Oliinyk M.O.

THE ROLE OF TNF-α IN METABOLIC DISORDERS IN PATIENTS WITH OSTEOARTHRITIS AND TYPE 2 DIABETES MELLITUS

Kharkov National Medical University (Department of Internal Medicine № 3)

Kharkov, Ukraine

Tumor necrosis factor-α (TNF-α) activates degenerative processes in the joint, is involved in the regulation of carbohydrate metabolism, induces insulin resistance in adipose tissue and muscle, inhibits genes that are involved in digestion and depositing glucose.

Purposes: to investigate influence of concentration in plasma tumor necrosis factor-α (TNF-α) on parameters of carbohydrate metabolism, lipid metabolism and articular syndrome in patients with osteoarthritis (OA) and type 2 diabetes mellitus (T2DM).

Methods. The study was performed on 28 patients (5 males), aged 58.6±0.31 with combination OA and T2DM in Regional Hospital of Kharkov, control group (n=20). Baseline characteristics of patients included history of OA (7.39±0.52 years), T2DM (9.8±0.97 years). The survey plan included: anthropometric data, indices of carbohydrate exchange (glucose, insulin (IRI), HbA1c, HOMA-IR), total cholesterol (TC), TG and level of C-reactive protein (CRP). The level of TNF-α was determined by ELISA. All patients were made X-ray examination of knees.

Results. We found the level of TNF-α in serum was significantly higher in patients with T2DM and OA (3.5-fold; $p<0.05$) compared with the control group. In patients with OA and T2DM the average level of glucose was (8.6±0.31), HbA1c - (8.6±0.21), IRI - (13.12±0.36), HOMA- IR - (5.14±0.27), TC - (6.2 ± 0.27), TG - (1.94 ± 0.17), CRP - (14.6±0.63) and was significantly higher compared to control group ($p<0.05$). In the group with combined course of OA and T2DM correlation between TNF-α and BMI ($r=0.72$; $p<0.05$), the ratio of OT/OS ($r=0.60$; $p<0.05$), TC ($r=0.67$; $p<0.05$) and TG ($r=0.45$; $p<0.05$) were found. The relationship between TNF-α and carbohydrate metabolism we could determine in its correlation with glucose ($r=0.71$; $p<0.05$), IRI ($r=0.50$; $p<0.05$), HbA1c ($r=0.60$; $p<0.05$) and HOMA-IR ($r=0.46$; $p<0.05$). Existing correlation between TNF-α and level of CRP ($r=0.46$; $p<0.05$) and radiographic changes by Kellgren ($\tau=0.50$; $p=0.000<0.05$) indicates on the possible impact of this cytokine in the development of OA.

Conclusion: The results suggest the possible use the level of TNF-α in serum as a possible marker of progression of metabolic disorders in patients with OA and T2DM.