

# Learning Objectives in Pathophysiology

## VI semester. Module No. 20

### "Vegetative (cardiovascular, respiratory, excretory) system pathology"

1. Adaptive and compensatory reactions of the cardiovascular system
2. Causes of acute vascular insufficiency
3. Causes of chronic vascular insufficiency
4. Essence of heart failure
5. Heart failure caused by increased workload
6. Heart failure caused by preload
7. Heart failure caused by afterload
8. Acquired and Congenital heart diseases
9. Heart failure caused by myocardial injury
10. Heart failure caused by pericardial injury
11. Left-sided and Right-sided heart failure, mixed type failure
12. Hypertension of pulmonary and systemic circulation
13. Determinants of the total peripheral resistance
14. Determining factors of coronary blood flow - Coronary insufficiency
15. Ischemic heart disease
16. Types of angina pectoris
17. Chronic atherosclerotic obstruction of coronary arteries
18. Necrosis of the myocardium due to catecholamine excess
19. Coronarogenic necrosis of the myocardium - Myocardial infarction
20. Mechanism and manifestations of life-threatening complications of myocardial infarction
21. Compensatory changes of heart muscle contractility - Homeometric and heterometric mechanism of contraction (concentric and exentric hypertrophy)
22. Peculiarities of hypertrophied myocardium
23. Pathogenesis of ``cor pulmonale"
24. Mechanism of pulmonary edema at heart failure
25. Role of Renin-angiotensin system during heart failure
26. Pathogenesis of cardiac edema
27. Cardiac arrhythmias

28. Dysrhythmias developed as a result of disorders of automaticity
29. Nomotopic and heterotopic arrhythmias
30. Cardiac arrhythmias according to the site of origin of the abnormal impulse generation
31. Arrhythmias developed due to disorders of excitability
32. Cardiac arrhythmias developed as a result of disorders of impulse conduction
33. Extrasystolic arrhythmia
34. Paroxysmal tachycardia
35. Heart block
36. Determinants of mean blood pressure
37. Mechanism of centrogenic hypertension
38. The role of vascular baroreceptors in blood pressure regulation
39. Reaction of baroreceptors during hypo- and hypertension
40. Humoral regulation of vascular tone
41. Effects of the renin-angiotensin system on vascular tone
42. The role of the sympathetic-adrenal system in the development of hypertension
43. Etiology and pathogenesis of hypertensive disease - the main pathogenic links
44. Primary and secondary hypertension
45. Pathogenesis of pulmonary hypertension
46. Mechanism of arterial hypotension
47. Secondary arterial hypotension
48. Types of arterial hypotension according to the initial link of pathogenesis
49. The main links of the pathogenesis of arterial hypotension
50. The concept of shock, its types
51. Stages of traumatic shock
52. Mechanism of development of primary hypovolemic shock
53. Mechanism of development of cardiogenic shock
54. Mechanism of development of septic shock
55. Normovolemia, its types
56. Hypovolemia, its types and mechanisms
57. Hypervolemia, its types and mechanisms
58. Principles of classification of anemias
59. Acute posthemorrhagic anemia
60. Chronic posthemorrhagic anemia

61. Immediate compensatory mechanisms after hemorrhage
62. Delayed compensatory reactions after bleeding
63. Blood picture – hemogram during acute posthemorrhagic anemia
64. Blood picture – hemogram during chronic posthemorrhagic anemia
65. Etiology and pathogenesis of anemias developed as a result of hemolysis
66. Hereditary hemolytic anemias
67. Hemoglobinopathies - sickle cell anemia, thalassemias,
68. Membranopathy/erythrocytopathy - spherocytosis, ovalocytosis
69. Enzymopathies - pathogenesis of glucose-6-phosphate dehydrogenase deficiency anemia
70. Congenital hemolytic anemia - RH factor mismatching
71. Acquired hemolytic anemias (physical, chemical and biological)
72. Blood picture – hemogram during hemolytic anemias
73. Anemias developed due to disorders of erythropoiesis
74. Causes of iron deficiency anemia
75. Alterations of erythrocytes and hemoglobin during iron deficiency anemia
76. Mechanisms of manifestations of iron deficiency anemia
77. Mechanism of achlorhydric anemia
78. Causes of iron-refractory anemias and common link of pathogenesis
79. B12 or folic acid deficiency anemia
80. Blood picture – hemogram during B12/folic acid deficiency anemia
81. Different types of B12 deficient anemia - Addison-Birmer pernicious anemia, agastric pernicious anemia, diphyllbothrium anemias
82. Causes and factors producing hypo- and aplastic anemias
83. Blood picture - hemogram in hypo- and aplastic anemias
84. Erythrocytosis and its types
85. Pathogenesis of Polycitemia Rubra Vera - Vaquez Disease
86. Mechanisms of relative (false) polycythemia
87. Regenerative and degenerative forms of erythrocytes
88. Signs of acceleration of erythropoiesis
89. Mechanism of reduced ESR/ increased ESR during anemia/erythrocytosis
90. Etiology of disorders of leukopoiesis
91. Leukopoietins

