

Intra-articular Corticosteroid Injections for Osteoarthritis of the Knee

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Clinical Question

How effective and safe are intra-articular corticosteroid injections for the treatment of osteoarthritis of the knee?

Evidence-Based Answer

Intra-articular corticosteroid injections can be used to reduce pain by about 20% in the short term (one to three weeks) in patients with osteoarthritis of the knee. (Strength of Recommendation [SOR]: A, based on a meta-analysis of randomized controlled trials.) Intra-articular injections cause joint infections in one out of 14,000 to 77,000 procedures and can result in hyperglycemia for two to three days in patients with diabetes mellitus. Injections should not be given more often than every three months. (SOR: C, based on expert opinion.)

Evidence Summary

EFFECTIVENESS

A meta-analysis of 13 randomized controlled trials comparing a single corticosteroid injection with placebo in patients with osteoarthritis of the knee showed improvement in pain but not in function at one week. There was no improvement in any parameter at longer intervals.¹ Patients were recruited from the United States, Canada, France, and England. Women comprised 62% to 71% of the study participants, and the average age was 60 to 71 years. Eight of the trials (N = 397) evaluated pain. Three trials that used a visual analog scale showed improvements at one week (weighted mean difference = -22 points on a scale of 1 to 100; 95% confidence interval, -30 to -14), but not at four or six weeks. Four studies compared the percentage of patients with

reduced pain after a corticosteroid injection compared with those who had a placebo injection. One trial showed a nonsignificant difference at one week, and another found reduced pain with steroids at one week but no difference at four weeks (number needed to treat [NNT] = 2.6). One trial showed reduced pain at two weeks after a corticosteroid injection, and one found reduced pain at three weeks (NNT = 3). Three studies that measured range of motion and walking distance or time (N = 251) found no significant differences for up to 24 weeks.

SAFETY

A systematic review found no significant differences in withdrawal rates, number of postinjection steroid flares, or local discomfort.¹ A randomized trial of patients with osteoarthritis who received intra-articular corticosteroid or saline injections found no difference in radiographic appearances between the groups.² A cohort study of 65 patients with osteoarthritis who were given multiple corticosteroid injections and followed for up to 20 years found no correlation between the frequency of injections and deterioration on radiography.³

Joint Infection. A retrospective study asked 69 rheumatologists to recall all episodes of joint infection after intra-articular corticosteroid injections that they performed during their careers (range, 10 to 20 years).⁴ They reported a total of 15 joint infections out of an estimated 1.6 million injections into a variety of joints (infection complication rate of approximately one in 77,300 injections). Another retrospective review cited in the meta-analysis above¹ reported infection rates of one in 14,000 to 50,000 injections. ►

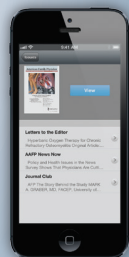
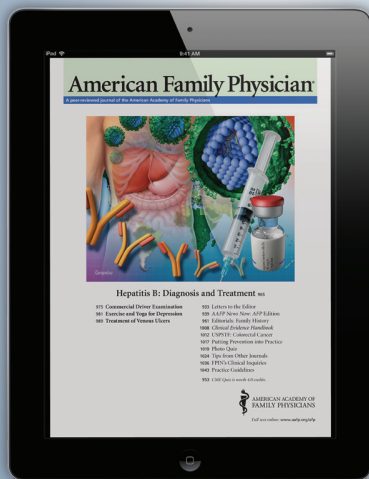
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Short-Term Hyperglycemia in Patients with Diabetes. Two small cohort studies found that corticosteroid injections produced short-term elevations in glucose levels in patients with diabetes who have osteoarthritis. In the first study, seven of nine patients with well-controlled type 2 diabetes (A1C less than 7.0%) had glucose levels more than two standard deviations above baseline after a methylprednisone injection into the knee (peak levels at five to 84 hours after injection).⁵ In the second study, six out of six patients had hyperglycemia after an intra-articular betamethasone injection (peak glucose levels 251 to 430 mg per dL [13.9 to 23.9 mmol per L]).⁶

Recommendations from Others

The American College of Rheumatology recommends that intra-articular corticosteroid injections be administered no more often than every three months for patients with osteoarthritis whose symptoms are not controlled with full-dose acetaminophen.⁷ A guideline from the United Kingdom's National Collaborating Centre for Chronic Conditions recommends intra-articular corticosteroid injections in combination with exercise and weight loss for pain relief in patients with osteoarthritis.⁸

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