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RESUSCITATION MEASURES FOR IRON DEFICIENCY ANEMIA AND BLEEDING IN OBSTETRICS AND GYNECOLOGY

Zarema Baymuratovna Dzhimakaeva[1], Marif Magomedovich Rasulov[2], Murad Taibovich Rasulov[3], Khadzhimurad Arifovich Guseynov[3], Tsarukho Gabibovich Magomedov[3], Ibragim Mutaevich Mutaev[3*]

1. ***Department of Therapy, Faculty of Medicine, Chechen State Medical University, Grozny, Russia.***
2. ***Department of Therapy, Faculty of Pediatrics, Stavropol State Medical University, Stavropol, Russia.***
3. ***Department of Therapy, Faculty of Medicine, Saratov State Medical University named after V. I. Razumovsky, Saratov, Russia.***

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ABSTRACT

Currently, iron deficiency anemia (IDA) is one of the most common in the world and extremely dangerous for women's health group of diseases, especially during pregnancy. It is proved that in patients from fifteen to forty-five years of age, 80% of all cases of blood diseases are due to anemia. With age, as a rule, the female body's need for iron increases. Anemia in pregnant women is iron-deficient in more than ninety percent of cases and requires careful monitoring of the entire period of pregnancy. In this article, a systematic online literature search was conducted in MEDLINE (National Medical Library), including PubMed, Web of Science, and Cochrane. The bibliographies of the relevant publications have been checked for further study. The cases of 130 pregnant and recently delivered patients were analyzed, their average age was thirty-two years. After a single intravenous administration of iron carboxymaltosate, there were more pronounced dynamics of hematological and ferrokinetic blood parameters compared with oral administration of iron (III) hydroxide polymaltosate for a month. Observation of patients after childbirth and during lactation confirmed the effectiveness of the applied medical measures. IDA in the female body can have a long-term, reaching a chronic stage, negative effect on the female body, starting from adolescence, therefore, early recognition and treatment of this clinical condition are fundamental in world and domestic medical practice.

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Introduction

Iron deficiency leads to prevalence in the world; according to WHO, 40% of pregnant women, 30% of women of reproductive age, 47% of children under five years of age and almost 13% of men have anemia, half associated with iron deficiency. The incidence of anemia in 190 countries was 33%, mainly due to socio-economic reasons [1].

Hematopoiesis disorders play a key role in the diagnosis of the condition of women since adolescence. When anemia is manifested by a decrease in hemoglobin levels during gestation, muscle and general weakness, fatigue, paresthesia, dizziness, impaired taste and smell, and other noticeable factors, their influence on the condition of the mother and fetus during pregnancy is aggravated [2]. The physiological prerequisites for gestational anemia determine the prevalence of this pathology of pregnancy under 20% (in developing countries, almost 80%). The most common form of gestational anemia in 75-95% of cases is iron deficiency anemia, which is extremely dangerous for the mother and fetus due to the increased oxygen demand by 15-30% [3]. Accordingly, taking into account possible risks, timely detection of this pathology is important. In the

Corresponding Author: Ibragim Mutaevich Mutaev; Department of Therapy, Department of Therapy, Faculty of Medicine, Saratov State Medical University named after V. I. Razumovsky, Saratov, Russia. E-mail: bucky99@ya.ru.

postpartum period, anemia is complicated by physiological blood loss, which is why up to 1 mg of iron is lost with every 2.0-2.5 ml of blood; pathologies affect the natural mechanisms of childbirth, for example, a decrease in the volume of red blood cells during poisoning and others. Anemia is actively developing with iron deficiency, due to the lack of a daily norm of meat products and non-heme forms of jelly in plant foods, milk, and dairy products. The etiology of anemia is determined by chronic blood loss, lack of iron in food, the need for iron during intensive growth in adolescence, and other factors [4].

In obstetrics, iron deficiency and anemia affect the health of the mother and fetus; in 80% of countries, the incidence of anemia in pregnant women reaches 20-40% in addition to undiagnosed cases; a correlation has been proven between the level of anemia, early childbirth and stunting, body weight, fetal development delay.

Clinically, iron deficiency affects women's well-being, and is characterized by fatigue or weakness and decreased performance, dizziness and irritability, pallor, shortness of breath and palpitations, headaches, hypersensitivity to cold, and many other manifestations [5]. The choice of the correct treatment of anemia depends on its cause and severity, the severity of anemia, concomitant diseases, and the wishes of patients.

The purpose of this work is a systematic review of the correction of iron deficiency conditions in women in a situation of normal life and during pregnancy, as well as consideration of resuscitation measures for IDA and bleeding.

