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Iron deficiency anemia in young women of reproductive age, pregnant women and children

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Objective: To study the frequency of iron deficiency conditions in women of reproductive age, pregnant women and children, as well as to evaluate the effectiveness of treatment of iron deficiency anemia using various approaches to therapy based on new links in pathogenesis.

Materials and Methods: Over a period of 20 years, 558 women of reproductive age, 342 pregnant women, and 439 children in their first year of life were examined. Biochemical examination of 37 women with grade I-II iron deficiency anemia, 53 with latent iron deficiency, and 45 without iron deficiency was conducted.

Results: In 2024-2025, in Ukraine, compared to previous years, there is a significant increase in the incidence of latent iron deficiency and iron deficiency anemia among women of reproductive age, pregnant women and children. Meanwhile, in Tajikistan, every third pregnant woman suffers from anemia (from 32.0% to 39.4%). A comparative analysis of the prevalence of anemia among pregnant women living in Ukraine and Tajikistan shows that in the Tajik cohort the level of iron deficiency in 2024 was 1.6 times higher.

Conclusion: An increase in the incidence of latent iron deficiency and iron deficiency anemia in women of reproductive age, pregnant women and children has been established. The results obtained show that the use of a vitamin-mineral vitamin-mineral complexes "Feruza FL" with iron is more effective in improving the clinical picture and homeostasis in patients with iron deficiency anemia, compared to other iron preparations.

Key words:
anemia, children, women of reproductive age, pregnancy, mental health, quality of life, treatment, epidemiology

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Железодефицитная анемия у юных женщин репродуктивного возраста, беременных и детей

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Цель работы. Изучение частоты железодефицитных состояний у женщин репродуктивного возраста, беременных и детей, а также оценка эффективности лечения железодефицитной анемии с применением различных подходов к терапии на основе новых звеньев патогенеза.

Материалы и методы. В течение 20 лет обследовано 558 женщин репродуктивного возраста, 342 беременных женщин и 439 детей первого года жизни. Проведено биохимическое обследование 37 женщин с железодефицитной анемией I-II степени, 53 – с латентным дефицитом железа и 45 – без дефицита железа.

Результаты. В 2024–2025 годах в Украине, по сравнению с предыдущими годами, наблюдается значительный рост заболеваемости латентным дефицитом железа и железодефицитной анемией среди женщин репродуктивного возраста, беременных и детей. В то же время в Таджикистане анемией страдает каждая третья беременная женщина (от 32,0% до 39,4%). Сравнительный анализ распространённости анемии среди беременных женщин – жительниц Украины и Таджикистана показывает, что в таджикской когорте уровень дефицита железа в 2024 году был в 1,6 раза выше.

Заключение. Установлен рост частоты латентного дефицита железа и железодефицитной анемии у женщин репродуктивного возраста, беременных и детей. Полученные результаты показывают, что применение витаминно-минерального комплекса с железом «Феруза ФЛ» более эффективно в улучшении клинической картины и гомеостаза у пациенток с железодефицитной анемией, по сравнению с другими препаратами железа.

Ключевые слова:
анемия, дети, женщины репродуктивного возраста, беременность, ментальное здоровье, качество жизни, лечение, эпидемиология

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RELEVANCE

In recent years, anemia has occupied a significant share in the structure of extragenital diseases in women. The specific share of iron deficiency anemia (IDA) in economically developed countries ranges from 4.3% to 20% of the population, depending on age and gender, and in countries with difficult economic development conditions - from 30% to 48% [1, 2]. The prevalence of anemia among adolescents in European countries is about 4.0%, in less economically developed countries - it ranges from 45% to 32% [3]. In Ukraine, during 2021-2023, the frequency of anemia increased by 7.96% (from 24.75% to 26.72%) [4].

The relevance of the problem of IDA is due to the consequences for women's health, the cardiovascular system, reproductive function, high perinatal and maternal morbidity and mortality [5-8]. The development of IDA in women is due to abnormal uterine and juvenile bleeding due to heavy menstrual bleeding, the presence of pregnancy, especially in young mothers and women who have given birth many times, in the postpartum period, with impaired iron absorption, inflammatory processes of the intestine, helminthic invasions, vegetarianism, etc. [9-11]. Resistance to generally accepted anemia therapy in women, which leads to disease progression, high incidence of complications [12], determines the need to direct further efforts to find improved treatment for this pathology, which would take into account new data on the etiopathogenesis of the disease and the complex of pathological changes in the body.

OBJECTIVE OF THE WORK

To determine the frequency of iron deficiency states in young women of reproductive age, pregnant women and children, the effectiveness of treating iron deficiency anemia in patients using different approaches to therapy based on the study of new links in pathogenesis.

MATERIALS AND METHODS

The study was conducted in several directions: analysis of the dynamics of the prevalence of iron deficiency and anemia in young women of reproductive age, pregnant women and children of the first year of life with an interval of 10 years; study of the pathogenetic links of IDA and determination of optimal approaches to treatment.

Over 20 years, 558 young women aged 16-20 years were examined (143 in 2003-2004, 118 in 2012-2013, 287 in 2024-2025); 342 pregnant women (115 in 2002-2003, 124 in 2012-2013, 103 in 2024-2025), 439 children of the first year of life (158 in 2002-2023, 173 in 2012-2013, 107 in 2024-2025).

