Practical lesson 1

"Pathophysiology of the blood system. White blood disorders. Leukocytosis. Leukopenia. Leukocyte dysfunction. Hemoblastoses"

1. Disorders of the white blood system, classification.
2. Leukocytosis, definition, classification, etiology, pathogenesis.
3. Diagnostic value of the leukocyte formula.
4. Leukopenia, definition, classification, etiology, pathogenesis, clinical manifestations.
5. Agranulocytosis, etiology, pathogenesis, clinical manifestations.
6. Leukocyte dysfunction, types, etiology, pathogenesis, clinical manifestations.
7. Leukemia, definition, classification, etiology, pathogenesis, clinical manifestations, principles of diagnosis.
8. Leukemoid reactions, types, etiology, pathogenesis, differences from leukemia.
9. Myeloproliferative diseases: definition, classification, principles of diagnosis.
10. Myelodysplastic conditions: definition, classification, principles of diagnosis.

Practical lesson 2

"Pathophysiology of the blood system. Anemia. Erythrocytoses"

1. Anemia: definition of the concept, principles of classification, clinical and hematological manifestations.
2. Acute posthemorrhagic anemia: etiology, pathogenesis, principles of laboratory diagnostics.
3. Iron metabolism in the body and its disorders.
4. Iron deficiency anemia: etiology, pathogenesis, manifestations, principles of laboratory diagnostics.
5. Hypoplastic anemia: etiology, pathogenesis, manifestations, characteristics of hematopoiesis and principles of laboratory diagnostics.
6. Vitamin B12-deficiency and folate deficiency anemia: etiology, pathogenesis, clinical manifestations, characteristics of hematopoiesis and principles of laboratory diagnostics.
7. Acquired (exoerythrocytic) hemolytic anemia: etiology, pathogenesis, manifestations, characteristics of hematopoiesis and principles of laboratory diagnostics.
8. Congenital (endoerythrocytic) hemolytic anemia: classification, etiology, pathogenesis, manifestations, characteristics of hematopoiesis and principles of laboratory diagnostics.
9. Erythrocytoses: types, etiology, pathogenesis.

Practical lesson 3

"Pathophysiology of hemostasis. Hemorrhagic syndrome"

1. Hemostasis and antihemostasis: components, their role in ensuring the rheological properties of blood.
2. Clinical and laboratory methods of studying the hemostasis system.
3. Hemorrhagic conditions caused by vascular wall pathology: classification, etiology, pathogenesis, manifestations, basics of diagnosis.
4. Thrombocytopenia: classification, etiology, pathogenesis, clinical and laboratory manifestations, basics of diagnosis.
5. Thrombocytopathies: classification, etiology, pathogenesis, clinical and laboratory manifestations, basics of diagnosis.
6. Coagulopathy: classification, etiology, pathogenesis, manifestations, principles of diagnosis.

Practical lesson 4

"Pathophysiology of hemostasis. Thrombophilic syndromes. DIC syndrome"

1. The general pathogenesis of thrombosis.
2. Arterial thrombosis, risk factors.
3. Venous thrombosis, risk factors.
4. Complications and outcomes of thrombosis.
5. DIC syndrome, etiology, pathogenesis, stages, laboratory diagnostics.

Practical lesson 5

"Pathophysiology of the blood system"

