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Cytological Diagnosis of Microcytic Hypochromic Iron Deficiency Anemia

Sanoev Bakhtiyor Abdurasulovich
BukhSMI, RSCEM Bukh Branch

Abstract: The most common (80–95% of all anemias) in therapeutic practice is chronic iron deficiency anemia (IDA) - a painful condition caused by impaired hemoglobin synthesis due to iron deficiency. The condition is observed in 10-30% of the adult population, more often in women. Children get sick less often than adults [D.I. Trukhan, S.N. Filimonov, N.V. Bagisheva, 2021]. Microcytic hypochromic iron deficiency anemia was detected in 4,000 out of 45,000 patients who underwent a complete blood count in the laboratory of the Bukhara branch of the RRCEM for 1 year.

Keywords: iron deficiency anemia, hypochromic anemia, cytology, microcytic anemia.

Relevance. Iron deficiency anemia (IDA) is a hypochromic microcytic hyporegenerative anemia that occurs as a result of an absolute decrease in iron resources in the body (usually due to chronic blood loss or insufficient intake of iron into the body). IDA is observed in 20–25% of the adult population. This is the most common form of anemia. It accounts for about 90% of all anemias. IDA occurs much more often in women than in men. According to various estimates, about 20% of women suffer from IDA [1, 7, 9]. Chronic blood loss is the main cause of IDA. Uterine: pregnancy, menorrhagia and fibroids. In healthy women, blood loss during menstruation is 40–50 ml. With constant menstrual blood loss of more than 80 ml of blood, iron reserves are gradually depleted, which leads to the development of IDA. Fibroids, even in the absence of menstrual bleeding, can lead to iron deficiency [3, 5]. Gastrointestinal: gastroduodenal erosions and ulcers, hiatal hernia, portal hypertension with varicose veins of the esophagus and rectum, ulcerative colitis, tumors of the stomach and intestines, diverticula [4]. Donation with regular blood donation (5 or more times during the year). Bleeding from the kidneys and urinary tract, especially with hypernephroma, bladder cancer. Hematological diseases: coagulopathy, thrombocytopenia, thrombocytopenia, Randu-Weber-Osler disease [7]. Vasculitis and collagenosis (especially Goodpasture's syndrome). Nutritional factors: vegetarianism, fasting, malnutrition, monotonous food. Impaired absorption of iron in the gastrointestinal tract: complete gastrectomy, resection of the stomach and/or intestines, especially the duodenum, in which the most intense process of iron absorption occurs (90%), atrophic gastritis, celiac disease [1]. Increased body need for iron: in infants (all types of milk contain very little iron), during pregnancy, in adolescence (with accelerated growth, iron consumption is increased). Other causes: paroxysmal nocturnal hemoglobinuria; isolated pulmonary hemosiderosis; hemodialysis leads to the development of IDA in 50% of cases [9].

Anemia is a condition characterized by a decrease in hemoglobin in the blood (< 130 g/l for men and < 120 g/l for women) and, in most cases, a decrease in the concentration of red blood cells. Currently, widespread anemia is noted throughout the world. According to the World Health Organization, about 1.8 billion people on Earth suffer from anemia of varying severity. A wide variety of factors underlying the development of anemia makes the problem of their differential diagnosis very important [O.A. Kurilyak, 2019].

So, at the first stage, the laboratory should analyze the sample on a hematological analyzer. When detecting a decrease in hemoglobin, it is necessary first of all to determine the nature of anemia: hypo-, normo- or hyperchromic. The criterion is the value of MCH, reflecting, as you know, the average content of hemoglobin in the erythrocyte.

Hypochromic anemias are characterized by a low MSI (<27 pg), they are usually microcytic - the average erythrocyte volume (MCV) does not exceed 80 fl. At the same time, the average concentration of hemoglobin in the erythrocyte (MCHC) remains within the normal range, i.e. the decrease in hemoglobin is primarily due to the predominance of erythrocytes with a reduced volume in the blood. Another characteristic feature of this type of anemia is the shift of the erythrocyte histogram to the left (to the area of small volumes) and in some cases (for example, at the initial stage of IDA and during the treatment of IDA with iron preparations) - an increase in RDW - an indicator of the width of the distribution of erythrocytes by volume due to anisocytosis erythrocytes. Microcytic-hypochromic are iron deficiency anemia (IDA), anemia in chronic diseases (ACD), anemia associated with a violation of the synthesis of porphyrins, thalassemia.

Purpose of the study. The aim of this study is to determine the incidence and cytological diagnosis of microcytic hypochromic iron deficiency anemia.

