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## Do steroid injections help with osteoarthritis of the knee?

### ■ EVIDENCE-BASED ANSWER

Intra-articular steroid injections appear to provide 2 to 6 weeks of pain relief for patients with knee osteoarthritis (strength of recommendation [SOR]: **A**). Higher-dose steroids with or without joint lavage can provide pain relief up to 24 weeks (SOR: **A**). Steroid injections may be an appropriate adjunct in the treatment of osteoarthritis, which includes nonpharmacologic treatments (education, weight loss, physical therapy) and pharmacologic therapy (nonsteroidal anti-inflammatory drugs [NSAIDs], topical and opioid analgesics).<sup>1,2</sup>

### ■ EVIDENCE SUMMARY

Osteoarthritis, also known as degenerative joint disease, is the most prevalent form of arthritis in the United States.<sup>3</sup> For the elderly, it is a common cause of pain and disability, affecting patients' ability to perform activities of daily living. Common causes of osteoarthritis include past and present biomechanical stresses affecting the articular cartilage, subchondral bone changes, and biochemical changes in the articular cartilage and synovial membrane.<sup>3</sup>

Treatment of patients with osteoarthritis of the knee should be individualized to the severity of symptoms for each patient. A treatment plan can include patient education, physical and occupational therapy, non-opioid oral and topical agents, NSAIDs, intra-articular corticosteroid injections, viscosupplementation injections, arthroscopic lavage, and total knee replacements.

Our knowledge of the long-term safety and efficacy of intra-articular knee corticosteroid injection

is based on limited data. In a randomized, double-blind, placebo-controlled crossover study, investigators randomized 59 patients aged 51 to 89 years to receive either an intra-articular injection of 1 mL of 40 mg methylprednisolone or 1 mL of 0.9% saline. After 3 weeks, patients receiving steroid injection had a minimal change in baseline visual analogue score for pain compared with those receiving saline (median change: -2.0 mm vs 0 mm on a 100-mm scale).<sup>4</sup>

A randomized, single-blinded study involving 84 patients demonstrated significant self-reported "overall improvement" for patients given intra-articular triamcinolone hexacetonide (78%) compared with placebo (49%) after 1 week ( $P<.05$ ).<sup>5</sup> It also confirmed reports that visual analogue score for pain and distance walked in 1 minute improves significantly for both steroid- and placebo-treated groups up to 6 weeks. Only the steroid-treated patients exhibited improved walking distance at 1 week compared with baseline ( $P<.001$ ).

A recent randomized, double-blind, placebo-controlled trial studied the long-term safety and efficacy of treatment of knee osteoarthritis with repeated steroid injections.<sup>6</sup> These investigators studied 66 patients aged 40 to 80 years recruited from rheumatology clinics. One half ( $n=33$ ) received injections of triamcinolone acetonide 40 mg, and the other half received saline injections every 3 months for 2 years. At 1- and 2-year interval follow-ups, no statistically significant difference was seen between the 2 groups in loss of joint space and no progression of degenerative disease, as demonstrated by measurements of joint space widths by standardized fluoroscopically guided radiographs. Although the primary outcome measure of this study was to assess radiologic joint space narrowing with repeated injections, knee pain and stiffness appeared to improve after 2 years, although these results were not well quantified.

A limitation of most studies testing intra-articular therapy has been sample size. Combining studies may allow the ability to detect levels of pain relief not found in individual

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**Intra-articular steroids are useful for candidates for total knee replacement who are not ready psychologically**

studies. A recent meta-analysis of 6 randomized controlled trials using intra-articular corticosteroid knee injections found short-term relief of pain for 2 weeks (relative risk [RR]=1.66; 95% confidence interval [CI], 1.37–2.01).<sup>7</sup> The number needed to treat (NNT) range for these studies is 1.3 to 3.5. Two additional studies included in this study using higher-dose steroids (prednisone equivalent dose of 37.5 to 80 mg), with or without joint lavage, assessed improvement at 16 to 24 weeks. Although neither individual study showed statistically significant differences, the pooled data from the 2 studies favored symptom improvement at 16 to 24 weeks (RR=2.09; 95% CI, 1.2–3.7; NNT=4.4).<sup>7</sup>

**RECOMMENDATIONS FROM OTHERS**

Guidelines for the treatment of knee osteoarthritis were outlined by a task force for the European League Against Rheumatism (EULAR) Standing Committee for Clinical Trials. The task force recommended intra-articular steroid injection for acute exacerbation of knee pain. This task force performed an evidence-based review and concluded at least 1 randomized control trial recommended intra-articular steroid for patients with osteoarthritis. It was noted that intra-articular steroid injections were effective for only short-term pain relief and that there are no predictors of success of treatment, such as the presence or absence of such factors as joint effusion, degree of radiologic change, age, or obesity.<sup>2</sup>

The American College of Rheumatology Subcommittee on Osteoarthritis Guidelines developed both nonpharmacological and pharmacological recommendations for the treatment of osteoarthritis of the knee.<sup>8</sup> These recommendations include: use of intra-articular steroid injection for patients with acute exacerbations who

had evidence for joint inflammation, and joint aspiration accompanying the intra-articular injection for “short-term relief.”

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**CLINICAL COMMENTARY**

**Intra-articular steroids provide extra relief for patients with acute exacerbations**

This well-constructed review demonstrates that intra-articular steroid injections provide up to 3 weeks of pain relief for patients with osteoarthritis of the knee. While this may not seem like much, in practice it can be quite helpful in some situations. It provides supplemental pain relief for patients with acute exacerbations of their disease. It is also useful as a temporizing measure for patients who are candidates for total knee replacement but are not quite ready for it psychologically.

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