BJHS
Birat Journal of Health Sciences

ISSN:

2542-2758 (Print) 2542-2804 (Online)

ARTICLE INFO:

Received Date:18/03/ 2024
AcceptanceDate: 05/04/2024
Published Date: 16/04/ 2024

KEYWORDS:

corticosteroids, hydrodissection, radial tunnel syndrome, tennis elbow

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Access the article online

DOI: https://doi.org/10.62065/bjhs558

CITATION:

Sangroula R, Das G, Sukhupayo R, Shakya E. Combination of Corticosteroid with Local Anesthesia Injection and Hydrodissection for a case of Tennis Elbow and Radial Tunnel Syndrome.. Birat J. Health Sci. 2024;9(1):113-116.

Combination of Corticosteroid with Local Anesthesia Injection and Hydrodissection for a case of Tennis Elbow and Radial Tunnel Syndrome.

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ABSTRACT

Tennis elbow, or lateral epicondylitis, is a common condition characterized by pain and tenderness over the lateral aspect of the elbow. Radial tunnel syndrome, often presenting with similar symptoms, is a less recognized. We present a case report of a 44 years old male presenting with symptoms consistent with both tennis elbow and radial tunnel syndrome. The patient underwent a thorough assessment, confirming the dual pathology. He was then managed with a combined approach, injection (corticosteroids and local anesthetics) to address the tennis elbow, followed by hydrodissection of the radial tunnel with 5% dextrose to relieve compression on the radial nerve. The patient experienced significant improvement in pain and functional outcomes during follow-up. This case underlines the importance of recognizing and treating both tennis elbow and radial tunnel syndrome concurrently for optimal patient outcomes.

INTRODUCTION

Lateral epicondylitis was first described in 1873 by Runge.[1] It is characterized by pain and tenderness over the lateral aspect of the elbow, often exacerbated by repetitive gripping or wrist extension. It is a common condition with incidence between 1%- 3%.[2]

In some cases, tennis elbow may be accompanied by radial tunnel syndrome, which is compression of the posterior interosseous nerve (PIN) as it passes through the radial tunnel. In 1954 Radial tunnel syndrome was described by Michelle and Kruegeras "radial pronator syndrome".[3] Roles and Maudsley described the association between pain and compression of the posterior interosseous nerve (PIN)in 1972, and they referred it as "resistant tennis elbow with a nerve entrapment".[4] They treated patients via surgical decompression of the nerve.

Treatment of tennis elbow with radial tunnel syndrome can be challenging. Conservative management includes activity modification, physiotherapy, bracing, and oral anti-inflammatory medications. Hydrodissection, or injection of fluid to separate tissues, has been used to treat radial tunnel syndrome by releasing the nerve from surrounding structures.[5] To our knowledge, no previous studies have evaluated the use of hydrodissection in combination with steroid injection for the treatment of tennis elbow with radial tunnel syndrome.The purpose of this case report is to describe the management of a patient with tennis elbow and radial tunnel syndrome using this combined approach.

A 44 years old male presented with a five months' history of progressive left elbow pain which was exacerbated by gripping activities and wrist extension. Patient also complained of tingling and burning sensation along the radial aspect of the forearm. He had pain score NRS- 8/10. Physical examination revealed tenderness over the lateral epicondyle and on dorsal aspect of forearm approximately 2 cm below the lateral epicondyle. Cozen's and Mill's test was positive. Diagnostic ultrasound of left elbow showed common extensor tendinopathy with loss of fibrillar pattern with increased vascularity and swollen PIN. MRI showed thickening of common extensor tendon attachment to lateral humeral epicondyle suggestive of epicondylitis.

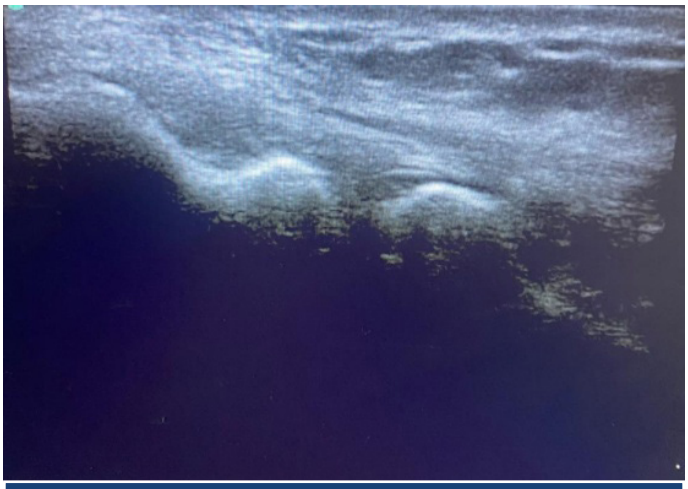

Fig 1: Ultrasonograph showing loss of fibrillary pattern of common extensor tendon

Fig 2: Ultrasonograph showing enlarged PIN in radial tunnel

So, he was diagnosed as tennis elbow with radial tunnel syndrome. Given the dual pathology, a combined therapeutic approach was adopted. Injection area was sterilized with 10% Povidone iodine. Skin infiltrated with localanesthesia 3 ml of 1% Lignocaine for needle insertion. Initially, fenestration of common extensor tendon was done and a mixture of corticosteroid and local anesthesia containing triamcinolone acetonide (40 mg/1ml) and 2ml of 1% Lignocainewas administered under ultrasound guidance above and below the common extensor tendon and hydrodissection of PIN was done at radial tunnel using 5ml of 5% dextrose. He was observed for 1 hour after procedure and his NRS was 4/10. The patient was advised on activity modification and a graded rehabilitation program to optimize functional recovery. His pain was reduced by 80% on his next follow up 2 months later.

