



FUNCTIONAL OUTCOME AND RESULT OF INTRA-ARTICULAR INJECTION HYALURONIC ACID IN TREATMENT OF OSTEOARTHRITIS OF KNEE

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ABSTRACT

Background: Osteoarthritis (OA) is the most common disease of joints in adults around the world. Worldwide, it is estimated to be the fourth leading cause of disability. Objective of the study was to assess functional outcome and results of injection of hyaluronic acid in symptomatic osteoarthritis knee.

Method: The purpose of this study is to find out the efficacy of three doses of intra articular Hyaluronic acid injection in treatment of Osteoarthritis of knee which is an easy procedure and can be carried out on an OPD basis. 37 Patients (54 Knees) with duration of symptoms more than 12 months were included in the study. Patients with associated Diabetes Mellitus, local infection, ligament injury, Crystalline arthropathy were excluded. Pre and post procedure VAS score was assessed.

Results: Patients were followed up 1 week, 2 weeks, 3 weeks, 3 months, 6 months after the injection. At 1st week 24.3%, at 2nd weeks 51.3%, at 3rd weeks 86.4% and at 3rd months and 6th months 94.5% patients had significant reduction in pain and improvement in VAS score.

Conclusions: Visco-supplementation with intra articular injection hyaluronic acid should be considered as safe and effective modality of treatment in selected group of mild to moderate osteoarthritis before mechanical changes takes place and patient complies with regular exercise, weight control and postural habits.

KEYWORDS : Hyaluronic acid, OA knee, VAS, ROM

INTRODUCTION

Osteoarthritis is a chronic joint disorder in which there is progressive softening and disintegration of articular cartilage accompanied by new growth of cartilage and bone at the joint margin and capsular fibrosis [1]. The largest risk factor associated with osteoarthritis is age and it has been reported by World Health Organization that 10% of world population over the age of 60 suffers from osteoarthritis. Knee is the commonest large joint to be affected by Osteoarthritis. Primary pathology is the area of cartilage distention in the area of maximum loading mainly medial joint compartment [1]. Pain is the leading symptom which is worse after use. Stiffness is felt after sitting for any length of time. On examination there may be varus deformity. The quadriceps muscle is usually wasted. X ray features of OA of knee narrowing of joint space, sclerosis of subchondral bone under area of cartilage loss, subchondral cysts close to articular surface and osteophytes at the margin of the joint [1]. Hyaluronan is a component of synovial fluid, responsible for its viscoelasticity [2]. In OA catalytic enzymes reduce the concentration and molecular weight of the hyaluronan polymers. Thus, Viscosupplementation with synthetic long chain hyaluronan preparations has been developed as intraarticular therapy of OA. Given as a weekly dose of injection for 3 weeks. The purpose of this study is to find out the efficacy of three doses of intra articular Hyaluronic acid injection in treatment of Osteoarthritis of knee.

METHODS

Interventional prospective study was carried out at VS General Hospital Ahmedabad over a period of 7 months from Aug 2016 to Feb 2016 on 37 Patients of age more than 50 years from both sex 13 males and 24 females. A complete history with special attention to onset of pain, aggravating and relieving factors. History of stiffness lasting not more than 30 minutes and crepitus on motion. A plain x ray of the knee joint including anteroposterior (AP) and lateral view. Was taken to confirm the diagnosis. Position of the patient during injection was supine under all aseptic condition part preparation was done using betadine solution. Injection was given with 2ml prefilled syringe containing hyaluron. Each ml contains 8 mg of Hyaluron. One injection was given per week for three weeks. With the knee extended superolateral edge of patella was the

site of injection with the needle aimed under patella [2]. Patients were advised no excessive weight bearing, physical activities for one to two days following injection. The patient was followed up at one week, two weeks, three weeks after injection. At each visit VAS was assessed to evaluate the status of the pain and the result was compared with preprocedure results. The selected data was analyzed using SPSS Software. P value less than 0.05 was significant. Patient was asked to describe his pain in each follow up. He/she was asked to give their pain a score between one to ten. 0-1- no pain, 2-4- mild pain, 5-7- moderate pain, more than 7 severe pain.

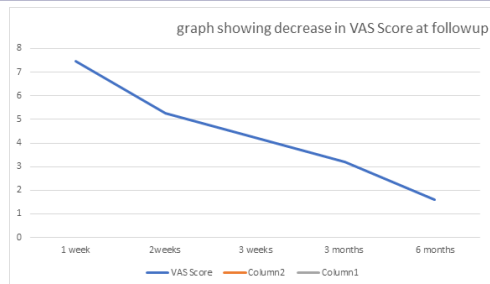


Fig 1

Observation and results

37 patients were included in the study. The age of the patients ranges from 50 years to 84 years. The mean age was 64.9 years with standard deviation 8.6. Out of 37 patients 13 (35.2%) were male and 24 (64.8%) were female. Duration of symptoms ranged from 12 months to 48 months with mean duration 33.7 months. Out of 37 patients 33 patients were under active group and 4 patients were having sedentary life style. The disease was bilateral in 17 (45%) patients and unilateral in 20 patients with 11 (29.7%) on left side and 9 (24.3%) on right side. Out of 37 patients 21 (57%) had grade II, 11 (30%) had grade III and 7 (13%) had grade I Osteoarthritis of knee.