To determine pathogenetic changes and treatment effectiveness, 37 women with IDA were examined (of which 2/3 were of the first degree and 1/3 of the second degree), 53 with latent iron deficiency (LID) and 45 without iron deficiency. In the treatment of anemia of the I-II degree, oral iron preparations are used: simple ones containing only iron salts or combined ones, which in addition to iron salts may contain various vitamins, trace elements and other active ingredients that improve iron absorption and are safer to use. We conducted a study of the better effectiveness of using simple iron preparations and combined ones. At the time of inclusion in the study, women with IDA were randomly divided into 2 groups: the experimental group included 20 patients who used iron preparations containing vitamin-mineral complexes "Feruza FL" for 3 months to treat IDA; the comparison group included 17 patients who received one of the iron preparations for 3 months.

At the initial stage, the experimental and comparison groups did not differ, which allowed them to be combined for statistical

processing and analysis. Women without iron deficiency formed the control group.

The study was approved by local ethics committees.

The scientific novelty of the study lies in the analysis of the prevalence of iron deficiency and anemia during 2003-2025 in young women of reproductive age 16-20 years, in pregnant women and children of the first year of life, and the development of optimal approaches to the treatment of patients with IDA. All women were examined in accordance with current standards, which included anamnestic, clinical, biochemical, and ultrasound examinations using unified methods. A questionnaire was conducted among patients and doctors regarding their assessment of the effectiveness of IDA therapy 3 months after the start of treatment, where unsatisfactory was taken as -1, unchanged as 0, satisfactory as -1, good as 2, excellent as 3.

The presence of IDA in women was determined at a hemoglobin level of less than 120 g/l. Iron deficiency (iron deficiency state) was determined at a serum ferritin level of less than 15 μg/l. In the case of a ferritin concentration of 15-30 μg/l, clinical and anamnestic data were evaluated to determine the presence of an inflammatory or chronic process and establish an iron deficiency state, C-reactive protein was determined, dynamic determination of ferritin and iron levels was performed, and a hematologist was consulted.

Lipid peroxidation (LPO) in erythrocytes was assessed by the level of malondialdehyde (MDA) in the reaction with 2-thiobarbituric acid according to E.N. Korobeynikova [5]. The concentration of phospholipids in erythrocytes was determined by the chromatographic method, erythrocyte membrane permeability (EMP) and erythrocyte sorption capacity (ESC) - according to D. S. Dodkhoev [13], catecholamine- (CAE) and insulin-depositing function of erythrocytes (IDE) - using the cytochemical method in blood smears according to the methods of G.I. Mardar and D.P. Kladienko and L.I. Sandulyak [5]. The concentration of estradiol, progesterone, cortisol, serotonin, prolactin TSH was studied in blood serum by enzyme-linked immunosorbent assay. The level of anxiety and depression was determined by the hospital scale HADS anxiety and depression, the quality of life was assessed by the short form of the SF-36 Health Status Survey [14]. A questionnaire was conducted on the effectiveness of therapy and its assessment by doctors depending on the treatment performed. The examination of patients was carried out before and 3 months after the start of treatment. The results obtained were statistically processed using standard computer programs using the paired Student's t-test with the calculation of the arithmetic mean (M) and the standard error of the arithmetic mean (m) or the Wilcoxon signed-rank test depending on the normality of the distribution of differences. To compare the clinical effectiveness of treatment, the Kruskal-Wallis rank analysis of variance was used. The normality of the data distribution was checked using the Shapiro-Wilk test at a significance level of 0.01. When using all statistical methods, except the Shapiro-Wilk test, the significance level was taken as 0.05 - the difference between the data was considered significant at $p < 0.05$. To determine structural relationships, correlation analysis was used with the determination of the pairwise correlation coefficients - r and factor analysis.

RESULTS AND DISCUSSION

The data obtained show that during 2002-2025, the proportion of women with IDA slightly decreased, but the percentage with latent iron deficiency increased (Fig. 1).

