Original Article

Content Of 25(Oh)D In The Blood Serum Of Tashkent City Residents

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DOI: 10.47750/pnr.2022.13.S08.188

Abstract

In recent years, the interest of researchers in the study of vitamin D in the population and in various pathological conditions has again increased. This is due to the widespread prevalence of vitamin D deficiency due to changes in the environmental situation, lifestyle and dietary habits (widespread use of various fast-feet and others), an increase in the incidence of pathology of many organs and systems, as well as deciphering the mechanism of action of this vitamin on a structural basis. -functional parameters of various organs and tissues.

Keywords: vitamin D, immunomodulatory effect, calcidiol, calcium deficienc, clinical manifestations

Introduction. At present, the role of some diseases of the digestive system and other somatic pathologies in the development of vitamin D deficiency has been proven [1, 9, 10, 12]. In recent years, the mechanism and clinical manifestations of vitamin D and calcium deficiency in malabsorption syndrome, hypoparathyroidism, and chronic renal failure have been revealed [5, 12]. Experimental and clinical studies point to the importance of vitamin D deficiency in the risk of arterial hypertension, atherosclerosis, neoplastic processes, autoimmune diseases, chronic inflammatory diseases, reproductive system pathology [1, 5, 8, 10, 12].

Under physiological conditions, the main sources of vitamin D in the circulating blood are cholecalciferol, which is formed under the influence of UV irradiation in the skin (90%) and food ergocalciferol (10%) [4]. They are transported as part of lipoproteins or with vitamin D-binding protein to the liver, where 25-(OH) vitamin D is formed and in the kidneys 1ά,25(OH)2D3 with the participation of microsomal cytochrome Cyp2R1, mitochondrial cytochrome Cyp27A1 25-hydroxylase and Cyp27B1 1, 25-hydroxylases [14]. The target of this metabolite is enterocytes, cells of the loop of Henle, and osteoblasts that maintain calcium homeostasis [15]. The immunomodulatory effect is mediated by the activation of the cellular link of the immune system, the effect on the growth and differentiation of cells [7]. All of the above requires a review of the relationship to this vitamin.

Materials and methods. Determine the content of 25(OH)D in the blood serum of residents of Tashkent. 144 practically healthy residents of the city of Tashkent aged from 1 to 76 years and 20 pregnant women in the second trimester of pregnancy who underwent outpatient examination were examined. Among the examined were 35 men and 109 women. The division of the examined by age was carried out according to the WHO recommendations. At the age of 1-2 years there were 6 infants, 3-6 years old - 5 toddlers of preschool age, 7-12 years old - 8 children of primary school age, 13-16 years old - 6 teenagers, 17-21 years old - 10 young people, 22 -35 years - 36 young people, 36-60 - 61 persons of mature age and over 60 years - 14 persons of senile age. To assess the state of vitamin D, we

used the determination of the most stable form of vitamin D-25(OH)D (calcidiol) in blood serum relative to international standards (DEQAS, NIST) by enzyme immunoassay ("ELIZA KIT")…. According to the recommendations of experts, quantitative criteria for vitamin D3 deficiency have been formulated [3, 6]:

• Adequate levels of vitamin D are determined when the concentration of 25(OH)D in the blood serum is more than 30 ng/ml (75 nmol/l);

• vitamin D deficiency - at levels of 20-30 ng/ml (50-75 nmol/l);

• vitamin D deficiency - at a level of 10-20 ng / ml (50 nmol / l),

• Severe vitamin D deficiency - at levels less than 10 ng/ml (less than 25 nmol/l).

The digital material was processed by the method of variation statistics.

Results and discussion The results of the studies showed that in the general population of residents of Tashkent, the content of 25(OH)D averages 18.57 ± 0.93 ng/ml, however, it is characterized by pronounced variability (table). Therefore, we decided to analyze the results obtained from the provision of the body with this vitamin. Studies have shown that in the general population of residents of Tashkent, an adequate level (more than 30 ng / ml) is only 13.9% of the examined, deficiency (20-30 ng / ml) was detected in 21.5% of the examined, deficiency of 25 (OH) D (10-20 ng/ml) was detected in 55.6%, and a pronounced deficiency (less than 10 ng/ml) in 9% of the population. As can be seen from the given data, 25(OH)D deficiency mainly prevails among residents of Tashkent. Analysis of the level of 25(OH)D depending on gender showed that on average it is 16.97±1.58 ng/ml in men and 18.95±1.13 ng/ml in women. It should be said that if an adequate level of this vitamin was detected in 11.4 and 14.7% of the examined, then deficiency was found in 17.1 and 22.9%, deficiency - in 62.9 and 53.2%, severe deficiency - in 8.6 and 9.2% of men and women, respectively. As can be seen, the deficit was more typical for men, but the differences were statistically insignificant.