Materials and Methods

We conducted a systematic online literature search in MEDLINE (National Medical Library), including PubMed, Web of Science, and Cochrane. The search was carried out by the following keywords:

iron deficiency anemia, anemia in gynecology, gynecological diseases, pregnancy, chronic iron deficiency, fetal development, as well as by various phrases (combining different keywords with OR, OR, and AND). The bibliographies of the relevant publications have been checked for further study.

The articles were checked based on the following criteria:

1. absence of abstracts (i.e. clinical studies published only in abstract form);
2. absence of reports of cases of the disease;
3. lack of technical reports (i.e. a report on new or modified equipment)
4. at least 10 patients in the study.

There were no language restrictions.

Results and Discussion

Due to the prevalence of iron deficiency anemia in women, after a thorough diagnosis of the patient's condition, WHO recommends special iron-containing supplements. Intravenous use of iron preparations reduces the therapeutic dose of recombinant human erythropoietin by up to 70% and reduces the risks of blood transfusion [6]. As part of the study, the course and outcome of IDA were analyzed in 40 patients on anti-anemic therapy, the control group consisted of fifteen patients with uncomplicated blood parameters; the inclusion criterion was the presence of previous anemia in extragenital diseases. Sideral forte was prescribed according to a special administration program after the detection of anemia. Correction of iron deficiency in pregnant women was carried out with a poly-maltose complex of iron (III) hydroxide, while at the beginning of treatment, iron preparations were prescribed - iron (II) salts, a poly-maltose complex of iron (III), liposomal iron; divalent iron salts were prescribed - iron sulfate, iron gluconate, and iron fumarate, with daily administration of elemental iron according to 100-200 mg. **Figure 1** shows the algorithm for differential diagnosis of the main types of anemia. **Table 1** shows the gradation of preparations according to the content of elemental iron.

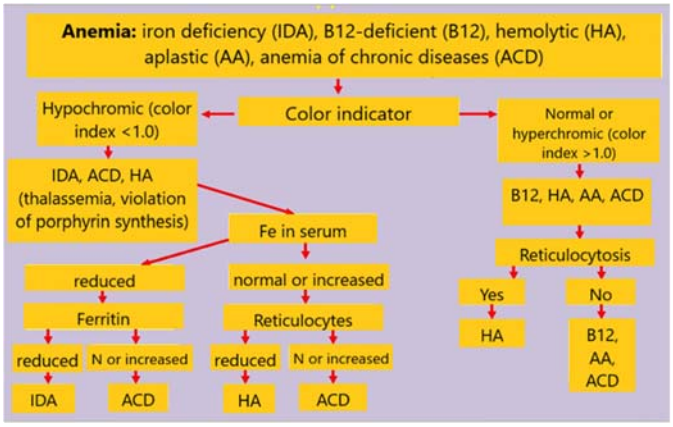

Figure 1. Algorithm of differential diagnosis of the main types of anemia

Table 1. Gradation of preparations according to the content of elemental iron

Medication	Pharmacological form of iron	Daily dose of elemental iron
Ferlatum	Fe protein succinylate	80 mg
Sorbifer Durules	Fe sulfate	200 mg
Fenyuls	Fe sulfate	100-200 mg
Ferro-folgamma	Fe sulfate	111 mg
Hemofer	Fe chloride	176 mg
Totem	Fe Gluconate	100-200 mg
Ferrum Lek	Fe hydroxide polymaltosate	200-300 mg
Maltofer	Fe hydroxide polymaltosate	to 300 mg

Studies have shown an increase in the concentration of Hb in 28 days from 1.3 to 2.5 g / dl compared with 0.6 to 1.3 g / dl in groups with oral iron intake, iron poly-maltose has shown effectiveness for improving hematological parameters under the following conditions: the maximum dose with a single injection is not more than 200 mg, infusion time is not less than fifteen minutes for 100 mg and thirty minutes for 200 mg, the maximum dose with a single injection is no more than 2500 mg, which does not exclude side effects of headache, hypotension, back and stomach pain, heartburn, and nausea, shortness of breath and tightness in the chest, tachycardia, vomiting, and rash. For intravenous iron therapy during pregnancy, a low percentage of side effects in comparison with oral administration of iron preparations for female anemia was shown by the drug ferinject [7]. Anemic conditions of pregnant women threaten the development of the fetus, leading to 14-15% mortality [8]. Fetoplacental insufficiency causes fetal hypoxia in 63% of cases, hypoxic brain injury in 40%, and developmental delay in 32% [9]. Children with anemia in their mothers were more likely to suffer from infectious diseases later. At the same time, the probability of pregnancy complications depends on the severity and time of occurrence of IDA, anemia before conception is the most unfavorable. With anemia after childbirth, 10-12% of women and 35% of newborns have purulent-septic processes. However, no test is diagnostic for iron deficiency, unless serum ferritin is low or the percentage of transferrin saturation is low with increased total iron binding capacity [10].