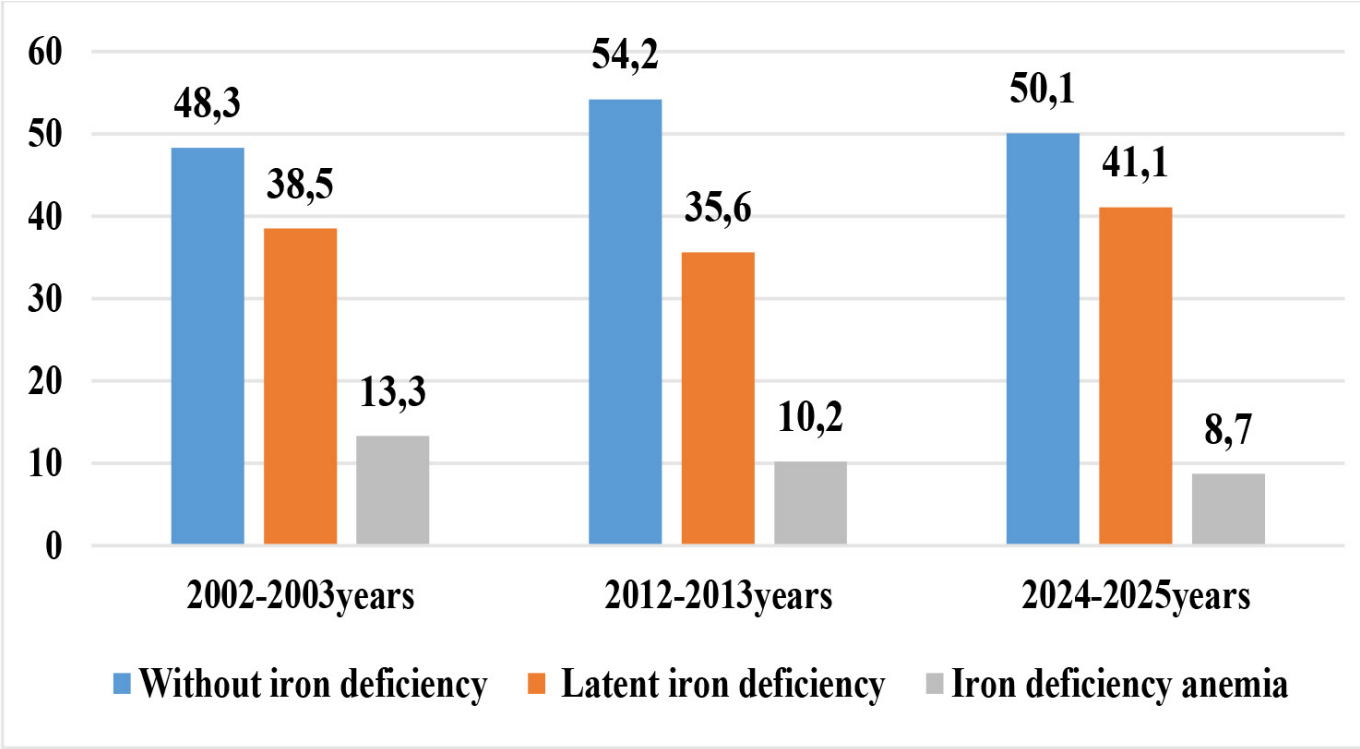

Fig. 1. Dynamics of the prevalence of iron deficiency states in young women of reproductive age (%)

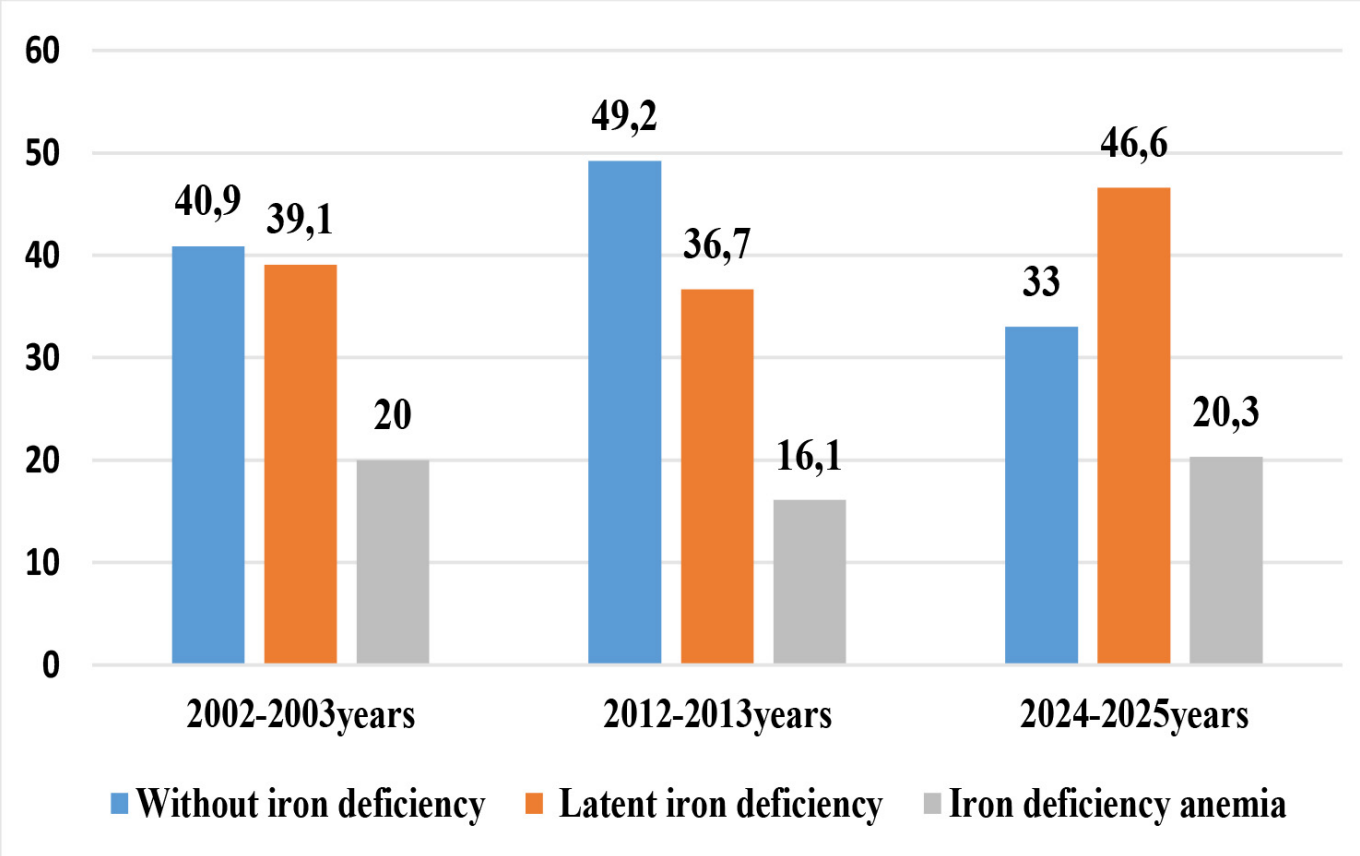

Fig. 2. Prevalence of iron deficiency in pregnant women (%)

At the same time, significant fluctuations were observed in iron deficiency states in pregnant women (Fig. 2). As can be seen from Fig. 2, in 2012-2013 the proportion of pregnant women with LDZ and IDA decreased, while in 2024-2025 all indicators significantly worsened compared to previous years: the frequency of women with LDZ and IDA increased. A similar situation was observed in children (Fig. 3).

