- [2] Stannus, O. Circulating levels of IL-6 and TNF-alpha are associated with knee radiographic osteoarthritis and knee cartilage loss in older adults/O. Stannus, G. Jones, F. Cicuttini et al. *Osteoarthritis Cartilage*. 2010;18(11):1441-1447.
- [3] Louati K. et al. Association between diabetes mellitus and osteoarthritis: systematic literature review and meta-analysis. *RMD open*. 2015;1(1).

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)

E. Tsvetkova¹, L. Denisov¹, E. Panasyuk¹, E. Nasonov². ¹*Clinical Research laboratory*; ²*Scientific Leader, V.A. Nasonova Research Institute of Rheumatology, Moscow, Russia, Moscow, Russian Federation*

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 DYSPESPIA

E. Tsvetkova¹, L. Denisov¹, E. Nasonov² on behalf of AGATA group. ¹*Clinical Research laboratory*; ²*Scientific Leader, V.A. Nasonova Research Institute of Rheumatology, Moscow, Russia, Moscow, Russian Federation*

Objectives: To investigate the efficacy and tolerability of amlolmetin 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 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 that occurred 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. There was 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 of AMG tolerability was only positive: excellent (33%), good (56%), and satisfactory (11%). There were no serious adverse events (AE). AE were graded as moderate and mild in 8 and 82% of cases, respectively. AE were recorded in 7.7% of the patients.

AMG had a marked analgesic effect confirmed by 40% or more pain reduction that occurred 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. There was 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 of AMG tolerability was only positive: excellent (33%), good (56%), and satisfactory (11%). There were no serious adverse events (AE). AE were graded as moderate and mild in 8 and 82% of cases, respectively. AE were recorded in 7.7% of the patients.

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., Tartyov 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 RAPAMYCIN GENE EXPRESSION IN THE PERIPHERAL BLOOD

E.V. Tchetaina¹, G.A. Markova¹, E.A. Taskina², N.G. Kashevarova², E.P. Sharapova², L.I. Alekseeva². ¹*Immunology & Molecular Biology*; ²*Osteoarthritis, Nasonova Research Institute of Rheumatology, Moscow, Russian Federation*

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

E. Mauricio, M. Sliepen, D. Rosenbaum. *Universitätsklinikum Münster, Münster, Germany*

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/m²), 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°C 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

and non-wear times was set at 25°C. Timeframes during which the temperature rose above 25°C were classified as wear time. A Wilcoxon signed-rank test was performed between the different wear times and Spearman's correlations between pain, comfort and wear time were determined.

Results: On average, patients wore the device for 143±80 h according to the form they filled out, whereas the TS measured only 83±86 h, leading to an overestimation of 72%. Patients reported an average pain level of 3±1.4 during the six weeks period and the AFO's comfort was rated with 1.9±0.3. Statistical differences were found between the wear time reported by the patients and the wear time derived from the TS ($p=0.005$). Additionally, a significant correlation between the AFO comfort and the wear time derived from the TS was found ($r = -0.81$; $p=0.001$). No significant correlation was found between pain and wear time.

Figure 1: Data set from one of the patients.

Conclusions: As can be expected, patients who found the AFO more comfortable were the ones who wore the orthosis for longer periods. The wear time recorded by the TS was significantly lower compared to the self-reports. This might be due to a social desire bias, overestimating the amount of hours of wearing the AFO as we asked the patients to wear it as often as possible. Secondly, patients might have trouble to accurately recall the amount of wear hours, thereby inducing an overestimation of wear time. As the reliability of self-reported measures seems to be questionable, such data should be interpreted with care.

References:

- [1] Lee S et al. *Int J Rheum Dis*, 2015.
- [2] Duivenvoorden T et al. *The Cochrane Library*, 2015.
- [3] Brouwer RW et al. *Cochrane Database Syst Rev*, 2005.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.1415

AB0801 EVALUATION OF EFFECTIVITY OF RADIOTHERAPY FOR PAIN CONTROL IN OSTEOARTHRITIS AND SOFT TISSUE PATHOLOGY

F. Aramburu, Á. Montero, R. Silvia, J. González, E. Calvo, M. Valero, C. Rubio, P. García de la Peña on behalf of Rheumatology and Radiotherapy services. *Rheumatology, HM hospitales, Madrid, Spain*

Background: Osteoarthritis and soft tissue pathology are diseases that produce important pain and disability in many patients. Some studies support that the low-dose radiotherapy may be effective in refractory diseases.

