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The Preventive Approach To Vitamin Deficiency, 25-Hydroxy-Cholecalciferol Deficiency And Enzyme Therapy Observation In Chronic Pancreatitis In The Conditions Of Uzbekistan

Aripova Nargiza Nusratovna[1]., Makhmudova Nilufar Mukhammadjonovna[2] Ergasheva Nargiza Obidjonovna[3]., Fayzieva Nozima Nurillaevna[4]., Salimova Nargiza Djurabaevna[5]., Rakhmatullaeva Gulnoza Kutpiddinovna[6].

[1.]PhD, Department of Internal Medicine No. 2, aripovan755@gmail.com Tashkent Medical Academy Uzbekistan, Farobi Street, Tashkent.

[2.]Center for the development of professional qualifications of medical personnel, doctoral student (PhD) of the folk medicine course of CDPCMP, Tashkent, Uzbekistan.

[3.]Center for the development of professional qualifications of medical workers CDPCMP Head of Folk Medicine Course, Doctor of Medical Sciences Associate Professor. Uzbekistan, Tashkent

[4.]Center for the Development of Professional Qualifications of Medical Workers, Candidate of Medical Sciences, Associate Professor of Valeology Department, CDPCMP. Uzbekistan, Tashkent nozima.fayz@gmail.com

[5.]Candidate of Medical Sciences (PhD) of the Department of Clinical Modeling, Tashkent Medical Academy, associate professor, Tashkent Medical Academy, Farobi street, Tashkent.

[6.]Senior teacher of the Department of Internal Medicine No. 2, candidate of medical sciences (PhD), Tashkent Medical Academy of Uzbekistan, Farobi street, Tashkent.

Abstract

Absorption of dietary fats and fat-soluble vitamins is impaired against the background of pancreatic insufficiency in patients with chronic pancreatitis, resulting in nutrient deficiencies. In patients with CP, the risk of vitamin D deficiency is on average 60%, and this condition, in turn, increases the risk of gastrointestinal diseases and several other diseases, such as osteoporosis, muscle weakness, depression, and diseases of the cardiovascular system. Determination of vitamin D levels in patients with chronic pancreatitis and examination of changes in vitamin D levels after enzyme therapy.

Key-words: Vitamin D, chronic pancreatitis, fat-soluble vitamins, pancreas.

Introduction

Today, chronic pancreatitis (CP) is one of the most urgent problems in gastroenterology. In specialized gastroenterology hospitals, patients with CP account for approximately 10% of hospital admissions [2]. It is mentioned in the scientific literature that SP is common among diseases of the digestive system and causes serious complications and death in most cases [1,12]. Absorption of dietary fats and fat-soluble vitamins is impaired and causes nutrient deficiencies in patients with chronic pancreatitis due to pancreatic insufficiency (PAG). In patients with CP, the risk of vitamin D deficiency is on average 60%, and this condition, in turn, increases the risk of osteoporosis, muscle weakness, depression, and cardiovascular diseases [3,13,14]. In recent years, the interest of researchers in the study of vitamin D in the population and in various pathological conditions has increased again. This is due to changes in environmental conditions, lifestyle and nutritional characteristics (wide use of various foods, etc.), an increase in the frequency of pathologies of many organs and systems, as well as the wide spread of vitamin D deficiency conditions due to the deciphering of the mechanism of action of this vitamin. structural and functional parameters of various organs and tissues. Currently, the role of certain diseases of the digestive system and other somatic pathologies in the development of vitamin D deficiency has been proven [4, 15, 16, 18]. 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 [8, 18]. Experimental and clinical studies show the importance of vitamin D deficiency in the risk of hypertension, atherosclerosis, autoimmune diseases, chronic inflammatory diseases, reproductive system pathology [4, 8, 11, 16, 18]. Under physiological conditions, the main sources of vitamin D in the blood are cholecalciferol formed under the influence of ultraviolet radiation in the skin (90%) and food ergocalciferol (10%). [7]. They are transported to the liver as part of lipoproteins or with vitamin D-binding protein, where 25

- (OH) vitamin D is formed, and in the kidneys 1α,25(OH)2D3 microsomal cytochrome Cyp2R1, mitochondrial cytochrome Cyp27A1 25-hydroxylase and Cyp27V1 1,25 [20] in the presence of -hydroxylase. The targets of this metabolite are enterocytes, which provide calcium homeostasis, Genle cells and osteoblasts [21]. The immunomodulatory effect is carried out through the influence of the immune system on cellular activation, cell growth and differentiation [10]. All of the above requires a review of the relationship to this vitamin.

