Vitamin D supplementation does not reduce knee pain, cartilage loss in patients with osteoarthritis

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In a two year randomized trial, patients with symptomatic knee osteoarthritis who received vitamin D supplementation did not have a significant difference in knee pain or cartilage volume loss compared to patients who received placebo, according to a study appearing in the January 9 issue of *JAMA*.

"Knee osteoarthritis (OA) is a common age-related musculoskeletal disorder that has significant functional impact and has considerable societal costs through work loss, early retirement, and arthroplasty. Despite its impact, there are no medical treatments established to influence the course of the disease," according to background information in the article. "Some studies have suggested that vitamin D may protect against structural progression."

Timothy McAlindon, D.M., M.P.H., of Tufts Medical Center, Boston, and colleagues conducted a clinical trial to examine whether vitamin D supplementation is associated with reductions in symptomatic and structural progression of knee OA. The 2-year randomized, placebo-controlled clinical trial included 146 participants with symptomatic knee OA (average age, 62 years; 61 percent women), who were enrolled in the study between March 2006 and June 2009. Participants were randomized to receive either placebo or oral cholecalciferol, 2,000 IU/day, with dose escalation to increase serum levels to more than 36 ng/mL. Eighty-five percent of the participants completed the study.

The primary measured outcomes for the study were knee pain severity (Western Ontario and McMaster Universities [WOMAC] pain scale, 0-20: 0, no pain; 20, extreme pain), and cartilage volume loss measured by magnetic resonance imaging. Secondary outcomes included physical function, knee function (WOMAC function scale, 0-68: 0, no difficulty; 68, extreme difficulty), cartilage thickness, bone marrow lesions, and radiographic joint space width.

Serum 25-hydroxyvitamin D levels increased by an average 16.1 ng/mL in the treatment group and by an average 2.1 ng/mL in the placebo group. Knee pain at the beginning of the study was slightly worse in the treatment group (average, 6.9) than in the placebo group (average, 5.8). Knee function at the beginning of the study was significantly worse in the treatment group (average, 22.7) than in the placebo group (average, 18.5). In the subset analyses for the WOMAC pain outcome, the effects were generally similar, and nonsignificant. The researchers found that knee pain decreased in both groups by an average -2.31 in the treatment group and -1.46 in the placebo group, with no significant differences at any time. The percentage of cartilage volume decreased by the same extent in both groups, by about 4 percent. There were no differences in any of the secondary clinical end points.

There were 31 serious adverse events in the vitamin D group and 23 in the placebo group but the number of participants who experienced an event was 16 in each group.

"… additional results from epidemiologic studies that emerged during the course of this study have been mixed demonstrating positive and negative associations. Two studies appeared to show strong associations of bone density with the development of knee OA, but some of those investigators later published concerns about the possibility of such associations arising as a result of contingent confounding. Therefore, together with the results of this clinical trial, the overall data suggest that vitamin D supplementation at a dose sufficient to

elevate 25-hydroxyvitamin D levels to more than 36 ng/mL does not have major effects on clinical or structural outcomes in knee OA, at least in a U.S. sample," the authors conclude.

More information: *JAMA*. 2013;309(2):155-162

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