outcomes. Remission, relapse, and complications. Typical pathological processes: characteristic symptoms, clinical significance.
4. Terminal conditions: stages, mechanisms. Signs of biological death. Postresuscitation disorders. Irreversible changes after resuscitation.
5. Concept of "etiology". Classification of causes and conditions. Critical analysis of the general concepts of etiology (monocausalism, conditionalism, theory of factors, constitutionalism, holism, etc.).
6. Concept of "pathogenesis". Damage as a initial link in pathogenesis, its manifestations at different levels of body. Leading units and "vicious circle" in pathogenesis of disease. Afterimpressions
7. Cause-and-effect relationships in pathogenesis. Localization and generalization of damage, local and general injury response.
8. Pathological system: its distinctive characteristics, implication in course of a disease.
9. Total sanogenesis. Mechanisms of immediate and long-term reactions of adaptation and compensation. Decompensation.
10. Mechanism of pathogenic action of heat on the body. Heat burn, burn disease, overheating and heat apoplexy.
11. Hypothermia: types, causes, mechanisms of development. Hibernation and its application in medicine.
12. Mechanism of the damaging effect of reduced barometric pressure. Mountain sickness, the causes, pathogenesis, stage.
13. Mechanism of the damaging effect of high barometric pressure. Caisson disease. Pathogenesis. Principles of prevention and therapy.
14. Mechanisms of the damaging effect of electric current on body. Local and general changes in the body in electric shock.
15. Acute radiation sickness: forms, stages, development mechanisms, manifestations.
16. Chronic radiation sickness: forms, stages, development mechanisms, manifestations
17. Ionizing radiation: mechanisms of action on the body. External and internal exposure. Radiosensitivity of cells. Immediate and long-term effects of ionizing radiation.
18. Pathological form of immunogenic reactivity. Autoimmune diseases: classification, mechanisms, principles of diagnosis and therapy. Classification of autoantigens.
19. Primary immunodeficiencies: classification, etiology, pathogenesis core. Clinical "masks" of immunodeficiency diseases.
20. Secondary immunodeficiencies: classification, etiology, pathogenesis. HIV infection: etiology, stage, major clinical manifestations. AIDS.
21. Allergy: definition. Criteria for allergic conditions. Classification of allergens. Allergic reactions: characteristic of stages.
22. Allergic reactions type I. Stages, mechanisms, principles of therapy. Primary and secondary mediators.
23. Allergic reactions type II. Stages, mechanisms. Mediators.
24. Allergic reactions type III. Stages, mechanisms. Mediators. Serum sickness.
25. Allergic reactions type IV. Stages, mechanisms. Mediators. Principles of diagnosis of allergic conditions.
26. Aging process. Theory of aging. Changes in organism during aging. Ways to influence the aging process.
27. Reactivity, characteristic of its types and forms. Classification of constitutional types of people. The value of constitution in human pathology.
28. Hereditary disease: etiology and pathogenesis. Mutagens and antimutagen. Phenocopy. Etiology and pathogenesis of genetic and chromosomal diseases. Features of inheritance.
29. Characterization of critical periods of prenatal development. Gametopathy, blastopathy, embriopathy, fetopathy (specific and nonspecific). Hereditary diseases: methods of study and principles of prevention.

## II. TYPICAL PATHOLOGICAL PROCESS

30. Typical disturbances of microcirculation: etiology and pathogenesis. Sludge: types, causes, mechanisms, and outcomes. Capillary-trophic insufficiency.
31. Arterial hyperemia: etiology, pathogenesis, forms, manifestations, and outcomes.

