

Glucosamine Long-Term Treatment and the Progression of Knee Osteoarthritis: Systematic Review of Randomized Controlled Trials

ABSTRACT

OBJECTIVE

To investigate the structural and symptomatic efficacy and safety of glucosamine in knee osteoarthritis (OA).

DATA SOURCES

Clinical trials of glucosamine were identified through electronic searches (MEDLINE, EMBASE, BIOSIS, EMB review, the Cochrane Library) using the key words glucosamine, osteoarthritis, degenerative joint disease, degenerative arthritis, osteoarthrosis, gonarthrosis, knee, disease progression, and clinical trial. The bibliographic databases were searched from their respective inception dates to August 2004. We also hand-searched reference lists of relevant articles.

STUDY SELECTION AND DATA EXTRACTION

Studies were included if they were double-blind, randomized, controlled trials that evaluated oral glucosamine long-term treatment in knee OA; lasting at least one year; and reporting as outcome measures the symptom severity and disease progression as assessed by joint space narrowing. Two authors interpreted data independently. Disagreements were resolved through discussion.

DATA SYNTHESIS

Glucosamine sulfate was more effective than placebo in delaying structural progression in knee OA. The risk of disease progression was reduced by 54 % (pooled RR 0.45; 95% CI = 0.28 to 0.73; $p = 0.0011$). The number-needed-to-treat was 9 (95% CI = 6 to 20). The pooled effect sized for pain reduction and improvement in physical function were 0.41 (95% CI = 0.21 to 0.60; $p < 0.0001$) and 0.46 (95% CI = 0.27 to 0.66; $p < 0.0001$), respectively, in favor of glucosamine sulfate. Glucosamine sulfate caused no more adverse effects than placebo.

CONCLUSIONS

The available evidence suggests that glucosamine sulfate may be effective and safe in delaying the progression and improving the symptoms of knee OA. Due to the sparse data on structural efficacy and safety, further studies are warranted.