

# Learning Objectives - Faculty of Stomatology

## Pathophysiology 1

1. The essence of pathophysiology
2. Constituent parts of pathophysiology
3. General nosology
4. Typical pathological processes
5. Health and disease
6. Dual nature of compensatory and protective reactions
7. Classification of diseases
8. Pathological process, pathological reaction, pathological condition
9. Stages of the disease
10. Incomplete recovery, disease recurrence, disease chronicity, disease remission
11. Terminal states
12. Clinical and biological death
13. Reanimation, its methods
14. General etiology
15. Causes and conditions of disease development
16. General pathogenesis
17. Protective, compensatory and adaptive reactions
18. The role of cause-effect relationship in pathology
19. The main link and vicious circle in the pathogenesis of diseases
20. Local and general pathology
21. Non-specific and specific in pathology
22. Typical forms of cell injury
23. Dystrophy and dysplasia
24. Paranecrosis and necrobiosis
25. Necrosis
26. Apoptosis
27. The role of caspases in the mechanism of apoptosis
28. The role of protein P-53 in the mechanism of apoptosis
29. General mechanisms of cell injury

30. Mechanisms of cell membrane damage
31. Changes in the genetic apparatus of the cell
32. Cell injury mediators
33. The role of nitric oxide in cellular processes
34. Disruption of cellular energy metabolism
35. The role of lipid peroxidation in cell damage
36. Prooxidants and antioxidant system
37. Stages of free radical oxidation
38. Changes in cellular antioxidant protection
39. The role of enzymes in cell damage
40. Consequences of water and ion imbalance in the cell
41. Changes in the genetic apparatus of the cell
42. Causes and consequences of cellular hypoxia
43. Cellular injury caused by oxygen
44. Non-specific manifestations of cell damage
45. Denaturation of cell proteins
46. Disorder of water exchange in the cell
47. Disorder of sodium-potassium pump function in the cell
48. The role of pH changes in cell damage
49. The role of calcium in cell damage
50. Specific manifestations of cell damage
51. Violation of the structure and function of cellular organelles
52. Endoplasmic reticulum damage
53. Impairment of mitochondria
54. Damage of lysosomes
55. Damage of ribosomes
56. General adaptation syndrome
57. Stress-reaction. Stages of the general adaptation syndrome
58. Mechanism of development of general adaptive syndrome
59. Acute phase reactions
60. Effects of interleukin-1
61. C-reactive protein, haptoglobin
62. Concept of shock

63. Types and manifestations of shock
64. General pathogenesis of shock
65. Pathological and compensatory-adaptive reactions during shock
66. Microcirculation disorders during shock
67. Pathogenesis and stages of traumatic shock, their characterization
68. Primary hypovolemic shock
69. Pathogenesis of cardiogenic shock
70. Pathogenesis of septic shock
71. Shock in dental practice
72. Pathogenesis and types of collapse
73. Similarities and differences between shock and collapse
74. Coma, its types
75. Harmful effect of mechanical trauma on the body
76. Types and mechanisms of traumatic skull/brain injuries
77. Acute mechanical trauma of the oral cavity
78. Chronic mechanical trauma of the oral cavity
79. Harmful effect of high temperature on the body
80. Burn disease, its mechanisms and stages
81. Pathogenesis of burn shock
82. Mechanism of false polycythemia in burn disease
83. Overheating of the body (hyperthermia)
84. Factors contributing to overheating
85. Changes in body functions during hyperthermia
86. Heat stroke, its pathogenesis
87. Harmful effect of low temperature on the body, hypothermia
88. Changes in the compensation phase of hypothermia
89. Changes in the decompensation phase of hypothermia
90. Factors contributing to hypothermia
91. Electrotrauma
92. Factors influencing the severity of electrical injuries
93. Local effect of electric current on the body
94. General effect of electric current on the body
95. Damaging effect of radiation energy on the body

