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

**Acknowledgements:** To be presented at AAD 2017 and reproduced with permission. This study was sponsored by Pfizer Inc. Editorial support was provided by S. Morgan of CMC and was funded by Pfizer Inc.

**Disclosure of Interest:** V. Strand Consultant for: AbbVie, Amgen, Bristol-Myers Squibb, CORRONA, Eli Lilly, Janssen, Novartis, Pfizer Inc, UCB, K. de Vlam Consultant for: Celgene, Eli Lilly, Janssen, Novartis, Pfizer Inc, UCB, Speakers bureau: Celgene, Eli Lilly, Janssen, J. Covarrubias-Cobos Grant/research support from: Bristol-Myers Squibb, Eli Lilly, Janssen, Pfizer Inc, P. Mease Grant/research support from: AbbVie, Amgen, Bristol-Myers Squibb, Celgene, Eli Lilly, Janssen, Novartis, Pfizer Inc, Sun, UCB, Consultant for: AbbVie, Amgen, Bristol-Myers Squibb, Celgene, Crescendo, CORRONA, Dermira, Janssen, Eli Lilly, Merck, Novartis, Pfizer Inc, Sun, UCB, Zynerba, Speakers bureau: AbbVie, Amgen, Bristol-Myers Squibb, Celgene, Crescendo, Genentech, Janssen, Novartis, Pfizer Inc, UCB, D. D. Gladman Grant/research support from: Amgen, AbbVie, Bristol-Myers Squibb, Celgene, Janssen, Eli Lilly, Pfizer Inc, Novartis, UCB, Consultant for: Amgen, AbbVie, Bristol-Myers Squibb, Celgene, Janssen, Eli Lilly, Pfizer Inc, Novartis, UCB, Speakers bureau: Amgen; AbbVie; Bristol-Myers Squibb; Celgene; Janssen; Eli Lilly; Pfizer Inc; Novartis; UCB, T. Hendrikx Shareholder of: Pfizer Inc, Employee of: Pfizer Inc, E. Kudlacz Shareholder of: Pfizer Inc, Employee of: Pfizer Inc, D. Graham Shareholder of: Pfizer Inc, Employee of: Pfizer Inc, J. Wu Shareholder of: Pfizer Inc, Employee of: Pfizer Inc, L. Chen Shareholder of: Pfizer Inc, Employee of: Pfizer Inc

**DOI:** 10.1136/annrheumdis-2017-eular.2445

## 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 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).

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-1ß (pg/ml) | -0.51 | -0.06 | 0.08 | -0.15 |
| IL-6 (pg/ml) | **-0.89*** | **-0.33*** | **-0.27*** | -0.03 |
| IL-10 (pg/ml) | -0.75 | -0.18 | -0.09 | **-0.41*** |
| NO (pg/ml) | -0.39 | 0.10 | 0.14 | 0.11 |
| Leptin (ng/ml) | -0.27 | **-0.28*** | -0.22 | **0.43*** |

Table legend: * r - p<0.005;

**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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**Disclosure of Interest:** None declared

**DOI:** 10.1136/annrheumdis-2017-eular.5896

### AB0796 THE PREDICTIVE ROLE OF INTERLEIKINE 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 adypokines (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) | **-0.60*** | **-0.62*** | **-0.54*** | -0.25 | **-0.51*** | **0.43*** | -0.20 |
| IL-10 (pg/ml) | **-0.48*** | **-0.42*** | **-0.64*** | -0.25 | **-0.56*** | 0.29 | **-0.53*** |
| NO (pg/ml) | 0.12 | 0.08 | 0.12 | **0.42*** | 0.31 | 0.15 | -0.02 |
| Leptin (ng/ml) | -0.31 | **-0.42*** | -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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**Disclosure of Interest:** None declared
**DOI:** 10.1136/annrheumdis-2017-eular.5940

## AB0797 LONG TERM PROSPECTIVE MULTICENTER RANDOMIZED PLACEBO-CONTROLLED STUDY OF HYALURONIC ACID IN SMALL JOINTS OSTEOARTHRITIS (SJOA)

