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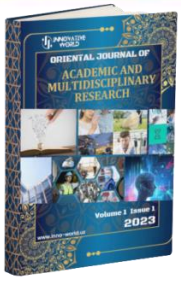

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EVALUATION OF THE ROLE OF IRON DEFICIENCY IN THE DEVELOPMENT OF ABNORMAL UTERINE BLEEDING AND METHODS OF ITS CORRECTION

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ABSTRACT

The article deals with severe menstrual bleeding (TMC), defined as excessive menstrual blood loss (TMC) (>80 ml per cycle). The etiology of TMK (due to uterine pathology, coagulopathy, ovulation disorders or iatrogenic causes) and treatment of patients are discussed. The management of such patientsdepends on the underlying cause of TMC and the preferences of the woman, her plans for the implementation of reproductive function.

Relevance. Drug therapy includes the use of hormonal drugs, levonorgestrel-containing intrauterine system, combined hormonal contraceptives. гемостатической терапии используется назначение Tranexamic acid and 1-deamino-8-D-arginine-vasopressin are used as hemostatic therapy. It is possible to combine hormonal and non-hormonal therapy. The result of chronic blood loss is iron deficiency, which leads to the development of iron deficiency anemia. Currently, many iron preparations are available on the pharmacological market, varying in dose and composition. Tardiferon is a long-acting drug containing 80 mg of elemental iron. Maximum iron absorption occurs in the proximal jejunum. Prolonged release prevents the irritating effect of iron on the gastric and duodenal mucosa, which leads to better tolerability compared to other drugs.

Heavy menstrual bleeding(TMC) is defined as excessive menstrual blood loss (TMC) >80 ml per cycle, which adversely affects a woman's physical activity, disrupts emotional, social well-being, and quality of life [1]. TMK should be considered if there are clots during menstruation ≥1 cm in diameter and the need for frequent replacement of pads or tampons (more often than 1 time per hour) [2].

TMK is a consequence of uterine pathology, coagulopathy, ovulation disorders or iatrogenic causes [3]. Up to 20% of women with TMC have inherited blood clotting disorders. When examining patients with TMC, it is necessary to carefully study the obstetric and gynecological history in order to identify the category of patients who need additional hematological examination. Gynecological examination and ultrasound of the pelvic organs will help to exclude the presence of any hidden pathology. Further management of such patients depends on the underlying cause of TMC and the woman's preferences, her plans for the implementation of reproductive

function [1].

Medical methods of treatment include the use of hormonal drugs. Levonorgestrel-containing intrauterine system (LNH-IUD) and combined hormonal contraceptives are most commonly used (they are the first choice drugs for patients who are not currently interested in the realization of reproductive function) [4,5]. In patients with uterine fibroids, it is pathogenetically justified to prescribe mifepristone and ulipristal acetate, which have demonstrated their effectiveness not only in the treatment of uterine fibroids, but also in the relief of menometrorrhagia. Hemostatic therapy includes administration of tranexamic acid and 1-deamino-8-D-arginine-vasopressin. It is possible to combine hormonal and non-hormonal therapy.

If drug therapy is ineffective, the question arises about surgical treatment, including hysterectomy, аблацииendometrial ablation [1].

As a result of chronic blood loss, women with TMC inevitably experience iron deficiency, leading to the developmentof iron deficiency anemia (IDA).

It should be remembered that IDA has two stages of development:

- a period of latent or latent iron deficiency;
- a period of apparent iron deficiency, or chronic IDA.

During latent iron deficiency, subjective complaints and clinical manifestations are usually absent, which complicates the timely diagnosis of anemia and delays the start of adequate treatment. Suspicion of the development of an iron deficiency state occurs already with a clear iron deficiency, when signs of sideropenic and general anemic syndrome appear.

In most clinical situations, treating IDA is a simple and rewarding task. Main principles: nutrition optimization and administration of iron-containing drugs [7]. Currently, there is a large selection of iron (RV) preparations. To increase bioavailability Various methodological approaches are used to improve iron tolerance. Among them are the maintenance of iron in a divalent state, the use of "carriers", increased hematopoiesis, utilization and absorption of iron, slowing down absorption and ensuring independence from the pH of the medium and the activity of enzymes, and the use of special receptors for Fe3+ absorption in the form of complexes. Clinical studies have repeatedly studied the efficacy and tolerability of each drug [8,9]. According to current recommendations, for the treatment of iron deficiency, the pancreas should be used orally, parenterally – only in certain clinical situations. As a rule, parenteral pancreas is prescribed to patients with intestinal malabsorption (enteritis, resection of the small intestine and a number of other operations), if the pancreas is intolerant for oral administration, with severe anemia based on a faster increase in hemoglobin content, during the planned operation. However, with parenteral use of the pancreas, allergic, toxic and other adverse reactions may develop more frequently.