Research methods. The material of the study was 45,000 general blood tests carried out in the laboratory of the Bukhara branch of the Republican Scientific Center for Emergency Medicine for 1 year.

Research results. Microcytic hypochromic iron deficiency anemia was detected in 4,000 out of 45,000 patients who underwent a complete blood count in the laboratory of the Bukhara branch of the RRCEM for 1 year.

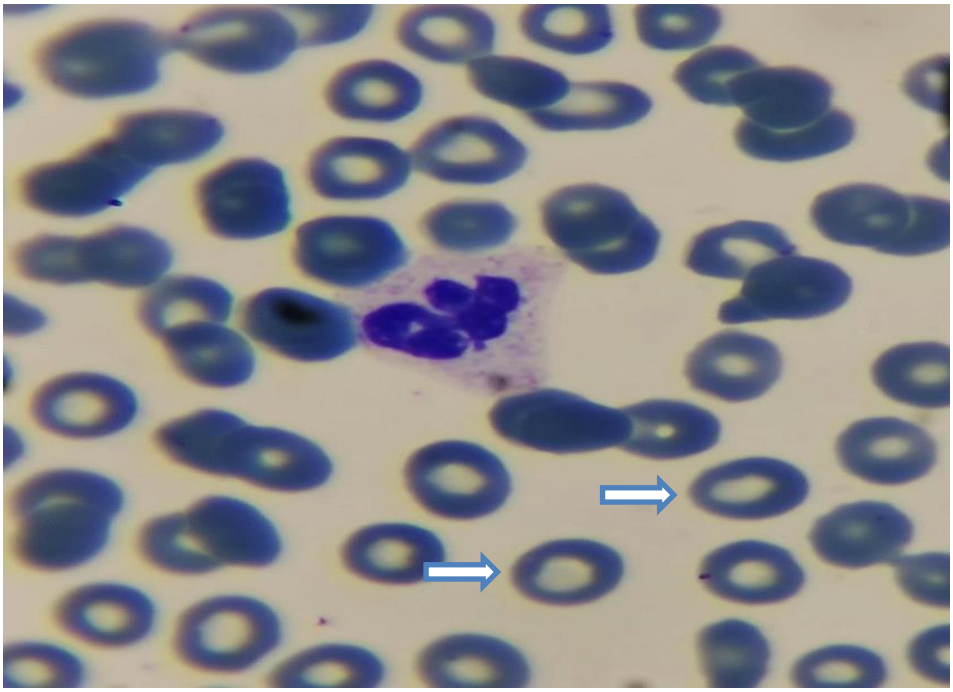

Figure 1. Cytological examination of blood smears.

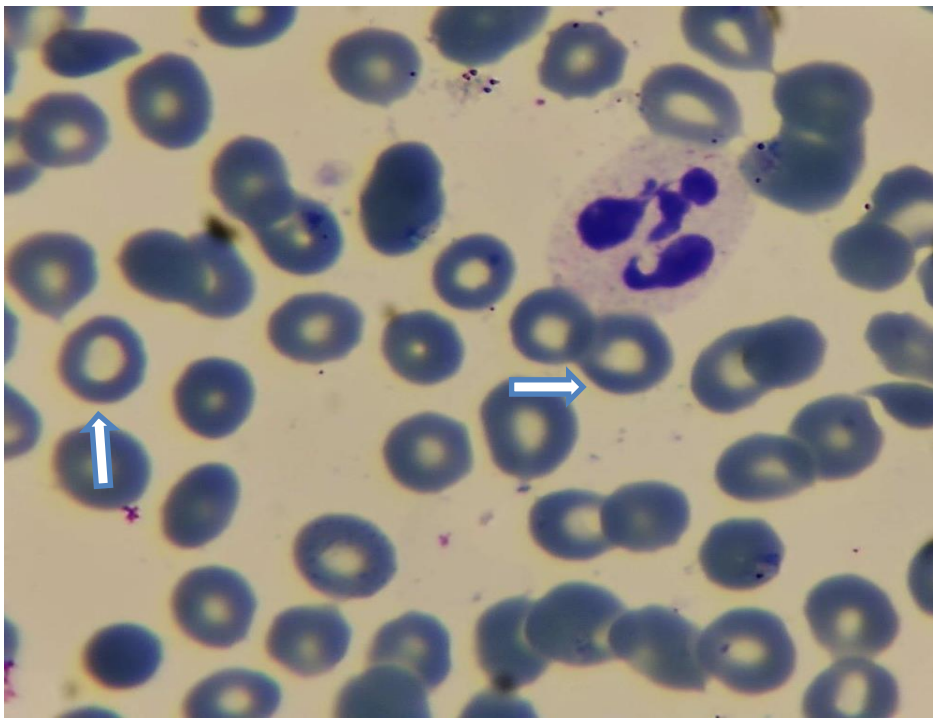

Figure 2. Cytological examination of blood smears.

