such a relationship was found in males. $GHR_{fl\text{-}d3}$ genotype was related to both osteophytes and joint space narrowing.

Conclusion: $GHR_{d3\text{-}fl}$ genotype was associated with knee and hand ROA in females with a severe primary OA phenotype, indicating a role for the GH/IGF1 axis in the pathophysiology of primary OA.

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Condroitin Sulfate Decreases Chemokine Levels and Synovitis in knee osteoarthritis Patients. Jordi Monfort[1], Paula Escudero[2], Cristobal Orellana[3], Laura Piqueras[4], Laura Tio[5], Francisco Montañés[1], Natalia García[5], Chantal Company[2], Pere Benito[1] and Maria Jesús Sanz[2]. [1]Hospital del Mar, Barcelona, Spain, [2]Universitary Clinic Hospital Research Foundation-INCLIVA, University of Valencia, Valencia, Spain, [3]Corporació Sanitaria Parc Taulí, Sabadell, Spain, [4]University Clinic Hospital Research Foundation-INCLIVA, University of Valencia, Valencia, Spain, [5]GRICIC. FIMIM, Barcelona, Spain

Background/Purpose: Synovitis is one of the major signs of structure damage in osteoarthritis (OA) progression. Chondroitin sulfate (CS) is an effective drug in the treatment of OA since it can reduce joint swelling and effusion in OA patients as described in the NIH-funded GAIT study. Therefore, the aim of this study was to compare the effect of CS vs. acetaminophen on synovitis in OA patients and to evaluate their impact on chemokine concentrations.

Methods: Synovitis (synovial hypertrophy+effusion≥4mm) assessed by sonography and synovial effusion quantified by artrhocentesis were evaluated in 45 patients treated with CS (800mg/day) or acetaminophen (4g/day) for 6 months. Patients were followed-up until month 9 to evaluate the carry-over effect. Symptomatic effect of both treatments was also evaluated by Lequesne Algofunctional Index (baseline,1.5, 3, 6 and 9 months). The levels of CXCL16, fractalkine/CX_3CL1, MCP-1/CCL-2, RANTES/CCL5 and GRO-α/CXCL1 were determined by ELISA in the plasma and synovial samples collected in each visit. Analysis of continuous variables was based on analyses of covariance (ANCOVA) model. Study of the chemokine variations between each time and the baselines was performed by a Wilcoxon two-related samples test Comparison between the two groups was obtained using an independent sample t-test for quantitative variables or a chi-squared test for qualitative variables. P values ≤0.05 were considered statistically significant for each variable.

Results: Eligible patients had clinical and radiographic evidence of OA (K&L grade 2 and 3) with synovitis. Mean age of patients was 70.4 years being women 72.1% of them. Mean BMI was 28.97. At the end of the study, CS significantly reduced synovitis compared to acetaminophen ($p<0.01$).This significant reduction was also detected in MCP-1 and fracktalkine synovial levels. Compared to baseline, CS treated patients showed significant reductions in synovitis (25.5%) and significant impairment of synovial hypertrophy (61.9% reduction). These effects were accompanied by significant decreases in synovial and serum MCP-1 content. In contrast, in the acetaminophen-treated group no effect on synovitis was observed and increased synovial RANTES levels were even detected. Additionally, CS but not acetaminophen effectively reduced functional incapacity after 6 months of treatment (CS-treated group: 11.5±2.5 vs. 7.9±3.0; $p<0.01$; acetaminophen-treated group: 9.9±4.1 vs. 8.3±4.9; n.s.). CS functional improvement remained after 3 months treatment cessation (month 9) thus confirming CS carry-over effect.

Conclusion: These results indicates that CS but not acetaminophen effectively reduces synovitis and clinical symptoms in OA patients. Evidence of an anti-inflammatory effect for CS has been also provided since it can decrease synovial and plasma levels of relevant chemokines. This study also adds further support and extends the finings described in the NIH-funded GAIT study and suggests that CS seems to be a more effective therapeutic tool for OA and synovial inflammation than analgesics.

