

# Safety and Efficacy of Intra-Articular 20 mg/2 ml Hyaluronic Acid Injection for the Non-Operative Palliation Treatment of Osteoarthritis of the Knee Joint

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## ABSTRACT

### PURPOSE OF THE STUDY

In this study it is aimed to prospectively evaluate the safety and efficacy of 20 mg/2 ml Hyaluronic Acid (HA) injections for non-operative palliation treatment of osteoarthritis (OA) of the knee joint.

### MATERIAL AND METHODS

After institutional review board approval was obtained for the study, 63 patients were enrolled and followed prospectively. All the patients have signed informed consent form.

Patients who had diagnosis of gonarthrosis according to clinical and radiological evaluation, were given nonsteroid anti-inflammatory drug (NSAID) treatment for four weeks. Patients between 55–80 years old in both sexes, whose pain did not relieve were included to the study and were followed up for 6 months. They were applied HA injections in total; three times with one week of interval. Patients were evaluated three times during the study. First one at third week (at the control visit of third injection), secondly at third month and lastly at sixth month.

Western Ontario and McMaster Universities Osteoarthritis (WOMAC) and Short Form Health Survey (SF-36) scores were used to clinically evaluate the patients at follow ups.

### RESULTS

56 (88.9%) patients completed the study and 7 (11.1%) patients did not show up for follow-up examinations and they were excluded. The mean age of the patients was  $63.6 \pm 6.90$  (range 47 and 76) years old. 22 (39.2%) of the patients were male and 34 (60.7%) were female. Any adverse events and adverse effects were not seen in the enrolled patients group.

### CONCLUSIONS

Results of this study revealed that the use of 20 mg/2 ml HA injection was effective in improving the WOMAC index score in patients of knee OA. Additionally, patients' quality of life as measured by SF-36 questionnaire was also significantly improved at the end of the study. None of the patient reported any of the adverse events during the study. Overall, the 20 mg/2 ml HA injection can be considered as a good treatment option for the knee OA in patients who do not respond to non-pharmacological therapy, NSAIDs or analgesics.

**Key words:** osteoarthritis, hyaluronic acid, injection, non-operative.

## INTRODUCTION

Osteoarthritis (OA) is the leading cause of lower-limb disability in older adults world-wide, contributing to pain, stiffness and functional limitation as well as having a negative impact on the physical and mental well-being of patients (17). The pathogenesis of knee OA is multifactorial, but largely attributable to chronic overloading of the knee joint that promotes degradation of the articular cartilage (1). Hyaluronic acid (HA) is an integral component of synovial fluid. As part of its intra-articular function, it acts as a joint lubricant during shear stress and a shock absorber during compressive stress. Loss of hyaluronic acid appears to contribute to joint pain and stiffness. Among adults 60 years of age or older the prevalence of symptomatic knee OA is approximately 10% in men and 13% in women (6, 19, 24). The etiology of knee OA is not entirely clear, but its incidence in-

creases with age, particularly in women (1, 19, 20). Obesity is considered as one of the main risk factor for the development and progression of OA along with other genetic or traumatic factors (11).

Analgesics and non-steroidal anti-inflammatory drugs (NSAIDs) are considered to be the first line treatment options (6, 7, 10, 15, 18, 19). However, due to the known facts of NSAIDs causing potential systemic side effects, caution must be taken before prescribing NSAIDs to the elderly patients who consists the main population of OA (19). Recent publications recommend conservative therapy as the first-line OA management, focusing on weight loss, strength training, water and land-based exercise followed by pharmacologic measures including NSAIDs and intra articular injection of HA (10, 18, 19). Both long- and short-term therapeutic effects of HA in knee