

ments in PROs compared with PBO at M3 that were maintained throughout both RCTs.

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## Osteoarthritis

### AB0795 OSTEOARTHRITIS AND COMORBIDITY: ASSOCIATION BETWEEN MENTAL FEATURES AND CYTOKINES LEVELS

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**Background:** Studies of mental health in patients with osteoarthritis (OA) are topical at the present time. This applies especially to OA patients with such comorbidity as obesity, metabolic syndrome (MS) and type 2 diabetes mellitus (T2DM). Psychological features, quality of life (QoL) and depression degree also can be linked with immunopathogenesis of OA with obesity, MS, T2DM.

**Objectives:** To explore the mental health in knee OA patients with obesity, MS, T2DM and to estimate association between psychological and immunological features.

**Methods:** Patients (n=128) with bilateral knee OA according to ACR criteria were divided into four groups. Group 1 (n=17) had obesity, group 2 (n=17) had MS, group 3 (n=56) had T2DM and group 4 (n=38) had only knee OA without comorbidity. All patients were comparable by age, sex and duration of OA. We assessed serum cytokine levels (IL-1b, IL-6, IL-10, IL-18), NO and adipokines (adiponectin, leptin) using ELISA. The parameters of QoL, mental health and depression degree were measured by short form 36 (SF-36), Knee injury and Osteoarthritis Outcome Score – (KOOS) and with patient health questionnaire-9 (PHQ-9). We also studied coping strategies to overcome pain by Coping Strategy Questionnaire (CSQ). U-Mann-Whitney test was applied to detect differences between groups. Correlation was assessed using Spearman correlation coefficient ( $r_s$ ).

**Results:** During comparative analysis, we found many statistically significant differences in such indexes and questionnaires as SF-36, KOOS, PHQ-9, CSQ between groups knee OA patients with comorbidity and group knee OA patients without concomitant diseases. Patients with OA and obesity were characterized by low values of mental health (SF-MH) (median (Me) 52; interquartile range (IQR) 38–64;  $p=0.01$ ). Patients from group 2 (MS) and 3 (T2DM) had significant impairment of QoL parameters, mental health values. Patients of these groups also had the higher degree of depression and built coping strategies to overcome

Table. Correlations between mental parameters and serum cytokine levels in studied groups.

Cytokines	OA patients with obesity n=17	OA patients with T2DM n=56		
	Social Functioning (SF36-SF)	Vitality (SF36-VT)	Social Functioning (SF36-SF)	Coping Strategy Questionnaire (CSQ)
IL-1b (pg/ml)	-0.51	-0.06	0.08	-0.15
IL-6 (pg/ml)	<b>-0.89*</b>	<b>-0.33*</b>	<b>-0.27*</b>	-0.03
IL-10 (pg/ml)	-0.75	-0.18	-0.09	<b>-0.41*</b>
NO (pg/ml)	-0.39	0.10	0.14	0.11
Leptin (ng/ml)	-0.27	<b>-0.28*</b>	-0.22	<b>0.43*</b>

Table legend. \*  $r - p < 0.005$ ;

pain of OA worse than patients of OA group. Differences in serum cytokine levels were found in patients with OA and T2DM (IL-6  $p=0.0018$ ; IL-18  $p=0.0006$ ; NO  $p<0.001$ ). Significant high leptin level had OA patients with obesity ( $p=0.03$ ) and OA patients with T2DM ( $p=0.0002$ ). Correlation analysis identified the association between mental health and cytokines in OA patients with obesity and OA patients with T2DM. Some data are presented (Table).

**Conclusions:** This study suggests that OA patients with obesity, MS and T2DM have special mental features which may be linked with immunological parameters. This data should be verified by larger studies and can be the part for an integrated program of treatment and rehabilitation of OA patients with comorbidity.

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### AB0796 THE PREDICTIVE ROLE OF INTERLEUKINE 6 AND 10 IN IMPAIRMENT OF MENTAL HEALTH IN PATIENTS WITH KNEE OSTEOARTHRITIS AND UNCONTROLLED TYPE 2 DIABETES MELLITUS

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**Background:** The influence of different interleukins on development and progression of osteoarthritis (OA) has been proved. However, there is lack of data on relationship between mental health and immunological features in OA patient with type 2 diabetes mellitus (T2DM).

**Objectives:** To estimate the relationship between mental health and the proinflammatory serum cytokine levels in patients with knee OA and T2DM depending on glycemic control.

**Methods:** A study was performed on 45 persons who had bilateral knee OA according to the ACR criteria and T2DM. Then patients were divided into two groups according to the compensation degree T2DM taking into account parameters of glycated hemoglobin concentrations (HbA1c) which were assessed using liquid chromatography. Group 1 (n=26) had controlled T2DM. Group 2 (n=19) had uncontrolled T2DM. All patients were comparable by age, sex and duration of OA. Serum cytokine levels (IL-1b, IL-6, IL-10, IL-18), NO, and adipokines (adiponectin, leptin) using ELISA were measured. Blood glucose level was also estimated. The parameters of QoL, mental health, depression degree and coping strategies to overcome pain were measured by short form 36 (SF-36), Knee injury and Osteoarthritis Outcome Score – (KOOS) and with patient health questionnaire-9 (PHQ-9), Coping Strategy Questionnaire (CSQ). We used U-Mann-Whitney tests to detect differences between selected groups. Correlation was assessed using Spearman correlation coefficient ( $r_s$ ).

**Results:** Patients with OA and uncontrolled T2DM had significant low values of role limitations due to emotional problems (SF-RE) (median (Me) 38; interquartile range (IQR) 25–52.3;  $p=0.02$ ). Serum cytokines levels were not different between studied groups. Correlation analysis identified the relationships between parameters of mental health and serum cytokine levels in OA patients with uncontrolled T2DM. Certain data are presented (Table).

Table. Correlations between clinical parameters and serum cytokine levels in studied groups.

Cytokines	OA patients with uncontrolled T2DM n=19						
	Vitality (SF36-VT)	Social Functioning (SF36-SF)	Mental Health (SF36-MH)	Role Emotional (SF36-RE)	General Mental Health (SF36-MH)	Patient Health Questionnaire (PHQ-9)	Coping Strategy Questionnaire (CSQ)
IL-6 (pg/ml)	<b>-0.60*</b>	<b>-0.62*</b>	<b>-0.54*</b>	-0.25	<b>-0.51*</b>	<b>0.43*</b>	-0.20
IL-10 (pg/ml)	<b>-0.48*</b>	<b>-0.42*</b>	<b>-0.64*</b>	-0.25	<b>-0.56*</b>	0.29	<b>-0.53*</b>
NO (pg/ml)	0.12	0.08	0.12	<b>0.42*</b>	0.31	0.13	-0.02
Leptin (ng/ml)	-0.31	<b>-0.42*</b>	-0.14	-0.19	-0.15	0.28	0.35

Table legend. \*  $r - p < 0.005$ ;

**Conclusions:** It follows from these results mental and immunology parameters of OA patients with uncontrolled T2DM can be linked. Such interleukins as IL-6 and IL-10 may play a role of potential biomarkers of mental impairment in this category of patients. These data should be verified by larger studies and may allow in future to develop programs of treatment and rehabilitation of OA patients with uncontrolled T2DM within personalized medicine.

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