Table 1 The content of vitamin 25(OH)D in serum and the frequency of occurrence of various degrees of deficiency of this vitamin in the blood of residents of Tashkent

Groups	Content of 25(OH)D ng/ml	Vitamin D3 deficiency criteria, %			
		adequate	failure	deficit	pronounced deficit
general population,n=144	18,57±0,93	13,9	21,5	55,6	9,0
By gender:					
men, n=35	16,97±1,58	11,4	17,1	62,9	8,6
women, n=109	18,95±1,13	14,7	22,9	53,2	9,2
According to the age:					
early childhood period, n=6	32,42±6,59	33,3	66,7	0,0	0,0
preschool age, n=5	28,42±4,75	40,0	40,0	20,0	0,0
junior school age,n=8	17,55±3,91	25,0	12,5	50,0	12,5
Adolescence, n=6	23,94±3,16	66,7	33,3	0,0	0,0
Young age, n=20	20,28±3,37	20,0	20,0	50,0	10,0
Young age, n=36	14,85±1,37	2,9	11,8	76,5	8,8
Mature age, n=61	17,86±1,56	14,7	16,5	59,0	9,8
Elderly agen=14	18,62±2,68	14,3	28,6	42,8	14,3
Pregnant 2nd trimester, n=20	24,14±3,17	35,0	25,0	20,0	20,0

It was of interest to study the content of 25(OH)D in residents of Tashkent, depending on age. Studies have shown that in early childhood, the average content of this vitamin is 32.42 ± 6.59 ng/ml, which is apparently associated with its intake by mother's milk. This is confirmed by adequate vitamin levels in 33.3% and deficiency in 66.7% of infants. In the first period of childhood, the content of 25(OH)D averaged 28.42 ± 4.75 ng / ml, while in 40% it was within the normal range, in 40% it manifested itself as a deficiency and in 20% as a deficiency. . In the second period of childhood, we already observed a significant decrease in this indicator to 17.55 ± 3.91 ng / ml, while 25% of the examined children had a satisfactory level of 25(OH)D, 12.5% had deficiency, 50% - deficiency and in 12.5% of children a pronounced deficiency of the active form of 25(OH)D. In adolescence, the level of vitamin in the blood serum was 23.94±3.16 ng/ml; 2/3 of the examined patients were found to be deficient and 1/3 were deficient in this vitamin. In adolescence, the level of this vitamin was 20.28±3.37 ng/ml. At the same time, satisfactory values were found in 20%, deficiency - in 20%, deficiency - in 50%, and 10% of the examined patients had a pronounced deficiency of 25(OH)D. It should be said that the average age is divided into 2 periods: the first and the second. In the first period, the level of 25(OH)D in the blood serum averaged 14.85±1.37 ($P<0.01$). At the same time, only 2.9% had satisfactory results, 11.8% had a deficiency, 76.5% had a deficiency, and 8.8% had a pronounced deficiency. The second period of middle age was also characterized by a low level of the vitamin, its values averaged 17.86±1.56 ng/ml ($P<0.001$). In this group, a satisfactory result was noted in 14.7% of cases, insufficiency in 16.4% of cases, deficiency in 59% of cases, and pronounced deficiency in 9.8% of the examined. The elderly also had a low level ($P<0.01$), averaging 18.32±2.68 ng/ml. In this group, 14.3% had a normal level of 25(OH)D, 28.6% had a deficiency, 42.8% had a deficiency, and 14.3% had a pronounced deficiency.

In pregnant women in the second trimester, the content of 25(OH)D in the blood serum was 24.14±3.17 ng/ml ($P<0.01$). In 35% of the examined pregnant women, an adequate content of this vitamin was revealed, in 25% - insufficiency, in 20% - a deficiency, and in 20% - a pronounced deficiency.

Our results indicate the prevalence of insufficiency and deficiency of 25(OH)D in the examined group. They can be caused by various factors: dietary habits, lifestyle, the presence of an unidentified malabsorption syndrome. In particular, this region is characterized by the predominance of carbohydrates in the diet, significantly less use of fish and dairy products in the diet, etc. Despite the hot summer, longer exposure to sunlight, the bulk of the population wears long clothes, which can lead to less synthesis of cholecalciferol . Higher values of this vitamin in infants, preschool children and pregnant women are apparently associated with its prophylactic intake. The decrease in the level of this compound in children of primary school age, in our opinion, is associated with stress, intensive school work, which leads to a breakdown in adaptive capabilities and an increased use of vitamins during this period.

Screening for vitamin D deficiency is indicated only for patients with risk factors for its development [2, 3, 6]. The recommended target values for 25(OH)D in the correction of vitamin D deficiency are 30–60 ng/mL (75–150 nmol/L) [3, 6]. It is recommended to check the reliability of the method used in clinical practice for the determination of 25(OH)D in dynamics using the same method 3 days after the last dose of the drug [3]. In conclusion, the need for a wider use of vitamin D in clinical practice should be emphasized, given the high prevalence of varying degrees of vitamin D deficiency and its proven role in the development of a wide range of diseases [9, 11, 13]. In conclusion, the need for a wider use of vitamin D in clinical practice should be emphasized, given the high prevalence of varying degrees of vitamin D deficiency and its proven role in the development of a wide range of diseases.

Conclusion. 1) In the blood serum of residents of the city of Tashkent, the content of 25(OH)D is below the standard values and is characterized by wide variability, significant differences depending on gender have not been established, in pregnant women in the second trimester, the content of the active form of the vitamin is low.

2) In the periods of early childhood and the first period of childhood, the content of 25(OH)D in the blood serum is within the normative values, subsequently it gradually decreases, especially in the second period of childhood and in adults.

Referances

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