

Conclusions: The innate capacity to produce TNF- α and IL-10 upon LPS stimulation contributes to radiological progression of knee OA, even over a relative short follow-up period of two years. This finding suggests that innate production of TNF- α and IL-10 play a role in OA progression, which if confirmed implies that cytokines such as TNF- α could be pathophysiological targets for OA therapy.

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ONE YEAR FOLLOW-UP OF COLL 2-1, COLL 2-1 NO₂ AND MYELOPEROXYDASE SERUM LEVELS IN OSTEOARTHRITIC PATIENTS AFTER HIP OR KNEE REPLACEMENT

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Purpose: To determine Coll 2-1 level, a peptide of type II collagen triple helix, its nitrated form (Coll 2-1 NO₂) and myeloperoxidase (MPO) in serum of patients with knee or hip osteoarthritis (OA) before the surgery, three months and one year after knee or hip replacement.

Methods: Coll 2-1, Coll 2-1 NO₂ and MPO were measured by specific immunoassays in 83 asymptomatic aged subjects and in patients with knee (82) or hip (53) OA candidates for joint replacement. Sera were taken the day before surgery, three months and one year after hip or knee replacement. Coll 2-1 and Coll 2-1 NO₂ immunohistochemistry was performed on biopsies removed from cartilage lesions and surrounding area.

Results: Immunostainings with Coll 2-1 and Coll 2-1 NO₂ labelled extracellular matrix of fibrillated cartilage but not that of neighbouring area. Before surgery, Coll 2-1, Coll 2-1 NO₂ and MPO levels were higher in serum of OA patients than in asymptomatic aged subjects (Coll 2-1: $p < 0.001$; Coll 2-1 NO₂: $p < 0.001$ and MPO: $p < 0.001$). Three months after joint replacement, Coll 2-1 and MPO serum levels were decreased ($p < 0.001$) and even reached the control values for Coll 2-1. In contrast, Coll 2-1 NO₂ levels remained elevated. At one year follow-up, Coll 2-1 levels remained to the control values, MPO levels were similar to those measured at 3 months, and Coll 2-1 NO₂ levels were unchanged and comparable to the pre-surgery values. However, in patients with pre-surgery values above the median (more than 0.42 nM), Coll 2-1 NO₂ levels significantly and progressively decreased over one-year [at month 3 median: 0.56 nM (min: 0.14 nM-max: 4.05 nM; after one year median: 0.46 nM (min: 0.21 nM-3.66 nM)] compared to the pre-surgery values [median: 0.72 nM (min: 0.43 nM-max: 4.21 nM)].

Conclusions: These findings suggest that Coll 2-1 is a relevant marker for the detection of late structural changes in OA patients. Furthermore, the normalization of Coll 2-1 levels three months after surgery indicates that Coll 2-1 is a disease-specific marker which is sensitive to the structural changes occurring in one single joint. Interestingly, MPO and Coll 2-1 NO₂ are increased in OA patients indicating that an oxidative stress occurs in the late stage of the disease.

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REARFOOT MOBILITY DETERMINES IF VALGUS WEDGED ORTHOSES REDUCE KNEE ADDUCTION MOMENTS IN MEDIAL KNEE OSTEOARTHRITIS (OA)

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Purpose: It has previously been demonstrated that patients with medial knee OA have increased loads across the medial knee, and we have shown that valgus posted foot orthoses have an effect on these knee adduction moments (AddM). This study aimed to determine whether the reductions in AddM in the presence of the wedge orthoses are related to frontal motion and position of the rearfoot in symptomatic medial compartment knee OA.

Methods: 40 subjects (63.4 \pm 9.9, mean \pm S.D, years of age, BMI of 28.5 \pm 4.4) with medial knee OA (symptomatic OA according to the ACR Clinical Criteria for OA, radiographic OA of Kellgren-Lawrence (K-L) grades 2-3, predominantly medial disease, and ambulatory knee pain \geq 20mm on a 100mm VAS scale) were recruited from an ongoing double-blind randomized controlled trial [NLM Identifier: NCT00078453]. Exclusions included symptomatic arthritis of the hip, ankle, or foot; structural foot pathology; or any inflammatory arthritis. WOMAC site-specific surveys for each knee and weight-bearing AP lower extremity X-rays were obtained. Radiographic alignment of the rearfoot and lower leg along with anthropometric measurements were obtained by a blinded experienced clinician with the subject standing in two different stance-foot positions. Subjects were randomized into two groups, one consisting of treatment with custom molded foot orthosis posted to 7 degrees everted (valgus wedge) and the other with custom molded foot orthosis with no post (neutral). Kinematic and kinetic gait data were obtained as previously described using an optoelectronic system (Qualysis, Gothenburg, Sweden) and a multicomponent force plate (Bertec, Columbus, OH). The subjects wore the orthoses daily for three months and the gait tests were repeated. For statistical evaluation, subjects were dichotomized into "high mobility" with a rearfoot range of motion (ROM) $>8^\circ$ (12.4 \pm 4.0) and "low mobility" ROM $<8^\circ$ (4.9 \pm 3.1), and each treatment group was analyzed using ANOVA. Changes in the radiographic angles were compared between positions and groups and analyzed with Pearson's correlation coefficient and ANOVA.

Results: At 3 months, among the wedge-treated subjects there was a 12% reduction in knee AddM for those that were "high mobility," i.e., had greater frontal plane rearfoot motion, compared to those that were "low mobility" ($p=0.001$); in contrast, the neutral control group had no change in AddM regardless of frontal plane motion. In addition, the "low mobility" group did not have significant reductions in AddM, even when treated with the wedge. No correlation was demonstrated between the reduction in moments and either WOMAC pain severity or radiographic severity as determined by K-L grade. The changes in the radiographic alignment demonstrated that a wider stance position resulted in less varus of the rearfoot and lower leg and confirmed the dichotomization of the groups with a strong correlation between changes in radiographic alignment and anthropometric measurements ($R^2=0.69$ $p < 0.001$). The changes in lower extremity radiographic alignment were also correlated to the reduction of knee

A3 – Table 1. Serum levels [median (range)] of Coll 2-1, Coll 2-1 NO₂ and MPO in asymptomatic subjects and OA patients.

	Asymptomatic subjects	OA subjects		
		Before surgery	3 months after joint replacement	1 year after joint replacement
COLL 2-1 (nM)	123.69 (37.60-284.09)	156.84 (45.77-460.80)	119.58 (17.00-250.19)	114.61 (24.38-303.82)
COLL 2-1 NO ₂ (nM)	0.26 (<0.03-1.66)	0.42 (0.10-4.21)	0.45 (<0.03-4.05)	0.42 (0.21-3.66)
MPO (ng/ml)	67.00 (0.00-212.00)	153.73 (0.00-1213.00)	92.00 (0.00-859.00)	98.70 (39.90-789.60)