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Modern Methods of Diagnosing Iron Deficiency Anemia in Pregnant Women and Criteria for Evaluating the Effectiveness of Ferrotherapy

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Abstract: Anemia in pregnant women remains a serious problem of extragenital pathology in obstetrics, this indicator is 15-80%. [1]. The issue of determining the etiology of anemia in pregnant women is especially relevant. Since it is iron deficiency anemia (iron deficiency anemia) in 80% of cases, the attending physician prescribes iron supplements without conducting confirmatory diagnostic tests. If there is no effect from taking the drug by mouth, the doctor often decides to increase the dose or give intravenous iron. However, it is known that parenteral administration of iron preparations causes the risk of double complications in the woman and the fetus [2]. Oral administration of high doses of iron supplements may increase gastrointestinal side effects [3]. In addition, anemia in pregnancy is not always caused by iron deficiency.

Keywords: pregnancy, microelements, anemia, hematopoiesis, fercinol.

Purpose of study. Pregnancy and childbirth result in iron depletion in more than 53% of women of childbearing age worldwide. Additional iron is required during pregnancy, menstruation, fetal development, placenta, and to increase the blood volume of the mother, which is about 1000 mg. In the second trimester, the need for iron increases by 6.3 mg per day [3]. Part of the increased demand during pregnancy is met by adaptive increases in iron stores and iron absorption. The iron requirement of a pregnant woman is about 60 mg per day [8]. The presence of iron deficiency anemia during pregnancy poses a great risk to the mother and the fetus. Increased anemia is accompanied by the frequent development of preeclampsia, pyelonephritis and bleeding in the mother during childbirth. In addition, the risk of premature birth, placental insufficiency and intranatal death of the fetus increases [3]. At the beginning of the disease, the number of erythrocytes increases, with the development of iron deficiency and a decrease in the efficiency of erythropoiesis, the number of erythrocytes decreases and increases only when iron preparations are prescribed and erythrocytosis may be observed during treatment. Laboratory diagnostics and control of the effectiveness of therapy with iron preparations are carried out by studying the parameters of iron metabolism. It should be remembered that these indicators may reflect other processes that reduce the level of iron in the body.

The purpose of this study is to determine the objective criteria for the diagnosis of iron deficiency anemia and monitoring of ferrotherapy in pregnant women.

Materials and research methods. 100 pregnant women and 100 babies with anemia will participate in the research. Blood loss was excluded in all patients. It is performed by determining hemoglobin, hematocrit, erythrocytes, leukocytes, as well as microelements such as ferritin, Vit B12, iron, copper, and zinc from blood samples. Trace elements of iron, copper, zinc, Vit B12, ferritin were determined from the blood taken from the umbilical cord of newborn babies.

We developed a questionnaire to assess the health status of babies by filling out a questionnaire from the child's mother (author's certificate No. 000790 dated May 16, 2018 is attached).

The developed screening program includes a questionnaire survey - a survey card conducted among mothers using a special questionnaire (Appendix 1). Inquiries include information on anamnesis and complaints specific to micronutrient deficiency - changes in the nervous, cardiovascular, digestive, urinary systems, as well as upper respiratory tract diseases, allergic diseases, and health effects. aimed at identifying other cases.

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The results of the questionnaire are summarized by medical personnel, the answers to the questions are marked with a negative (-) or positive (+) sign, or with the words "Yes" and "No", and summarizes the identified information.

At the next stage, the QVP or family polyclinic doctor analyzes the results of the survey and selects children who need examination, after examining them, makes a decision on the need to refer to narrow specialists for additional examinations.

The questionnaire consists of 20 questions, which include possible causes and symptoms of micronutrient deficiency. Special questionnaires were prepared for mothers and their children. The use of the questionnaire to assess the condition of the mother allows to simultaneously assess the physical, neuro-psychological development and functional state of the internal organs of the baby with a deficiency of micronutrients. The questionnaire for assessing the state of the mother's health allows to assess the health of the mother and the child depending on the imbalance of microelements (hypo- and hypermicroelementosis).

Research results and their discussion. When checking the parameters of the hematological analyzer, the parameters of trace elements were determined in all examined patients. Micronutrient parameters were shown in pregnant women with iron deficiency anemia before and after treatment.

The average hemoglobin level in the group was 86.5 g/l. During therapy, hemoglobin level increases in all patients. At the end of treatment, the average hemoglobin level was 120.6 g/l. A small group of pregnant women who did not normalize hemoglobin has a sharp increase in body weight and a decrease in hematocrit. The number of red blood cells in all women was initially in the normal range (3.8-4.7x1012 / l). After 1 month, the level of red blood cells increased by an average of 18%, after 3 months - by an average of 24%.

The hematocrit index, which is a control parameter for the differential diagnosis of hemodilution, was on average 34.9% (30.4-37.9%) at the first stage of the examination. It should be noted that, on average, women with iron deficiency anemia had a 17% increase in hematocrit after 1 month of therapy. During the study, the average hematocrit level remained unchanged due to the formation of a group of pregnant women with hypervolemia.

In our study, erythrocyte indices reflecting the morphological characteristics of erythroid cells were of particular interest. The lowest value (77.7 fL) was found in a patient with severe iron deficiency. During therapy with iron supplements, it remained stable in women with unchanged values and increased in cases of initial decline. During treatment with the multi-element drug "Fersinol", the iron deficiency anemia index returned to normal in all women within 1 month.

Our results are consistent with the literature that long-term (3-6 months) intake of any iron supplement is necessary to fully restore body stores.

CONCLUSIONS. The number of side effects was small (3 patients had temporary dyspeptic disorders, 4 patients had a short-term metallic taste in the mouth after taking the drug), and toxic effects from the use of the drug 'secret not specified. These data show the clinical effectiveness of the drug "Fersinol" in the treatment of iron deficiency anemia in pregnant women.

The average number of erythrocytes detected in pregnant women cannot be a criterion for the diagnosis of iron deficiency anemia, because it depends on the occurrence of concomitant folic acid deficiency. Hematocrit can be used as a marker of hemodilutional anemia.

Use of the multi-element drug "Fercinol" for 1 month allows normalization of hematological indicators in pregnant women with iron deficiency anemia. Iron supplements, particularly Fercinol, should be used long-term (at least 3 months) to prevent recurrence of iron deficiency anemia

The drug "Fercinol" is an effective remedy for the correction of iron deficiency conditions, and can be used both in the treatment of iron deficiency anemia and in the prevention of iron deficiency anemia in pregnant women.

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