

Intra-articular Sodium Hyaluronate in Comparison with Corticosteroids for the Management of Osteoarthritis of Knee Joint

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ABSTRACT

OBJECTIVE: To assess and compare the role of intra articular hyalurnic acid [HA] for the management of osteoarthritis of knee joint in comparison with the intra articular injection of corticosteroids.

DESIGN: It is a comparative and analytical study.

PLACE & DURATION OF STUDY: This study was carried out in surgical unit III Fauji Foundation Hospital , Rawalpindi and at Choa Khalisa a town 40 kilometres from Rawalpindi in the period from January 2008 – March 2009

RESULTS: The highest prevalence of Hyaluronic Acid [HA] use was in the 70–79 year age group in both sexes. Women received intra-articular HA treatment more frequently than men in all age groups, especially in the 60–69 and 70–79 year groups (1.6% vs. 0.5%, 2.2% vs. 1.0%, respectively).

A total of 100 patients were included in this study, 79 {79%} patients were females and 21 [21%] were males. who presented in the outdoor patient department of fauji foundation hospital and Choa Khalisa with complaints of a pain and sittings of the knee joints..

CONCLUSION: we conclude that intra-articular Hyaluronic Acid might be a good alternative for patients for whom conventional treatment fails especially in younger age groups(60-69). Whereas the corticosteroids are effective in acute cases where they give relief especially if combined with lidocaine or bupivacain but it has no long lasting effects. Intraarticular Hyaluronic acid should be reserved for patients in whom conventional treatment fails and who are comparatively young. Further research is needed to examine the age-gender differences in use of intra-articular Hyaluronic Acid.

KEYWORDS: intraarticular, hyaluronic acid, corticosteroids

INTRODUCTION

Osteoarthritis of the knee is one of the leading causes of disability among the older population. Beside functional activities, it affects social relationships, body image and emotional well-being [1,2]. In Western countries, 7–18% of older people have symptomatic osteoarthritis of the knee [3,5]. A population-based study in China also found that symptomatic osteoarthritis of the knee occurs in 15% of women and 6% of men aged 60 and older [6]. The pain arising from osteoarthritis can be treated with several kinds of drugs: paracetamol, non-steroidal anti-inflammatory drugs (NSAIDs), opioid analgesics, glucosamine salt, chondroitin sulphate, diacerein, corticosteroids, hyaluronic acid (HA) and capsaicin [7]. Most of these drugs are for either oral or topical use; only corticosteroids and HA can be administered intra-articularly. Because of its viscoelasticity, HA may replace synovial fluid and protect the cartilage [9]. Intra-articular HA

treatment for osteoarthritis of the knee was approved by the US Food and Drug Administration [FDA] in 1997. In comparison with NSAID and corticosteroid, the better tolerability and fewer adverse effects of HA have made it widely accepted in recent decades [8,10,11]. Until the late 1970s, hyaluronan was described as a "qoo" molecule, a ubiquitous carbohydrate polymer that is part of the extracellular matrix.^[7] For example, hyaluronan is a major component of the synovial fluid, and was found to increase the viscosity of the fluid. Along with lubricin, it is one of the fluid's main lubricating components.

Hyaluronan is an important component of articular cartilage, where it is present as a coat around each cell (chondrocyte) . When aggrecan monomers bind to hyaluronan in the presence of link protein, large highly negatively-charged aggregates form. These aggregates imbibe water and are responsible for the resilience of cartilage

(its resistance to compression). The molecular weight [size] of hyaluronan in cartilage decreases with age, but the amount increases.[8]

Most studies of intra-articular HA treatment examine its effectiveness, but few consider the pattern of its use. Intra-articular injections are one method that physicians use to treat joint pain. Corticosteroids were the first substances to be injected commonly into the intra-articular space. In the 1950s, corticosteroids were found lower indicators of the inflammatory response, including the interarticular leukocyte count. The indications and effectiveness of intra-articular steroid injections have been debated since their introduction.

More recently, Viscosupplementation has gained popularity. Local anaesthetics also have become common additions to intra-articular injections. Anesthesiologists and orthopedic surgeons have started to explore the use of intra-articular opiates for postoperative analgesia.

