Chondroitin sulfate and not acetaminophen effectively reduces synovitis in patients with knee osteoarthritis: results from a pilot study

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Purpose:
Inflammation of synovial membrane in osteoarthritis (OA) is one of the major signs of structure damage during disease progression. Chondroitin sulfate (CS) is effective in the treatment of OA. Recently, CS has shown to reduce joint swelling and effusion in OA patients in the NIH-funded GAIT study (N Engl J Med 2006;23;354(8):795-808). The purpose of this pilot study was to compare the effect of CS (Condrosan®, Bioibérica S.A., Barcelona) on synovitis of OA patients vs. acetaminophen.

Methods:
Synovitis (synovial hypertrophy + effusion ≥ 4 mm) was evaluated by sonography in 45 patients treated with CS (800 mg/day) or acetaminophen (4 g/day) for 6 months. Patients were followed-up until month 9 to evaluate the carry-over effect. Synovial hypertrophy was assessed by sonography and synovial effusion was quantified by arthrocentesis. Symptomatic effect of both treatments was also evaluated by Lequesne Algofunctional Index (baseline, 1, 3, 6, and 9 months). Analysis of continuous variables was based on analyses of covariance (ANCOVA) model. 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 less than or equal to 0.05 were considered statistically significant for each variable.

Results:
Eligible patients had clinical and radiographic evidence of OA (Kellgren&Lawrence grade 2 and 3) with synovitis assessed by sonography. Mean age of patients was 70.44 years. 72.09% were women. Mean BMI was 28.97. At the end of the study, CS significantly reduced synovitis compared to acetaminophen (p<0.01). Compared to baseline, CS treated patients presented a 25.45% reduction of synovitis (6.64±1.69 vs. 4.88±1.69; p<0.05) and, specifically, a 61.93% reduction of synovial hypertrophy (3.73±1.96 vs. 2.23±1.98; p<0.05). No effect on synovitis was observed in the acetaminophen group over time. Additionally, CS and not acetaminophen effectively reduced functional incapacity after 6 months of treatment (CS group: 11.5±2.5 vs. 7.88±3; p<0.01. Acetaminophen group: 9.9±4.1 vs. 8.3±4.9; n.s.), CS functional improvement remained significant at month 9 after treatment supression confirming the carry-over effect of CS.

Conclusions:
These results suggest that CS effectively reduces synovitis and clinical symptoms of OA, though these effects are not observed with acetaminophen. It also confirms the results from the NIH-funded GAIT study. Therefore, CS seems to be a more effective therapeutic tool than analgesics for patients with OA and synovial inflammation. Its carry over effect (also confirmed in this study) and its well-recognized safety profile, provide additional clinical benefits vs. acetaminophen.