Meanwhile, in the Republic of Tajikistan, according to the indicators for the period from 2020 to 2024, a slightly different trend in the spread of anemia among pregnant women is noted (Fig. 4).

Anemia is the most serious problem faced by women during pregnancy. Every third pregnant woman suffers from this pathology, the rates vary from 32.0% to 39.4%, which negatively affects not only the health of the pregnant woman herself, but also the development of the fetus.

As shown in Figure 4, despite the high rates of anemia among pregnant women in Tajikistan, there is a downward trend in morbidity among this cohort. Thus, in 2024, compared with 2020, the incidence rate decreased by 1.2 times.

A comparative analysis of the prevalence of anemia among pregnant women in Ukraine and Tajikistan shows that in Tajikistan, the level of iron deficiency among this cohort of women in 2024 is 1.6 times higher.

Analyzing the anamnestic data, it was found that 23% of women had clinical manifestations of iron deficiency states. In patients with IDA, 3.6-5.5 times more often, compared with women without iron deficiency and 2.3-2.9 times more often than in women with LDZ, general weakness, fatigue, sleep disorders, changes in the cardiovascular system, gastrointestinal tract and other clinical symptoms were observed.

At the same time, in this cohort of patients, menstrual disorders and abnormal uterine bleeding were observed 5.5 times more often than in the absence of LDZ and 2.8 times more often compared with data with LDZ, which indicates their role in the development of IDA.

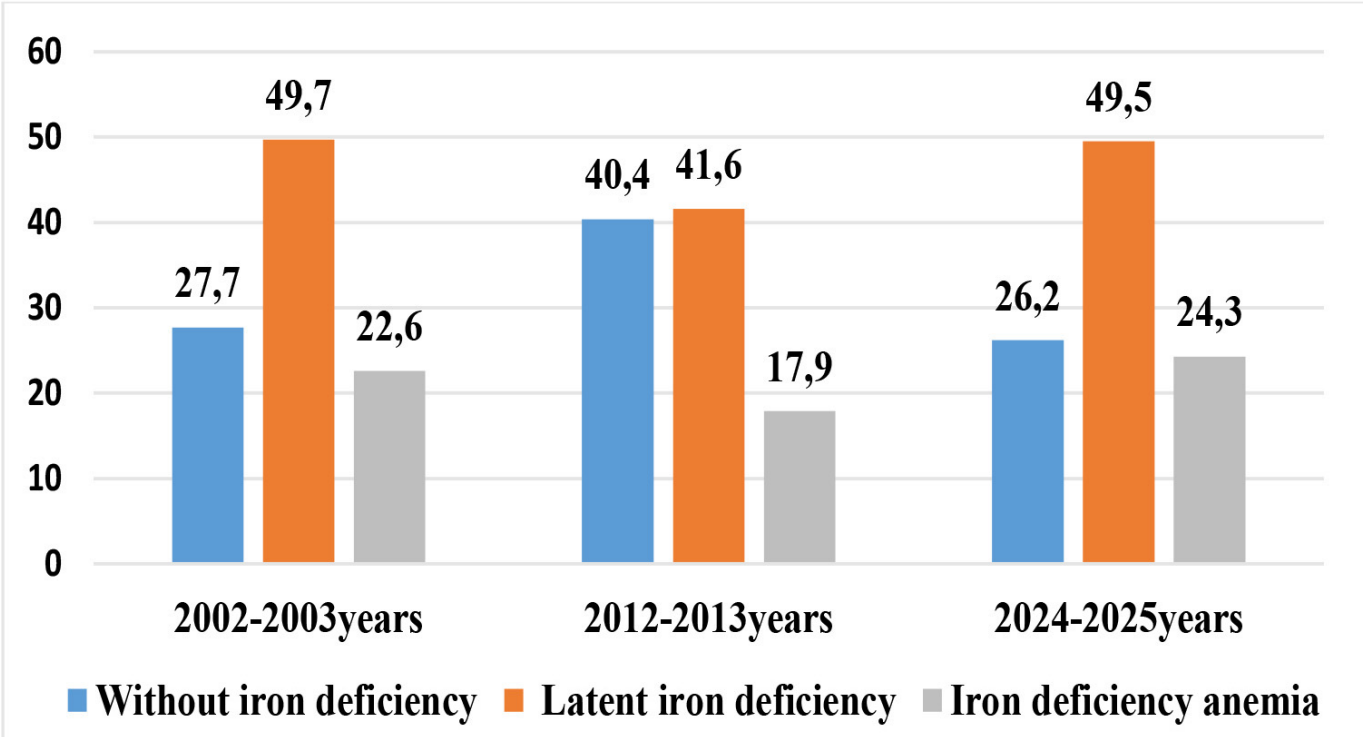

Fig. 3. Prevalence of iron deficiency states in children of the first year of life (%)