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Immunoreactive Collagen Type II Cleavage Products and Their Nitrated Forms in Rheumatoid Arthritis and Osteoarthritis: An Outpatient Cross-Sectional Study. Ruediger Mueller[1], Axel Finckh[2], Guy Heynen[3] and Johannes von Kempis[4]. [1]Cantonal Hospital, St. Gallen, Switzerland, [2]Geneva University Hospitals, Geneva 14, Switzerland, [3]Consulting, CH-6300 Zug, Switzerland, [4]MD, St. Gallen, Switzerland

Background/Purpose: Catabolism of type II collagen (COLII) involves multiple metalloproteinases, aggrecanases and cathepsin, releasing heterogeneous triple helix cleavage products. The complex regulation of these enzymes and of inducible NOS (iNOS)includes inflammatory cytokines. Col2-1 peptide (Col), located towards the N-telopeptide region of COLII contains a tyrosine residue susceptible to endogenous nitration by reactive nitrogen species, forming Col-2-1-NO2 (NCol). Specific immunoassays allow for estimation of nitration index (NI). Using these assays in OA and RA should show differences since RA, unlike OA, is treated with DMARDs known to inhibit structural damage progression.

Methods: Serum (S) and Urine (U) Col and NCol were measured by ELISA in a cross-sectional study (49 RA and 118 outpatients with active hand OA). The ratio of NCol (nmol)/Col (nmol) provided NI. Clinical variables were age, sex, DAS and VAS. Urinary fractional excretions (UFE) of biomarkers was calculated in RA patients.Statistical analysis used STATA® Version 12.1

Results: OA patients were older (64 years vs 58 in RA). Mean DAS28 was 2.64 with 60% receiving corticoids or synthetic and biological DMARD treatment in RA. VAS pain was higher in OA than RA patients (46 vs. 34;$p<0.0001$). Mean SCol concentrations (nmol/l) and SNCol (pmol/l) were higher in RA (308±17 and 687 ±90) than OA (241 ± 13 and 465±39; $p<0.0001$). Mean UCol (nmol/mmol creatinine) was higher in RA than in OA (16.3 vs. 8.1; $p<0.0001$) whereas UNCol (pmol/mmol creatinine) values were similar between the 2 groups (22.4 ±4.3 in RA and 26.2 ±2.1 in OA; $p>0.1$). Col and NCol UFE were 2.87% (2.25–3.48; 95%CI) in RA and 2.63 % (1.81–3.46; 95%CI) and highly correlated (r-square=0.53; $p<0.0001$).The SCol2-1NI was similar in RA (0.238 %, 95% CI: 0.214–0.262) and in OA (0.217, 95% CI: 0.19–0.24; $p>0.05$) but the UCol2-1NI was markedly lower in RA (0.164, 95%CI: 0.141–0.187) than OA (0.37, 95%CI: 0.33–0.42; $p<0.0001$). In both RA and OA, pairwise comparisons of serum and urine NI indicated highly significant differences ($p<0.0001$). None of the disease activity indices were associated with any of the two biomarkers or their ratios in serum or urine.

Conclusion: Data indicate excess nitrated forms of Col2-1 in the urine of patients suffering from active OA in comparison to DMARD treated RA patients, indicating that a greater proportion of OA SNCol immunoreactive forms pass through the renal glomerular membrane than in RA. In RA, fractional excretion of both Col and NCol was low and similar for Col and NCol, excluding a differential renal handling of the detected epitopes. The excess of urinary nitrated forms in OA vs RA may result from the OA disease process itself or from DMARD interference with the iNOS activity in RA. Within patients' differences between serum and urine NI values indicate biological heterogeneity of immunoreactive species containing the Col2-1 epitope. The clinical relevance of this heterogeneity is unknown since the half-life of measured components have not been studied. Additional investigations with specific enzyme inhibitors in OA and biological DMARDs in early RA are warranted to quantify the dynamics of serum and urine components of Col2-1 and its nitrated forms.

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Cumulative Occupational Physical Load As Risk Factor for Knee Osteoarthritis. Allison M. Ezzat[1], Jolanda Cibere[2], Mieke Koehoorn[1], Eric C. Sayre[2] and Linda C. Li[1]. [1]University of British Columbia, Vancouver, BC, [2]Arthritis Research Centre of Canada, Vancouver, BC

Background/Purpose: Knee osteoarthritis (OA) results from the interaction of multiple risk factors, one of which may be physically demanding occupations. The purpose of this study was to determine the association between cumulative occupational physical load (COPL) and the presence of knee OA, defined as Symptomatic Radiographic Osteoarthritis (SOA) or Magnetic Resonance Imaging Osteoarthritis (MRI-OA).

Methods: This was a cross-sectional analysis of symptomatic (n=255) and asymptomatic (n=72) knee cohorts recruited as a random sample from the same population. Participants were 40 to 79 years old. Inclusion criteria