Purpose of the research

To determine the amount of vitamin D in patients with CP and to examine the level of changes in the amount of vitamin D after enzyme therapy.

Material and methods

In Tashkent, 144 almost healthy population aged 1 to 76 years and 20 pregnant women who underwent ambulatory examination in the second trimester of pregnancy were examined. There are 35 men and 109 women among those who participated in the survey. Separation of the examined by age was carried out in accordance with WHO recommendations. 6 babies 1-2 years old, 3-6 years old - 5 preschoolers, 7-12 years old - 8 primary school-aged children, 13-16 years old - 6 teenagers, 17-21 years old - 10 years old, 22- 35-36 years old, 36-60 years old -61 mature and over 60 years old - 14 old people. Determination of the most stable form of D-25(ON)D ("ELIZA КИТ") in blood serum against international standards (DEQAS, NIST) was used to assess the status of vitamin D. According to the recommendations of experts, quantitative criteria of vitamin D3 deficiency were formed [6, 9]:

According to the recommendations of experts, quantitative criteria of vitamin D3 deficiency were formed [6, 9]:
* Sufficient level of vitamin D is determined in serum 25 (OH)D concentration more than 30 ng/ml (75 nmol/l).;
* lack of vitamin D - 20-30 ng/ml (50-75 nmol/l) mild level;
* vitamin D deficiency at an average level of 10-20 ng/ml (50 nmol/l),
* Marked vitamin D deficiency - less than 10 ng/ml (less than 25 nmol/l).
Based on the following studies, we examined patients with chronic pancreatitis and vitamin D deficiency.

Researches were conducted in 94 (31 men and 63 women) patients aged 31 to 83 years (mean age 58.40±1.29 years) and 15 healthy subjects (mean age 39.73± 39.73) who were treated at the gastroenterology department of the multidisciplinary clinic of the Tashkent Medical Academy. 4.92 years) was conducted in humans. Patients were divided into the following groups according to the amount of calcidiol (25-OH-D), a metabolite of vitamin D in blood serum: group 1 those with 25-OH-D 30 ng/ml and above (normal), group 2 those with 25-OH-D 20-30 ng/ml (deficiency), 3rd group - 10-20 ng/ml (deficiency), 4th group consisted of patients with 25-OH-D 10 ng/ml (obvious deficiency) and control group. Metabolites of vitamin D in blood serum of 21 (5 men and 15 women) patients aged 31 to 83 years (average age 58.81±2.91 years) treated with SP disease in the gastroenterology department of the multidisciplinary clinic of the Tashkent Medical Academy. The amount of calcidiol (25-OH-D) was checked and the amount of calcidiol (25-OH-D), a metabolite of vitamin D, was checked in 15 healthy people (mean age 39.73±4.92 years) who were ordered to drink pancreatin enzyme preparation for two months . The amount of 25-OH-D was examined in 25 (9 men and 16 women) patients aged 31 to 83 years (mean age 58.81±2.91 years) who were treated with the 2nd group of SP disease. Patients were subjected to clinical and anamnestic, instrumental, coprological and biochemical examinations. In order to determine the state of MOB, UT examination was carried out on the "MINDRAY DC-60" device (manufactured in China).

