Comparison of the Effects of Hyaluronate versus Corticosteroid Injections in the Treatment of Lateral Epicondylitis

Thesis

Submitted for Partial Fulfillment of the Master Degree in Physical Medicine, Rheumatology and Rehabilitation

By

Rana Ibrahim Hussein El Mallah

M.B., B.Ch.

Faculty of Medicine- Ain Shams University

Under Supervision of

Prof. Mervat Mohamed Abd El Hakim

Professor of Physical Medicine, Rheumatology and Rehabilitation

Faculty of Medicine - Ain Shams University

Prof. Neven Mahmoud Fouda

Professor of Physical Medicine, Rheumatology and Rehabilitation

Faculty of Medicine - Ain Shams University

Dr. Nouran Mostafa Abaza

Assistant Professor of Physical Medicine, Rheumatology and Rehabilitation

Faculty of Medicine Ain Shams University

Faculty of Medicine,

Ain Shams University

2017

سورة البقرة الآية: ٣٢

Acknowledgment

First and foremost, I feel always indebted to **ALLAH**, *the Most Kind and Most Merciful.*

I'd like to express my respectful thanks and profound gratitude to **Prof. Mervat Mohammed Abd El Hakem,** *Professor of Physical Medicine, Rheumatology and Rehabilitation - Faculty of Medicine- Ain Shams University for her keen guidance, kind supervision, valuable advice and continuous encouragement, which made possible the completion of this work.*

I am also delighted to express my deepest gratitude and thanks to **Prof. Neven Mahmood Fouda,** *Professor of Physical Medicine, Rheumatology and Rehabilitation, Faculty of Medicine, Ain Shams University, for her kind care, continuous supervision, valuable instructions, constant help and great assistance throughout this work.*

I am deeply thankful to **Dr. Nouran Mostafa Abaza,** *Assistant Professor of Physical Medicine, Rheumatology and Rehabilitation, Faculty of Medicine, Ain Shams University, for her great help, active participation and guidance.*

I would like to express my hearty thanks to all my family for their support till this work was completed.

Last but not least my sincere thanks and appreciation to all patients participated in this study.

Rana El Mallah

List of Contents

List of Tables

List of Tables (Cont...)

List of Figures

List of Figures (Cont...)

INTRODUCTION

Lateral epicondylitis known as tennis elbow, considered to be an overload injury of the Extensor carpi radialis brevis at the point of attachment at the lateral epicondyle. The Overall prevalence of 1% to 3% of the general population, peaks at the age of 45 to 54 years, with no sex predilection ***(Weber et al., 2015).***

Researchers agree that the pathology of lateral epicondylitis is "angiofibroblastic hyperplasia" or non-inflammatory degeneration of Extensor Carpi Radialis Brevis (ECRB) or common extensor tendon together with cellular apoptosis, therefore the term "tendinosis" has been recently adopted instead of the term "tendinitis" ***(Chen et al., 2010)***.

The aetiology of "tennis elbow" is still unknown; It is likely to be multifactorial with an emphasis on repetitive microtrauma and overuse in genetically predisposed individuals ***(Herquelot et al., 2013)***.

Diagnosis of tennis elbow is mainly clinical, in the form of lateral elbow pain of gradual onset that increases with simple activities of daily living and tenderness on lateral epicondyle with increase pain on resisted wrist extension ***(Villasenor-Ovies et al., 2012)***. Imaging is usually not necessary however MRI and ultrasound can reveal tendinopathy ***(Torp-Pedersen et al., 2008)***.

In most cases the pathology is described as self-limiting, but requires medical treatment due to prolonged functional disability of the patients. There is a wide spectrum of treatment modalities such as rest, activity modification, stretching exercises, using of counterforce brace, NSAID, steroid injections, botulinum injections, shock wave therapy and as a last option surgical interference. However in some cases none of them is highly effective ***(Coombes et al., 2010)***.

Corticosteroid Injection in lateral epicondylitis has been frequently used since 1950 ***(Trough et al., 2012)***. A common belief is that corticosteroid injections can relieve the early symptoms of lateral epicondylitis. There is no consensus on the dose or the type of corticosteroid being injected ***(Coombes et al., 2010).***

However, because several studies have not shown long-term effect of corticosteroid injection ***(Trough et al., 2012)***, the high risk of recurrence after corticosteroid injection ***(Bisset et al., 2006)*** and the new described nature of the disease to be degenerative rather than inflammatory elucidate the need for an alternative line of treatment ***(Sanchez et al., 2015)***.