Objectives: The main objective of this study is to evaluate whether the treatment with radiotherapy is long-term effective to reduce the pain in osteoarthritis and soft tissue pathology. The secondary objective is to evaluate the analgesic requirements before and after the treatment.

Methods: A prospective and observational study was designed. 38 patients were included. 53 different pathologies were treated including knee osteoarthritis, trochanteric bursitis, calcinosis, rizartritis, pyramidal syndrome, rotatory cuff pathology and shoulder osteoarthritis, plantar fasciitis, epicondylitis, hand osteoarthritis, tibialis posterior tendonitis, ankle osteoarthritis, hip osteoarthritis and hand tendonitis. All these pathologies did not respond to conventional therapy (non steroidal antiinflammatory drugs, rehabilitation or infiltrations). Initially, the patients received a treatment of radiotherapy with a dose of 6 Gray divided in 6 sessions during 2 weeks. The patients that did not respond after 6 weeks received a second treatment with the same characteristics. The modification in Visual Analogic Scale (VAS) of pain was evaluated as well as analgesic intake before and after the treatment.

Results: No side effects were observed. 92% were women and 8% men. Mean age was 66,82, standard deviation (SD): 12,97 (42–89). 44 locations responded to one treatment and 19 needed a second one.

The mean VAS prior treatment was 7,38, SD: 1,49, (10–4). Mean VAS after the first treatment was 3,81 SD: 2,84 (9–0).

The mean VAS after the first treatment in locations that received 2 treatments was 6,65 SD: 1,46 (9–5), and mean VAS after the second one was 4,56 DE: 2,66 (8–1).

By pathology, the difference in means was: 4,8 in knee osteoarthritis (N=11), 4,78 in trochanteric bursitis (N=10), 5 in calcinosis (N=3), 5,33 rizartritis (N=8), 4 in pyramidal syndrome (N=2), 3,87 in rotatory cuff pathology and shoulder osteoarthritis (N=6), 6 in plantar fasciitis (N=1), 7 in epicondylitis (N=1), 3,22 in hand osteoarthritis (N=11), 6 in tibialis posterior tendonitis (N=2), 4 in ankle osteoarthritis (N=2), 2 in hip osteoarthritis (N=1) and 2,2 in hand tendonitis (N=5). Until November 2016, 12 patients (17 pathologies) were followed-up for 6 months. The mean VAS before treatment of these pathologies was 7,29 SD: 1,21; (9–4). After 6 months mean VAS reduced to 1,47 SD: 1,42; (5–0).

The analgesic intake was reduced in 37,98% of patients, 10,34% used the same amount and 34,48% was not known. 17,24% did not take analgesic drugs at all after treatment.

Conclusions: The treatment with low dose radiotherapy was long-term effective for reducing the pain level in our study.

References:

- [1] Minten MJ, Mahler E, den Broeder AA et al. The efficacy and safety of low-dose radiotherapy on pain and functioning in patients with osteoarthritis: a systematic review. *Rheumatol Int*. 2016 Jan; 36(1):133–42.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.4256

AB0802 EFFECTS OF DIETARY MAGNESIUM SUPPLEMENTATION AND INTRA-ARTICULAR MAGNESIUM SULFATE ON EXPERIMENTAL OSTEOARTHRITIS AND POTENTIAL MOLECULAR MECHANISMS BY MRNA AND LNCRNA EXPRESSION PROFILES SCREENING

G. Lei¹, C. Zeng¹, H. Li¹, J. Wei², T. Yang¹, B. Wise³, X. Ding¹, Y. Zhang¹, Y. Yang¹, Z. Deng¹, J. Li⁴, Y. Cui⁵. ¹Department of Orthopaedics; ²Health Management Center, Xiangya Hospital of Central South University, Changsha, Hunan Province, China; ³Department of Internal Medicine and Department of Orthopaedics, University of California, Davis School of Medicine, Sacramento, CA; ⁴Division of Rheumatology, Department of Internal Medicine, Rush University Medical Center, Chicago, IL, United States; ⁵International Medical Center, Xiangya Hospital, Central South University, Changsha, Hunan Province, China

Background: Epidemiological studies of ours and other groups have reported an inverse association between dietary and serum Mg with knee radiographic osteoarthritis (OA) [1–4].

