World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-4, November 2021
ISSN: 2749-3644

THE ROLE OF VITAMINS IN IRON DEFICIENCY IN PREGNANT WOMEN

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Article history:

Received: September 3rd 2021
Accepted: October 4th 2021
Published: November 28th 2021

Abstract:

The article deals with the problem of iron deficiency anemia as a polyetiological disease from the point of view of polydeficiency microelementosis of the pregnant woman's body. Deficiency of vitamins and minerals during pregnancy significantly increases the risk of perinatal pathology, increases infant mortality, is one of the causes of prematurity, congenital anomalies of development, affects the physical and mental development of the child. Diagnosis of polyhypovitaminosis is difficult due to the absence of pathognomonic clinical picture.

Keywords: Iron Deficiency, Pregnancy, Iron Preparations, Vitamin-Mineral Correction.

THE PURPOSE OF OUR STUDY WAS

To determine the quantitative content of vitamins in the body of pregnant women, depending on the severity of iron deficiency. The study included 34 pregnant women at gestational age between 22 and 35 weeks.

Materials and methods of research: We examined 34 pregnant women in gestational age from 22 to 35 weeks. During 2020-2021 in Samarkand in clinic No. 2 in the department of obstetrics and gynecology. All pregnant women took red blood counts and parameters of the exchange of the samejelly.

The results of the studyshowed that,with the progression of anemia, the content of folic acid and vitamin E in the blood of the examined pregnant women is aggravated. To solve the problem of combined iron deficiency and trace elements, it is advisable to prescribe combined iron preparations, as well as multivitamin complexes with trace elements for pregnant women. Despite the close attention to the problem of anemia, the relevance of this problem cannot be overestimated. Due to the increase in the need for iron in various physiological conditions and chronic blood loss, the frequency of iron deficiency anemia (IDA) in women is several times higher than in men. During gestation, in the vast majority of cases (98-99%), anemia is a consequence of iron deficiency states [7,10, 11]. Pregnancy complicated by anemia can lead to an increase in the frequency of gestosis, premature birth, the formation of placental insufficiency, delayed growth and development of the fetus, its intrauterine death, anomalies of labor, increased blood loss in childbirth and the postpartum period, infectious complications [1]. It should be noted that latent iron deficiency (LJ) in pregnant women occurs more often than its manifest form, developing at a period of 21.6 ± 1.1 weeks [2,12]. At the same time, IDA implies not only iron deficiency, but also a lack of other micronutrients [4]. With an increase in the gestational age, the frequency of true iron monodeficiency decreases, leading to polydeficiency microelementosis of the body, which is noted in more than half of pregnant women. The current situation is not based on only medical, but also socio-economic reasons, among which a significant place is occupied by the aggressive impact of macro- and microecosystems, as well as the violation of the rational nutrition system of the population in all age periods. Unbalanced diets, in particular, vitamin deficiency states are considered by WHO as a problem of starvation. According to the data presented, even a balanced diet is deficient in vitamins by 20-30% (regardless of the time of year), and the mother's body for the fetus is the only source of vitamins and other nutrients [3]. Vitamin deficiency in the preimplantation period and even more so during pregnancy increases the risk of perinatal pathology, increases infant mortality, is one of the causes of prematurity, congenital deformities, congenital anomalies of development, affects the physical and mental development ofthe child a[6,8,9] (Table 1).

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The effect of certain vitamins and trace elements on the development of the fetus

Trace elements	
Iron	Synthesis of hemoglobin and myoglobin, cytochromes, catalase, peroxidase, etc.
Zinc	Exchange of nucleic acids (transfer of genetic information), formation and growth of bone tissue, participation in the action of insulin
Copper	Development of nervous tissue, differentiation of erythrocytes, bone mineralization
Manganese	Participation in the formation of the nervous and immune systems, hearing, vision, cartilage and synovial fluid
Iodine	Development of the central nervous system, formation of the structure and function of the pancreas
Vitamins	
A (retinol)	Formation of the organ of vision, skin and mucous membranes
D (кальциферол)	Formation and growth of bone tissue, phosphorus-calcium metabolism
E (tocopherol)	Formation and growth of bone tissue, phosphorus-calcium metabolism
C (ascorbic acid)	Formation of connective, cartilage and bone tissues, synthesis of steroid hormones
B 12 (Cyanocobalamin)	Differentiation and maturation of red blood cells in the red bone marrow

