ASSESSMENT OF THE LEVEL OF 25-HYDROXYVITAMIN D IN PATIENTS WITH NEWLY DIAGNOSED TYPE 2 DIABETES MELLITUS

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Abstract: Vitamin D is a steroid prohormone synthesized in the skin following UV exposure or else acquired by supplemental or dietary intake. Originally, it was described as regulator of calcium homeostasis, but has since been shown to play a much greater, comprehensive role including protection against immune dysfunction, cancer, cardiovascular conditions, hypertension, metabolic syndrome (MS) and diabetes. The role of vitamin D in modulating metabolic processes is increasingly recognized, with emerging evidence suggesting a link between vitamin D deficiency and the pathogenesis of Type II Diabetes Mellitus (T2DM). Given the high prevalence of both conditions globally, understanding this relationship could have significant clinical implications. This study seeks to investigate the prevalence of vitamin D deficiency among newly diagnosed T2DM patients and its potential impact on managing the disease effectively.

Type 2 diabetes mellitus (DM) is a global epidemic associated with severe vascular complications development. Diabetic neuropathy is the most common chronic complication of DM that worsens patients' life quality and prognosis. Therefore, studies dealing with DM and diabetic neuropathy underlying mechanisms are extremely relevant. The review discusses current views on vitamin D role in glucose metabolism and inflammatory processes. It is reported that vitamin D deficiency can contribute to insulin resistance development, and change in vitamin D receptor activity or extra- and intracellular calcium

concentration due to vitamin D deficiency can affect pancreatic β-cells function and lead to decrease in insulin production.

Keywords: 25-hydroxyvitamin D, type 2 diabetes mellitus, microalbuminuria, metabolism, hemoglobin, immunochemiluminescent analyzer.

The purpose of research: to study the level of 25-hydroxyvitamin D (25(OH) vitamin D) depending on the stage of chronic kidney disease (CKD) in patients with newly diagnosed type 2 diabetes mellitus (DM).

Materials and methods: 90 people were examined, 60 of them were patients with type 2 diabetes and 30 people were in the control group. The control group consisted of practically healthy people of working age, without impaired carbohydrate metabolism, with arterial blood pressure <130/80 mmHg and body mass index (BMI) <34.9 kg/m2. The average level of glycated hemoglobin (HbA1c) in patients with DM2 was 6.6±0.4%, microalbuminuria (MAU) - 43.2±1.8mg/ml. In the course of our work, patients with type 2 diabetes according to the CKD classification (K/DOQI, 2002; RNA,2011) were divided into groups: group 1 – with stage 1 CKD (GFR ≥ 90 ml/min/1.73 m2) – 30 people; group 2 – with stage 2 CKD (GFR = 60-89ml/min/1.73 m2) – 30 people.

All groups were comparable in terms of gender, age, and degree of obesity. The values of 25(OH) vitamin D were evaluated on an immunochemiluminescent analyzer.

Results: when analyzing the level of 25 (OH) vitamin D, it was found that it significantly decreases with decreasing GFR. Thus, in the group of patients with type 2 diabetes with CKD 2, a deficiency of 25(OH) vitamin D was detected and its

average level was 17.61±7.9 ng/ml. The average level of 25(OH) vitamin D in the group of patients with newly diagnosed type 2 diabetes with CKD 1 was 20.92±8.3 ng/ml ($p<0.0001$), indicating its insufficiency. Patients with newly diagnosed type 2 diabetes. Patients of this type had lower average concentrations

of 25(OH) vitamin D –19.26±8.1ng/ml than patients in the control group without impaired carbohydrate metabolism 24.01±8.1 ng/ml (p <0.001). The data obtained are confirmed by the presence of a positive correlation of 25(OH) vitamin D levels with the GFR level (r=0.32). Vitamin D deficiency is common not only in patients with newly diagnosed type 2 diabetes with CKD 1, but also in the control group.

Conclusions: it should be noted that vitamin D deficiency of 25(OH) are common in patients with newly diagnosed type 2 diabetes with CKD. When evaluating an indicator of the level of 25(OH) vitamin D in patients with newly diagnosed diabetes 2 and CKD 2 have a more pronounced deficiency. Thus,vitamin D deficiency is significantly associated with an increased risk of loss.

GFR in patients with newly diagnosed type 2 diabetes. However, further longitudinal studies are required to establish causality and to assess the impact of vitamin D supplementation on long-term diabetes management outcomes. These findings advocate for a more integrated approach in managing newly diagnosed T2DM patients, potentially incorporating vitamin D status as a regular clinical assessment parameter.

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