32. Venous congestion: types, etiology, pathogenesis, manifestations, and outcomes. Stasis: types, etiology, pathogenesis.
33. Ischemia: etiology, pathogenesis, forms, manifestations, and outcomes. Postischemic reperfusion syndrome.
34. Thrombosis: etiology, stages, mechanisms. Types of blood clots. Significance, outcomes and consequences of thrombosis.
35. Embolism: types, etiology, pathogenesis. Embolism of large, pulmonary circulation, portal venous system: main pathological manifestations.
36. Cell damage, etiology, common mechanisms. Specific and nonspecific damage. Features of acute and chronic cells damage.
37. Reversible and irreversible cell damage. Types of cell death. Apoptosis: trigger factor, mechanisms, different from necrosis, role in pathology.
38. Mechanisms of damage of cell membranes. The role of lipid peroxidation and activation of membrane phospholipases in damaged cells.
39. Ischemic and reperfusion cells injury, the role of lipid peroxidation products and ionized calcium, Mechanisms of disturbances of cell energy supply and its consequences.
40. Damage of cell receptor system and intracellular mechanisms regulating its functions. Protection mechanisms and adaptation of cells to damage.
41. Violations of structure and function of cell organelles: nucleus, plasma membrane, endoplasmic reticulum, mitochondria, lysosomes, peroxisomes, cytoskeleton.
42. Inflammation: definition, causes, classification. Basic theory of inflammation. Local and general signs of inflammation. Importance of inflammation for body.
43. Mechanism of primary and secondary injury in inflammation. Mediators of inflammation: types, origins, main effects, correlation. Antimediators.
44. Exudation. Mechanisms of exudation. Types and properties of exudates. Difference between serous exudate from transudate. Role of mediators in the development of exudation during inflammation. Value of exudation during inflammation.
45. Emigration of leukocytes in inflammation: stages, mechanisms. Role of mediators and adhesion molecules in leukocyte emigration.
46. Phagocytosis: types, stages, mechanisms. Role of chemoattractants, opsonins and bactericidal system of phagocytes. Failure of phagocytosis: Chediak-Higashi syndrome, chronic granulomatous.
47. Mechanisms of cell proliferation. Stimulators and inhibitors in reparative stage of inflammation. Chronic inflammation: characteristics and mechanisms of development.
48. Acute phase response: causes, mechanisms. Main acute-phase proteins and their biological role. Criteria for systemic inflammatory response syndrome
49. Infection process: types, common etiology, pathogenesis, stages, complications and outcomes. Ways of introduction of infectious agents into the body, their dissemination.
50. Sepsis, its etiology and pathogenesis. Multiple organ dysfunction syndrome
51. Definition of "fever". Classification of febrile reactions. Pyrogenic substances: types, mechanisms of action. Pathogenesis of fever.
52. Fever: stages, changes in metabolism and physiologic systems. Characteristic of endogenous antipyrogenic system. The biological significance of fever.
53. Typical forms of protein metabolism disturbance. Causes of dysproteinemia. Violations of final stages of protein metabolism. Hyperazotemia.
54. Metabolism of purine and pyrimidine bases. Gout: role of exogenous and endogenous factors, mechanisms and manifestations. Orotic aciduria: etiology and pathogenesis.
55. Starvation: types. Periods of total starvation: changes in metabolism and physiological functions. Protein deficiency: types, causes, mechanisms, manifestations.
56. Hypo- and hypervitaminosis: etiology, pathogenesis, symptoms. Characteristics of avitaminosis. Antivitamins.
57. Hypo- and hyperglycemic states: types, mechanisms of development. Hypoglycemic coma.
58. Diabetes mellitus: principles of classification, mechanisms of protein, fat and carbohydrates dysmetabolism. Diabetes mellitus type 1: etiology and pathogenesis.
59. Diabetes mellitus type 2: etiology, pathogenesis, risk factors, mechanisms of insulin resistance. Comparative characteristics of diabetes type 1 and type 2.
60. Acute and chronic complications of diabetes: mechanisms, main manifestations.
61. Overall obesity: types, mechanisms of development. Dislipoproteinemia: types, etiology, pathogenesis.
62. Metabolism of phospholipids. Antiphospholipid syndrome: types, etiology, pathogenesis.

