Indications and Usefulness of Common Injections for Nontraumatic Orthopedic Complaints

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KEYWORDS

• Joint injections • Steroid injections • Corticosteroids • Tendinopathy • Arthritis

KEY POINTS

- Corticosteroid injections (CSIs) are commonly used in the treatment of painful musculoskeletal conditions, despite a lack of consensus in the literature of the true usefulness.
- Any benefits of CSIs are of modest magnitude and short lived, on the order of a few weeks. There are no long-term benefits, and no change in future need for surgical intervention.
- Hyaluronic acid injections to treat knee osteoarthritis are widely used, although the benefits are modest and short term, and the cost is high.
- Injections for treatment of painful musculoskeletal conditions are generally safe and well tolerated, although in some circumstances there are suggestions of long-term deleterious outcomes.

INTRODUCTION

Pain related to various musculoskeletal (MS) conditions is a common patient complaint, and one that is often difficult to remedy. In addition to oral analgesics and physical therapy, local injections (most commonly of corticosteroid [CS]) are a common intervention and have been for decades. However, in most cases, the literature is full of poor-quality studies, making the true utility of these injections questionable. This article reviews some of the literature studying these injections with the goal of providing clinicians the information to make evidence-based, high-value choices.

OSTEOARTHRITIS OF THE KNEE

Osteoarthritis of the knee is a common problem in Western societies, especially in the elderly, and is one of the biggest causes of disability.[1] There is no cure, and joint

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replacement surgery is expensive and carries significant risks. Therefore, treatment is focused on pain relief interventions and maintaining function. Injection therapy (notably CSs and hyaluronic acid derivatives) are widely used. Various other modalities have been studied in this regard, including exercise therapy, braces, and oral medications, and these must be kept in context for comparison purposes.

Corticosteroid Injections for Osteoarthritis of the Knee: Efficacy

Corticosteroid injections (CSIs) have been used in osteoarthritis of the knee since the 1950s, and there have been numerous studies, many of them small and with significant methodological flaws that limit the interpretation of the results. For example, many studies did not use validated pain scales, and frequently the severity of osteoarthritis was not reported. The studies that are the most useful are double blinded and placebo controlled, and use validated measures of improvement, such as validated pain scales and objective functional measures.

A meta-analysis by Arroll and Goodyear-Smith[2] in 2004 found 10 studies of reasonably good quality and determined that intra-articular steroid injections led to statistically significant improvements in pain, stiffness, and function at 1 week and 2 weeks but not at various later end points, up to 6 months. When they combined the 2 studies that followed patients for 24 weeks, they found a statistically significant improvement compared with baseline, but no difference compared with placebo. The meta-analysis also suggested that higher doses of steroids, such as 40 mg of methylprednisolone or 40 mg of triamcinolone, are superior to the lower doses used in some studies.

A later systematic review was done by Hepper and colleagues[3] in 2009, in which 6 randomized placebo-controlled studies were examined. They used a 100-point analog pain scale, and all 6 of these studies showed a significant benefit from steroid injection at both 1 and 2 weeks, with a reduction in pain of about 50% (20–33 points on the scale). Note that 3 of 5 studies also showed a benefit to placebo at these time points, but to a smaller scale (7%–20%, up to 20 points on the analog scale). All studies showed that the steroid injection was superior in efficacy to the placebo, which was usually saline and/or lidocaine. Similar to the Arroll and Goodyear-Smith[2] meta-analysis, the incremental benefit of the steroid injections seemed to fade after 2-weeks.

Bannuru and colleagues[4] in 2015 did a network meta-analysis and systematic review to compare the efficacy of various interventions in treating osteoarthritis of the knee. They concluded that intra-articular CSIs were superior to oral placebo, injected placebo, and oral nonsteroidal antiinflammatory medications in the short term. They also found that injected placebo was superior to oral placebo. However, they commented on the wide variety of studies and the inconsistency in the literature, and stated that further studies were warranted.

The aforementioned studies were all limited to the effects of 1 injection, but it is possible that repeated injections may have cumulative benefits over time. Raynauld and colleagues[5] studied 68 patients with moderate osteoarthritis of the knee and randomized them in double-blind fashion to receive either triamcinolone 40 mg or saline every 3 months for 2 years (total of 8 injections). They found borderline significant benefit to the steroid injections at 1 year in night pain, as well as a general trend toward improvement in many other measures, but these differences over time were small and did not reach statistical significance in this small study. At 2 years, there were no differences and all trends had disappeared.

A recent Cochrane systematic review[6] concluded that the data for intra-articular steroid injection utility in the treatment of osteoarthritis remains overall very poor,