

Original Article

Comparative study between intra articular hylan G-F 20 injection with other conservative management in knee osteoarthritis patients

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Different modalities of treatments are available for OA knee starting from local heat therapy, analgesics, exercises, intra articular steroid, visco supplementation to knee replacements. Viscosupplementation is done with hyaluronic acid (HA) and high molecular weight crosslinked polymer of HA ie, Hylan G-F 20. Our study is to compare Hylan G-F 20. 60 patients were treated with 6ml (48mg) injection of hylan G-F 20 intra articularly at a interval of 6 months and by conservative methods (oral analgesics, glucosamines and local heat therapy with exercise). Responses to therapy in both groups were assessed by means of mobility, expressed as distance travelled in the 6-minute walk test (6MWT) and a 10-point visual analog scale (VAS) score for pain at rest and after the 6MWT. Treatment at 6-month intervals with injections of hylan G-F 20 shown a better outcome.

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Key words : OA knee, Inj Hylan G-F 20.

Knee osteoarthritis (OA) is a common problem with increasing prevalence. Different modalities of treatments are available starting from local heat therapy, analgesics, exercises, intra articular steroid, visco supplementation to knee replacements. Among these visco-supplementation is done with hyaluronic acid (HA) and high molecular weight crosslinked polymer of HA ie, Hylan G-F 20. Our study is to compare Hylan G-F 20 with other conservative mode of treatments.

Methodology : For this study 60 patients were chosen with early osteoarthritis divided into two groups. One group treated with 6ml (48mg) injection of hylan G-F 20 intra articularly at a interval of 6 months and the other group treated by conservative methods(oral analgesics, glucosamines and local heat therapy with exercise).

The patients of each group were matched in terms of age, BMI, other comorbidities. Additional inclusion conditions comprised OA-related pain severity assessment up to 4 weeks before the start of therapy and a repeat assessment up to 4 weeks after completing therapy. Patients were excluded if no data were recorded for the post-injection efficacy/outcome measures for each course of treatment. The severity of OA at baseline was quantified based on the Kellgren–Lawrence rating system (1=mild; 4=severe) using radiographs that were obtained not more than 1 year prior to the first course of treatment.

Responses to therapy in both groups were assessed by means of mobility, expressed as distance travelled in the 6-minute walk test (6MWT) and a 10-point visual analog scale (VAS) score for pain at rest and after the 6MWT, with 0=no pain and 10=severe pain.

Result : 60 patients were chosen and divided into 2 groups matching their demographic criterias. one group treated with 2 intraarticular 6ml(48mg) injection of Hylan G-F 20 at a interval of 6 months and the other group was treated by other conservative methods.

Both male and female patients were chosen, among which 23 male and 37 female patients. They were matched according to their BMI also, the mean BMI in each group was 28 where as in 1st group number of overweight and obese patients were 18 and 12 and in second group 17 and 13 respectively.

The patients were graded as per Kellgren-Lawrence grading at the time of diagnosis. Most of the patients were in grade 2 and 3.

Demographic details			
		Hylan G-F 20 N= 30	Reference group N=30
Age (mean)		67	66
Sex	M	11	12
	F	19	18
BMI (kg/m)	Mean	28	28
	Overweight (25-29.99)	18	17
	Obese (≥ 30)	12	13
Kellgren-Lawrence grade	1	4	5
	2	12	12
	3	7	9
	4	7	6
Location of knee OA	Unilateral		
	Bilateral		

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The patients were evaluated before starting of any treatment with visual analog scale (VAS) score and reevaluated after 6 months of 2nd dose of Hylan G-F 20 injection. It was found that in Hylan G-F 20 group the post treatment pain score in both resting (VAS 4.26) and after 6 minutes walk test (6MWT) (VAS 4.64) decreased significantly from pretreatment resting (VAS 7.62) and after 6MWT (VAS 9.62) with a difference of VAS 3.36 and 4.98 respectively (P value <0.05) (Fig 1 and 2), whereas in the 2nd group with conservative treatment the difference is not so significant (pre and post treatment difference in VAS 1.6 and 3.42 respectively) (P value >0.05).

Discussion : The study was conducted to observe the result of HA specifically Hylan G-F 20 in patients of OA knee. The treatment effect was most marked for the reduction in self-assessed pain after walking. The comparison system we have used like VAS and 6MWT are very simple, easy to measure. We have found that intra articular injection of Hylan G-F 20 have significant effect on disease progression and patient satisfaction.

Conclusion : Treatment at 6-month intervals with IA injections of hylan G-F 20 with no other prescribed OA medications improved pain and mobility in patients with OA of the knee; the degrees of improvement in both pain and mobility were significantly greater than those achieved in matched peers treated with prescribed OA medications but not IA injection.

