

Features Indicators of Micronutrients in Patients with Reproductive Disorders

Kholova Nodira Fazliddinovna

Bukhara Medical Institute named after Abu Ali ibn Sino, Bukhara, Uzbekistan

Abstract Purpose of the study to study the comparative indicators of micronutrients in patients with reproductive disorders. To analyze the composition of trace elements, the study group consisted of patients with reproductive system disorders included in the main group, and for comparison, the control group of 30 healthy girls and girls of reproductive age, we took blood from a vein on an empty stomach in the morning. Thus, we believe that in adolescent girls and in girls of the early reproductive period, a mandatory study of the microelement composition should be special indications, those with existing signs of infantilism, such as hypoplasia of the uterus and ovaries of varying degrees - calcium, phosphorus, vitamin D3, with functional cysts and tumor processes, amenorrhea conditionally normal size of the uterus and ovaries - zinc and copper, and in the absence of signs of thyrotoxicosis, check the thyroid hormones and the concentration of iodine in the blood.

Keywords Microelement composition, Hormonal imbalance, Reproductive dysfunction, Zinc, Copper, Calcium, Phosphorus

1. Introduction

The priority direction of the state policy of the Republic of Uzbekistan in the field of health care is the protection of the reproductive health of adolescent girls and girls of early reproductive age, strengthening general somatic health by predicting and early detection of pathologies of the reproductive system and their timely correction in order to improve generative potential [3].

For the full functioning of the human body, nutrients must be supplied daily - special compounds that are not produced by the body on its own.

Nutrients refers to the chemical elements and substances that must come from food, which also contain minerals. In the event of a deficiency or shortage of any nutrient, pathological conditions of varying degrees may develop, depending on its degree of deficiency, and they should be replenished from the outside [1,9].

One of the main functions of trace elements is, of course, to maintain the vital activity of the body and prevent the development of pathological conditions of complications such as tumor processes, nervous strain, hypothyroidism, even infertility in both women and men [2].

In Uzbekistan, among microelements, such microelements as calcium, magnesium and phosphorus have a special place. According to the literature data, it is known that calcium and phosphorus complement each other in their main function –

the preservation of the mineral basis of bone tissue. And also in the formation of bone tissue, there is undoubtedly a role of vitamin D3 cholecalciferol [4,6].

Based on the literature data, such trace elements as calcium and phosphorus are actively involved in the formation of bone tissue, and also maintain the acid-base balance of the body's homeostasis, which is important during the puberty of a girl, and is considered a responsible period - the period of the formation of the first menstrual cycles [5,8].

The role of the micronutrient iodine is undoubtedly involved in the synthesis of TSH and thereby prevents hypothyroidism of varying degrees, which is also directly related to the development of reproductive dysfunctions of various nature in its deficiency [7].

Based on the above, we set a goal - to study the composition of microelements in the blood of patients, depending on the type of their violations of the function of the reproductive system.

Purpose of the study: to study the comparative indicators of micronutrients in patients with reproductive disorders.

2. Materials and Methods

To achieve the goal, we compared the content of calcium, phosphorus, magnesium in the blood serum of women with menstrual disorders such as cyclic uterine cycles, late menarche, amenorrhea, oligo-opsomenorrhea, as well as infantilism.

To analyze the composition of trace elements, the study group consisted of patients with reproductive system disorders included in the main group, and for comparison, the control group of 30 healthy girls and girls of reproductive age, we took blood from a vein on an empty stomach in the morning.

To analyze the composition of microelements in the blood of girls with ROP, we also paid due attention to their diet, since it is a correct and timely balanced diet that can eliminate many deficiency conditions associated with nutrients [3,6].

According to a specially compiled questionnaire, we found that patients of the main group consume about 110-160g of meat per week, dairy products - in the form of milk, katik and cottage cheese and suzma - 1.5-2 liters, fish - rarely - up to 100-200g per month, greens in the form of dill, cilantro, lettuce leaves - 1 bunch in general. Constantly their diet was filled with fried potatoes, rice, fast foods, and a constantly consumed and favorite type of food; porridge, especially dairy, vegetable salads - our patients did not particularly use.

