Original Article

Capsula Eburnea

INTRA-ARTICULAR INJECTION OF HYALURONIC ACID IN PATIENTS AFFECTED BY CROHN-LESNIOWSKI DISEASE

Giuseppe Margiotta[1], Antonio Sanfilippo[1], Maurizio Filippo Accardo[2], Provvidenza Damiani[3], Alessandro Geraci[4], Giovanni Tomasello[5]

SUMMARY

The pain and functional limitations caused by osteoarthritis in joints have multiple etiologies and often involve inflammatory mechanisms. The first level of medical intervention consists of therapeutic use of NSAIDs or steroids when no complications are present. Such therapies could be ineffective, or cause drug-related complications, prompting the suspension of treatment. In these cases, intra-articular injections of high molecular weight hyaluronic acid can be administered in order to reach therapeutic goals. Patients with Crohn-Lesniowski disease, affected by osteoarthritis of the shoulder or the knee, were included in this study.

INTRODUCTION

Crohn's disease (CD) has no known etiology, but it is thought that in predisposed individuals, exogenous (bacterial microflora and infectious agents) and endogenous (mucosal barrier function) factors cause an alteration of the chronic immune response of the enteric mucosa; thus, CD is considered to be caused by an inappropriate immune response to microbial flora. In a small proportion of cases the initial symptoms of Crohn's disease can include osteoarticular manifestations. These include pain caused by degenerative chondropathy of large joints, including knee and shoulder. According to literature, in patients with ulcerative colitis, colectomy surgery often results in a significant reduction of clinical symptoms including osteoarticular pain; unfortunately, such results are not possible in Crohn's disease due to the involvement of the entire gastrointestinal tract [1]. However, high molecular weight hyaluronic acid injections can help to improve the quality of life of patients with CD with cartilage damage by eliminating pain and stiffness, and restoring joint function. The etiology of osteoarthritic pain is multifactorial, and includes mechanic and inflammatory processes. Intra-articular hyaluronan injections are recommended in cases where non-pharmacological therapeutic approaches, such as patient education, physical therapy, weight loss and low-impact exercises, as well as simple analgesics (non-steroidal anti-inflammatory drugs) have failed to relieve symptoms. The hyaluronic acid (HA) appears to reduce pain by restoring both mechanical and biomechanical homeostasis in the joint. Hyaluronan, or HA, is a complex

Address of the authors

[1] Orthopedic and Traumatology Unit, University of Palermo, Italy.

[2] Department of National Accounts and Analysis of Social Processes, University of Palermo, Italy.

[3] Department of Internal Medicine and Specialist - DIMIS, University of Palermo, Italy.

[4] Orthopedic Unit, Santa Maria del Prato Hospital, Feltre, Italy.

[5] Department of Oncology and Surgical Disciplines, University of Palermo, Italy.

***Send correspondence to**: Dr. Giuseppe Margiotta,* margiotta.gius@gmail.com

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glycosaminoglycan composed of repeated disaccharide units forming a linear polymer. It is widely present in mammalian tissues and its highest concentration is found in synovial fluid [2]. The synthesis of HA in osteoarthritis (OA) is disrupted by increased levels of pro-inflammatory cytokines, free radicals and proteinases, resulting in a HA with a significantly reduced molecular weight, more molecular polydisaccharides, and a reduced synovial fluid viscoelasticity. Exogenous HA with a molecular weight of 1500 to 4000 KDa increases synovial fluid viscosity and enhances its shock absorption and lubricating capabilities. HA has been shown to reduce pain by several mechanisms, such as binding neuropeptides and creating a boundary layer around nociceptors. Additional mechanisms that can potentially reduce pain in OA include the inhibition of inflammatory mediators, e.g. cytokines and prostaglandin. HA has been shown to stimulate endogenous HA synthesis by the synovium through CD 44 [3] receptor binding. Exogenous HA down-regulates matrix metalloproteinase-3 expression and inhibits metalloproteinase synthesis, resulting in a decrease in cartilage wear. Exogenous HA restores metabolic homeostasis, thereby enhancing synovial fluid flow and reducing pain [4].

MATERIAL AND METHODS

From January 2009 to July 2011, 27 patients were treated with intra-articular injections of high molecular weight hyaluronic acid at the Orthopedic Clinic of the Polyclinic of Palermo, Italy. The patients had been experiencing osteoarthritic pain and stiffness; in 10 patients, the shoulder joint was affected, while the remaining 17 presented with knee involvement. The mean age of patients was 71 years (range 66-75). All patients had been diagnosed with Crohn's disease following histological examination of biopsies obtained from esophagogastroduodenoscopy and colonoscopy, and the joint symptoms were therefore considered as secondary symptoms of CD. Sodium salt of hyaluronic acid, or sodium hyaluronate, was administered at 1.5% of 30 mg per dose, with the total quantity per patient varying from 90 mg to 120 mg in relation to severity of the clinical symptoms; the treatment was administered every seven days (the doses were made every seven days) [5].

RESULTS

The clinical status showed improvement in all 27 patients, with differences between individual patients in the duration of the pain- and stiffness-free period, or the level of benefit obtained. 19 patients experienced an improvement or complete lack of pain and stiffness for seven months and eight patients reported similar improvements lasting four months [6]. The degree and quality of the benefits observed were similar for both groups of patients, and results for the treated joints were also comparable

DISCUSSION

This study evaluated the therapeutic approach and management, as well as the efficacy and safety of hyaluronic acid (HA) (MW 1500 – 2000 KDa) injections in patients with Crohn's disease affected by secondary osteoarthritis. The results indicate that this treatment is safe and effective [7] used in clinical practice, as confirmed by the VAS scores of joint pain in motion and at rest measured during the study period for the affected joints. The effects of HA treatment on the diarthrodial joint are both mechanical and metabolic. HA provides important viscoelasticity and lubricating properties to synovial fluid, thus reducing articular cartilage wear. Furthermore, HA molecules restrict large plasma protein entry to synovial fluid, while facilitating the passage of small molecules into the joint for nutritional maintenance. HA was found to be generally safe and well tolerated, and no adverse effects were detected during the study.

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