

Federal State Budgetary Educational Institution of Higher Education

«North-Ossetia State Medical Academy»

of the Ministry of Healthcare of the Russian Federation

Department of Internal Diseases No. 4.

Head of the Department Doctor of Medical Sciences Professor

ASTAKHOVA Z.T.

***Guidelines for conducting a practical lesson with 5th year students of
the Faculty of Medicine on the topic:***

DIFFERENTIAL DIAGNOSIS OF ANEMIA

Vladikavkaz 2022

Purpose of the lesson:

- Learn the causes, development mechanisms and hematological manifestations of anemia
- Learn to differentiate the main types of anemia based on their hematological characteristics.

Objectives of the lesson - the student must:

Know:

- the main types of anemia classifications (according to pathogenesis, color index, type of hematopoiesis, severity, ability of the bone marrow to regenerate, size of erythrocytes);
- anemia etiology, clinical manifestations and mechanisms of their development;
- laboratory signs of various types of anemia.

Be able to:

- determine the type of anemia in the studied blood sample.

2. Basic concepts that should be learned by students in the process of studying the topic

Anemia, sideropenia, hypoxia, intracellular and intravascular hemolysis, membranopathies, ensiopathy, hemoglobinopathies, megaloblastic type of hematopoiesis, osmotic resistance of erythrocytes.

3. Questions for the lesson: Anemia. General information (concept, classification, non-specific and specific clinical and laboratory manifestations).

Posthemorrhagic anemia. Etiology, pathogenesis, clinical and hematological picture, laboratory diagnostics.

Iron deficiency and iron refractory anemia. Etiology, pathogenesis, clinical and hematological picture, laboratory diagnostics.

B12-, folate deficiency anemia. Etiology, pathogenesis, clinical and hematological picture, laboratory diagnostics.

Hypo- and aplastic anemias. Etiology, pathogenesis, clinical and hematological picture, laboratory diagnostics.

Mechanisms of destruction of erythrocytes.

Acquired hemolytic anemia. Etiology, classification pathogenesis, clinical and hematological picture, laboratory diagnostics.

Hereditary hemolytic anemias. Membranopathy. Etiopathogenesis, clinical and hematological picture, laboratory diagnostics.

Hereditary hemolytic anemia. Enzymopathies. Etiopathogenesis, clinical and hematological picture, laboratory diagnostics.

Hereditary hemolytic anemias. Hemoglobinopathies. Etiopathogenesis, clinical and hematological picture, laboratory diagnostics.

4. Questions for self-control:

1. How is the regenerative capacity of the bone marrow determined?
2. What are the signs of megaloblastic hematopoiesis?
3. Describe the main stages of iron metabolism.
4. Name the signs of iron deficiency in the body.
5. Name the main laboratory signs of iron deficiency anemia.
6. What organs and systems are affected by vitamin B12 deficiency?
7. Explain the appearance of megaloblasts, Jolly bodies, Kebo rings in B12 deficiency anemia.
8. How is the osmotic resistance of erythrocytes determined?

9. Name the clinical and laboratory signs of intracellular hemolysis.
10. Name the clinical and laboratory signs of intravascular hemolysis.
11. Name the causes of hemolytic anemia.
12. How are anemias classified according to the diameter of erythrocytes?
13. Name the causes of hypoplastic anemia.

Sample test questions.

Specify the changes in hematological parameters characteristic of Addison-Birmer anemia

- a) moderate hypochromia of erythrocytes
- b) anisocytosis and poikilocytosis of erythrocytes
- c) neutropenia with a nuclear shift to the right
- d) thrombocytosis
- e) the appearance in the blood of erythrocytes with Jolly bodies and Cabot rings
- e) neutrophilia with a nuclear shift to the left

Select hematological features characteristic of hypoplastic anemia

- a) a high percentage of ineffective erythropoiesis
- b) shortening of the average lifespan of erythrocytes
- c) neutropenia of varying degrees
- d) hyperchromia of erythrocytes
- e) normoblastic type of erythropoiesis
- f) decrease in the latent iron-binding capacity of serum

3. The main pathogenetic factors causing the development of anemia:

- a) insufficient production of red blood cells
- b) increased destruction of red blood cells
- c) increased production of red blood cells
- d) insufficient destruction of red blood cells
- e) violation of the release of erythrocytes from the bone marrow

Answers to the tests: 1 - b, c, e; 2 - a, c, e; 3 - a, b.