

Patient Perceptions Regarding Viscosupplementation for Treatment of Osteoarthritis of the Knee

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Abstract

Viscosupplementation as a treatment for knee osteoarthritis is widely used, though current literature is controversial regarding its efficacy. The purpose of this study was to evaluate patient perceptions regarding viscosupplementation as a treatment for knee OA. A questionnaire was administered randomly to 200 patients of a community-based orthopedic practice. Items focused on subjective patient outcomes in regard to their experience with viscosupplementation, as well as WOMAC symptom scores. One hundred and fifteen completed surveys were returned (response rate = 57.5%). Fifty-one patients (44.3%) reported some relief of symptoms and 18 patients (15.7%) reported large relief. Fifty-eight patients (50.4%) described their relief as lasting 1-4 weeks, with only 15 patients (13.0%) reporting 6 or more months of relief. Fifty-three patients (46.1%) stated they had more symptom relief with viscosupplementation when compared to corticosteroid injections. One hundred and ten patients (95.7%) had no prior surgery for knee OA. Ninety-two patients (80.0%) had not experienced any adverse effects. One hundred and eight patients (93.9%) stated they felt the treatment was worth the cost. One hundred and one patients (87.8%) said they would recommend viscosupplementation to another patient. Average WOMAC scores for patients who responded with no relief of symptoms was 80.4, while the average WOMAC score was 8.6 for those responding with complete relief. In conclusion, viscosupplementation has a positive treatment effect, possibly placebo, in a majority of patients, especially those with milder symptoms, and may provide improved symptom relief when compared to corticosteroid injections. More affordable viscosupplementation options must be investigated in the future.

Keywords: Viscosupplementation; Osteoarthritis; Knee replacement; NSAIDS

Abbreviations: OA: Osteoarthritis; NSAIDs: Nonsteroidal anti-inflammatory drugs; FDA: Food and Drug Administration; WOMAC: Western Ontario and

McMaster Universities Osteoarthritis Index; AAOS: American Academy of Orthopaedic Surgeons.

Introduction

Arthritis is the most common cause of disability in adults in the United States and is a major contributor to work limitations [1,2]. By the year 2030, it is estimated that approximately 67 million adults, or 25% of the population, will be affected by arthritis [3]. Specifically, the prevalence of symptomatic osteoarthritis (OA) of the knee is 4.9% among adults age 26 and older [4]. Subsequently, as knee arthroplasty has emerged as an effective treatment for knee OA, the amount of knee replacement procedures performed from 1992 to 2011 approximately tripled, resulting in total hospitalization charges for primary and revision knee replacements to increase from \$8.1 billion in 1998 to \$38.5 billion in 2011. Physician office visits account for 84% of ambulatory visits for osteoarthritis, and with the current trends in surgical treatment for knee OA and its associated economic burden, effective conservative management of knee OA is an obvious need in today's health care climate [5].

Nonsteroidal anti-inflammatory drugs (NSAIDs) have long been the mainstay of conservative treatment for knee OA, and while effective at providing symptomatic relief, considerable morbidity, including gastrointestinal disease, is associated with their use [6,7].

Viscosupplementation of the knee joint with intra-articular injection of hyaluronic acid is a frequently used non-surgical treatment for symptoms related to knee OA. Hyaluronic acid is thought to contribute to symptom relief via physical, analgesic, anabolic, anti-inflammatory, and chondroprotective effects [7]. The Food and Drug Administration (FDA) approved an injectable form of hyaluronic acid, sodium hyaluronate (Hyalgan), for treatment of pain associated with knee OA in 1997. Although use of viscosupplementation is widespread amongst health care providers for this indication, the current literature is controversial regarding its clinical efficacy and cost effectiveness, as well as its safety profile [8-13].

Prior studies have investigated clinical and radiographic outcomes associated with the use of viscosupplementation for knee OA, with varied results [14-18]. However, these studies did not evaluate patients' perspectives regarding the efficacy and necessity of their treatments. Juby et al. investigated patient awareness, utilization, and satisfaction regarding treatment of OA with various modalities, but did not include viscosupplementation [19]. The objective of this study is to evaluate patient perceptions regarding

viscosupplementation as a treatment for knee OA. We hypothesize that patients will report positive perceptions of viscosupplementation as a treatment for OA of the knee, in contrast to recent literature reports refuting its clinical efficacy.

Methods

A two-page questionnaire was administered randomly to patients of a single community-based orthopedic practice from October 2016 to April 2018. Responses were kept anonymous. Inclusion criteria were prior diagnosis of osteoarthritis of the knee and current treatment with intra-articular viscosupplementation injections (EUFLEXXA, 1% sodium hyaluronate, Ferring B.V). Incomplete questionnaires were excluded from the study.