Deficiency of pancreatic exocrine secretory function was assessed by elastase 1 activity in feces, and the amount of 25-OH-D in blood serum was determined by immunoenzyme method in "ELIZA" immunoenzyme analyzer with special reagents of this company. The amount of calcium in the blood serum was determined in a biochemical analyzer using special biotests. Statistical analysis of the obtained results was performed using Microsoft Office Excel 2010 (Microsoft Corp., USA) and Portable Statistica 8 (StatSoft, Inc., USA). The description of categorical data was carried out in the form of degree indicators expressed in percentages. Given that most of the analyzed characteristics have a non-normal distribution, non-parametric statistical tests were used for statistical analysis of the obtained results. Correlation between the studied characteristics was evaluated using Spearman's rank correlation method (r – correlation coefficient). A significance level of 0.05 was assumed for statistical hypothesis testing.

Results and Discussion

The results of the research showed that the average amount of 25 (OH)D in the general population of Tashkent is 18.57±0.93 ng/ml, but it differs with a clear variability. Therefore, we decided to analyze the results obtained from providing the body with this vitamin. Studies have shown that in the general population of Tashkent, sufficient level (more than 30 ng/ml) is only 13.9% of respondents, (20-30 ng/ml) deficiency in 21.5% of respondents, (25(OH)D deficiency (10-20 ng/ml) was detected in 55.6%, and obvious deficiency (less than 10 ng/ml) was found in 9% of residents. It can be seen from the above data that the population of Tashkent is mainly deficient in 25 (OH)D .Having a level 25 deficiency, gender-specific analysis of 25(ON)D showed an average of 16.97±1.58 ng/ml in men and 18.95±1.13 ng/ml in women. In 11.4 and 14.7%, the sufficient level of this vitamin was determined, in 17.1 and 22.9%, deficiency - 62.9 and 53.2%, obvious deficiency - 8.6 and 9.2% of men and women. It was found that the deficiency was more common in men, but the differences were not statistically significant.

It was interesting to study the composition of 25 (OH)D according to age for the population of Tashkent. Studies have shown that the average content of this vitamin in early childhood is 32.42±6.59 ng/ml, which is related to its consumption with breast milk. This is confirmed by sufficient vitamin levels in 33.3% and deficiency in 66.7% of infants. In the first period of childhood, the content of 25 (OH)D was on average 28.42±4.75 ng/ml, and 40% were in the normal range, 40% were deficient, and 20% were deficient. In the second period of childhood, we observed a significant decrease of this indicator to 17.55 3.91 ng/ml, 25% of the examined children had satisfactory 25(OH)D, 12.5% were deficient, 50% were deficient, and 12.5% were clearly deficient. had 25 (OH)D. from the active form of the vitamin in the blood serum during adolescence is 23.94±3.16 ng/ml; established; 2/3 of the examined patients were found to be deficient in this vitamin and 1/3 were found to be deficient. In youth, the level of this vitamin was 20.28±3.37 ng/ml. At the same time, satisfactory values are 20%, deficient in 20%, deficient in 50%, and 25 (OH)D in 10% of those asked. obvious shortage of, it should be said that the average age is divided into 2 periods: the first and the second. In the first period, the average level of 25 (OH)D in blood serum was 14.85±1.37 (R<0.01). However, only 2.9% had satisfactory results, 11.8% were deficient, 76.5% were deficient, and 8.8% were clearly deficient. The second period was also characterized by a low vitamin level, its values on average were 17.86±1.56 ng/ml (R<0.001). In this group, 14.7% achieved a satisfactory result, 16.4% of cases - deficiency, 59% of cases - deficiency and 9.8% of the survey - a clear deficiency. The elderly also had lower levels (P<0.01), with a mean of 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 an obvious deficiency. In second trimester pregnant women, serum 25(OH)D was 24.14±3.17 ng/ml (R<0.01). Sufficient amount of this vitamin was found in 35% of examined pregnant women, 25% - deficiency, 20% - deficiency and 20% - clear deficiency.