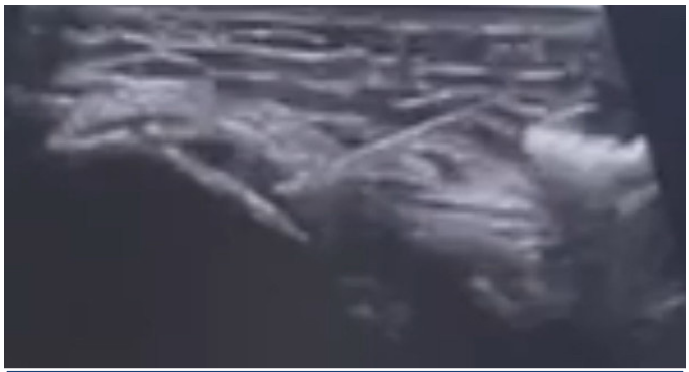

Fig 3: Steroid and lignocaine Mixture Injection given below the common extensor tendon(Ultrasound guided)

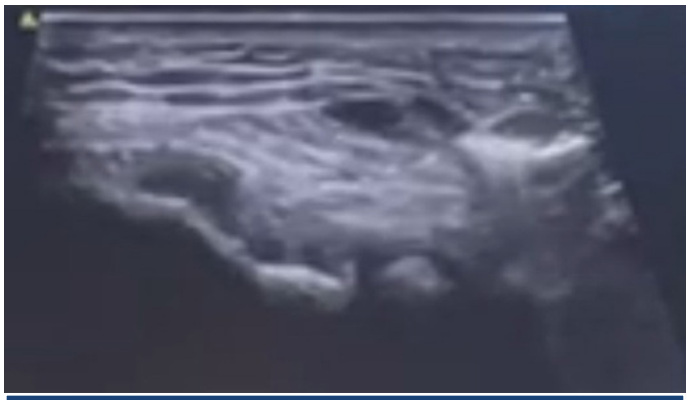

Fig 4: Steroid and lignocaine Mixture Injection given below the common extensor tendon(Ultrasound guided)

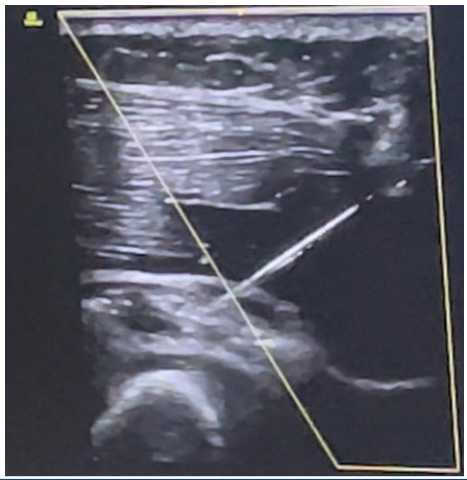

Fig 5: Hydrodissection of PIN in radial tunnel(Ultrasound guided)

DISCUSSIONS

Numerous studies have investigated the efficacy of corticosteroid injection in the management of tennis elbow, with varying results. Conservative management, including rest, activity modification, physical therapy, and NSAIDs, remains a cornerstone of initial treatment for tennis elbow. These approaches focus on reducing

inflammation, strengthening the affected muscles, and improving biomechanics, often yielding favorable outcomes.[6] Studies have suggested that the peppering technique may improve the distribution and diffusion of injected medications, leading to better pain relief and functional outcomes.[7] Moreover, alternative intervention like platelet-rich plasma (PRP) injections has also shown promising results in alleviating symptoms.8 Studies done by Bisset et al.[6] and Smidt et al.[9] randomized patients with tennis elbow to wait and see, physiotherapy and corticosteroids injection. Corticosteroid injection showed significantly better effects at 6 weeks ($P < 0.01$) in both the studies. A randomized controlled trial done among 164 patients of new episode of lateral epicondylitis, where patients were randomized to injection group (methylprednisolone plus lignocaine), naproxen group and placebo. 92% of patients in injection group were completely better or improved compared with 57% in the naproxen group and 50% in the placebo group.[10] Toker et al. compared anti-inflammatory drugs alone with local injection of corticosteroid and anesthetic mixture where significantly enhanced efficacy with combination treatment was seen.[11] Thaper et al. did hydrodissection in a case of nontraumatic radial sensory neuropathy.[12] The single hydrodissection session provided over 90% symptomatic improvement without adverse effects.Tracey et al found that tendon fenestration is safe and effective in 74% of their patients who failed conservative treatment for ECRB tendinosis.[13] Tendon fenestration is a needling technique that repeatedly perforates thediseased tendon to induce mechanical reinjury and signalhematological healing processes Chang et al. described a case of 73 year old lady with superficial radial nerve entrapment.[14] The patient had clinical improvement in pain after two sessions of 2 mL D5W injected around the sensory nerve at 2 week intervals.

CONCLUSION

The management of tennis elbow with concomitant radial tunnel syndrome poses diagnostic and therapeutic challenges due to overlapping clinical features. This case report illustrates the successful use of a combined therapeutic approach, incorporating corticosteroid and local anesthesia injection and fenestration for tennis elbow and hydrodissection of the radial tunnel for radial nerve decompression. Early recognition and targeted treatment of both pathologies are crucial for achieving favorable clinical outcomes and optimizing patient satisfaction. Further research is needed to validate the effectiveness and long-term benefits of this multidisciplinary approach.

Conflict of interest None

Financial disclosure None

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