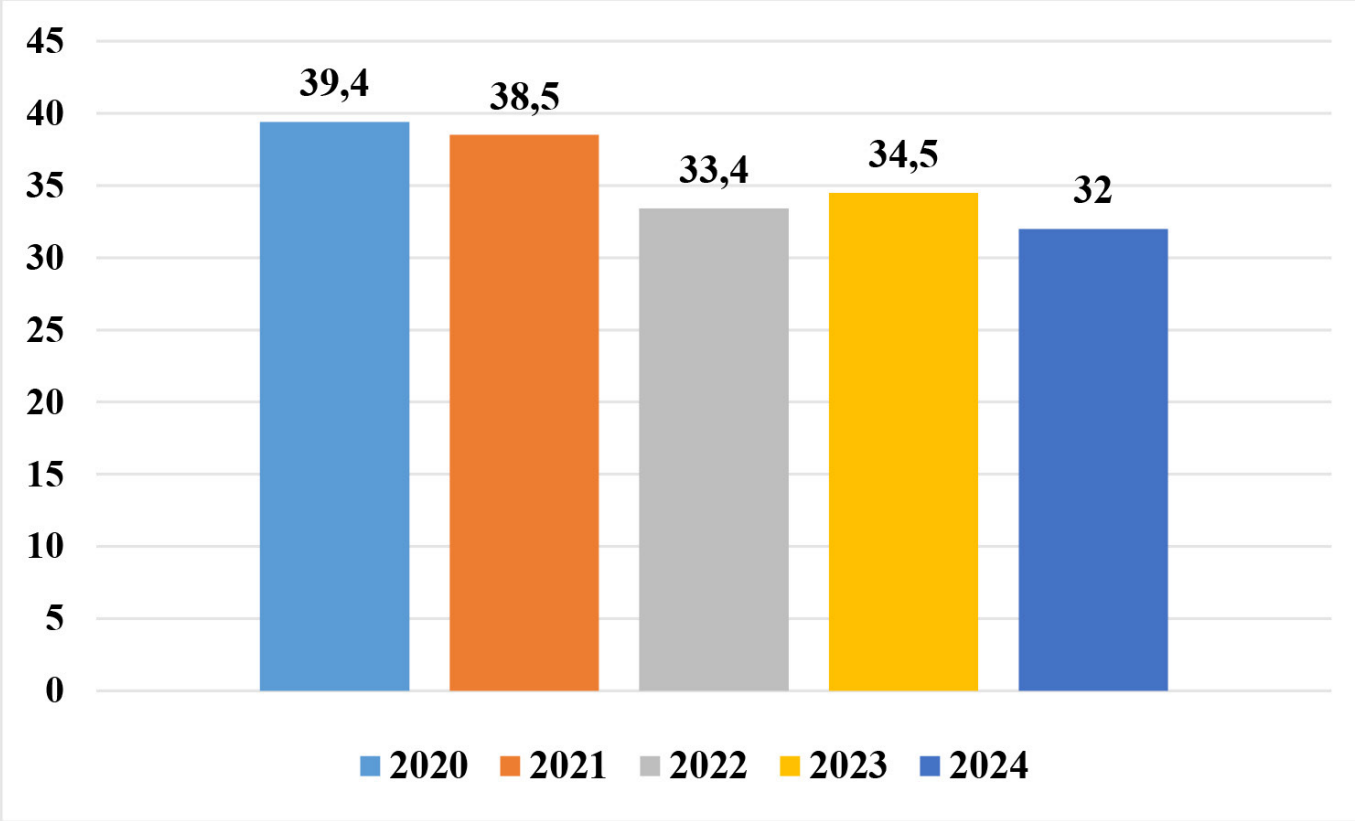

Fig. 4. Prevalence of iron deficiency among pregnant women in Tajikistan (%)

The results of the study of hormone levels in patients before treatment are noteworthy. We found a significant increase in estradiol levels by 1.25 times in patients with IDA and by 1.18 times in patients with LDZ compared to women without iron deficiency, against the background of a decrease in progesterone levels, which confirms the presence of an imbalance of sex hormones in the first phase of the menstrual cycle (Table 1).

Table 1. Hormone levels in the examined patients

Indicators	Patients		
	without iron deficiency	from LDZ	from IDA
Estradiol, 1st phase pg/ml	146,7±5,8	172,4±5,3*	182,1±6,1*
Progesterone, 1st phase nmol/l	1,64±0,10	1,36±0,11	1,21±0,13*
Cortisol, nmol/l	288,4±7,2	327,8±9,9*	367,4±7,5*●
Serotonin, ng/ml	151,4±6,2	127,1±6,5*	112,4±7,1*
Prolactin, ng/ml	11,6±0,9	15,3±0,9*	19,4±0,7*
TSH, mIU/l	2,5±0,2	3,1±0,3	3,7±0,3*
HOMA Index	1,86±0,07	2,08±0,10	2,29±0,11*

Notes: *- significant difference ($p<0.05$) when compared with the group without iron deficiency. ● - significant difference ($p<0.05$) when compared with the group with latent iron deficiency

At the same time, a significant increase in cortisol, prolactin, and a decrease in serotonin were observed in both patients with LDZ and IDA compared to individuals without iron deficiency. In LDZ, the TSH content increased by 1.24 times, the HOMA index – by 1.12 times compared to the control group, and in the presence of LDZ – by 1.48 times and 1.23 times, respectively. This indicates that women with IDA have serious changes in hormonal levels, insulin resistance, menstrual cycle disorders, accompanied by heavy or prolonged menstruation with significant blood loss, which lead to the development of LDZ and IDA.