The task of medical diagnostics in the case of anemic pregnancy is to timely assess the state of iron metabolism and other parameters, to conduct a comprehensive assessment of the fetal condition against the background of systematic therapy with iron preparations. In the case of moderate to severe anemia, it is important to maintain a balance of hemoglobin content by taking high doses of iron in a divalent form orally. Cyanocobalamin deficiency stimulates the parenteral administration of vitamin B12. Further, the effects of hypoxia are comprehensively eliminated, tocolytics relaxing the uterine wall are used, microcirculation is improved with angioprotectors and drugs affecting blood rheology; membrane stabilizers, antioxidants, and actovegin are prescribed for fetal resistance to hypoxia. Non-drug treatment includes a diet rich in iron and protein. Treatment is carried out for a long time for five to eight weeks before the restoration of optimal hemoglobin levels against the background of daily intake of ascorbic and folic acids.

Indications for emergency hospitalization are the presence of anemic and circulatory hypoxic syndromes and trophological insufficiency. Then the total dose of iron is injected intravenously with venofer, ferinject, kosmofer, likferr, or simultaneously with kosmofer, ferinject. In case of any anaphylactoid or allergic reactions, the procedures are stopped, adrenaline is immediately injected and cardiopulmonary resuscitation is performed, and in case of mild allergic reactions, medications are canceled with desensitizing therapy. Timely help with bleeding at the prehospital stage is especially important, often in the presence of pain syndrome. As one of the causes of maternal mortality, in a quarter of cases obstetric bleeding may be associated with uterine hypotension, may be the result of detachment or placenta previa, and may occur due to various diseases and defects of hereditary and acquired nature, due to abortions of pregnancy, injuries of the uterus and other reproductive organs, due to inflammation in the pelvic region, and so on. The therapy carried out depends on the cause of the bleeding, in any form of manifestation, treatment is only stationary.

For any kind of blood loss, it is necessary to take a set of urgent measures - a basic assessment of the patient's condition (pressure and pulse rate of the patient, clarification of the shock index, assessment of the type of skin and other factors, then assessment of the level and degree of blood loss in each case, after that, the obstetric and gynecological situation is clarified - the pregnancy period and obstetric status, after which it is necessary to immediately transport a pregnant woman or a woman in labor, if possible while maintaining a horizontal position to maintain normal breathing. Upon receiving the patient, it is also urgently necessary to intravenously inject 400 ml of polyoxidine, intravenously 500 ml of glucose, and ascorbic acid 3 ml of a five percent solution. Blood loss of 350-400 ml in full-term pregnancy is considered borderline, blood loss of more than 0.5% of the total weight of the patient is considered critical. In cases of premature placental abruption, which is a fairly common pathology of pregnancy, it is also important to clarify the general level of the patient's condition, while it must be remembered that in the second half of pregnancy, the phenomenon of gestosis often masks bleeding against the background of a general decrease in blood pressure in the body. In any case, it is necessary to support infusion therapy, supporting the organs of the body and the central nervous system, hospitalization in a hospital is also mandatory. In coagulopathy, emergency therapy is designed to prevent or stop the hemorrhagic shock that has occurred, against the background of monitoring the state of the blood coagulation system and coagulogram with emergency possibilities for surgical intervention.

Conclusion

The main reason for the development of IDA is blood loss of various natures. Accordingly, measures are needed to prevent both bleeding at different stages and actual anemic conditions. Taking into account the regular loss of iron reserves in the female body with urine, feces, sweat, exfoliating epithelium, and hair loss in the amount of 1 mg of iron daily, as well as blood loss due to menstruation, pregnancy, childbirth, and lactation, the female need for iron increases two to three times, which may have hidden or pronounced forms. To normalize these conditions, regular iron supplementation is traditionally prescribed with a history of menorrhagia, with a short interval between childbirth, with prolonged lactation after previous childbirth, and with multiple births against the background of the application of the principles of high-quality and balanced nutrition for the patient. Only if medical recommendations are followed, it is possible to anticipate anemic situations, and in case of their occurrence, normalization up to complete relief of anemic symptoms and bleeding through medication and non-drug treatment.

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