



To Evaluate the Effect of Correction of Vitamin D Deficiency on the Dynamics of Endocrine Diseases

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Annotation: *This article provides information about the study of patient P., 52 years old, who complained of headache, periodic dry mouth and frequent urination, weakness, fatigue, increased blood pressure to 160/100 mm Hg. From the anamnesis of the disease - diabetes mellitus (DM) type 2 and hypertension (AH) for 5 years, age-related hypogonadism (AH) and vitamin D deficiency were established during the last 6 months. The aim of our work was to evaluate the effect of vitamin D deficiency correction on blood pressure dynamics in a male patient with hypertension, type 2 diabetes mellitus, obesity, and vitamin D deficiency.*

Keywords: *vitamin D, endocrine diseases, diabetes mellitus.*

Introduction: Deficiency and insufficiency of vitamin D is a global problem of mankind. On average, 40% of children and adults have vitamin D levels below 20 ng/ml, and 60% below 30 ng/ml. The consequences of this pandemic for human health are catastrophic. It has been established that 25% of the funds spent on health care can be saved on those diseases, the development of which is associated with vitamin D deficiency and insufficiency. To date, it has been proven that most cells and tissues of the human body contain receptors for vitamin D, and also synthesize their own 25 (OH)D- α -hydroxylase and thus can locally transform 25(OH)D into its active hormonal form, 1,25(OH)₂D. More than 2,000 genes for the vitamin D receptor are responsible for the extraskelatal effects of vitamin D in the human body. This may explain the association between improved vitamin D status and reduced risk of certain cancers, autoimmune diseases such as multiple sclerosis and type 1 diabetes, cardiovascular disease, stroke, cognitive dysfunction including Alzheimer's disease, infectious diseases, and tuberculosis. . 1,25(OH)₂D is a powerful hormone that regulates calcium homeostasis, and its excess contributes to the development of hypercalcemia and serious complications for the human body. To prevent an increase in the level of 1,25(OH)₂D in the blood serum, 25-hydroxyvitamin D-24-hydroxylase is activated, which, in turn, is responsible for the hydroxylation and oxidation of 1,25(OH)₂D, which leads to the formation of a biologically inactive water-soluble calcitrienoic acid. Vitamin D can enter the human body in three ways: synthesized in the skin under the influence of sunlight; with food (mainly fatty varieties of sea fish, to a lesser extent eggs, fortified products) and with pharmacological preparations.

The study of the impact of vitamin D deficiency on the human body is attracting more and more attention of scientists. According to numerous studies, vitamin D deficiency is registered in half of the world's population; among the elderly this figure reaches 80-90%. At the same time, vitamin D deficiency in men is most often detected in obesity, androgen deficiency, infertility, and prostate diseases.

Purpose: to evaluate the effect of vitamin D deficiency correction on blood pressure dynamics in a male patient with hypertension, type 2 diabetes mellitus, obesity, and vitamin D deficiency.



Materials and Methods: Patient P., 52 years old, complained of headache, periodic dry mouth and frequent urination, weakness, fatigue, increased blood pressure up to 160/100 mm Hg. From the anamnesis of the disease - diabetes mellitus (DM) type 2 and hypertension (AH) for 5 years, age-related hypogonadism (AH) and vitamin D deficiency were established during the last 6 months. On examination, the patient is malnourished, height 184 cm, weight 139 kg, BMI 41 kg/m², WC-130 cm. The thyroid gland is not palpable. In the heart: tones are muffled, the rhythm is correct, blood pressure is 160/100 mm Hg, heart rate is 85 beats/min. Peripheral pulsation in the arteries of the feet is preserved. In addition to the general clinical examination, the patient's systolic and diastolic blood pressure (SBP) and (DBP) were measured, respectively, the body mass index (BMI) was determined using the Quetelet formula, and waist circumference (WC) was measured. Carbohydrate metabolism was assessed by glycotriade - glycemia on an empty stomach and 2 hours after a meal, as well as by the level of glycated hemoglobin A1c. The analysis of fat metabolism was carried out using the lipid spectrum - total cholesterol, HDL, LDL, TG, CA. Hormonal examination included the determination of follicle-stimulating and luteinizing hormones (FSH) and (LH), respectively, total testosterone (T), prolactin, thyroid-stimulating hormone (TSH). The level of vitamin D was determined. For the treatment of diabetes, the patient was prescribed metformin long 1500 mg and vildagliptin 100 mg per day; for the treatment of GB - valsacor 80 mg and nevigolol 5 mg per day; for the treatment of VG - low-dose testosterone 1% 50 mg per day and for the correction of vitamin D deficiency - cholecalceferol 10 drops per day.

Results: after 6 months of therapy, in addition to the subjective improvement in the condition, the disappearance of thirst and dry mouth, the cessation of headaches, improved performance and general tone, the patient's clinical and metabolic parameters also improved significantly. The patient's weight decreased by 21% to 110 kg, BMI decreased by 20% to 33.3 kg / m², WC decreased by 16.9% and amounted to 108 cm. The target values were reached by blood pressure - SBP and DBP decreased by 18.9 and 10%, respectively, and amounted to 130 and 85 mm Hg. 31 Significantly improved indicators of carbohydrate metabolism - fasting glycemia decreased by 40% to 6.0 mmol/l, glycemia 2 hours after eating and H_vA1c decreased by 38 and 29% to target values and amounted to 6.7 mmol/l and 6.2%, respectively. Against the background of therapy, the indicators of fat metabolism practically reached the target values: total cholesterol decreased by 27.6% to 4.7 mmol/l, LDL decreased by 30.1% to 3.6 mmol/l, HDL increased by 10% to 1 mmol/l, triglycerides decreased by 25.9% up to 2 mmol/l. An analysis of the hormonal status established a significant increase (by 5.6 times) to the target level of total testosterone - from 3 to 17 nmol / l. Prolactin, FSH, LH, TSH continued to remain within the normal range. Finally, vitamin D increased from 12 to 48 ng/ml (4 times) and reached the target level.

Conclusions: the appointment of cholecalceferol contributes not only to the elimination of vitamin deficiency, but also to a more effective correction of glycemia, blood pressure and weight in men with hypertension, type 2 diabetes mellitus, obesity and age-related hypogonadism.

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