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 ± 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 (RO4) in serum, Ca-PO4 product was calculated as the product of the total blood calcium and phosphate levels, as determined by the level of urinary calcium excretion and RO4 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.