The mean VAS score was 7.45 pre procedure and at one week follow up it was 5.27, At 2nd week it was 4.24 and at 3rd week it was 3.21. At 3rd months it was significantly lower than preprocedure score and was 1.59. It was still lower at 6 months but was slightly more than 3rd month and it was 1.64. There is gradual improvement in patient's condition as VAS Score decreases from 7.5 to 1.59 at 3rd month follow up.



Graph no 1

DISCUSSION

Effect of intra-articular Hyaluronic acid was assessed by recording pain at rest, joint line tenderness and range of motion in all groups. In patients with mild osteoarthritis there was no significant improvement in pain at rest after two injections. After the third injection, there was clinical and statistically significant improvement in pain at 3 months. The Osteoarthritis Research Society International (OARSI) has examined treatment effects of both corticosteroids and HAs for knee OA in a review of research published through January 2009. The effect size of corticosteroids on knee OA was estimated at 0.58, compared with 0.60 for HA derivatives (0.5 indicates a moderate effect). The number needed to treat (NNT) for each modality was also similar: 5 for corticosteroids and 7 for HA injections. This analysis suggests IA corticosteroids and HA can be expected to deliver similar results in clinical practice. There was significant effect of intraarticular hyaluronic acid in decreasing VAS and joint tenderness from baseline to 3 month in this study. The decrease was higher among the patients of mild than moderate. There was no significant decrease in VAS and joint tenderness among the patients of severe. No change was observed in range of movement. Similar observations were made by other authors. Patients overall satisfaction favoured hyaluronic acid compared with Placebo after 6 months ($p=0.006$) in a double blinded multi-centre trial of 495 patients of osteoarthritis of knee, it was found that patients receiving Hyaluronic acid improved more with respect to pain on walking. Albert et al reviewed 80 knees in the symptomatic osteoarthritis treated with Hyaluronic acid and reported more than 80% improvement in pain at rest. Improvements in the knee range of movement were not significant in all the groups in this study.⁵ In general, the rate of post-arthrocentesis septic arthritis is low and has been estimated at 1 in 14,000 to 1 in 50,000 following corticosteroid injections.⁶ Albert and colleagues described 2 cases of septic knee arthritis following intra-articular hyaluronate injection in elderly OA patients, but no estimates are currently available specifically for the rate of post-hyaluronate injection septic arthritis.⁷ Patients should be informed of the risk of infection when counseled about this procedure, because infection can occur following injection with either corticosteroid or HA. In addition to septic arthritis, risks of HA injection include pseudoseptic injection reaction and flare of crystalline arthritis. Attacks of gout and calcium pyrophosphate dehydrate arthritis (ie, pseudogout) have been described following HA injection.⁸

CONCLUSION

In the first three months improvement in patient's condition was satisfactory. Between third and sixth months improvement was less than expectation but improvement in patient's condition was satisfactory. Therefore it can be considered as good alternative for the treatment of symptomatic osteoarthritis of knee in those patients who are refractory or intolerant to conservative treatment with NSAIDs.

REFERENCES

1. Abate M, Pulcini D, Di Iorio A, Schiavone C. Viscosupplementation with intraarticular hyaluronic acid for treatment of osteoarthritis in the elderly. *Curr Pharm Des*, 2010; 16(6):631-640.

2. Abate M, Pelotti P, De Amicis D, Di Iorio A, Galletti S, Salini V. Viscosupplementation with hyaluronic acid in hip osteoarthritis (a review). *Ups J Med Sci*, 2008; 113(3):261-277.
3. Zhang W, Nuki G, Moskowitz RW, Abramson S, Altman RD, Arden NK, et al. OARSI recommendations for the management of hip and knee osteoarthritis: part III: Changes in evidence following systematic cumulative update of research published through January 2009. *Osteoarthritis Cartilage*. 2010;18(4):476-99.
4. Gray RG, Tenenbaum J, Gottlieb NL. Local corticosteroid injection treatment in rheumatic disorders. *Semin Arthritis Rheum*. 1981;10(4):231-54.
5. Albert C, Brocq O, Gerard D, Roux C, EullerZiegler L. Septic knee arthritis after intra-articular hyaluronate injection: two case reports. *Joint Bone Spine*. 2006;73:205-7.
6. Disla E, Infante R, Fahmy A, Karten I, Cuppari GG. Recurrent acute calcium pyrophosphate dihydrate arthritis following intraarticular hyaluronate injection. *Arthritis Rheum*. 1999;42:1302-3.
7. Yacyshyn EA, Matteson EL. Gout after intraarticular injection of hylan G-F 20. *J Rheumatol*. 1999;26:2717.
8. Bellamy NI, Campbell J, Robinson V, Gee T, Bourne R, Wells G. Viscosupplementation for the treatment of osteoarthritis of the knee. *Cochrane Database Syst Rev*. 2006;2:CD005321.