A positive correlation was established between the level of hemoglobin and progesterone, serotonin, and a negative one – between the level of hemoglobin and estradiol, cortisol, prolactin, TSH, and the weak HOMA index. Correlation analysis revealed a relationship between the level of serum iron and estradiol, progesterone and cortisol in women with IDA. A weak correlation was established between serum iron levels and progesterone (r=+0.39), estradiol (r=-0.43), cortisol (r=-0.41), serotonin (r=+0.45), prolactin (r=-0.43), TSH (r=-0.41), and the HOMA index (r=+0.39). The correlation between ferritin and hormones was unidirectional, like iron, but had a greater strength with progesterone (r=+0.47), estradiol (r=-0.56), cortisol (r=-0.45), serotonin (r=+0.51), prolactin (r=-0.53), TSH (r=-0.49), and the HOMA index (r=+0.44). This indicates a greater impact of ferritin deficiency on hormonal homeostasis than iron levels. The weak or moderate correlation indicates that in addition to hemoglobin, iron and ferritin levels, other factors also affect hormone levels in women with IDA.

3 months after the start of therapy, both groups of patients with IDA showed significant normalization of hemoglobin levels, ferritin and serum iron concentrations compared to pre-treatment data (Fig. 5). Significantly better results were obtained in women who used a vitamin-mineral complex with iron compared to the group that used one of the iron preparations.

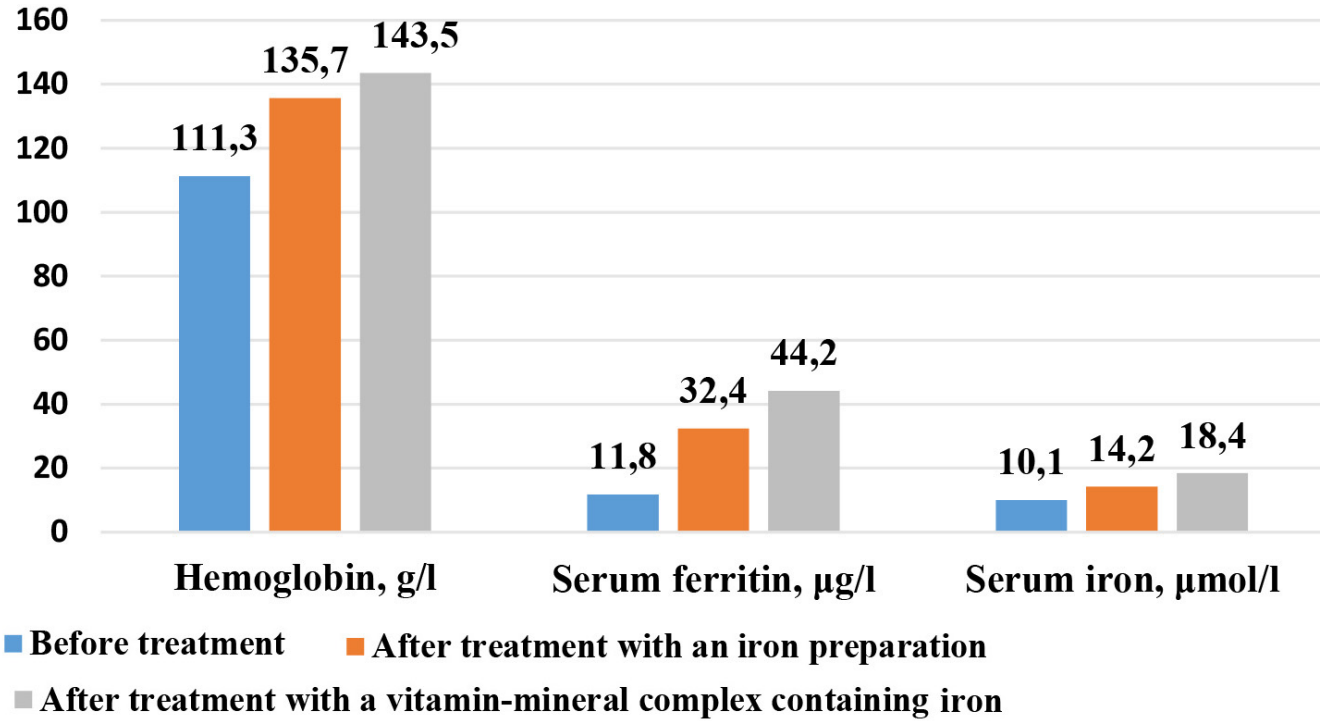

Fig. 5. Dynamics of hemoglobin, ferritin and iron content in blood serum during treatment of women with IDA

During treatment, the groups observed a decrease in the levels of cortisol, estradiol, prolactin, TSH, and HOMA index, and an increase in progesterone and serotonin, however, the best results were observed in women who received a vitamin-mineral complex with iron (Table 2).

The results obtained indicate that the use of a vitamin-mineral complex with iron is more effective in normalizing the content of hemoglobin, ferritin and serum iron, compared with other iron preparations, which, in turn, leads to the restoration of the hormonal background in women with IDA. This is confirmed by the Kruskal-Wallis rank analysis of variance. The results obtained showed that the medians of the distribution of hormones between the experimental and comparison groups after treatment had a statistically significant difference ($p<0.01$). This gives reason to argue that there are significant differences between the effectiveness of the considered treatment approaches, where the use of vitamin-mineral complexes with iron has a more significant impact not only in normalizing the level of hemoglobin, iron and ferritin, but also in normalizing the hormonal status.

The results of the patient questionnaire on the effectiveness of treatment and its assessment by doctors depending on the therapy performed were of some interest (Table 3).

