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## Physical Therapy before the Needle for Osteoarthritis of the Knee

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Clinical guidelines for the treatment of osteoarthritis of the knee emphasize education, exercise, and (if appropriate) weight loss, rather than the use of drugs or surgery.<sup>1,2</sup> However, a survey conducted in four European countries showed that these treatments were recommended to fewer than half the patients; stronger painkillers were recommended in 52% of patients, and 36% were referred for surgery.<sup>3</sup> Intraarticular glucocorticoid injections are commonly used to treat osteoarthritis of the knee, partly because they are easy to administer, they involve fewer visits than other treatments, and patient adherence is not an issue. But benefits may be short-lived, and adverse effects on the joint have been reported, including a small increase in loss of cartilage volume of uncertain clinical relevance.<sup>4</sup> In contrast, physical therapy, including exercise, is used less frequently than glucocorticoid injections, and although physical therapy requires patient participation and investment of time, it is noninvasive, has negligible adverse effects, and may have longer-lasting benefits than glucocorticoid injections.

Few trials have directly compared different treatments for osteoarthritis of the knee. In this issue of the *Journal*, Deyle and colleagues<sup>5</sup> report the results of a pragmatic, randomized, controlled trial conducted predominantly in one military hospital in the United States. A total of 156 outpatients with osteoarthritis of the knee were assigned to undergo physical therapy or to receive intraarticular glucocorticoid injections. Outcomes were assessed at 12 months. It was not possible to conceal treatment assignments from patients or providers, and placebo injections were not included in the trial design.

Over the 12-month trial period, patients in the physical therapy group attended a mean of 11.8 treatment visits (range, 4 to 22), at which they received manual physical therapy and instruction on home exercise. The glucocorticoid injection group received a mean of 2.6 injections (range, 1 to 4) of triamcinolone acetonide. The primary outcome was the total score on the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC; scores range from 0 to 240, with higher scores indicating worse pain, function, and stiffness). Patients in the physical therapy group had less pain and functional disability at 1 year than patients in the glucocorticoid injection group. Although the magnitude of the absolute between-group difference in total WOMAC score (18.8 points) was small, 8 of 78 patients (10.3%) in the physical therapy group, as compared with 20 of 78 (25.6%) in the glucocorticoid injection group, did not have an improvement from baseline of at least 12% (the minimal clinically important difference) in the WOMAC score. Secondary outcomes measuring functional tasks and patient assessment of improvement, as well as sensitivity analyses, were in the same direction as the primary outcome, with the results favoring physical therapy. The results of the trial contrast with recent recommendations from some medical and research societies against manual therapy for osteoarthritis of the knee.<sup>1,2</sup>

There are several issues regarding the trial that are worth considering. First, patients in the physical therapy group had considerably greater contact time with clinicians than patients in the glucocorticoid injection group. This may have accentuated placebo effects and the therapeutic

alliance, which is a predictor of better outcomes. Second, the results may reflect a lack of long-term efficacy of injections (at 12 months, when the primary outcome was assessed), as was described in a systematic review of two trials.<sup>6</sup> It could be argued that joint injections are used for their rapid, short-term effects before or contemporaneously with physical therapy because benefits with injections in the short term (6 weeks) have been shown to be greater than those with placebo.<sup>7</sup> However, there was no evidence in the current trial to suggest that injections were more beneficial than physical therapy at 4 or 8 weeks. Another controlled trial also showed that a glucocorticoid injection administered 2 weeks before a course of exercise therapy provided no benefit with respect to reducing pain.<sup>8</sup> If the population in the current trial had been restricted to patients with severe pain, the benefits with injection may have been greater, as was shown in a meta-analysis of individual patient data.<sup>9</sup> Third, the physical therapy program was individualized and included therapist-applied manual techniques combined with home exercises, all of which were based on the clinical judgement of the therapists. Although therapists were provided with guidelines regarding manual therapy and exercise, we do not know how these guidelines were applied; therefore, replication of the findings in the trial may be difficult. Although evidence supports exercise for osteoarthritis of the knee,<sup>10</sup> a systematic review has indicated that the few published trials of manual therapy have generally been of low quality and inconclusive,<sup>1</sup> which probably accounts for the aforementioned recommendations of some medical and research societies against manual therapy for osteoarthritis of the knee. Fourth, a broad assessment of health care costs associated with osteoarthritis of the knee showed almost no difference between groups in the current trial, but formal cost-effectiveness analyses would help inform funding decisions, especially given that the number of physical therapy visits may not be practical in many health care systems. There were fewer knee replacements in the physical therapy group than in the glucocorticoid injection group, although the total number was small — a finding that warrants further investigation. Finally, because the trial was conducted in a U.S. military population, the generalizability of the conclusions may be limited.

This relatively small trial, conducted predomi-

nantly in one center, provides evidence to support a greater benefit with physical therapy involving manual therapy and exercise than with glucocorticoid injection. The results do not exclude a role for joint injection for treatment of a flare of acute pain, as acknowledged in guideline recommendations,<sup>1,2</sup> but the implication could be that injections should not be used first, nor should they be used in place of a physical therapy program that includes exercise to manage symptoms of osteoarthritis of the knee. Challenges remain as to how to change the referral behavior and treatment decisions of clinicians and how to provide health service models that offer nondrug and nonsurgical approaches in the treatment of patients with osteoarthritis of the knee.

Disclosure forms provided by the authors are available with the full text of this editorial at NEJM.org.

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