VITAMIN D STATUS IN OBESITY AND TYPE 2 DIABETES

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Introduction. Many researchers note the relationship between vitamin D deficiency/insufficiency and an increased risk of developing a number of diseases of both the musculoskeletal system (osteoporosis, sarcopenia) and metabolic disorders: obesity, diabetes mellitus (DM) [2].

According to research, vitamin D has pleiotropic effects, regulates insulin secretion in Î²-cells of the pancreas, and with its deficiency, the number of insulin receptors decreases, the activity of glucose transport proteins and PPAR-receptors decreases, insulin resistance, prediabetes and DM develop [2], which aims at timely detection and correction of vitamin D status.

Aim of the study. To assess the level of vitamin D in the body by the level of 25(OH)D in the blood plasma in patients with obesity and DM type 2.

Materials and methods. The study involved 32 patients, with 46,9% (n=15) of them being obese – group 1. The average age of this group was 65 (50; 77). Another 53,1% (n=17) of participants had DM type 2 – group 2. The average age in this group was 68 (63; 71). The data was analyzed by the 4D client program at the State Healthcare Institution "Grodno City Polyclinic No. 6". We analyzed: body mass index (BMI), blood pressure (BP), vitamin D level – 25(OH)D, glycated hemoglobin – HbA1c, creatinine, triglycerides (TG), and cholesterol (CH). The vitamin D status was assessed by the level of 25(OH)D in blood plasma, which corresponds to the optimal level of vitamin D as 25(OH)D > 30 ng/ml, while insufficiency is 29-20 ng/ml and deficiency is <20 ng/ml. We performed statistical analysis by using program "STATISTICA 10.0".

Results and discussion. The analyzed groups of patients had not differences in age, BP, creatinine, CH, or TG (p>0,05). BMI was higher in group 1 if compared to group 2 (34,2 kg/m^2 vs 30,1 (28,8; 31,2) kg/m², p=0,01).

The level of 25(OH)D in the blood plasma of patients in group 1 was 14.2 (10.0; 18.8) ng/ml and corresponded to vitamin D insufficiency in 20% (n=3) and deficiency in 80% (n=12) of those examined.

In group 2, the level of 25(OH)D was 14,3 (11,8; 20,3) ng/ml, which corresponded to insufficiency in 29,4% (n=5) and deficiency in 70,6% (n=12) of patients. The level within the optimal range of 25(OH)D in the blood plasma of patients for these two groups was not revealed. No significant differences were found in the levels of 25(OH)D between those examined, nor was there a significant difference in the ratio of vitamin D deficiency to insufficiency (p>0,05).

In group 2, we found a negative relationship between 25(OH)D levels and HbA1c (R =-0,50, p=0,04), as well as a positive relationship between HbA1c levels and TG (R=0,61, p=0,01), TC (R=0,53, p=0,03) and glucose levels

(R=0,55, p=0.02).

Conclusion. In the study conducted in patients with obesity and DM2, the vitamin D status corresponds to a deficiency/insufficiency of the 25(OH)D level in the blood plasma, while in patients with DM type 2, the 25(OH)D level has an inverse correlation with HbA1c, which aims to correct hypovitaminosis D to improve glycemic control in this category of patients.