REFERENCES

- 1 Bruyère O, Burllet N, Delmas PD, Rizzoli R, Cooper C, Reginster JY — Evaluation of symptomatic slow-acting drugs in osteoarthritis using the GRADE system. *BMC Musculoskeletal Disord* 2008; **9**: 165.
- 2 McAlindon TE, Bannuru RR, Sullivan MC — OARSI guidelines for the non-surgical management of knee osteoarthritis. *Osteoarthritis Cartilage* 2014; **22**: 363-88.
- 3 Richmond J, Hunter D, Irrgang J — American Academy of Orthopaedic Surgeons. Treatment of osteoarthritis of the knee (nonarthroplasty). *J Am Acad Orthop Surg* 2009; **17**: 591-600.
- 4 Hochberg MC, Altman RD, April KT — American College of Rheumatology. American College of Rheumatology 2012 recommendations for the use of nonpharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip, and knee. *Arthritis Care Res (Hoboken)* 2012; **64**: 465-74.

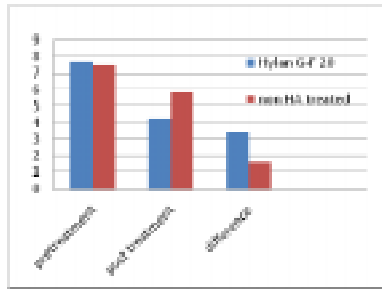


Fig 1 — Pain at rest (VAS)

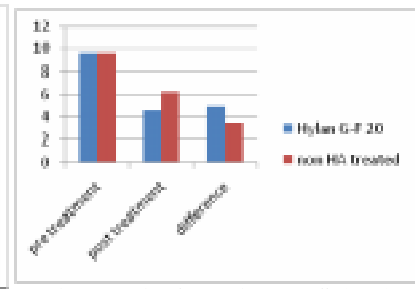


Fig 2 — Pain after 6 minutes walk (VAS)

- 5 Hunter DJ — Viscosupplementation for osteoarthritis of the knee. *N Engl J Med* 2015; **372**: 1040-7.
- 6 Lürati A, Laria A, Mazzocchi D, Re KA, Marrazza M, Scarpellini M — Effects of hyaluronic acid (HA) viscosupplementation on peripheral Th cells in knee and hip osteoarthritis. *Osteoarthritis Cartilage* 2015; **23**: 88-9.
- 7 Navarro-Sarabia F, Coronel P, Collantes E — AMELIA Study Group. A 40-month multicentre, randomised placebo-controlled study to assess the efficacy and carry-over effect of repeated intra-articular injections of hyaluronic acid in knee osteoarthritis: the AMELIA project. *Ann Rheum Dis* 2011; **70**: 1957-1962.
- 8 Waddell DD, Cefalu CA, Bricker DC — A second course of hylan G-F 20 for the treatment of osteoarthritic knee pain: 12-month patient follow-up. *J Knee Surg* 2005; **18**: 7-15.
- 9 Petrella RJ — Hyaluronic acid for the treatment of knee osteoarthritis: long-term outcomes from a naturalistic primary care experience. *Am J Phys Med Rehabil* 2005; **84**: 278-83.
- 10 Six Minute Walk Test (6MWT). Atlanta, GA, USA: American College of Rheumatology. Available from: [https://www.rheumatology.org/Practice/Clinical/Clinicianresearchers/Outcomes_Instrumentation/Six_Minute_Walk_Test_\(6MWT\)](https://www.rheumatology.org/Practice/Clinical/Clinicianresearchers/Outcomes_Instrumentation/Six_Minute_Walk_Test_(6MWT)). Accessed February 8, 2015.
- 11 Moe RH, Fernandes L, Osterås N — Daily use of a cane for two months reduced pain and improved function in patients with knee osteoarthritis. *J Physiother* 2012; **58**: 128.
- 12 Foti C, Cisari C, Carda S — A prospective observational study of the clinical efficacy and safety of intra-articular sodium hyaluronate in synovial joints with osteoarthritis. *Eur J Phys Rehabil Med* 2011; **47**: 407-15.
- 13 Chen WL, Hsu WC, Lin YJ, Hsieh LF — Comparison of intra-articular hyaluronic acid injections with transcutaneous electric nerve stimulation for the management of knee osteoarthritis: a randomized controlled trial. *Arch Phys Med Rehabil* 2013; **94**: 1482-9.
- 14 Balke B — A simple field test for the assessment of physical fitness. *REP 63-6. Rep Civ Aeromed Res Inst US* 1963; **53**: 1-8.
- 15 Casanova C, Celli BR, Barria P — Six Minute Walk Distance Project (ALAT). The 6-min walk distance in healthy subjects: reference standards from seven countries. *Eur Respir J* 2011; **37**: 150-6.