1. Anemia: definition of the concept, principles of classification, clinical and hematological manifestations.
2. Acute posthemorrhagic anemia: etiology, pathogenesis, principles of laboratory diagnostics.
3. Iron deficiency anemia: etiology, pathogenesis, manifestations, principles of laboratory diagnostics.
4. Iron metabolism in the body and its disorders.
5. Hypoplastic anemia: etiology, pathogenesis, manifestations, characteristics of hematopoiesis and principles of laboratory diagnostics.
6. Vitamin B12-deficiency and folate deficiency anemia: etiology, pathogenesis, clinical manifestations, characteristics of hematopoiesis and principles of laboratory diagnostics.
7. Exoerythrocytic (acquired) hemolytic anemia: etiology, pathogenesis, manifestations, characteristics of hematopoiesis and principles of laboratory diagnostics.
8. Endoerythrocytic (congenital) hemolytic anemia: classification, etiology, pathogenesis, manifestations, characteristics of hematopoiesis and principles of laboratory diagnostics.
9. Erythrocytoses: types, etiology, pathogenesis.
10. Disorders of the white blood system, classification.
11. Leukocytosis, definition, classification, etiology, pathogenesis.
12. Diagnostic value of the leukocyte formula.
13. Leukopenia, definition, classification, etiology, pathogenesis, clinical manifestations.
14. Agranulocytosis, etiology, pathogenesis, clinical manifestations.
15. Leukocyte dysfunction, types, etiology, pathogenesis, clinical manifestations.
16. Leukemia, definition, classification, etiology, pathogenesis, clinical manifestations, principles of diagnosis.
17. Leukemoid reactions, types, etiology, pathogenesis, differences from leukemia.
18. Myeloproliferative diseases: definition, classification, principles of diagnosis.
19. Myelodysplastic conditions: definition, classification, principles of diagnosis.
20. Hemostasis and antihemostasis: components, their role in ensuring the rheological properties of blood.
21. Clinical and laboratory methods of studying the hemostasis system.
22. Hemorrhagic conditions caused by vascular wall pathology: classification, etiology, pathogenesis, manifestations, basics of diagnosis.
23. Thrombocytopenia: classification, etiology, pathogenesis, clinical and laboratory manifestations, basics of diagnosis.
24. Thrombocytopathies: classification, etiology, pathogenesis, clinical and laboratory manifestations, basics of diagnosis.
25. Coagulopathy: classification, etiology, pathogenesis, manifestations, principles of diagnosis.
26. The general pathogenesis of thrombosis.
27. Arterial thrombosis, risk factors.
28. Venous thrombosis, risk factors.
29. Complications and outcomes of thrombosis.
30. DIC syndrome, etiology, pathogenesis, stages, laboratory diagnostics.

Practical lesson 6

"Pathophysiology of the cardiovascular system. Heart defects"

1. Heart defects, definition, classification.
2. Congenital heart defects, etiology, pathogenesis of hemodynamic disorders in congenital heart defects of the "blue" type: Fallot triad; Fallot tetrad; transposition of the main arteries.
3. Congenital heart defects, etiology, pathogenesis of hemodynamic disorders in congenital heart defects of the "pale" type

- with blood discharge from left to right: atrial septal defect; ventricular septal defect; open arterial duct

- without pathological blood discharge: congenital stenosis of the aortic mouth; coarctation of the aorta.

1. Acquired heart defects:

- etiology, pathogenesis of hemodynamic disorders in mitral valve defects: stenosis of the left atrioventricular orifice; insufficiency of the left atrioventricular orifice;

- etiology, pathogenesis of hemodynamic disorders in aortic valve defects: aortic stenosis; aortic valve insufficiency.

- etiology, pathogenesis of hemodynamic disorders in tricuspid valve defects: stenosis of the right atrioventricular orifice; tricuspid valve insufficiency.

1. Mechanisms of intracardial compensation of hemodynamic disorders in heart defects.
2. Mechanisms of extracardial compensation. The small circle of blood circulation as a mechanism of extracardial compensation.

Practical lesson 7

"Atherosclerosis. CHD"

1. Atherosclerosis, definition of the concept, meaning in clinical medicine.
2. Etiology of atherosclerosis, risk factors.
3. Pathogenesis of atherosclerosis, stages, the role of oxidative stress in the development of atherosclerosis.
4. Types of atherosclerotic plaques, their role in disorders of blood supply to organs and tissues.
5. Coronary heart disease, definition, causes, classification.
6. Pathogenesis of ischemic myocardial injury.
7. The main forms of coronary heart disease, pathogenesis, clinical manifestations.

Practical lesson 8

"Pathophysiology of the cardiovascular system.   
Arterial hypertension: hypertension, symptomatic hypertension"

1. Local and systemic mechanisms of blood pressure regulation.
2. Arterial hypertension, definition, classification.
3. Primary arterial hypertension, etiology, pathogenesis, stages, complications.
4. Secondary arterial hypertension, their types, causes and mechanisms of development.

