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INCREASED SEVERITY OF SYNOVIAL HYPERTROPHY BY ULTRASOUND IN KNEE OSTEOARTHRITIS OF SHORTER DISEASE DURATION

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Purpose: To analyze whether the existence or severity of inflammatory changes as detected by ultrasound (synovial effusion and /or hypertrophy) are related to disease duration in patients with knee osteoarthritis.
Methods: Patients aged 50 y or more with symptomatic osteoarthritis of the knee and joint effusion, Kellgren-Lawrence II-III. Demographics, BMI, duration from onset of symptoms, pain assessed by VAS (0–10 cm) and the Lequesne index algofuncional were analyzed in a cross-sectional study. Knee ultrasound was performed evaluating and measuring the presence of effusion and synovial hypertrophy at the suprapatellar midline. Two groups were established depending on whether the evolution time from the onset of symptoms was less than or equal to or greater than 2 years.
Results: Thirty patients were analyzed, F/M 29/6, age 61.7±9.6 y, disease duration 46.1±43 months, BMI 30.6±4.9 kg/cm2. Disease duration was ≤ 2 years in 19 patients (54.3%). There were no differences according to disease duration with regard to age, BMI or radiological grade. Patients with osteoarthritis of the knee with less evolution time showed a moderate tendency to have a greater joint effusion (7±3.1 vs. 6.6±2.6 mm, ns). Synovial hypertrophy was significantly greater in the shorter duration group (6.9±2.1 vs. 4.1±2.1 mm, $P < 0.005$) and also showed a tendency to have higher pain by VAS (6.5±1.5 vs. 5.9±2.6, ns). On the other hand, patients with a longer history of knee OA showed significantly higher scores on the Lequesne index (11.3±4 vs. 8.4±2.6, $p < 0.05$).
Conclusions: In this sample of patients with symptomatic knee OA, synovial hypertrophy had a greater thickness in patients with shorter disease duration. This finding could be related to the existence of pain in the early stages of the disease.

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ASSOCIATION BETWEEN METABOLIC SYNDROME AND SYNOVITIS IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Purpose: To assess whether patients with knee osteoarthritis and metabolic syndrome have an increased frequency of inflammatory features as detected by ultrasound.
Methods: Patients aged 50 years or more with symptomatic osteoarthritis of the knee and joint effusion, Kellgren-Lawrence II-III. Demographics, BMI, disease duration, pain assessed by VAS (0–10 cm), algofuncional Lequesne index and the existence of metabolic syndrome (ATP III criteria) were assessed. Knee ultrasound was performed evaluating and measuring the presence of effusion and synovial hypertrophy at the suprapatellar midline.
Results: We analyzed 35 patients, F/M 29/6, age 61.7±9.6 y, disease duration 46.1±43 months, BMI 30.6±4.9 kg/cm2. Eight patients (22.9%) met diagnostic criteria for metabolic syndrome. There were no significant differences in age, BMI or radiological grade. Patients with metabolic syndrome had a higher mean duration (76.6 vs. 37.2 months, $p < 0.05$). In patients with metabolic syndrome there was a clear trend, although not statistically significant, to have a more prominent joint effusion (7.2±2.7 vs. 6.2±3.2 mm) and a greater percentage of patients with significant synovial hypertrophy (>4 mm) (5/8 (62.5%) vs. 14/27 (51.9%), while no difference was evident in relation to the average thickness of the hypertrophy in patients with synovitis in both groups. Patients with metabolic syndrome had higher pain (VAS 6.2±1.5 vs. 5.8±1.9, ns) and higher scores on the Lequesne index (12.1±4.5 vs. 9±2.9, $p < 0.05$).
Conclusions: In this sample of patients with symptomatic knee osteoarthritis, comorbidity in the form of metabolic syndrome was associated with greater functional impairment as measured by the Lequesne index and a nonsignificant trend (probably related to small sample size) to show higher prevalence of hypertrophic synovium and increased synovial effusion.

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ENDOGENOUS PARATHYROID HORMONE IS ASSOCIATED WITH REDUCED CARTILAGE VOLUME IN VIVO IN A POPULATION-BASED SAMPLE OF ADULT WOMEN

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Purpose: Parathyroid hormone(PTH) has complex actions on bone when administered exogenously, and intermittent injection is anabolic to bone. Current data suggest that exogenous PTH may exert a positive influence upon cartilage after injury. However, little are known about endogenous PTH and cartilage in vivo, and the role PTH may play in changes to knee structure, as precursors to the onset or progression of osteoarthritis. Thus, the aim of this study was to examine the association between endogenous PTH and cartilage volume in a healthy adult population without any signs of osteoarthritis.
Methods: Magnetic resonance imaging of the knee was performed on 101 asymptomatic females aged 35–49 years(2007–9). Blood samples(PTH and vitamin D) were obtained 10 years prior(1994–7), and stored at −80°C for random batch analyses. Serum intact PTH was quantified by chemiluminescent enzyme assay. Serum vitamin D(25[OH]D) was assayed using an equilibrium radioimmunoassay after extraction with acetonitrile.
Results: After adjustment for age, BMI and bone area, a 1-unit(pmol/L) increase in PTH was associated with reduced medial cartilage volume [regression coefficient ± standard deviation, p value](−0.7±0.3, $p = 0.03$). Further adjustment for seasonal variation increased the strength of association(−0.8±0.3, $p = 0.01$), however results were similar after further adjustment for 25[OH]D(−0.08±0.4, $p = 0.03$). No associations were observed with lateral cartilage volume ($0.2 \le p \le 0.5$). All results remained significant($p < 0.01$) after excluding subjects with osteophytes to account for the possibility of pre-clinical osteoarthritis.
Conclusions: This study suggests greater levels of PTH might be detrimental to cartilage in vivo in humans. High PTH may reduce the ability of cartilage to heal following injury, similar to the reduced healing ability of cartilage observed in animal studies. These data suggest a limited regenerative capability of cartilage in the presence of high endogenous PTH.

Clinical Trials

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DEXTROSE PROLOTHERAPY FOR KNEE OSTEOARTHRITIS: RESULTS OF A RANDOMIZED CONTROLLED TRIAL

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Purpose: Knee osteoarthritis (KOA) is common, expensive and debilitating. Sources of pain include the joint capsule, ligaments, synovium, bone, menisci and extra-articular ligament and tendon attachments. Prolotherapy is a complementary and alternative injection therapy for chronic musculoskeletal pain including KOA hypothesized to stimulate healing of chronically injured tissue. Prolotherapy injections directly target the multiple pain-generating structures associated with KOA in and around the knee, but is poorly studied.
Methods: The objective of our study was to assess the efficacy of prolotherapy for chronic KOA in an NIH-NCCAM funded study. We conducted a 3-arm (prolotherapy, saline injections, at-home exercise) randomized controlled trial. The injector, all assessors and injection group subjects were blind to group allocation. Adult subjects were recruited from outpatient settings. Inclusion criteria included at least 3 months of symptomatic KOA and clinically determined KOA using American Rheumatological Association criteria. Blinded injections were performed at 1, 5, and 9 weeks with as-needed injection sessions at weeks 13 and 17. Extra-articular injections were done at peri-articular tendon and ligament insertions. A single intra-articular injection was performed through an infero-medial approach. Extra- and intra-articular prolotherapy injections were 15% and 25% dextrose respectively; control injections were saline. Exercise subjects received an exercise manual and