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**Objectives:** Assessment of the efficacy, tolerability and period of aftereffect of the single administration into 1st carpometacarpal and 1st metatarsophalangeal OA joints of 1.0 ml (20mg) of hyaluronic acid (Durolane) as compared with placebo.
**Methods:** The study included 120 pts with OA of small hand joints or feet, pain intensity >40 mm by VAS and consisted of two phases: "blind" phase up to 24 weeks, period of assessment of long term efficacy results – 48 weeks. The efficacy was assessed by 40% pain subsiding, index AUSCAN (for the hand), dose of NSAID, total effect assessment.
**Results:** Both groups were comparable by basic clinical criteria, 40% pain subsiding by VAS (mm) was noted in experimental group to 24th week in 79.7%, in the placebo group – 30% (chi-square: $p<10^{-5}$), relation of chances (OR) equal to 9.1 (3.9–21.1). Dispersion analysis of pain, stiffness and function of AUSCAN index revealed reliable differences between Durolane and placebo. Statistically significant difference ($p<0.0001$) according to assessment of general condition by the doctor and patient were found out in experimental group from the 4th week and were stable till 48th week. Adverse effects related to the therapy were not found. NSAID dose was decreased in 45.7% in experimental group and in 30% in placebo group.
**Conclusions:** efficacy and considerable duration of aftereffect of single administration of Durolane SJ (small joints) as compared with placebo was demonstrated in 24 and 48 weeks.
**Disclosure of Interest:** None declared
**DOI:** 10.1136/annrheumdis-2017-eular.5740

## AB0798 AMTOLMETIN GUACIL-EFFECTIVE AND GOOD SAFE NONSTEROIDAL ANTI-INFLAMMATORY DRUG IN KNEE OSTEOARTHRITIS PATIENTS WITH DYSPEPSIA

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**Objectives:** To investigate the efficacy and tolerability of amtolmetin guacil (AMG; Niselat®, Dr. Reddy's Laboratories Ltd, India) versus previous therapy with nonsteroidal anti-inflammatory drugs (NSAIDs) in patients with knee osteoarthritis (OA) and signs of dyspepsia.
**Methods:** The open-label observational study included 220 patients aged 30–65 years who suffered from knee OA and intense pain during NSAID intake and had symptoms of dyspepsia in the absence of contraindications to the use of AMG. Among the comorbidities that generally occurred in 68% of the patients, there was a preponderance of hypertension (42%), lower extremity varicose veins (6.4%), and diabetes mellitus (6%).
Treatment efficacy was evaluated using three domains of the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), by also taking into account pain intensity and general health assessment on the visual analogue scale. A Severity of Dyspepsia Assessment (SODA) scale was used to rate dyspepsia.
**Results:** AMG had a marked analgesic effect confirmed by 40% or more pain reduction thatoccurred in 72.5% of the patients. The high analgesic effect of AMG was confirmed by a statistically significant ($p<0.001$) reduction in the WOMAC index (pain and stiffness) and by an increase in functional activity. Therewas a significant decrease in painless and painful signs of dyspepsia, as well as positive changes in the measures"overall assessment of dyspepsia severity" ($p<0.001$) and "satisfaction with treatment". Overall assessment ofAMG tolerability was only positive: excellent (33%), good (56%), and satisfactory (11%). There were no seriousadverse events (AE). AE were graded as moderate and mild in 8 and 82% of cases, respectively. AE were recordedin 7.7% of the patients.
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**Conclusions:** The findings suggest that AMG offers good prospects for knee OA treatment.
**Acknowledgements:** Otteva A.N., Dubikov A.I., Yakupova S.P., Ivanova O.N., Korshunov N.I., Vaisberg A.R., Abyshev R.A., Tartynov A.V.
**Disclosure of Interest:** None declared
**DOI:** 10.1136/annrheumdis-2017-eular.5253

## AB0799 DECREASED RATIO OF TIMP1/MMP-9 IS ASSOCIATED WITH HIGHER PAIN SENSITIVITY IN A SUBSET OF OSTEOARTHRITIC PATIENTS WITH LOW MECHANISTIC TARGET OF RAPAMICIN GENE EXPRESSION IN THE PERIPHERAL BLOOD

