# BLOOD ELEMENTS AND LABORATORY ANALYSIS IN THE DIAGNOSIS OF HYPOCHROME ANEMIA

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***Abstract.*** *This article discusses the types of anemia, their degrees, and the morphological characteristics of erythrocytes in different forms of anemia. What causes anemia, what are its main causes, and how to treat and prevent it. Anemia is one of the most important problems that arise in any population today. About 90% of anemias are caused by iron deficiency. The resulting disruption of homeostasis, a decrease in hemoglobin concentration, and a decrease in the oxygen capacity of the blood have serious health consequences. Only timely diagnosis, normalization of hematological parameters, and correctly prescribed treatment allow for full recovery.*

***Keywords:*** *Anemia, erythrocyte, hypochromia, biochemical, proper nutrition, laboratory analysis, genetic diseases, fetal hemoglobin, donation.*

# ЭЛЕМЕНТЫ КРОВИ И ЛАБОРАТОРНЫЕ АНАЛИЗЫ В ДИАГНОСТИКЕ ГИПОХРОМНОЙ АНЕМИИ

***Аннотация.*** *В данной статье представлены виды анемий, их степени при различных формах анемии, исходя из разнообразия морфологических признаков, особенно морфологических особенностей эритроцитов. Что такое анемия, каковы ее основные причины, как ее лечить и предотвращать? Состояние анемии является одной из важных проблем, которая сегодня встречается у любого слоя населения. Около 90% анемий вызваны дефицитом железа. В результате этого нарушение гомеостаза, снижение концентрации гемоглобина и снижение кислородной емкости крови вызывают серьезные последствия для здоровья. Только своевременная диагностика, нормализация гематологических показателей и правильно назначенное лечение позволят полностью выздороветь.*

***Ключевые слова:*** *анемия, эритроцитарная, гипохромная, биохимическая, правильное питание, лабораторный анализ, генетические заболевания, фетальный гемоглобин, донация.*

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**Research objective:** To assess the importance of the morphology of the formed elements and the results of biochemical tests in the early detection, treatment, and prevention of hypochromic anemia, as well as all types of anemia, among the population.

**Research methods:** Anemia (from the Greek an - negative suffix and haima - blood), anemia - a disease characterized by a decrease in the number of erythrocytes and hemoglobin in the blood, as well as changes in their quality. Anemia can be caused by a violation of the blood formation process, the inability of the main blood-forming tissue - bone marrow - to adequately perform its functions.

Classification of anemias:

I. BY ETIOLOGY: • posthemorrhagic; • posttransfusion; • infectious; • alimentary; • dysmetabolic; • immunopathological; • paraneoplastic, etc.

II. BY TYPE OF ERYTHROPOSIS: • Normoblastic (erythroblastic); • Megaloblastic

III. BY COLOR INDEX: • hypochromic; • normochromic; • hyperchromic.

IV. BY SEVERITY: • mild; • moderate; • severe.

V. BY ERYTHROCYTE DIAMETER: • microcytic; • normocytic; • macrocytic.

VI. BY BONE MARROW REACTION • aregenerative • hyporegenerative • regenerative • hyperregenerative

VII. BY CLINICAL COURSE: • acute; • chronic

VIII. ACCORDING TO PATHOGENESIS: 1. Posthemorrhagic anemias: anemias caused by blood loss 2. Hemolytic anemias: Anemias resulting from the dominance of erythrodieresis over erythropoiesis • Endoerythrocytic o erythropathy; o hemoglobinopathy; o enzymopathy. • Exoerythrocytic o nonimmune; o autoimmune; o isoimmune. 3. Dyserythropoietic anemias: anemias resulting from erythropoiesis deficiency • Aplastic • Deficiency o iron deficiency anemia o B12/folate deficiency anemia o protein deficiency anemia

Anemia caused by iron and vitamin B12 deficiency is quite common. Anemia is also often observed in cases of prolonged bleeding, such as hemorrhoids or stomach and duodenal ulcers. Iron deficiency anemia is also common in women who have long and heavy menstrual bleeding. In general, there are 4 main causes of iron deficiency anemia. These are:

· Insufficient dietary iron intake
or nutritional deficiency

· Strict diets

· Malnutrition

· Eating disorders or anorexia, including low consumption of meat products.

In some cases, iron deficiency anemia can be a frequent donor, a consequence of congenital genetic diseases. The main risk of developing anemia is women of childbearing age with heavy menstruation. According to statistics, today 75-95% of pregnant women suffer from iron deficiency. In Muslim countries, where the basis of society is large families, women suffer most from hypochromic anemia.

According to the degree of anemia, it is divided into 3 groups:

1. Mild (90<Hb<110 g/l)
2. Moderate (70<Hb<90 g/l)
3. Severe (Hb<70 g/l)

Iron deficiency anemia itself does not lead to death. However, the lack of oxygen saturation of tissues leads to chronic diseases and serious changes in the cardiovascular system. This leads to a deterioration in the general condition and can even lead to the risk of premature death. In the diagnosis and prevention of this disease, complaints are first clarified and a complete history is taken. One of the most common methods is a blood test:

The hemogram will allow you to see the concentration of hemoglobin, the number of erythrocytes, the hematocrit index, the color index, and the morphological changes of erythrocytes.

The level of ferritin in the serum can be assessed in a biochemical examination. In addition, it is possible to make a diagnosis through instrumental diagnostics:

· Ultrasound

· FGDS

· Colonoscopy, etc.

Discussion results: Early detection, prevention and timely treatment of hypochromic anemia create the basis for preventing various negative consequences and pathologies that occur as a result of the disease in humans. This requires patients to consider biochemical tests when they notice the initial signs of anemia.

**Conclusion:** Biochemical tests used to diagnose any diseases today are also important in diagnosing hypochromic anemia. In conclusion, diagnosing the disease is half the battle.

According to the results of the examination, there are more than 10 types of anemia, the most common of which are those caused by iron and vitamin B12 deficiency. The causes of their occurrence are different and vary depending on age and gender. Basically, this type of anemia is more common in women, especially during pregnancy or after pregnancy. Anemia is closely related to the diet, as impaired absorption of iron or insufficient iron in food can also cause it.

Therefore, it has been proven that these research methods can help to form healthy offspring and prevent various diseases.

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