Hyaluronic acid a nonsulphated glycosaminoglycan which is distributed widely in our tissues, it has been shown to have a positive effect in inter-articular injection for osteoarthritis ***(Petrella et al., 2002)*** as well as there is more evidence supporting the use of hyaluronate injections in patient

with ankle sprain ***(Petrella et al., 2007)***, adhesive capsulitis of the shoulder ***(Cuni and Ozcakar, 2013)***, after flexor tendon injury ***(Oryan et al., 2012)***.

There is increasing evidence that hyaluronate might help vascular Endothelial Growth Factor (VEGF) proliferation and collagen type 4 after injection ***(Chen et al., 2012)*** and decrease the formation of adhesion tissue ***(Yagi et al., 2012)*** .

Aim of the Work

The aim of this study is to evaluate the efficacy of hyaluronic acid injection and to compare it to that of corticosteroid injection in the treatment of lateral epicondylitis.

Chapter 1

INCIDENCE, EPIDEMIOLOGY AND AETIOLOGY OF LATERAL EPICONDYLITIS

Lateral epicondylitis (LE) is one of the most common upper-limb musculoskeletal disorders in general practice and in the working population. It is considered to be the most frequent type of myotendinosis encountered in the general population ***(Coombes et al., 2010).*** It accounts for two thirds of cases presenting with persistent elbow pain in the general practice ***(Descatha et al., 2016).***

The incidence of lateral epicondylitis is approximately 1-3 cases per 100 subject per year ***(Weber et al., 2015).*** It is most prevalent in manually intensive occupations ***(Shiri et al., 2011)***.

Only 10% of individuals affected by this disorder are active tennis players, although it has been estimated by 50% of racquet-sport players will experience a painful lateral elbow during their lifetime ***(Tosti et al., 2013)***.

In Washington State, the incidence of workers compensation claims due to non-traumatic epicondylitis was 4.7 per 10, 000 full time employees, with an average of 263 lost work days per claim and an average annual direct cost of more than 12 million dollars ***(Silverstein and Adam, 2006)***.

It was first described in the German literature by ***Runge*** in 1873 as "Lawn-tennis elbow" the name was due to its association with the biomechanical injuries in tennis players ***(Whaley and Baker, 2004)***.

It can be responsible for substantial pain and loss of function of the affected limb for over 1 year in up to 20% of people, , leading to functional disability of the affected limb with a major impact on the patient's social and professional life ***(Smedt et al., 2007).***

Lateral epicondylitis occurs much more frequently than medial epicondylitis ***(Whaley and Baker, 2004).***

Although lateral elbow tendinosis is regarded as a self-limiting condition, some studies have reported unpredictable healing patterns and identified factors leading to poor symptom resolution, including high baseline pain scores, manual work, and involvement of the dominant extremity ***(Sander, 2015).***

Although the majority of patients respond to conservative management, between 5% and 10% of these patients develop chronic symptoms and eventually require surgical intervention. In some referral practices, the percentage of patients who require surgery can reach 25% ***(Kraushaar et al., 1999).***

Lateral epicondylitis is a disease of middle aged people with peak incidence 45 to 54 years with no sex predilection

(Weber et al., 2015), it tends to affect the elbow of the dominant hand more than the non-dominant one ***(Shiri et al., 2007)***.

The aetiology of lateral epicondylitis is thought to be complex and multifactorial ***(Shiri et al., 2007)***. Factors that were attributed to the aetiology of LE are:

1. Anatomical factors:

Several observations suggest that the anatomy and kinematics around the elbow play an important role in the aetiology of tennis elbow ***(Cohen et al., 2001)***.

- ***Bunata et al. (2007)*** studied 85 cadaveric elbows; they found that during elbow extension, the undersurface of the extensor carpi radialis brevis is rubbed against the capitellum, at the same time the extensor carpi radialis longus also compressed the brevis against the underlying bone rendering the tendon more susceptible to injury.

- ***Nimura and his colleagues (2014)*** observed that the ECRB originates as a purely tendinous structure, while other extensors originated as a mixture of tendon and muscle, and that the attachment of the joint capsule was thin anteriorly. This also could be an initial contributing factor to the development of lateral epicondylitis ***(Nimura et al., 2014)***.