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**Background:** Progression of osteoarthritis (OA) produces loss of articular cartilage that may culminate in pain, loss of joint function, and disability. Osteoarthritic changes in articular cartilage are associated with progressive proteolytic degradation of the extracellular matrix due to excessive expression of metalloproteinases (MMPs) over their tissue inhibitors (TIMPs). At the same time, decrease in TIMP concentration versus MMP has been previously associated with an increase in pain sensitivity.
**Objectives:** Here we hypothesized that imbalance in TIMP1 and MMP-9 gene and protein expressions in the peripheral blood might contribute to pain perception in OA patients.
**Methods:** We examined whole blood of 65 OA outpatients and 27 healthy subjects. Clinical testing comprised physical examination, radiographic and WOMAC scoring, and ultrasonography. Total RNA isolated from the whole blood was used for gene expression examination of mTOR, mechanistic target of rapamycin, a major regulator of cell growth and proliferation, metalloproteinase MMP-9, and tissue inhibitor of metalloproteinase, TIMP1 using quantitative Real-time RT-PCR. p70-S6K (mTOR read-out), MMP-9, and TIMP1 protein levels were quantified by ELISA.
**Results:** 23 OA outpatients exhibited significant downregulation of mTOR gene expression (subset "Low mTOR") while other 42 OA outpatients have demonstrated upregulation of mTOR gene expression (subset "High mTOR") in the peripheral blood compared to healthy controls. Although both OA outpatient subsets had comparable radiographic severity according to Kellgren-Lawrence grading, similar age, disease duration, and body mass index, "Low mTOR" patients experienced significantly higher pain at joint function versus "High mTOR" subset. This was associated with a significant upregulation of MMP-9 gene expression in "Low mTOR" patients versus healthy subjects while TIMP1 expression remained equal to controls. In a "High mTOR" subset, both gene expressions were significantly upregulated. p70-S6K and TIMP1 protein concentrations measured in the peripheral blood mononuclear cells were significantly lower in "Low mTOR" patients versus that in "High mTOR" while MMP-9 protein expression was significantly higher compared to healthy subjects in both examined OA subsets.
**Conclusions:** Our results show that TIMP1 and MMP-9 gene expressions measured in the peripheral blood might be associated with pain sensitivity in OA outpatients while low level of TIMP1/MMP-9 ratio indicates increased pain perception.
**Disclosure of Interest:** None declared
**DOI:** 10.1136/annrheumdis-2017-eular.2254

## AB0800 KNEE OSTEOARTHRITIS PATIENTS' USE OF AND COMPLIANCE TO AN ORTHOTIC INTERVENTIONS

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**Background:** Knee osteoarthritis (KOA) is the most common form of arthritis with an estimated lifetime prevalence of 44.7% (1). The use of orthotic devices (knee braces, insoles, wedged shoes) is a generally accepted conservative therapy for KOA patients (2). However, it is suggested that their effectiveness is detrimentally affected by poor patient compliance due to discomfort while wearing these devices (3).
**Objectives:** The aim of this study is to objectively establish the compliance to an orthotic intervention using a thermal sensor (TS) and comparing it to patients' self-reported wear time.
**Methods:** Ten medial KOA patients (mean±SD age 57.6±13.4 years, BMI 27.3±3.2 kg/m$^2$), clinically diagnosed according to the ACR Guidelines, were recruited for this study. A small, light-weight TS with the size of an average lithium battery (0.5℃ resolution) was placed in a newly developed ankle-foot-orthosis (AFO) that patients were asked to wear as often as possible during a period of six weeks. The TS measured the temperature every 5 minutes for 4 weeks. Patients rated the comfort of the orthosis during the first visit using a scale from 1 to 5 (1 being the most comfortable).
Additionally, the patients reported during these six weeks how many hours per day they had worn the orthosis and rated which amount of pain they felt each day (from 0=no pain to 10=most painful). To determine the patients' compliance, the AFO wear time, derived from the TS, was compared to the wear time per day recorded in the patients' diaries. The threshold to differentiate the wear