96. Harmful effect of sunlight on the body
97. The damaging effect of ultraviolet and laser rays
98. Damaging effect of ionizing radiation on the body
99. The mechanism of the main changes developed by the action of ionizing radiation
100. Main free radicals formed under the influence of ionizing rays
101. Changes developed at the molecular level under the influence of ionizing rays
102. Changes developed at the tissue level under the influence of ionizing rays
103. Long-term effects of ionizing radiation on the body
104. Pathogenesis of radiation sickness
105. Bone marrow form of radiation disease
106. Intestinal form of radiation sickness
107. Toxemic form of radiation sickness
108. Cerebral form of radiation sickness
109. Chronic radiation sickness
110. Endogenous poisons
111. Exogenous poisons
112. Drug addiction, its forms
113. Toxicomania
114. Infectious process
115. The role of microflora in oral pathology
116. Non-specific protective-adaptive reactions during the infectious process
117. Specific protective-adaptive reactions during the infectious process
118. Mechanisms of infectious process development
119. Characterization of infectious disease periods
120. Mechanisms of protection of the body against infection
121. Mechanisms of mouth protection against infection
122. Complications of infectious diseases, sepsis
123. Physiological arterial hyperemia
124. Pathological arterial hyperemia
125. Types of arterial hyperemia
126. The mechanism underlying symptoms of arterial hyperemia
127. Microcirculation changes during arterial hyperemia
128. Causes of venous hyperemia

129. Mechanism of venous hyperemia
130. The mechanism underlying symptoms of venous hyperemia
131. Venous hyperemia and tissue fluid shift
132. Microcirculation changes during venous hyperemia
133. Consequences of venous hyperemia
134. Causes of ischemia
135. Mechanisms of ischemia
136. Genesis of signs of ischemia
137. Ischemia caused by compression
138. Ischemia caused by Obturation
139. Neurotonic ischemia
140. Neuroparalytic ischemia
141. Postischemic hyperemia
142. Results of ischemia
143. Microcirculation during ischemia
144. Causes and mechanisms of stasis
145. Ischemic stasis
146. Congestive stasis
147. True capillary stasis
148. Thrombosis
149. Mechanism of thrombus formation
150. Types of thrombi
151. The role of vascular wall injury in thrombus formation
152. Blood flow rate and thrombus formation
153. Thromboplastin, thrombin, fibrinogen and thrombus formation
154. The main components of arterial thrombus formation
155. Venous thrombus formation
156. Solution of thrombosis
157. Disseminated intravascular coagulation
158. Forms of embolism according to its origin
159. Types of embolism
160. Inflammation, its etiology
161. Alteration and development of the inflammatory process

162. Cells participating in the inflammation process
163. Mechanism and peculiarities of inflammatory redness
164. Hemodynamic changes in the area of inflammation
165. Mechanism of capillary dilation during inflammation
166. Linear and volume velocity of blood flow during acute inflammation
167. Aggregate state of blood during inflammation
168. Comparative hemodynamic characterization of inflammatory, arterial and venous hyperemia
169. "Secondary alteration" and lysosomal enzymes
170. Exudation and its mechanism
171. Consequences of exudate accumulation
172. Mechanism of leukocyte emigration
173. Mechanism of inflammatory edema
174. Mechanism of substance transportation across the capillary wall
175. Leukocyte reaction during inflammation
176. Margination and adhesion of leukocytes during inflammation
177. Basics of leukocyte activation
178. Phagocytosis during inflammation
179. Leukocyte degranulation
180. Formation and mechanism of action of the main mediators of inflammation
181. Types of exudate
182. Alterative form of inflammation
183. Proliferative inflammation
184. Pain during inflammation
185. Solution of acute inflammation
186. The importance of inflammation for the body
187. Normergic, hypoergic and hyperergic inflammation
188. Chronic inflammation
189. The role of macrophages and leukotrienes in chronic inflammation
190. Inflammation of oral tissues
191. The role of lymphocytes and collagen in chronic inflammation
192. Cells and fibrous elements involved in chronic inflammation
193. Hypersensitivity reactions of the body
194. Etiology of allergy. Classification of allergens

