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PARTICULARITIES OF THE CALCIUM-PHOSPHORUS METABOLISM IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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Recently, the problem of osteoporosis (OP) has been more and more important. Increase in the propitiation of aging population elevated the frequency of new cases of OP, bringing it to a leading position in the structure of not-infections diseases. In the modern classification of osteoporosis, a group of secondary osteoporosis (about 15% of all cases of osteoporosis) and osteoporosis associated with type 1 diabetes mellitus is distinguished. The degree of impairment of calcium-phosphorus metabolism in patients with type 2 diabetes mellitus has not been investigated.

The purpose of the study was to evaluate the state of the calcium-phosphorus metabolism in patients with type 2 diabetes mellitus (DM).

Materials and Methods: The study involved 36 patients with type 2 diabetes aged 51 to 65 (mean age 58 ± 7 years) of them - 20 men (55.5%) and 16 women (44.5%). Duration of diabetes ranged from 7 to 12 years, mean $9,5 \pm 2,5$. To determine the degree of compensation of diabetes glycosylated hemoglobin - HbA1c was studied. Depending on the degree of compensation, all patients were divided into 3 groups: patients with compensated ($HbA1c < 8.5$), subcompensated ($HbA1c > 8.5 < 10.0$) and decompensated ($HbA1c > 10.0$) diabetes. Twelve patients were with compensated diabetic (33.3%), with subcompensated - 16 (44.4%) and decompensated - 8 (22.2%) patients. Parameters of calcium-phosphorus metabolism were assessed by concentration of calcium (Ca), inorganic phosphorus (RO_4) in serum, Ca- PO_4 product was calculated as the product of the total blood calcium and phosphate levels, as determined by the level of urinary calcium excretion and RO_4 fasting relative to creatinine excretion. The level of total calcium in the blood must be

maintained in the low-normal range: 2,1-2,37 mmol/l PO₄ target level of blood - 1,13-1,78 mmol/l.).

Results: Significant differences in the concentration of Ca and PO₄ in the serum, as well as their excretion in the urine, depending on the degree of compensation of diabetes was not identified. Relationship between indicators of calcium-phosphorus metabolism and the age of patients was not detected. Among the patients target calcium level was determined in 5 patients (13.8%), hypocalcemia in 2 patients (5.6%), hypercalcemia in 29 cases (80.6%). PO₄ level of blood was within the range of target values in 12 (33.3%), hypophosphatemia was observed in 1 person (2.8%), hyperphosphatemia occurred in 23 patients (63.9%) of the patients. Ca-PO₄ product above the target value of 4.44 mmol²/l² was observed in 27 (74.7%). Only 2.8% (1 patient of 36). The levels of all three parameters (PO₄, Ca, Ca-PO₄ product) were in normal limits only in one patient. High correlation of calcium excretion, in relation to creatinine excretion suggests increase bone resorption

Conclusions: The present study demonstrates that almost in all patients develop disorders of calcium-phosphorus metabolism and bone remodeling, which is an indication of osteoporosis in patients with type 2 DM. We recommend to determine the level of calcium and phosphorus for all patients with type 2 DM.