3. Research Results

To compare the content of trace elements, all 120 patients of the main group were conditionally divided into 3 subgroups: group A - patients with infantilism - 23; group B - With various tumors or tumor-like neoplasms - this included cases with uterine myoma (5), endometriosis (14), dermoid cyst (7), follicular cyst (25), and some occurred in a combined form, for example, uterine myoma with follicular ovarian cysts were in 3, dermoid cysts with endometrial foci and adenomyosis in 2, follicular cysts with PID - a total of 51 girls;

C subgroup - 46 patients without infantilism and neoplasms, but with existing MC disorders (Table 1).

In our patients in Group A, the calcium content was the lowest 1.85 mmol / l, in group C (1.95 mmol / l) the indicator was also lower than in healthy girls (2.15 mmol / l), in comparison with patients with various tumor-like conditions

(2.05 mmol/l).

In the group with infantilism and mono-disturbance of the menstrual cycle, calcium had a special place in the development of pathological abnormalities and were lower than normal reference fluctuations - 2.10–2.55 mmol/l.

And in group B, calcium in the blood varied within the normative reference values and everything, like the data of other groups, was not significantly low - 2.05 mmol / l.

Analyzing samples with low calcium values, it was found that such results (below 1.90 mmol / l) were in girls with short stature (at 13-15 years old below 150 mm), with underweight (BMI below 18), which ranged from since this microelement is involved in the growth of bone tissue and nerve conduction, and it should be noted that this group of girls consumed dairy products in sufficient quantities in acceptable norms, and it follows that the calcium content does not always depend on the nature of the food. But in these girls, the vitamin D3 index was below the permissible norms from 10 mg per day to 20.

The cases of hypothyroidism were more in patients from subgroups A and C, which is in line with the data of a number of studies (PetrovYu.A., Bagnovskaya A.G., 2020).

Also, given that this trace element is involved in the growth of bone tissue and nerve conduction, it is probably in the first group that these complications such as short stature and nervous lability arose.

Phosphorus in group A, as well as calcium, was less (0.85 mmol / l) than in two groups B (0.98 mmol / l) and C (1.15 mmol / l) and all indicators of three groups with different pathological changes in the reproductive areas were significantly lower than the phosphorus index in healthy women, which amounted to 1.28 mmol / l.

According to the literature data (Belaya Yu.M., Balan V.E.. 2017), calcium and phosphorus complement each other in their main function - the preservation of the mineral basis of bone tissue, and phosphorus indicators were also necessary for us, since a decrease in these microelements and their decrease is manifested not only their performance of both elements indicates their actual decrease and violation of the optimal ratio between them.

Table 1. Comparative data on the composition of trace elements depending on the pathology in patients with reproductive disorders

Name of microelement	Controlgroup n=30	Group -A with infantilism n=23	Group -B formations n=51	Group C- with menstrual cycle disorder n=46
Calcium, 2.10–2.55 mmol/l	2,15±0,17	1,85±0,10*	2,05±0,54^	1,95±0,19*^°
Phosphorus, 0.81-1.45 mmol / l	1,28±0,10	0,85±0,02**	0,98±0,07^^	1,15±0,05*^°
Magnesium, 0.7-4 μmol/l	2,8±0,33	1,96±0,19*	2,26±0,45^^	1,56±0,10*^°
Zinc 0.75-1.50 mcg/ml	1,35±0,11	0,98±0,02*	0,76±0,04***^^	1,31±0,06*^°°
Copper-11-24 μmol/l	18,1±0,12	12,3±0,26***	13,5±0,18***^^	15,9±0,32***^^°°

Note: * - differences are significant in comparison with the data of the control group (*- P <0.05, **- P <0.01, *** - P <0.001), ^ - differences are significant in comparison with the data of group -A (^- P <0.05^^- P <0.01, ^^ - P <0.001), ^ - differences are significant in comparison with the data of the -A group, ° - differences are significant in comparison with the data of the -B group, (°-P<0.05, °°-P<0.01, °°°-P<0.001).

Magnesium in the blood also fluctuated to the side and it was very interesting that it was low compared to other subgroups in the group of patients without infantilism and neoplasms (group C -1.56 $\mu\text{mol/l}$). The magnesium content up to 2.26 $\mu\text{mol/l}$ was in group B i.e. closer to the normative indicators, as in healthy girls - 1.96 $\mu\text{mol/l}$.

As for the microelements of zinc and copper, what was expected was not significantly lower in the groups of patients with myoma, endometriosis, i.e. with various tumor-like formations, including a follicular cyst.