Objectives: To investigate the effects of dietary magnesium supplementation and intra-articular MgSO₄ on the development of experimental rat osteoarthritis, and explore the underlying potential molecular mechanisms by mRNA and lncRNA expression profiles screening.

Methods: Rat osteoarthritis model was induced by surgery. Articular cartilage damage was evaluated by modified Mankin score system after intervention of dietary magnesium supplementation or intra-articular MgSO₄ injection. Microarray was performed to reveal alteration of expression profiles of mRNA and lncRNA after intervention of MgSO₄ on human osteoarthritis chondrocytes. Bioinformatics analyses including gene ontology analysis, pathway analysis, target gene predictions and network analysis were used.

Results: Comparing with normal diet, dietary Mg supplementation showed significantly ameliorated cartilage damage at the medial femoral condyle, lateral tibial plateau and medial tibial plateau ($P \leq 0.05$), and approaching significance at the lateral femoral condyle ($P=0.06$). All four locations exhibited mitigated cartilage damage in the intra-articular MgSO₄ group compared with intra-articular saline ($P \leq 0.05$). 1767 lncRNAs and 2558 mRNAs were upregulated while 994 lncRNAs and 1512 mRNAs were downregulated in chondrocytes with intervention of 50mM MgSO₄ compared with control group (fold change ≥ 2.0). The top 6 lncRNAs which showed the largest difference were ENST00000425914.2, ENST00000419881.1, ENST00000561231.1, ENST00000609062.1, TCONS_00029212 and ENST00000429530.1. Bioinformatics analyses indicated that the differentially expressed lncRNA target genes of chondrocyte after intervention of 50mM MgSO₄ are enriched in negative regulation of phosphatidylinositol 3-kinase signaling.

Conclusions: Both dietary magnesium supplementation and intra-articular MgSO₄ injection may exert cartilage protective effects by causing widespread changes in the profile of lncRNAs and mRNAs of chondrocytes.

References:

- [1] Hunter DJ. Evidence of altered bone turnover, vitamin D and calcium regulation with knee osteoarthritis in female twins. *Rheumatology* 2003;42(11):1311–6.
- [2] Zeng C, Wei J, Li H, Yang T, Zhang FJ, Pan D, et al. Relationship between Serum Magnesium Concentration and Radiographic Knee Osteoarthritis. *J Rheumatol* 2015;42(7):1231–6.
- [3] Qin B, Shi X, Samai PS, Renner JB, Jordan JM, He K. Association of dietary magnesium intake with radiographic knee osteoarthritis: Results from a population-based study. *Arthritis Care & Research* 2012;64(9):1306–11.
- [4] Zeng C, Li H, Wei J, Yang T, Deng Z, Yang Y, et al. Association between Dietary Magnesium Intake and Radiographic Knee Osteoarthritis. *PLOS ONE* 2015;10(5):e127666.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2017-eular.4647

AB0803 DOES INTRA-ARTICULAR INJECTION OF PLATELET-RICH PLASMA PROVIDE CLINICALLY PREFERABLE OUTCOMES IN THE KNEE OSTEOARTHRITIS? A DOUBLE-BLIND, RANDOMIZED CONTROLLED PILOT STUDY

J. Moghimi^{1,2}, R. Ghorbani¹, H. Beiki¹. ¹Social Determinants of Health Research Center; ²Department of Internal Medicine, Semnan university of medical sciences, Semnan, Iran, Islamic Republic Of

Background: Knee osteoarthritis (OA) symptoms Improvements with platelet-