

PATHOPHYSIOLOGY SYNOPSIS FOR MEDICAL STUDENTS

1. Health and disease, contemporary view of disease. Pathologic reactions, processes and conditions. General etiology and pathogenesis.
2. Reactivity and resistance. Factors, influencing reactivity and resistance. Types of reactivity and resistance.
3. Hypersensitivity reactions – types, pathogenesis. Allergies.
4. Autoimmune diseases and immunodeficient states.
5. Disturbances in peripheral circulation – arterial and venous hyperemia, ischaemia, infraction.
6. Disturbances in peripheral circulation – thrombosis and embolism.
7. Changes in blood glucose levels – hyperglycemias and hypoglycemias.
8. Diabetes mellitus – etiology, pathogenesis.
9. Diabetes mellitus – pathobiochemistry and complications.
10. Dyslipidemias – types. Atherosclerosis – risk factors, etiology, pathogenesis, consequences and complications.
11. Obesity – definition, types, pathogenesis. Metabolic syndrome.
12. Changes in the plasma proteins. Disturbances in aminoacid metabolism.
13. Disturbances in the end-stage protein metabolism – hyperazotemias.
14. Disturbances in purine metabolism – gout.
15. Disturbances in water-electrolyte balance – dehydration and hyperhydration.
16. Edemas – definition, factors for development. Types of edemas.
17. Disturbances in mineral metabolism (Ca, P, Mg). Osteoporosis and osteomalacia.
18. Disturbances in acid-base balance – general characteristics, parameters, compensations.
19. Characteristics of the main types of acid-base disorders.
20. Hypoxia – definition, parameters. Hyperoxias.
21. Pathogenetic classification of hypoxias. Characteristics of the different types.
22. Systemic, organ and cellular adaptations to hypoxia.
23. Inflammation – definition and biological meaning. Classification and outcome of inflammation. Cardinal signs of inflammation.
24. Inflammation – phases. Mediators. Vascular changes. Cellular response. Changes in metabolism.
25. Disturbances in body temperature regulation – hypo- and hypertermia.
26. Fever – definition, etiology and pathogenesis. Significance of fever. Stages of fever. Changes in metabolism in fever. Changes in the function of organs and systems.
27. Neoplasms – general characteristic and etiology. Definition and stages of carcinogenesis.
28. Neoplasms – tumor/organism interactions. Paraneoplastic syndromes.
29. Functional pulmonary diagnostics – spirometry, diffusion capacity, lung volumes, bodyplethysmography, cardio-pulmonary exercise tests.

30. Basic mechanisms disturbing lung function – obstruction of the airflow in the airways – types.
31. Obstructive disorders. Pulmonary hyperinflation. Disturbed functional capacity. Reduced functional capacity (by CPET).
32. Basic mechanisms disturbing lung function – types of restrictive ventilatory disorders.
33. Restrictive disorders. Etiology and pathogenesis of pulmonary edema and pneumothorax.
34. Mechanisms responsible for disturbed gas exchange. Changes in the V/Q ratio, disturbed diffusion of gases through the alveolo-capillary barrier, alveolar hypoventilation syndrome, disturbances in respiratory control.
35. Acute respiratory failure – etiology, pathogenesis, types.
36. Chronic respiratory failure – etiology, pathogenesis, types.
37. Coronary artery disease – definition, types, pathogenesis.
38. Rhythm-conductive disorders. Pathogenesis.
39. Arterial hypertension – essential hypertension. Etiology, pathogenesis.
40. Secondary (symptomatic) hypertension. Hypotensions, collapse and syncope.
41. Acute insufficiency of hemodynamics – shock – definition, types, etiology, pathogenesis.
42. Heart failure - definition, etiology, pathogenesis and types. Compensatory mechanisms.
43. Functional signs of heart failure.
44. Pathogenesis of some complex symptoms. Dyspnea and fatigue.
45. Anemias – definition and classification. Posthemorrhagic anemias.
46. Anemias due to disturbed hemopoiesis. Anemias due to increased hemolysis.
47. Leukemias – definition, etiology, pathogenesis, types.
48. Disorders of hemostasis (hemorrhagic diatheses).
49. Disorders of hemostasis (thrombotic diatheses). DIC – syndrome.
50. Disorders in the gastrointestinal system. Gastritis – etiology and pathogenesis.
51. Disorders in the gastrointestinal system. Peptic ulcer – etiology and pathogenesis.
52. Pancreatitis – types, etiology, pathogenesis, complications.
53. Disorders in the gastrointestinal system: ileus, gastro-intestinal auto-intoxication. Disorders in the intestinal microbiome.
54. Basic etiology and pathogenesis of liver diseases. Hepatitis.
55. Functional signs of liver damage – jaundice, portal hypertension, ascites, hepato-renal and hepato-pulmonary syndromes.
56. Pathogenesis of liver cirrhosis. Hepatic encephalopathy.
57. Basic etiology and pathogenesis of renal disorders. Functional syndromes.
58. Etiology and pathogenesis of acute renal failure.
59. Etiology and pathogenesis of chronic renal failure.
60. Basic etiology and pathogenesis of endocrine disorders.
61. Disturbances in the functions of the pituitary gland.
62. Disturbances in the functions of the thyroid gland.
63. Disturbances in the functions of the suprarenal glands.

64. Disturbances in the functions of the gonads.
65. Basic etiology and pathogenesis of the diseases of the nervous system.
66. Degenerative diseases of the nervous system.
67. Disorders in sleep and wakefulness – hypersomnia and insomnia.
68. Disorders in sleep and wakefulness – central and obstructive sleep apnea.
69. Pain – definition, pathogenesis, types.