Table 2. Dynamics of hormone levels in patients with anemia during treatment

Indicators, units of measurement	Patients with IDA		
	before treatment	after treatment with iron	after treatment with a vitamin-mineral complex with iron
Estradiol, 1st phase pg/ml	182,1±6,1	170,6±4,7	156,4±4,6●
Progesterone, 1st phase nmol/l	1,21±0,13	1,32±0,09	1,51±0,08●
Cortisol, nmol/l	367,4±7,5	335,1±7,3●	302,9±8,4●▲
Serotonin, ng/ml	112,4±5,9	124,9±7,0	144,7±4,8●▲
Prolactin, ng/ml	19,4±0,7	14,5±0,9●	13,2±1,0●
TSH, mIU/l	3,7±0,3	3,2±0,2	2,6±0,3●
HOMA Index	2,29±0,11	2,17±0,09*	1,94±0,11●

Notes: ● - significant difference ($p<0.05$) when compared with the group before treatment; ▲ - significant difference ($p<0.05$) when comparing the groups after treatment.

Table 3. Assessment of the effectiveness of treatment of IDA

Treatment effectiveness assessment, %	Patients after treatment		Doctors after treatment	
	with iron	a vitamin-mineral complex with iron	with iron	a vitamin-mineral complex with iron
No change	5,9	0,0	5,9	0,0
Satisfactory	52,9	20,0	47,1	15,0
Good	35,3	65,0	41,2	60,0
Excellent	5,9	15,0	5,9	25,0
Conditional average	1,41±0,12	1,95±0,11▲	1,47±0,11	2,10±0,14▲

Notes: ▲- significant difference ($p<0.05$) after treatment between the corresponding indicators of the groups receiving the iron preparation and the vitamin-mineral complex containing iron

As can be seen from Table 3, 3 months after the start of treatment, its positive effectiveness was noted in all groups.

There were some peculiarities in the assessment of patients depending on the choice of therapy. Thus, 3 months after the start of treatment, in the group of patients with IDA who received an iron preparation, the assessment was satisfactory, which is also confirmed by the conditional mean value, while in the group that used a vitamin-mineral complex with iron, the assessment was good, and the conditional mean value of the assessment was statistically higher than in the comparison group. The results of the assessment of the effectiveness of therapy by both patients and doctors were approximately the same (Table 3). The effectiveness of treatment in the group of patients who received a vitamin-mineral complex with iron and doctors was estimated statistically significantly higher than in the group that received an iron preparation.

To objectify the assessment of the effectiveness of IDA therapy by doctors and patients, we analyzed the results of the pair-

Table 4. MDA of erythrocytes, EPR, concentration of erythrocyte phospholipid fractions, permeability of erythrocyte membranes, ESC, catecholamine- and insulin-depositing function of erythrocytes in patients with iron deficiency anemia during treatment

Indicators, units of measurement	Patients without iron deficiency	Patients with IDA		
		before treatment	after treatment with iron	after treatment with a vitamin-mineral complex with iron
MDA of erythrocytes, μmol/l	12,58±0,67	18,6±0,69*	16,3±0,44*●	13,7±0,45●▲
EPR, %	14,3±	16,6±	15,9±	15,1±
MDA/ EPR	0,88	1,12	1,03	0,91
Phosphatidylinositol, μmol/L	811±	611±	70637,6	764±
Sphingomyelin, μmol/L	181673,8	1435±	1538±	171155,8●
Phosphatidylcholine, μmol/L	221778,1	1817±	1955±	2134±
EMP, %	100,0±3,2	125,3±3,7*	117,1±3,1*	105,8±2,9●▲
ESC, %	36,1±1,3	44,2±1,4*	41,8±1,7*	36,5±1,5●▲
CAE, units	145,1±5,2	179,3±4,3*	166,4±5,1*	148,6±4,4●▲
IDE, units	82,1±3,4*	57,3±3,7*	66,8±4,3*	77,4±3,5●

Notes: *- significant difference ($p<0.05$) when compared with the control group;

● - significant difference ($p<0.05$) when compared with the group before treatment; ▲ - significant difference ($p<0.05$) when comparing the groups after treatment.

wise correlation between the assessment by doctors and patients 3 months after the start of treatment. The strength of the pairwise correlation of conditional mean values (+0.68) was statistically significantly high, which indicates the same, in most cases, assessment of the effectiveness of treatment by doctors and patients. However, the lack of one hundred percent coincidence indicates a different vision of the effectiveness of treatment by patients and doctors.

During the study, MDA in erythrocytes and erythrocyte peroxide resistance (EPR), phospholipid content, EMP, ESC, CAE and IDE were determined in patients with IDA before and after treatment, the results of which are presented in Table 4.

In patients with IDA, before the start of treatment, a statistically significant increase in the number of MDA-active products and a slight increase in EPR were detected, which led to an increase in the MDA/EPR ratio, and therefore the prevalence of the activity of the POL system over antioxidant protection in erythrocytes. It is likely that the accumulation of MDA in the cell leads to its binding to lipids and proteins of cell membranes, which thereby enhances LPO and disrupts the functioning of cell membranes, which may result in the development of cellular hypoxia. This is indicated by a significant increase in TEM and KAE against the background of a decrease in IDE in women with IDA compared to patients without iron deficiency (Table 4). The content of phosphatidylserine, lysolecithin, phosphatidylinositol, phosphatidylglycerol, and phosphatidiethanolamine in patients with IDA did not differ significantly compared to the control group, however, a significant decrease in the concentration of phosphatidylinositol, sphingomyelin, and phosphatidylcholine was noted.