Currently, iron preparations are represented by two groups: preparations

of iron salts (SJ, divalent iron, organic and inorganic salts) and preparations of iron-containing complexes-chelates (trivalent iron) containing various forms of iron and differing in bioavailability, tolerability, etc. Divalent iron salts show only minor differences in the efficiency of iron absorption. Trivalent iron salts are less well absorbed (level of evidence 1A) [1-1]. This is due to differences in the suction mechanism. It is proven that iron is absorbed in the intestine in a divalent state. For this purpose, trivalent iron of food is reduced to divalent iron by means of copper-dependent ferroreductase on the apical membrane of enterocytes or under the action of vitamin C and enters the enterocyte via manganese-dependent divalent metal transporter proteins (DMT1 proteins). Then, through the protein ferroportin on the basement membrane enters the blood, where it is oxidized to the trivalent state by copper-dependent ferrooxidases (hephaestin on the basement membrane, bound to ferroportin; ceruloplasmin in plasma) to bind to the transportprotein transferrin [10, 12]. The bioavailability of divalent iron salts is several times higher than that of trivalentones, since they freely diffuse through the channels of DMT1 proteins and ferroportin. Therefore, preparations containing bivalent iron have a rapid effect and normalize the level of hemoglobin in an average of 2 weeks – 2 months, and normalization of the iron depot occurs after 3-4 months from the start of treatment, depending on the severity of anemia and dosage of the drug. Iron absorption from trivalent iron preparations is slower, since active (energy-dependent) transport with the participation of ferrooxidases is required. Therefore, preparations containing iron in the trivalent state require longer use, and in the case of a copper deficiencyin the body, they will be ineffective at all. Normalization of hemoglobin during treatment with trivalent iron preparations will occur only after 2-4 months, and normalizationof iron depo indicators - after 5-7 months. from the beginning of therapy. When choosing a specific drug and the optimal dosage regimen, it should be borne in mind that an adequate increase in hemoglobin indicators in the presence of IDA can be provided by the intake of 30 to 100 mg of bivalent iron. Taking into account that with the development of IDA, iron absorption increases in comparison with the norm and amounts to 25-30% (with normal iron reserves – only 3-7%), it is necessary to prescribe from 80 to 300 mg of bivalent iron per day. The use of higher doses does not make sense, since the absorption of iron does not increase. Individual fluctuations in the amount of iron needed are due to the degree of iron deficiency in the body, depletion of reserves, the rate of erythropoiesis, absorption, tolerability, and some other factors. With this in mind, when choosing a medicinal pancreas, one should focus not so much on the total amount of iron in it, but on the amount of divalent iron that is absorbed only into the intestine.

Progress in the field of oral iron preparations has led to the emergence of prolonged-release active substance preparations with new galenic forms

that can improve gastrointestinal tolerance and increase bioavailability. Of these compounds, Tardiferon with prolonged release of iron a sulfate is the most studied andaused. Tardiferon contains 256.3 mg of iron sulfate, which corresponds to 80 mg of elemental iron, 30 mg of ascorbic acid and excipients that promote prolonged iron release, which ensures high patient compliance. In this preparation, the polymer complex surrounds Fe2+ ions, forming a matrix that controls the presence of Fe2+ ions in certain areas of the digestive tract in accordance with their absorption capacity. After iron absorption, the maximum concentration in the blood is reached in approximately 7 hours and remains elevated for 24 hours.

In a studyconducted by Kaltwasser et al., the bioavailability of Tardiferon was compared with that of bivalent non-prolonged-release iron preparations in 18 healthy volunteers using the stable iron isotope 54Fe. The study found no differences in intestinal iron absorption at day 21 between the two drugs. In addition, after 2 months of treatment, the hemoglobin level reached baseline values in both observation groups. The effectiveness of the drug was confirmed by other authors. Twice daily intake of the drug for 8 weeks. It resulted in normalization of red blood counts and a significant reduction in sideropenia symptoms. To replenish iron reserves, it is necessary to continue taking Tardiferon 1 tablet a day for another 3 months. under the control of a blood test. Ina systematic review of 1,66 иccstudies published before120-18, including data on 1,15patients treated with various oral ironpreparations, Manasanch et al. it was found that drugs with a delayed release of SJ (Tardiferon) had a statistically significant low frequency of gastrointestinal side effects (3.7%) compared to other drugs: SJ (31.6%), фумаратомiron fumarate (44.8%), and ferric trivalent preparations containing iron proteinsuccinylate (7.0%). The results of this study clearly showed that delayed-release SJ drugs are better tolerated than other drugs, including those containingdivalent iron. Oral iron supplementation is the standard treatment for patients with iron deficiency. Iron salts and, in particular, long-acting drugs are the drugs of choice, taking into account their high efficiency, acceptable tolerability and low cost.

Conclusion. Thus, when choosing a drug for oral administration, it is necessary to take into account: the amount of divalent iron, the presence of substances in the drug that improve iron absorption. ыйThe correct selection of the drug helps to reduce abnormal uterine bleeding caused by iron deficiency anemia.

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