

Nursing 568

Critical Appraisal Topic

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**Critical Appraisal Topic****Clinical Scenario**

A 53 year old male presents to the orthopedic clinic for a recheck of recurrent knee pain. The patient has been receiving cortisone injections to the right knee that have been ineffective. His history indicates obesity and long standing osteoarthritis unaffected from previous attempts at pain relief with corticosteroid injections, NSAID's and therapy.

**Clinical Question**

In patients with chronic knee pain, is injection with Hyaluronic Acid as or more effective in pain relief as corticosteroid injections?

**Summary and Appraisal of Key Evidence****Study 1**

Bellamy, (2008) performed a systematic review utilizing a meta-analysis of twenty-eight randomized controlled trials with 1973 participants. Thirteen trials included comparisons of corticosteroid against placebo injections, ten compared corticosteroid against hyaluronan/hylan, Hylan G-F 20, and Orthovisc. Six trials compared corticosteroid injections and joint lavage. Level of evidence based on the review is a Level 1 Grade A. Participants were followed over the course of 1-24 weeks. Participant's ages were varied and were all sufferers of chronic osteoarthritis of the knee. All participants were treated with the methods described above.

Over the course of 1-24 weeks, double-blind, randomized participants were assigned specific treatment modalities and their effects monitored over the course of the study. Factors included in the evaluation of an interventions' effectiveness were measured by the following outcomes: pain, physical functioning, patient global assessment, and joint imaging.

**Study 2**

Arrich et al. (2005) conducted a systematic review and meta-analysis of randomized controlled trials to assess the effectiveness of hyaluronic acid treatments. The systemic review identified twenty-two studies that reported valid quantitative information on which to base their decisions. They assessed these studies looking for any statistical anomalies, indications for bias, actual clinical effectiveness and used the following outcomes as a guide for successful implementation and treatment of hyaluronic acid in knee pain: pain at rest, pain during or immediately after exercise, joint function, and adverse events. This meta-analysis indicated several problems with many of the studies indicating possible skewed results and possible lack of reliability. The analysis concluded that many of the research designs were flawed and indicated the need for additional studies to be performed that were free of statistical bias, free from any pharmaceutical company influence, with higher statistical validity and reliability.

## **Results**

The results of the studies are inconclusive. The meta-analysis performed in study one indicated a significant improvement in treatment with hyaluronic acid and its derivatives, the total sample size was large, and the studies were double blind and randomized. Study two however indicates that no significant difference is noted and described increased adverse events with the injection of hyaluronic acid components. Weaknesses in study one include the sponsoring of some of the trials by the pharmaceutical companies responsible for the product, which also is a threat to the validity of the entire trial itself. Their meta-analysis included many studies of this nature. Many of the trials were short in duration, lasting less than four weeks. Further research is recommended at this time. Study two indicated promising animal research that may indeed lead to confirmed benefits in the use of hyaluronic acid products in the treatment of osteoarthritic joints. At this time the meta-analysis could not recommend the use of hyaluronic acid over cortisone injections to osteoarthritic knees.

## **Clinical Bottom Line**

By interpreting these two meta-analyses, the hyaluronic acid products could be used clinically. Recommendations would be made with particular emphasis on its possible non-efficacy. Our population of patients continues to become older, more obese, and present with multiple co-morbidities. As osteoarthritis continues to be seen at an alarming rate, current pharmacologic modalities should be advocated with caution. The studies do indicate contradictory information and the practitioner should be mindful of these results. The efficacy of the use of hyaluronic acid should be closely monitored.

## **Implications for Practice**

I would recommend the use of hyaluronic acid based upon some of the research analyzed. I would use it either as adjunct therapy to cortisone injections if all other treatment options have been addressed and proved to be ineffective. As a practitioner I would advocate for the implementation of lifestyle changes including, diet modification, increased exercise and activity, weight loss, ice and elevation at rest, and cortisone injections. Both cortisone and hyaluronic acid injections have had varying degrees of effectiveness and I would be sure to educate and inform my patient of the slower onset of action of hyaluronic acid based on clinical trials. According to recent studies, hyaluronic acid, when effective, does show longer symptom relief than does cortisone.

## References

- Arrich, J., Piribauer, F., Mad, P., Schmid, D., Klaushofer, K., & Mullner, M., (2005). Intra-articular hyaluronic acid for the treatment of osteoarthritis of the knee: systematic review and meta-analysis, *Canadian Medical Association Journal*, 172(8), 1039-1043.
- Bellamy, N. (2008). Intraarticular corticosteroid for treatment of osteoarthritis of the knee. *Cochrane Database Of Systematic Reviews*, (2),