

CONTEST TOPICS
for the position of ASSOCIATE PROFESSOR,
position 17, PHYSIOPATHOLOGY discipline

1. Introduction lecture. Definition, the purpose of pathophysiology, history, correlation with preclinical and clinical disciplines. Disease definition. Etiology. Stages of disease development. Clinical and biological death; reanimation principles.
2. General pathogenesis. Pathogenesis. Definition. Concepts of pathogenesis. Concepts about stress; general adaptation syndrome (Selye); vegetative irritative syndrome (Reilly); psycho-somatic design. Information disorder mechanisms; regulation of neuroendocrine function disturbances; pathogenetic molecular mechanism, biochemistry. Significances of pain; endorfin role.
3. Cellular pathology Cellular membrane pathology; abnormal receptors, transport mechanisms, changes in cellular membrane structure affecting the functions performance. Cellular organelles pathology: mitochondria, endoplasmic reticulum (smooth and rough), Golgi complex, lysosomes. Intracellular matrix.
4. Cellular malignant transformation. Etiology of cancer, carcinogenic factors (physical, chemical, biological oncogenic viruses, endogenous genetic factors, hormonal, and metabolic influences). Cancer pathogenesis. Carcinogenic inducing factors' action, promoters. Malignant particularities during cell transformation. Metastasis. Paraneoplastic syndrome.
5. Pathophysiology of inflammation. Definition, etiological agents. Vascular changes mechanisms; vasoactive mediators': amino acids derivatives, by enabling protease lipoidic mediators' system; the role of cytokines. Consecutive vascular changes phenomenon. Systemic reactions during inflammation. Acute phase reaction: fever - mechanism of production, acute phase proteins, leukocytosis, functional and metabolic changes.
6. Metabolic disturbances. The metabolism. The main metabolic pathways in cellular compartments. ATP production during intermediary metabolism. Enzymes' kinetic, induction and protein biosynthesis. Carbohydrates metabolism. Disturbances of carbohydrates' metabolism: glycolysis, gluconeogenesis, cycle pentosophosphatic, glucuronic acid cycle, glycogenogenesis, glycogenolysis.
7. Pathogenesis of diabetes mellitus type I and II, hypoglycemia.
8. Proteins metabolism. Quantitative alterations of proteins. Amino-acid disorders. Metabolic blocks.
9. Lipids metabolism. Lipid disorders: fatty acids, triglycerides, cholesterol. Plasmatic lipids transport, metabolism of lipoproteins, primary hyperlipoproteins, primary and secondary lipidosis, hyperlipoproteinemia and atherosclerosis, hypolipoproteinemia.
10. Pathophysiology of Erythropoiesis. Anemias – mechanisms of production: iron – deficiency anemia, megaloblastic anemia, haemolytic anemia, aplastic anemia. Polycythemia. Mechanism of production, classification.
11. Haemostasis and coagulation disorders. Vasculopathies: mechanism of production. Qualitative and quantitative alterations of platelets. Alteration of fibrinolysis. Thrombosis
12. Pathophysiology of heart failure. Pathogenetic mechanism of heart failure. Compensatory mechanism in heart failure. Systolic and diastolic disfunction
13. Alteration of the blood pressure. Classification of hypertension: essential hypertension. Secondary hypertension of renal origin. Secondary hypertension of endocrine origin. Secondary hypertension of cardio-vascular origin

14. Pathophysiology of shock. Hypovolemic shock. Cardiogenic shock. Obstructive shock. Distributive Shock
15. Hypoxia. Mechanism of production. Cyanosis. Mechanism of production
16. Alterations of hydroelectrolyte balance. Regulation of hydroelectrolyte balance. Dehydration: hyper-, hypo-, and isotonic. Hyperhydration: hyper-, hypo-, and isotonic. Alteration of Kalium balance
17. Acid-Base disorders. Regulation of acid-base balance. Metabolic and respiratory acidosis. Metabolic and respiratory alkalosis
18. Pathophysiology of kidneys. Glomerular disorders. Tubulo-interstitial disorders Acute and chronic renal failure
19. Disturbances of motility and secretion of gastro-intestinal tract. Mastication disturbance. Motility of gastro-intestinal tract disturbances. Secretions disturbance qualitative and quantitative alteration of saliva. Secretory disturbances of G-I tract
20. Pathophysiology of the liver. Mechanism of ascitis. Mechanism of jaundice. Mechanism of porto-cave encephalopathy

Bibliography

1. Gary D. Hammer, Stephen J. McPhee, Pathophysiology of Disease: An Introduction to Clinical Medicine, 2014, McGraw-Hill Education
2. Stefan Silbernagl, Florian Lang, „Color Atlas of Pathophysiology”, Thieme 2000
3. Elizabeth J. Corwin, „Handbook of Pathophysiology”, Lippincot 2000
4. Sue E. Huether, Kathryn L. McCance, „Understanding Pathophysiology”, Mosby 2000

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