Our results show a predominance of 25(OH) D deficiency and deficiency in the examined group. They can be caused by various factors: the characteristics of nutrition, lifestyle, the presence of an unknown 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, most of the population wears long clothes, which may lead to less synthesis of cholecalciferol. High rates of this vitamin in infants, preschool children and pregnant women are probably related to its preventive intake. In our opinion, the decrease in the level of this compound in primary school students is associated with a strong school load, which leads to a violation of adaptive abilities and an increase in the use of vitamins during this period.

Screening for vitamin D deficiency is indicated only for patients with risk factors for its development [5, 6, 9]. When correcting vitamin D deficiency, recommended target values of 25 (OH)D are 30-60 ng/ml (75-150 nmol/l) [6, 9]. It is recommended to check the reliability of the method used in clinical practice for dynamic determination of 25 (OH)D using the same method 3 days after the last administration of the drug [6]. Thus, it should be noted that taking into account the high prevalence of vitamin D deficiency and its proven role in the development of diseases [15, 17, 19], it is necessary to use vitamin D more widely in clinical practice. In conclusion, it should be noted that, given the high prevalence of various degrees of vitamin D deficiency and its proven role in the development of a wide range of diseases, there is a need for a wider use of vitamin D in clinical practice.

The conducted studies showed that the amount of 25-OH-D in 22 (23.4%) patients was within normal values (32.57±1.32 ng/ml), 17 (18.1%) - partial deficiency (23.84±0.83 ng/ml), 39 (41.5%) - deficiency (15.55±0.61 ng/ml) and 16 (17%) - severe deficiency (7.00±0.75 ng/ml) were observed (1 see the table).

Table 1
25-OH-D M±m in serum of patients with chronic pancreatitis

Groups	**25-OH-D, ng/ml**
Conditionally healthy	25,90±1,41
According to the amount of 25-OH-D in patients with chronic pancreatitis	
norm, n=22	32,57±1,32[a]
deficiency, n=17	23,84±0,83
scarcity, n=39	15,55±0,61 [a]
obvious shortage, n=16	7,00±0,75 [a]

Note: * statistically reliable compared to the indicators of a conditionally healthy group (p<0,05).

If we consider the conducted studies, the average amount of 25-OH-D in healthy people was 25.90±1.41 ng/ml. The first group of patients, that is, after ten days of inpatient treatment at the clinic, were ordered to drink pancreatin enzyme preparation for another two months. After two months, the vitamin D level of these patients was 25.90±1.89 ng/ml. The second group of patients did not receive pancreatin enzyme drug after being treated in the clinic for ten days. Their values were 17.08±1.59 ng/ml. Look at the second table.

Table 2

	(C) Control group		**(ET) who did not receive enzyme therapy**		**(ET2) who received enzyme therapy**		**(t) p<0,05**		
	M	**m**	**M**	**m**	**M**	**m**	**T1/T2**	**T1/T3**	**T2/T3**
age	39,73	4,92	57,52	2,55	58,81	2,91	3,21*	3,34*	0,33
k/ d	-	-	7,8	0,38	8,05	0,37	20,37*	21,85*	0,47
vitamin D	25,9	1,41	17,08	1,59	25,9	1,89	4,14*	0	3,57**

Conclusion

In conclusion, the preventive approaches to vitamin deficiency have been implemented in conditions of Uzbekistan. For example, vitamin D calcidiol deficiency in chronic pancreatitis, the amount of 25-OH-D vitamin D increased in patients who received an enzyme preparation for two months by monitoring the effect of enzyme therapy. The amount of 25-OH-D vitamin D was relatively reduced in patients who did not take the enzyme preparation. In order to increase the effectiveness of treatment in patients with chronic pancreatitis, it is necessary to determine the amount of vitamin D and determine the severity of vitamin D deficiency.

25-OH-D in the blood serum of the population of Tashkent city is lower than the standard values and has a wide variability, no significant differences depending on gender have been identified, the active form of the vitamin is low in pregnant women in the second trimester.

In early childhood and the first period of childhood, the content of 25-OH-D in the blood serum corresponds to the normal values, then it gradually decreases, especially in the second period of childhood, and this is clearly observed in adults.

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