Intra-articular corticosteroids injections may be appropriate in patients with osteo arthritis who have one or several joints that are painful despite the use of NSAIDS and in patients with mono articular or pauci articular inflammatory osteoarthritis in whom NSAIDs are contraindicated. Intra-articular corticosteroids slow down cartilage catabolism & osteophyte formation & also increase the quadriceps strength after knee injection. Repeated corticosteroid injections over a period upto 2 years appear to be safe & may provide more relief than saline injections. Common corticosteroids suspensions used for intra-articular injection include triamcinolone, acetoneide, hexacetonide, & depamedrol. The amount of these agents generally used depends upon joint size;

10 mg for small joints (inter phalangeal, metacarpophalangeal & metatarsophalangeal)

20 mg for medium sized joints (Wrists, Elbows, Ankles)

40 mg for larger joints (Shoulders, Knees, Hips)

Joint aspiratin was described as early as 1970s. the first intraarticular injection, which yielded little benefit were formalin and glycerine, lipodol, lactic acid and petroleum jelly. Hollander attempted joint injections with hydrocortisone acetate and found that his patient had a much better response. From 1950s to the present time clinicians have used corticosteroid injections routinely to treat joint pain.

PATIENTS & METHODS

100 patients were included in this study who presented in the out door patient department of fauji foundation hospital Rawalpindi with complaints of pain and stiffness of the knee joints. patients were clinically examined and x-rays of the knee joint done. patient were divided into two groups and one group [Group A 50 patients] of patients offered intraarticular injection of Sodium hyaluronate 20mg/2ml prefilled syringe {HYALGAN} once a week for 5 weeks and the other group [Group B 50 patients] was injected with triamcinolone acetate 40 mg intraarticularly combined with 1 cc of xylocaine 2% once a week for 3 weeks. Patients assessed after 06 months. patients examined and assessed by active and forced movements of the knee joint and by passive and spontaneous movement of the knee joint..

RESULTS

A total of 100 patients aged 60 years and older were included. In this study. 69 patients were women, and 31 were men and The average age was 70.9 years and 72.8 years for men and 70.2 years for women.

19 patients [38%] out of 50 [Group A] who were offered hyalgan needed one or two times more of intraarticular hyaluronate and these were the patients who showed painful knee movements even with active and passive movements

5 patients [10%] out of 50 of Group A did not show any response to the treatment and they were as bad as they were before the treatment

01 [2%] patient of Group A showed hypersensitivity to intraarticular hyaluronate by developing rest pain in the knee and this patient refused further injections

In the other group of 50 patients [Group B] 37 [74%] patients showed immediate response soon after the injections with triamcinolone

9 patients [18%] out of 50 expressed a feeling of more pain during and soon after the injection and these were the in whom 2cc of lidocain was added to triamcinolona instead of 1cc in the subsequent injections.

04 [8%] patients did not show any response to intraarticular triamcinolone even after three injections and their symptoms did not improve at all.

39 patients [Group A] after the period of 06 months showed effective pain relief where as 34 patients [Group B] were symptomatic again.

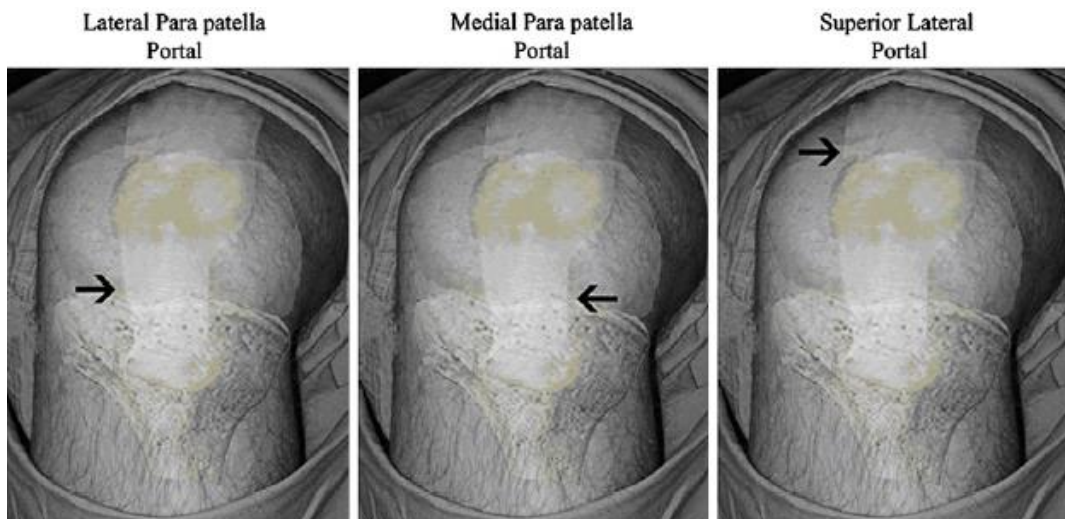
Intraarticular sodium hyaluronate is effective in the long run and may not be as magical soon after the injection. Where as Group B patients is not promising in the long run but came out to be magical even on 1st injection