92. Keyfons as leukopoiesis inhibitors
93. Changes in the leukocyte formula
94. Physiological and pathological leukocytosis
95. Quantitative and qualitative changes of leukocytes
96. Leukemoid reactions
97. Leukopenia
98. Aleikia
99. Agranulocytosis
100. Pancytopenia
101. Leukosis and its types
102. Etiology and pathogenesis of leukemias
103. Forms of acute leukemia according to the number of leukocytes in the blood
104. Acute myeloblastic leukemias
105. Chronic myelogenous leukemia
106. Thrombocytosis, thrombopenia, their types, mechanisms and results
107. Thrombocytopenia
108. Thrombocytopathies, its causes and types
109. Mechanism of erythrocyte aggregation
110. Changes in osmotic resistance of erythrocytes
111. The role of dysfibrinogenemia in blood coagulation disorders
112. Mechanisms of hypercoagulation
113. Determining factors of alveolar ventilation
114. Primary factors and mechanisms of respiratory failure
115. Disorders of regulation of the respiratory center
116. Hyper- and hypoventilation
117. Main peripheral receptors involved in breathing regulation
118. The role of the vagus nerve in respiratory regulation –Hering Breuer reflex. Its early onset.
119. Causes of respiratory disorders due to impaired chest movement - respiratory muscle dysfunction
120. Effect of carbon dioxide/pH on lung ventilation
121. Pneumo-, hydro- and hemothorax
122. Causes and mechanism of obstructive type of respiratory failure
123. Disorders of ventilation of the lungs related to the reduction of the respiratory surface area
124. Obstructive Versus Restrictive Pulmonary Diseases

125. Surfactant and the consequences of its deficiency
126. Pulmonary atelectasis (Collapse)
127. Acute Respiratory Distress Syndrome
128. Obstructive Lung (Airway) Diseases – Emphysema, Chronic Bronchitis, Asthma, Bronchiectasis
129. Chronic Interstitial (Restrictive, Infiltrative) Lung Diseases, Fibrosing Diseases
130. Pulmonary Diseases of Vascular Origin
131. Diffusion disorders in the lungs
132. Alveolar-capillary block
133. Pulmonary Infections - Bacterial Pneumonias
134. Viral Pneumonias
135. Chronic Pneumonias
136. Mechanism of hypoxia development during pneumonia
137. Causes and mechanisms of decreased perfusion of pulmonary vessels
138. Types of dyspnea
139. Causes of dyspnea and mechanisms of its development
140. Inspiratory dyspnea
141. Expiratory dyspnea
142. Mixed type of shortness of breath
143. Cough, its causes and mechanism
144. Periodic breathing - Cheyne-Stokes, Biot, Kussmaul "big", gasping breath
145. Respiratory distress syndrome
146. Causes of renal dysfunction
147. Disorders of regulation of urine secretion
148. Dysfunction of nephrons
149. Causes and mechanisms of proteinuria
150. Mechanisms of functional and organic proteinuria
151. Disorders of the excretory function of the kidneys
152. Disorders of renal tubule function
153. Disorders of reabsorption of sodium and water in renal tubules
154. Tubular proteinuria
155. Disorders of reabsorption of amino acids in tubules
156. Fanconi syndrome
157. Tubular acidosis

- 158.Pathologic components of urine – Hematuria, Leukocyturia, Cylindruria
- 159.Urination disorders (polyuria, pollakiuria, oliguria, anuria)
- 160.Acute diffuse glomerulonephritis
- 161.Immunocomplex mediated glomerulonephritis
- 162.Chronic diffuse glomerulonephritis, its types
- 163.Nephrotic syndrome, nephritic syndrome
- 164.The main causes of acute diffuse glomerulonephritis
- 165. Pyelonephritis, its causes and manifestations
- 166.Kidney stone disease
- 167.General events during kidney damage
- 168.Azotemia
- 169.Renal arterial hypertension
- 170.Renal anemia
- 171.Coagulation disorders during kidney disease
- 172.Kidney failure
- 173.Acute kidney failure
- 174.Chronic kidney failure
- 175.Uremia, uremic coma

#### 20<sup>th</sup> module typical tests

- //// Sudden asystole can be caused by:
  - /// Cardiomyodystrophy
  - /// Excitation of the sympathetic nervous system
  - /// excitation of the cardiac conduction system
  - // Total spasm of coronary vessels
  
- //// Bradycardia develops
  - // During a concussion
  - /// during hyperthermia
  - /// during thyrotoxicosis
  - /// during diabetes
  
- //// Cardiogenic shock may develop
  - /// during atherosclerosis
  - // during Morgagni-Adam-Stokes syndrome
  - /// during heart muscle dystrophy
  - /// when the tone of coronary vessels decreases
  
- //// Left ventricular failure results in:
  - /// Cyanosis

// Congestion in a small circle

/// Congestion in a big circle

/// arterial hypertension

//// Which of the following belongs to compensatory reactions during heart failure

/// myogenic dilatation

/// Coronary spasm

/// coronary sclerosis

// Increased myocardial contractility