Questionnaire items focused on amount and duration of symptom relief from viscosupplementation treatment, symptom relief from viscosupplementation compared to corticosteroid injection treatment, history of surgical treatment for knee OA, presence/severity of adverse effects from viscosupplementation, financial justification for viscosupplementation, and recommendation of viscosupplementation to peers. Additionally, each questionnaire contained the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) to assess severity of symptoms related to knee OA [20]. Item responses were manually tallied, recorded, and analyzed using Microsoft Excel.

Results

One-hundred and fifteen completed questionnaires were returned and met inclusion criteria for a total response rate of 57.5% (115/200). Fifty-one patients (44.3%) reported that they felt some relief of symptoms and 18 patients (15.7%) reported that they felt large relief. Fifty-eight patients (50.4%) described their relief as lasting 1-4 weeks, with only 15 patients (13.0%) reporting 6 or more months of relief. In comparison to corticosteroid injections, 53 patients (46.1%) stated they had more symptom relief with viscosupplementation. The vast majority of patients (95.7%) of patients had no prior history of surgical treatment for knee OA. Ninety-two patients (80.0%) had not experienced adverse effects of the treatment, with only 1 patient reporting severe adverse effects. The majority of patients stated they felt the treatment was worth the cost, and that they would recommend viscosupplementation to another patient (108 patients [93.9%] and 101 patients [87.8%], respectively). Two patients stated that they believed

viscosupplementation was financially worthwhile because their insurance covers the cost, while another patient stated that it "depends on how long the effect lasts".

For those patients who reported no relief of their symptoms (18.3%), the average WOMAC score was 80.4. Of those that reported complete relief of their symptoms (6.96%), the average WOMAC score was 8.6.

Discussion

The results of the data show that, although current literature on the use of viscosupplementation injections of the knee for treatment of osteoarthritis is not validated by objective findings, the results of this survey demonstrate that there is a positive patient subjective response to viscosupplementation injections. In 2013, the American Academy of Orthopaedic Surgeons (AAOS) released the second edition of the "Clinical Practice Guidelines for Treatment of Osteoarthritis of the Knee," in which they state strong evidence exists that the use of viscosupplementation as a treatment for OA of the knee cannot be recommended. This guideline was based on 14 studies, and of those studies, the authors state that "although meta-analyses of WOMAC pain, function, and stiffness subscales scores all found statistically significant treatment effects, none of the improvements met the minimum clinically important improvement thresholds" [13].

Whether the results of our study are supported by radiographic or other objective findings does not clinically correlate with outcomes. A placebo effect is one possible explanation of the positive responses. In effect, if a placebo effect was the root cause of the positive responses, this may simply be a neurocognitive management approach to the pain associated with osteoarthritis of the knee.

The current cost of intra-articular hyaluronic acid injections is a major concern. Corticosteroid injections have been proposed in the past because they have been shown to cost less and have similar outcomes in knee pain, function, and range of motion at mid-range follow up [18]. In contrast, however, our study demonstrates that many patients subjectively report they have better pain relief with viscosupplementation injections compared to their experience with corticosteroid injections. Mar et al. has stated in their cost-analysis study that the use of viscosupplementation injections delayed the need to perform knee replacement surgery by 2.67 years, and

thereby lead to a net savings of health care funds over a period of 10 years [11].

The complete abandonment of viscosupplementation injections as a viable treatment for osteoarthritis of the knee may be premature and unwarranted. Further research should be done to correlate radiographic findings of knee arthritis with the amount of symptom relief from viscosupplementation injections for a more objective correlation between pain and effectiveness of injections. The average cost of viscosupplementation injections per year for a single patient has been shown to be \$1,128 [21]. Future endeavors should aim to find an affordable compound of viscosupplementation that reliably provides symptom relief to those patients with osteoarthritis, so as to optimize patient care while minimizing healthcare costs.

Analysis of WOMAC symptom scores in our study suggests that those patients with less symptomatic knee OA receive more relief with viscosupplementation, with the reverse holding true as well. We did not consider these findings surprising.

Our study was limited by its design, in that the results were purely subjective responses and were not correlated with any objective clinical or radiographic outcomes. This was an attempt to isolate subjective patient outcomes. Demographic information was not collected and could not be correlated with results.

Conclusions

In summary, based on subjective patient responses, viscosupplementation as a treatment for OA of the knee has a positive treatment effect in a majority of patients, especially on those with mild symptoms, and may provide improved symptom relief when compared to intra-articular corticosteroid injections. Nearly all patients in the study had not had surgical treatment for knee OA at the time of response, and this may support previous studies that show a delay in knee replacement surgery secondary to treatment with viscosupplementation. 11 More affordable options must be available in regards to viscosupplementation if its continued routine use can be viable in a modern health care environment.

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