Stratified by age, the highest prevalence of HA use was in the 70–79 group (1.5%) and the lowest was in the 80 years and older group (1.0%) Women were more likely to receive intra-articular HA treatment than men (1.8% vs. 0.7%), especially in the 60–69 (1.6% vs. 0.5%) and 70–79 (2.2% vs. 1.0%) year groups. The gender difference diminished with age. On average, a patient had 5.7 ± 1.3 visits for intra-articular HA treatment during the year. The frequency distribution showed no marked sex and age differences Most of the intra-articular HA treatment occurred in fauji foundation hospital (75.1%) and (18.2%) Choa Khalisa, a town located 40 km from Rawalpindi, and only 6.7% in general practices

DISCUSSION

Knee osteoarthritis is a common but often difficult problem to manage in primary care. Traditional nonsurgical management, consisting of lifestyle modification, physical therapy and pharmacologic therapy (e.g., analgesics, anti-inflammatory medications), is often ineffective or leaves residual symptoms. Viscosupplementation is a newly available option for patients with symptomatic knee osteoarthritis that involves a series of intra-articular injections of hyaluronic acid. The exact mechanism of action is unclear, although increasing the viscoelasticity of the synovial fluid appears to play a role and probably by reducing the inflammation and maintaining the cartilage structure. It also

lubricates the cartilage and helps in shock absorption.. Clinical experience and studies of the two hyaluronic acid products available, hyaluronan [HYALGAN] and hylan G-F 20,[SYVISC] are inconclusive but seem to indicate beneficial effects with minimal adverse reactions in a significant number of patients. The exact indications for viscosupplementation are still evolving, but it currently can be considered for use in patients who have significant residual symptoms despite traditional nonpharmacologic and pharmacologic treatments. In addition, patients who are intolerant of traditional treatments (e.g., gastrointestinal problems related to anti-inflammatory medications) can be considered for these injections. Our study offered a source of data concerning intra-articular HA treatment for osteoarthritis of the knee among the total older population. Although the prevalence of osteoarthritis of the knee generally increases with age [14], our study revealed that the utilization of intra-articular HA treatment fully correlate with the patient's age. People aged 70–79 years tended to receive HA treatment most frequently, and people aged 80 years and older least. [15]. Another study found that most of those aged 75 years and older who might benefit from knee arthroplasty had not been referred to rheumatological or orthopaedic services [6]. Because the oldest people generally have multiple comorbidities, clinicians might hesitate about referral. As HA treatment has a low incidence of severe adverse events and good tolerability compared with NSAIDs and corticosteroids [8,10,11], it might be a relatively safe alternative for the oldest patients.



The prevalence, incidence, symptoms and severity of osteoarthritis differ not only with age but also between sexes [17]. Several studies have shown that women are more likely than men to have both radiographic and symptomatic osteoarthritis of the knee. The female-to-male ratio for radiographic osteoarthritis of the knee varies from 1.5 to 4.0 [2,14], and that of symptomatic osteoarthritis of the knee from 1.6 to 1.7 [5,18,19]. In addition, a community study has shown that the sex difference is more obvious in the Chinese population [6] In our study, such a sex difference existed in the use of intra-articular HA treatment. This might be due to the difference in disease prevalence and severity between the sexes. One study showed that women underwent total knee arthroplasty at a more advanced stage of their disease [20]. Even with equal willingness to undergo surgery, fewer women than men had discussed the possibility of arthroplasty with a physician though the degree of underuse was more than three times as great in women as in men [18]. These findings might suggest that women are more inclined to non-operative treatment or that clinicians are more likely to offer intra-articular HA treatment to women.

Tennant and colleagues reported that women aged over 55 years made more demands for knee arthroplasty than men of the same age and the discrepancy increased with age [16].

In 2004, most of the HA products available were of lower molecular weight. A course of five injections was suggested to achieve a better clinical effect. Many patients in our study received intra-articular HA treatment 5 or 7 times in one year. We might presume that most patients completed the treatment course(s), showing good tolerance and adherence to intra-articular HA. Although its efficacy is currently controversial within academia, HA is generally thought to be more tolerable than operative procedures and less invasive than NSAIDs [8,10,11]

CONCLUSION

We conclude that intra articular injection of hyaluronic acid is more effective in reducing pain and improving spontaneous movement of the knee joint. Hyaluronic acid and triamcinolone injections are both effective in reducing the effects of synovial membrane inflammation but hyaluronic acid seems more superior and long lasting due to its effect of reducing probably the grade and extent

of cartilage damage. It has also been observed that pain relief has been seen with passive movement of the knee joint but the active or forced movement of the knee joint is painful even with both intraarticular injections. The high usage and completion rates of intra-articular HA treatment reflected high tolerance of the treatment in geriatric ambulatory care. Further research is needed to elucidate the effectiveness and adverse effects of this important osteoarthritic knee management in the elderly population.

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