Practical lesson 9

"Pathophysiology of the cardiovascular system.   
Heart failure"

1. Heart failure: definition, classification, etiology.
2. Acute heart failure: etiology, pathogenesis, main clinical manifestations of acute right ventricular and left ventricular heart failure.
3. Pathogenesis of chronic heart failure: mechanisms of compensation and decompensation.
4. Chronic heart failure: pathogenesis of clinical manifestations, changes in hemodynamic parameters.
5. Stages of pathological myocardial hypertrophy, their pathogenesis. The concept of heart remodeling in chronic heart failure

Practical lesson 10

"Pathophysiology of shock"

1. Shock. Definition, classification.

2. Hypovolemic shock: etiology, pathogenesis, clinical manifestations.

3. Cardiogenic shock: etiology, pathogenesis, clinical manifestations.

4. Vascular shock: etiology, pathogenesis, clinical manifestations.

5. Principles of shock therapy and prevention.

Practical lesson 11

" Pathophysiology of the external respiration system: respiratory distress syndrome "

1. Breathing as a process. Methods for evaluating ventilation, gas diffusion and lung perfusion.

2. Respiratory failure: definition, classification.

3. Ventilation form of respiratory failure: etiology, pathogenesis, clinical manifestations of respiratory biomechanics disorders. Obstructive and restrictive disorders.

4. Chronic obstructive pulmonary disease, etiology, pathogenesis.

5. Ventilation form of respiratory failure: violation of the central regulation of breathing. Pathological types of breathing.

6. Diffusive form of respiratory failure: etiology, pathogenesis.

7. Perfusion form of respiratory failure: etiology, pathogenesis.

8. Dyspnea: definition of the concept, types of dyspnea, pathogenesis.

9. Pulmonary hypertension: mechanism of development, consequences.

10. Respiratory distress syndrome of adults, etiology, pathogenesis.

11. Pulmonary edema: causes, mechanisms of development. Cardiogenic and non-cardiogenic pulmonary edema.

Practical lesson 12

" Pathophysiology of the gastro-intestinal tract: stomach function disorders, small and large intestine disorders. Ulcerous disease of the stomach and the duodenum "

1. Violation of the motor, evacuation and secretory functions of the stomach: etiology, mechanisms of development, manifestations and consequences.

2. Peptic ulcer of the stomach and duodenum. Definition of the concept, etiology. The role of Helicobacter pylori.

3. Peptic ulcer of the stomach and duodenum: pathogenesis, complications.

4. Consequences of gastrointestinal surgery. Dumping syndrome, shortened bowel syndrome, consequences of vagotomy: etiology, pathogenesis of manifestations.

5. Maldigestion syndrome, etiology, pathogenesis. Intestinal enzymopathies.

6. Malabsorption syndrome: etiology, pathogenesis.

Practical lesson 13

" Hepatic pathophysiology: syndromes in cases of pathologies of the liver "

1. Hepatic cell insufficiency: etiology, pathogenesis, manifestations. The role of alcohol and environmental factors in the occurrence and progression of liver diseases.

2. Etiology and pathogenesis of hepatic encephalopathy.

3. Jaundice syndrome: definition of the concept, classification.

4. Hemolytic jaundice, etiology, pathogenesis, diagnostic criteria.

5. Mechanical jaundice, etiology, pathogenesis, diagnostic criteria.

6. Parenchymal jaundice: etiology, pathogenesis, diagnostic criteria. Enzymopathic jaundice.

7. Portal hypertension: definition, etiology, classification, pathogenesis of the main symptoms. Cirrhosis of the liver.

Practical lesson 14

"Kidney pathophysiology: nephritic and nephrotic syndrome, acute renal injury, chronic kidney disease"

1. Etiology and pathogenesis of filtration, reabsorption and secretion disorders.
2. Changes in the composition of urine in case of impaired renal function.
3. Acute renal failure: definition, etiology, classification.
4. Acute renal failure, pathogenesis, stages, clinical and laboratory criteria, manifestations.
5. Nephrotic syndrome: definition of the concept, etiology, pathogenesis, clinical and laboratory manifestations.
6. Nephritic syndrome: definition of the concept, etiology, pathogenesis, clinical and laboratory manifestations.
7. Chronic kidney disease and chronic renal failure: definition, etiology, pathogenesis, stages, manifestations.
8. The concept of dialysis and kidney transplantation.