Significantly low levels of these trace elements were in patients of subgroup B, corresponded to the lower limit of the norm, and based on this, in the future we should recommend foods rich in zinc and copper in the diet, prescribe zinc supplements in a daily dose of up to 40 mg-50 and copper 3-5 mg per day, to normalize hormonal imbalance and prevent tumors of the female genital area. Comparison of the microelement composition of patients with impaired reproductive function showed multidirectional violations in the form of the lower limits of the norm of calcium, phosphorus, average values of magnesium and the relative deficiency of zinc and copper, which indicates the undoubted role of micronutrients in the formation of a normal menstrual cycle. It is the lack of otherwise called deficiency of the above microelements that plays a significant role in the formation of many pathologies of adolescence in terms of reproduction.

A special place is occupied by several patients with amenorrhea, but with smaller sizes of both the uterus and ovaries, as well as 2 cases of aplasia of the uterus and ovaries, the composition of trace elements in their blood also did not differ from those of, for example, infantile girls, moreover, zinc and copper were similar as in patients from the group of mono-disorders of menstrual function (C-group). It follows from this that trace elements do not always play a responsible role in anatomical disorders, and therefore, in such cases, in our opinion, karyotyping should be checked to identify genetic disorders, which we did and in two organs with aplasia, the set of chromosomes was 45XY.

Thus, we believe that in adolescent girls and in girls of the early reproductive period, a mandatory study of the microelement composition should be special indications, those with existing signs of infantilism, such as hypoplasia of the uterus and ovaries of varying degrees - calcium, phosphorus, vitamin D₃, with functional cysts and tumor processes, amenorrhea, conditionally normal size of the uterus and ovaries - zinc and copper, and in the absence of signs of thyrotoxicosis, check the thyroid hormones and the concentration of iodine in the blood.

Our recommendations on micronutrients will contribute to the timely and early diagnosis of reproductive disorders in adolescents, and a full-fledged rational diet, taking into account micronutrient deficiencies in the composition of food, will be able to eliminate possible complications in terms of the reproductive system.

Mandatory introduction into the diet of a girl with a deficiency of calcium, phosphorus and vitamin D₃ - nuts, mushrooms, eggs, cheese, meat and fish, as well as dairy products - normalizes calcium-phosphorus, zinc, copper deficiency, which should be taken into account when planning a diet for young women and teenagers. The use of potatoes in the diet is also useful in terms of the balance of microelements such as iron and iodine in its composition.

REFERENCES

- [1] Uvarova E.V. Abnormal uterine bleeding during puberty / E.V. Uvarova // Reproductive health of children and adolescents. - 2013. - No. 3. - S. 73-87.
- [2] Mozheiko L.F., Guzey I.A. // Journal "Reproductive Health in Belarus". - 2010. - No. 4. - "Modern view on the problem of SMC" (literature review). - P.141-150.
- [3] Yakovleva E.B. Pubertal uterine bleeding: basic principles for the management and prevention of relapses / E.B. Yakovleva, M.Yu. Sergienko, L.V. Zheltonozhenko // Women's health. - K.: Expert LTD, 2010. - No. 10. - P. 105-108.
- [4] Akhmedov F.K., Negmatullaeva M.N., Features of the state of central hemodynamics and hemostasis in pregnant women with preeclampsia of varying degrees and severity // New Day of Medicine. - 2020. - No. 1 (29) - S. 147-150.
- [5] Tuxanova D.I. Features of the state of parameters of homeostasis and cardiohemodynamics in women with a physiological course of pregnancy // New Day of Medicine. - 2019. - No. 1 (25). - S. 159-163.
- [6] Akhmedov F.K. Peculiarities of cardiac hemodynamic in pregnant women with mild preeclampsia // European Science Review. - Austria, Vienna, 2015, № 4-5 - C. 56-58.
- [7] Akhmedov F.K., Negmatullaeva M.N., Kurbanova Z.S. Modern views on the problem of preeclampsia - A new day in medicine, 2018- C.180-185.
- [8] James A, Nazzaro A. Bleeding disorders: impact on reproduction. Contemporary OB/GYN. 2012; 57(7): 32-39.
- [9] Negmatullaeva M.N., Akhmedov F.Q., Tuksanova D.I. Modern diagnostics of markers of preeclampsia // Vestnik Tashkent skoymeditsinskoyakademii. - 2020. -№2 (94). - S. 145 - 147.