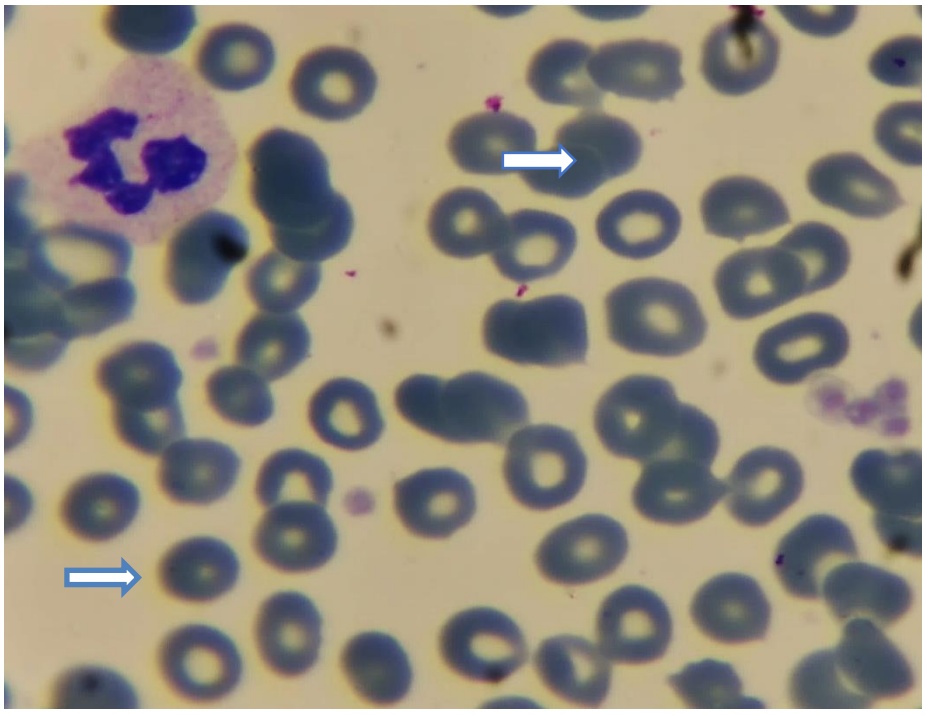

Figure 3. Cytological examination of blood smears.

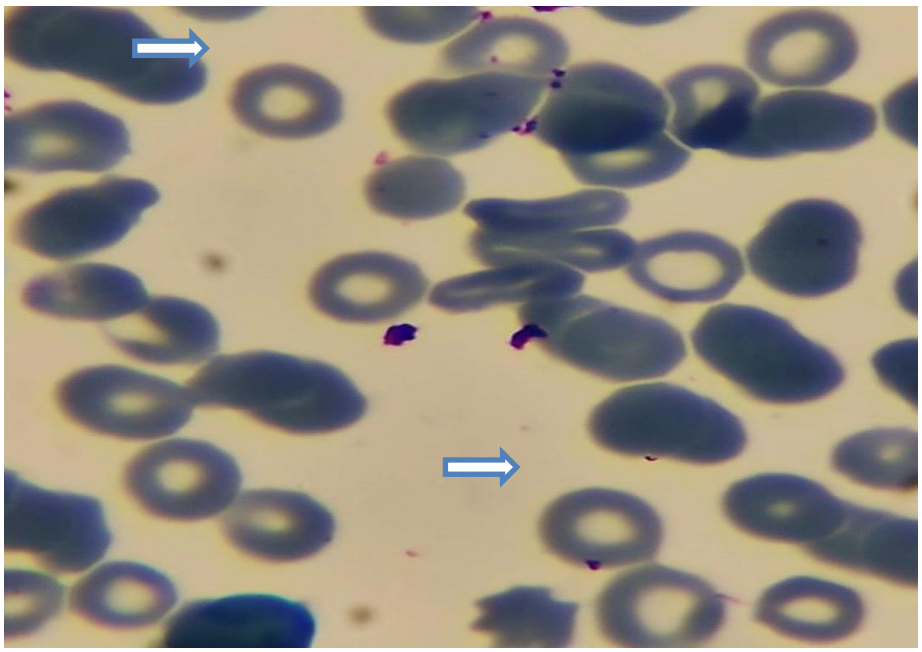

Figure 4. Cytological examination of blood smears.

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