After the treatment, the MDA level significantly decreased in both groups of women with IDA compared to the data before treatment. At the same time, the content of phosphatidylinositol, sphingomyelin and phosphatidylcholine increased in the groups, but significant differences were observed in the group that used the vitamin-mineral complex with iron, compared to the data before treatment. This had a positive effect on the state of erythrocyte membranes: EMP, ESC, CAE decreased and IDE increased, but significantly better results were observed in the group that took the vitamin-mineral complex with iron, compared to the data before treatment and the results in the comparison group. The results obtained indicate a higher effectiveness of the iron preparation in combination with the vitamin-mineral complex in the treatment of IDA.

Having conducted a correlation analysis between the level of hemoglobin in IDA, we obtained a negative correlation with the level of MDA of erythrocytes (r=-0.64), EMP (r=-0.57), CAE (r=-0.51), and a positive correlation with the level of sphingomyelin of erythrocytes (r=-0.39), phosphatidylcholine of erythrocytes (r=-0.43), IDE (r=-0.47). This indicates the influence of a reduced level of hemoglobin on these indicators. However, the decrease in hemoglobin concentration on the content of MDA, phospholipids, EMP, ESC, CAE, IDE according to the results of factor analysis ranged from 35.4% to 55%, which indicates that other factors also affect the changes in these factors in anemia.

Thus, in IDA, there is not only a decrease in the number of erythrocytes, but also a disruption in the function of cell membranes, and these disruptions are directly proportional to the severity of anemia.

During the study, we paid great attention to determining the characteristics of the mental state of patients with IDA, the results of which are presented in Table 5. As can be seen from Table 5, patients with IDA had higher levels of anxiety and depression before treatment, which affected their quality

Table 5. Dynamics of anxiety, depression, quality of life in patients with IDA in the dynamics of observation, points (M±m)

Indicators	Patients without iron deficiency	Patients with IDA		
		before treatment	after treatment with iron	after treatment with a vitamin-mineral complex with iron
HADS, anxiety	3,0±0,4	7,6±0,8*	6,2±0,7*	3,5±0,5●▲
HADS, depression	3,2±0,4	5,2±0,5*	4,4±0,6	3,5±0,4●
Physical functioning	66,4±1,2	54,2±1,3*	60,4±1,5*●	64,8±1,6●
Life activities	70,8±1,4	61,4±1,5*	67,9±1,6●	69,1±1,4●
Social functioning	73,2±2,0	59,2±2,1*	67,5±2,5●	71,9±2,2●

Notes: *- significant difference (p<0.05) when compared with the control group; ● - significant difference (p<0.05) when compared with the group before treatment; ▲ - significant difference (p<0.05) when comparing the groups after treatment.

of life, since indicators of physical and social functioning and life activity were reduced compared to the data in women without iron deficiency.

In the group of patients after treatment with iron preparations, the levels of anxiety and depression were lower, which is probably explained by the decrease in cortisol and prolactin levels.

Their anxiety level remained subclinical, and the level of depression was on average within the normal range, which indicates an improvement in the psychological assessment of patients after treatment with iron preparations due to the general improvement in health, however, there was no complete normalization of the indicators of the mental state of women.

3 months after the start of therapy, patients who received a vitamin-mineral complex with iron had statistically significantly lower levels of anxiety and depression compared to both the data before treatment and the group that received iron preparations. The results of the experimental group that used a vitamin-mineral complex with iron approached the values in women without iron deficiency.

The level of anxiety and depression in patients with IDA was normal, and a significant improvement in their clinical picture against the background of the use of a vitamin-mineral complex with iron affected the normalization of cortisol and prolactin concentrations.

A significant improvement in the clinical picture, the effectiveness of therapy, metabolism in patients with IDA, as well as a decrease in anxiety and depression and an increase in the quality of life in patients when using a vitamin-mineral complex with iron indicates a balance of ingredients, the need to use not only iron in the treatment of anemia, but also vitamin-mineral complexes with an additional content of substances that contribute to better absorption of iron, reduce negative

side effects, and also contribute to improving metabolism, primarily in erythrocytes.

This will improve both the state of mental health and the quality of life. First of all, this applies to women of reproductive age to ensure the normal course of pregnancy and the health of their future children.

CONCLUSION

Currently, the frequency of latent iron deficiency and iron deficiency anemia in young women of reproductive age and children is increasing, which has a negative impact on their health. In patients with IDA, an imbalance in the level of sex hormones, cortisol, the prevalence of lipid peroxidation, impaired concentration of phospholipids, functioning of cell membranes, increased anxiety and depression, and a decrease in the quality of life compared to women without iron deficiency were found.

After 3 months from the start of therapy, patients who received a vitamin-mineral complex with iron had a more effective restoration of hemoglobin, ferritin, serum iron, normalization of hormonal levels, NOMA index, lipid peroxidation in erythrocytes, function and structure of erythrocyte membranes, and positive changes in mental health compared to the comparison group.

The results obtained indicate that the use of a vitamin-mineral complex with iron is more effective in improving the clinical picture and homeostasis in patients with IDA, compared to other iron preparations, since its components contain not only iron, but also a number of vitamins and trace elements that play an important role in various physiological functions of the body and have a positive effect on the psychological state of this cohort of women.

Prospects for further scientific research lie in continuing the study of iron deficiency anemia in women under stress.

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