The "gold standard" of the treatment of IDA is the use of iron preparations inside, mainly Fe3 +. Despite the WHO recommendations on the use of Fe2+ drugs for the treatment of NDA as the most effective, drugs with low bioavailability based on Fe3 + are actively used due to their better tolerability. To solve the problem of combined deficiency of iron and trace elements, it is advisable to prescribe combined iron preparations - a combination with vitamins B12, folic acid, copper, etc. In addition to the appointment of iron preparations, multivitamins and biological active supplements are indicated. Modern vitamin preparations used during pregnancy can be divided into 3 groups: 1) monovitamins; 2) multivitamins; 3) vitamins with trace elements. In multivitamin preparations, vitamins are contained in prophylactic doses, i.e. in doses close to the physiological needs of the body [5]. Currently, complex preparations are widely used, which, in addition to iron, include vitamins and trace elements ("Vitrum Prenal Forte", "Pregnavit", "Menterna", "Multitabs", "Elevit Pronatal", "Complivit Mama", etc.). As a rule, these vitamin complexes are taken in courses during the entire gestation. The severity of anemia was assessed according to the WHO classification of anemia in pregnant women: mild degree - hemoglobin (Hb) level is from 90 to 109 g / l, moderate - Hb from 70 to 89 g / l, severe - Hb less than 70 g / l [8]. Clinical and laboratory research included a detailed blood test, a biochemical blood test, a study of iron metabolism parameters (serum iron, ferritin, transferrin, olzhss), a study of the quantitative composition of vitamins (folic acid and vitamin E). IDA of the I degree was diagnosed in 11 patients, IDA of the II degree - in 9 women, latent iron deficiency was established in 14 pregnant women. This contingent made up the main group. The control group included 20 pregnant women without signs of iron deficiency. The characteristics of the presented groups were identical in age, the presence of extragenital and gynecological diseases, and the parity of childbirth. The most common reason for hospitalization of pregnant women with iron deficiency was the threat of abortion, significantly more often than in the control group. Despite the ongoing therapy, 6 patients with anemia required repeated hospitalization, and often the threat of miscarriage was recurrent, starting from the early stages of gestation (up to 12 weeks). When determining the content of folic acid and vitamin E in pregnant women, a blood serum study was conducted (Table 2).

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Table 2
The content of vitamins in pregnant women, depending on the severity of iron deficiency (before treatment)

Index	ЖДА II ст. (n = 9)	ЖДА I ст. (n = 11)	ЛДЖ (n = 14)	Pregnant women without iron deficiency (n = 20)
Folic acid, ng / ml 5.3-14.4 ng / ml - the norm of 3.7-5.3 ng / ml - borderline < 3.7 ng / ml - deficiency	2,1 ± 0,06*	3,6 ± 0,2*	3,87 ± 0,04*	5,2 ± 0,3
Vitamin E 12–42 mcmole/l — norm	14 ± 0,09*	17 ± 0,04*	19 ± 0,6*	22 ± 0,07

*p < 0.01 (confidence of differences between groups).

A laboratory study of clinical blood tests showed that pregnant women with iron deficiency had a significant decrease in folic acid content in direct dependence on the severity of anemia, and in the group with LLJ and IDA I degree, the differences were insignificant. As can be seen from the table, folic acid deficiency is noted in all stages of YDA, as well as in pregnant women without signs of iron deficiency. The content of vitamin E, despite the presence of iron deficiency, is within the permissible norm, but, nevertheless, there is a progressive decrease in it with an aggravation of the parameters of iron metabolism. Therapy of iron deficiency was carried out with a complex iron preparation Ferro-Folgamma, which includes ferrous sulfate 112.6 mg, folic acid 5 mg, cyanocobalamin 0.010 mg, ascorbic acid 100 mg. With mild anemia and LLJ, the drug was prescribed 1 capsule 2 times a day, with grade II IDA - 1 capsule 3 times a day. All subjects had good tolerability of the drug. Patients without iron deficiency were prescribed vitamin complexes with trace elements for pregnant women. In addition to pharmacological correction, women were recommended a balanced diet with a sufficient content of protein, iron and trace elements. The dynamics of the increase in folic acid and vitamin E was assessed 4 weeks after the start of treatment (Table 3). Despite the improvement in hematological parameters, and therefore changes in the number of pregnant women in each group, the assessment of vitamin status was carried out among the number of pregnant women that was in each group before the start oftreatment.

Table 3
The content of vitamins in pregnant women, depending on the severity of iron deficiency (after treatment)

Index	ЖДА II ст. (n = 9)	ЖДА I ст. (n = 11)	ЛДЖ (n = 14)	Pregnant women without iron deficiency (n = 20)
Folic acid, ng / ml 5.3-14.4 ng / ml - the norm of 3.7-5.3 ng / ml - borderline < 3.7 ng / ml - deficiency	3,1 ± 0,03*	3,6 ± 0,2*	3,87 ± 0,04*	5,6 ± 0,07
Vitamin E 12–42 mcmole/l — norm	15 ± 0,04*	4,9 ± 0,6*	19 ± 0,5*	24 ± 0,01

**p < 0.01 (reliability of differences between groups).*

As the data of table show. 3, the study showed the effectiveness of correction of iron and vitamin deficiency, regardless of the severity of anemia. After treatment, there was a significant increase in folic acid in women with iron deficiency, regardless of its severity. In pregnant women with LJ and mild IDA, the level of folic acid was within acceptable values. Despite the absence of vitamin E deficiency in all study groups before treatment, its increase was noted against the background of therapy, balanced nutrition and vitamin-mineral correction in all pregnant women.

CONCLUSIONS

1. With the progression of anemia in pregnant women, the content of folic acid in the blood serum is aggravated. Despite the fact that in the studied pregnant women the level of vitamin E is within acceptable values, its decrease is noted with an increase in iron deficiency. 2. To solve the problem of combined iron deficiency, preference should be given to combined iron preparations. 3. Pregnant women

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ISSN: 2749-3644

without iron deficiency for the purpose of its prevention should be recommended regular intake of vitamin preparations with trace elements and a balanced diet, which contributes to the development of a healthy child, ensuring the increased needs of the mother in minerals.

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