THE INFLUENCE OF ADIPOKINES IMBALANCE ON COURSE OF OSTEOARTHRITIS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS AND OBESITY

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Purposes: The aim of the study was to investigate the level of leptin, resistin and their connection with high sensitive C-reactive protein (hsCRP) and clinical manifestation of osteoarthritis (OA) in patients with type 2 diabetes mellitus (T2DM) and obesity.

Methods. The study involved 92 patients (31 males), aged 54.56±0.29 with OA and T2DM in Kharkiv Regional Hospital, control group (n=20). All patients were divided into 3 groups: group 1 (n=28) - with OA (BMI<30 kg/m^2), group 2 (n=31) - with combined course of OA and T2DM (BMI<30 kg/m^2) and group 3 (n=33) - with combined course of OA and T2DM (BMI>30 kg/m^2). The survey plan included anthropometric data, global knee pain [visual analog scale (VAS)], the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), indices of carbohydrate metabolism (insulin, glucose, HbA1C, HOMA-IR). The levels of high sensitivity C-reactive protein (hsCRP), leptin and resistin were determined by ELISA. The X-ray examination of knees was performed in all patients.

Results. A statistically significant relations between the degree of diagnosis complexity and the level of leptin and resisitin were determined (M-L χ2=18.22 p=0.0035; M-L χ2=16.81 p=0.0029). The levels of hsCRP, leptin and resistin were significantly higher in patients with OA, T2DM and obesity (p<0.0035). The difference between hsCRP and leptin in patients with OA and its combination with T2DM was present but not significant. Significant difference of resisitin level was determined between patients of 1st and 2nd group. We found correlation between leptin and resisitin in all groups of patients (1st - =0.39; p<0.05; 2nd - r=0.48; p<0.05, 3rd - r=0.75; p<0.05). We determined that the level of indices of WOMAC Pain score correlated with hsCRP (r=0.66; p<0.05), leptin (r=0.38; p<0.05) and resisitin (r=0.42; p<0.05); WOMAC physical function score correlated with hsCRP (r=0.29, p<0.05), leptin (r=0.45; p<0.05) in patients of the 1st group. We determined significant correlation between WOMAC Pain score and hsCRP (r=0.51; p<0.05), resisitin (r=0.53; p<0.05); between WOMAC stiffness and resisitin (r=0.33; p<0.05), also between WOMAC physical function score and hsCRP (r=0.31; p<0.05) in the 2nd group of patients with comorbid pathology. The significant correlations were present between WOMAC Pain score and hsCRP

(r=0.52; p<0.05), resisitin (r=0.62; p<0.05) and leptin (r=0.76; p<0.05); between WOMAC stiffness and leptin (r=0.54; p<0.05), also between WOMAC physical function score and hsCRP (r=0.62; p<0.05) and leptin (r=0.70; p<0.05) in the 3rd group of patients with comorbid pathology. The indices of WOMAC Pain score weren't significantly different in the 1st and 2nd groups (M-W U=208, Z=–1,793, p=0,0729), but had a statistically significant effect when comorbid with obesity (when comparing groups 1 and 3: M-W U=156,5, Z=–3,633, p=0,0003; when comparing groups 2 and 3: M-W U=298, Z=–2,722, p=0,006). We noted that the combination of OA and T2DM significantly increases the values of WOMAC physical function (when comparing groups 1 та 2: M-W U=88, Z=–4,167, p=0,00003) and combination of OA, T2DM and obesity increases WOMAC physical function subscore (when comparing groups 1 and 3: M-W U=150,5, Z=–3,676, p=0,0002) and WOMAC total score (when comparing groups 1 and 3: M-W U=113, Z=–3,660, p=0,0003). So the statistically significant differences between studied parameters were mostly found when comparing groups 1 and 2, 1 and 3, meanwhile no significant differences were revealed between groups 2 and 3.

Conclusion. The present study demonstrates that combination of OA with T2DM and obesity was associated with more severe changes of physical function. Significant correlations between leptin, resistin and hsCRP in patients with combined course of OA, T2DM and obesity demonstrate that T2DM and obesity can be important factors that influence the course of metabolic processes and impact the progression of OA in this group of patients.