63. Typical forms of violation of Acid basic balance: types, causes, mechanisms, manifestations. Protective system of pH changing.
64. Edema: principles of classification. Pathogenetic factors of edema. Cardiac, renal, inflammatory, allergic and edema: mechanisms of their development and manifestations.
65. Violations of electrolyte metabolism (K<sup>+</sup>, Na<sup>+</sup>, Ca<sup>2+</sup>, Mg<sup>2+</sup>, microelements): causes, mechanisms, manifestations.
66. Hypoxia: principles of classification, characteristics of main types.
67. Manifestations of hypoxia at cellular, organ level. Mechanisms of emergency and long-term adaptive-compensatory reactions during hypoxia. Outcomes of acute and chronic hypoxia.
68. Extreme conditions: main characteristics, difference from terminal conditions. Coma: types, etiology, stage, disturbances of body functions.
69. Shock: definition, types, pathogenesis. Characteristics of main components of a shock: disorders of regulation, macro-and microcirculation, metabolism. Similarities and differences of certain types of shock.
70. Collapse: types, causes, pathogenesis, manifestations, consequences, principles of therapy. Comparative evaluation of shock and collapse.
71. Stress, definition. Characteristics of main stressors groups. "Triad Selye" and stage of general adaptation syndrome. Main manifestations of stress.
72. Eustress and distress. Central and peripheral stress-limiting systems: characteristic of components. Concept of "diseases of adaptation."
73. The definition of "tumor." The etiology of tumors: physical and chemical factors blastomogenic, carcinogens biological nature. Genetic predisposition to the appearance of the tumor.
74. The physical carcinogenic factors: the role of ionizing radiation, radioactive isotopes, ultraviolet rays, X-ray, thermal and mechanical factors. Stages of physical carcinogenesis.
75. Chemical carcinogens, classification, procarcinogens and the final carcinogens. Cocarcinogens and syncarcinogens. Stages of chemical carcinogenesis.
76. Carcinogens biological nature. Classification of oncoviruses. Stages of viral carcinogenesis.
77. Theories of the pathogenesis of tumors.
78. The concept of cellular proto-oncogenes and antioncogenes, their role in oncogenesis. The mechanisms of proto-oncogene transformation in active current oncogene. The nature of oncoproteins and possible mechanisms of action.
79. Biological characteristics of tumor growth, relative autonomy and unregulated growth of the tumor, the simplification of the structural and chemical organization: atypism, its type.
80. Metastasis, the definition, stages of development, mechanisms. Recurrence of tumors.
81. Malignant and benign tumors, and their differences.
82. Metabolic, antigenic and functional properties of malignant cells.
83. Features and mechanisms of invasive and destructive growth. Stages of tumor progression.
84. Antineoplastic resistance, immune and non-immune factors of resistance.
85. The interaction of the tumor and the body. The role of the reaction of nervous and endocrine systems. Mechanisms of tumor cachexia.
86. Systemic manifestations of neoplastic disease. Paraneoplastic syndrome, the mechanism of development.

#### **Basis literature:**

1. Литвицкий, П. Ф. Патофизиология = Pathophysiology : лекции, тесты, задачи : учеб. Пособие / П. Ф. Литвицкий, С. В. Пирожков, Е. Б. Тезиков. – М. : ГЭОТАР-Медиа, 2016.– 432 с.

#### **Additional literature:**

2. Kumar, V. Robbins and Cotran Pathologic basis of disease, 7th Edition / V.Kumar, A.K. Abbas, N. Fausto. — Philadelphia: Elsevier Inc., 2005. — 1629 p. Режим доступа: <http://www.rkmyat.in/up1/34/1629.pdf>. – Дата доступа: 30.08.2016.
3. Кидун, К. А. Общая нозология = General nosology : учеб.-метод. пособие для студ. 3 курса фак. по подг. спец. для зарубеж. стран, обуч. на англ. яз. по спец. «Лечеб. дело», мед. вузов / К. А. Кидун.— Гомель : ГомГМУ, 2015. — 74 с.
4. Кидун, К.А. Test tasks on pathological physiology: Workbook for students of the faculty for training specialists for foreign countries, studying in english on specialty «General medicine», for higher medical education institution In three parts Part 1. General pathophysiology. / К.А. Кидун; под ред. Т.С. Угольник — Гомель: ГомГМУ, 2016. — 108 с.
5. Научная электронная библиотека eLIBRARY.RU [Электронный ресурс] / Научная электронная библиотека. – М., 2005. – Режим доступа: <http://www.elibrary.ru>. – Дата доступа: 26.08.2017.