195. Classification of allergic reactions
196. Allergic sensitization of the body
197. Stages of allergic reactions
198. General mechanism of immediate allergic reactions
199. Mechanisms of anaphylactic hypersensitivity reactions
200. Reagins and their target cells for fixation
201. Primary and secondary target cells
202. Allergy mediators
203. Examples of type I hypersensitivity reactions
204. Pathogenesis of the type II hypersensitivity reactions
205. Antibodies and complement system during type II of hypersensitivity reactions
206. The role of autoimmune processes in type II hypersensitivity reactions
207. Examples of type II hypersensitivity reactions
208. Pathogenesis of type III hypersensitivity reactions
209. Examples of type III hypersensitivity reactions
210. Pathogenesis of type IV hypersensitivity reactions
211. Antibodies during type IV hypersensitivity reactions
212. The role of lymphokines in the fourth type of allergic reactions
213. Graft removal reaction
214. Mechanism of anaphylactic shock
215. Bacterial allergy
216. Fever, its mechanism
217. Difference between hyperthermia and fever
218. Infectious and non-infectious fever
219. Pyrogenic substances
220. Bacterial pyrogens
221. The role of interleukin 1 and tumor necrosis factor in the development of fever
222. Mechanism of action of secondary pyrogens
223. Stages of fever
224. Changes in heat production and dissipation in different stages of fever
225. Different types of temperature reduction
226. The impact of fever on the body
227. Significance of fever and medical application of fever in medicine

228. Hyperbiotic and hypobiotic processes
229. Hypertrophy
230. Types of hypertrophy
231. Hypertrophy resulting after physical exercise
232. Hyperplasia
233. Regeneration
234. Metaplasia
235. Dysplasia
236. Primary and secondary wound healing
237. Atrophy
238. Pathophysiology of tumor growth
239. General characterization of benign and malignant tumors
240. Character and differentiation of malignant growth
241. Invasion of malignant tumor cells
242. Metastasis of a malignant tumor, its primary stages
243. Biological features of malignant growth
244. Tissue atypism of malignant tumor
245. Chemical carcinogenic factors
246. Ionizing radiation as a carcinogen
247. Oncogenic viruses
248. Pathogenesis of tumorous growth
249. Neoplastic transformation of the cell
250. Antiblastomic resistance of the organism
251. Anticarcinogenic substances
252. The role of protein P-53 in the pathogenesis of tumor growth
253. Interdependence of organism and tumor
254. Tumors of the oral cavity and jaw bones
255. Disorders of digestion and absorption of carbohydrates
256. Causes and mechanisms of hypoglycemia
257. Clinical manifestations of hypoglycemia
258. Hypoglycemic reaction
259. Hypoglycemic syndrome
260. Hypoglycemic coma



261. Glycogenoses
262. Types of hyperglycemia and glucosuria
263. Etiology of diabetes mellitus
264. Pathogenesis of diabetes mellitus
265. Pancreatic insulin insufficiency
266. Non-pancreatic insulin insufficiency
267. Complications of diabetes
268. Disorder of nitrogen balance
269. Typical types of protein metabolism disorders and their mechanisms
270. Impairment of protein synthesis and degradation processes
271. Impairment of the end stage protein metabolism
272. Disorder of lipid metabolism
273. Typical forms of lipid metabolism disorder
274. Disturbance of fat digestion and absorption
275. Fat secretion disorder
276. Disturbance of fat transportation in the blood and towards the tissues
277. Disturbance of intermediate fat exchange
278. Hyperlipemia and its types
279. Obesity
280. Degrees and types of obesity
281. Disorder of water exchange
282. Regulation of water exchange during normal and pathological conditions
283. Types of water exchange disorders
284. Hypohydration
285. Types and mechanisms of edema
286. Mechanism of cardiac edema
287. Mechanism of nephritic edema
288. Mechanism of nephrotic edema
289. Mechanism of cachexic edema
290. Disorder of electrolyte (ion) balance
291. Disturbance of sodium metabolism
292. Disturbance of potassium metabolism
293. Disturbance of calcium and magnesium metabolism

294. Disorder of vitamin metabolism. Hypervitaminoses
295. Hypo- and avitaminosis
296. Violation of acid-alkaline balance
297. Respiratory (gaseous) acidosis
298. Metabolic (non-gaseous) acidosis
299. Respiratory (gaseous) alkalosis
300. Metabolic (non-gaseous) alkalosis
301. Essence and mechanisms of hypoxia
302. Hypoxic hypoxia
303. Respiratory hypoxia
304. Circulatory (cardiovascular) hypoxia
305. Hemic hypoxia
306. Tissue hypoxia
307. Compensatory mechanisms during hypoxia
308. Changes in body functions during hypoxia

