

High Molecular Weight Hyaluronic Acid Injection had Similar Outcome to Saline in Knee Osteoarthritis: A Randomized Double-Blind, Placebo-Controlled Trial

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INTRODUCTION:

Intra-articular hyaluronic acid (HA) injection has been known for reducing pain in osteoarthritic knee patients. Cross-linked HA and high molecular weight HA injection were reported effective in relieving pain compared with placebo. The purpose was to investigate the efficacy of single shot intra-articular cross-linked HA (hyruan-one) and high molecular weight HA (hylan G-F 20) injection compared with saline control in symptomatic osteoarthritic knee patients.

METHODS: We randomized 276 primary osteoarthritic knee patients with Kellgren-Lawrence grade I-III into three groups. All participants received intra-articular injection. Hyruan-one group received 3 mL of hyruan-one, Hylan G-F 20 group received 6 mL of hylan G-F 20, and Saline group received 6 mL of normal saline. All patients took only 1000 mg of acetaminophen as needed for relieving pain after injection. Primary outcomes were pain level (visual analog scale [VAS], 0-100) at rest and during motion at 24 weeks after injection and VAS change from baseline over 24 weeks. Secondary outcomes were VAS at any timepoints (every 2 weeks after injection), modified WOMAC score and Lequesne index. If patients felt unsatisfied or did not improve after injection, they received steroid shot as a resuscitation procedure. All patients were followed at 4, 12, and 24 weeks. ANOVA test and paired t-test were used for analysis.

RESULTS: All groups had similar pain level at 24 weeks post-injection (VAS at rest was approximately 10 points and VAS during motion was approximately 15 points, $p > 0.05$). The pain in any timepoints were not different ($p > 0.05$). All groups were improved the mean change of VAS over 24 weeks ($p < 0.001$). The total modified WOMAC score and Lequesne index were similar between 3 groups at 2, 4, 8, 12, 16, 20, and 24 weeks after injection ($p > 0.05$). Patients who received hyruan-one had lower rate of resuscitation injection compared with the other two groups (16% vs. 23% vs. 23%).

DISCUSSION AND CONCLUSION:

Intra-articular injection of hyruan-one, hylan G-F 20, or saline were similar in reducing pain and improving functional outcome over 24 weeks in osteoarthritic knee patients. However, hyruan-one injection had the least failure to treatment compared with hylan G-F 20 and saline.