

THE PECULIARITIES OF LIPID METABOLISM AND BONE TISSUE METABOLISM IN PATIENTS WITH OSTEOARTHRITIS AND TYPE 2 DIABETES MELLITUS

M. Oliinyk, L. Zhuravlyova, Y. Sikalo

Kharkiv National Medical University, Kharkiv, Ukraine

Objective: To investigate the interaction between lipid metabolism and parameters of bone tissue metabolism in patients with osteoarthritis (OA), type 2 diabetes mellitus (T2DM).

Methods: The study involved 85 patients (20 males), aged 58.00 ± 0.82 with OA and T2DM in Regional Hospital of Kharkov, control group (n=20). All patients were divided into 2 groups: group 1 (n=21) - with OA, group 2 (n=64) - with combined course of OA and T2DM. Baseline characteristics of patients included history of OA (1st group- 8.52 ± 0.53 y; 2nd group – 7.84 ± 0.54 y, T2DM (2nd group – 9.22 ± 0.90 y). The survey plan included indices of lipid metabolism (levels of total cholesterol (TC), low-density lipoprotein cholesterol (LDL), very LDL (VLDL), triglycerides (TG), high-density lipoprotein cholesterol (HDL). The level of alkaline phosphatase (ALP) was determined by colorimetric method, levels of Ca, P, Mg were determined by biochemical method. The levels of osteocalcin (OC), calcitonin (Ct) were determined by ELISA. The level of HbA1C was $<7.5\%$ in all patients. The X-ray examination of knees was performed for all patients.

Results: The level of TC in patients with OA was significantly higher in comparison with the control group, in patients with T2DM and in combination with OA it was even higher than in group with OA ($p < 0.05$). Pair correlations between indices of lipid metabolism and bone tissue metabolism were mostly moderate or weak, no strong coupling were found. A statistically significant relations were determined that indicate a decrease of OC level with an increase in the values of TC ($r = -0.60$, $p = 0.004112 < 0.05$) and LDL cholesterol ($r = -0.56$, $p = 0.008210 < 0.05$) in patients in 1st group. A significant correlation between OC and LDL ($r = -0.49$, $p = 0.004321 < 0.05$), VLDL ($r = -0.36$, $p = 0.019259 < 0.05$) and TC ($r = -0.57$, $p = 0.000435 < 0.05$) was determined in 2nd group of patients. Also the correlations

between Ca and HDL ($r=0.54$, $p=0.003329<0.05$), TC ($r=0.41$, $p=0.01<0.05$) and VLDL ($r=0.38$, $p=0.01<0.05$); P and TG ($r=0.46$, $p=0.02<0.05$), Ct and VLDL ($r=-0.40$, $p=0.0307<0.05$) were determined in patients with combined course OA and T2DM. Ct is moderately negatively correlated with HDL ($r=-0.46$, $p=0.003412<0.05$). The biggest number of correlations were found between level of TG and parameters of bone tissue metabolism, such as Ca ($r=0.39$, $p=0.01381<0.05$), ALP ($r=0.38$, $p=0.03231<0.05$), OC ($r=-0.39$, $p=0.03712<0.05$) and Ct ($r=-0.39$, $p=0.03122<0.05$) in patients group 2.

Conclusion: The study shows that the remodeling of the bone, which can lead to progression of osteoarticular changes in patients with in patients with OA and the comorbidity of OA and T2DM, can be connected with effect of lipid metabolism disorders on bone tissue metabolism.