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Treatment of de Quervain's Tenosynovitis with Prolotherapy: A Case Report

Veronika Susanty Siampa[1,2*], Charles Wijaya Tan[1]

[1]Department of Anesthesiology, Intensive Care, and Pain Management, Faculty of Medicine, Universitas Hasanuddin, Makassar, Indonesia

[2]Abdul Rivai Hospital, Berau, Indonesia

***Corresponding author:**
Veronika Susanty Siampa
Department of Anesthesiology, Intensive Care, and Pain Management, Faculty of Medicine, Universitas Hasanuddin, Makassar, Indonesia
Abdul Rivai Hospital, Berau, Indonesia
Email:
verosanty94@gmail.com

ABSTRACT

Introduction: De Quervain's tenosynovitis is a disease with pain in the styloid process area due to chronic inflammation of the tendons covering the abductor pollicis longus and extensor pollicis brevis muscles at the level of the distal radius. This study aims to describe the treatment of de Quervain's tenosynovitis with prolotherapy. **Case presentation:** A woman, 49 years old, working as a cleaning service, came to the hospital with complaints of pain in her right thumb and wrist. Pain has been felt since 1.5 years ago, especially when using the hand and moving the thumb. The pain has been getting worse in the last 4 months and is sometimes swollen and red near the thumb. Physical examination showed nodules measuring 2x1 cm in the right radial region, positive tenderness, positive Allen test, active and passive movement of digit 1, rotation and adduction inhibition, wrist extension and digitorum positive, wrist flexion and digitorum positive, and a positive Finkelstein test. The patient was diagnosed with de Quervain's tenosynovitis dextra. Prolotherapy was carried out as pain management in this patient. **Conclusion:** Treatment with injection prolotherapy of patients with complaints of de Quervain's tenosynovitis using a mixture of D40% solution and lidocaine has a good prognosis for symptom improvement and relatively minimal complications.
Keywords: de Quervain's tenosynovitis, fibrosis, prolotherapy.

Introduction

Tenosynovitis is an inflammation involving the tendon and its sheath, which causes the formation of fibrosis resulting in the narrowing of the synovial and causing pain. Tenosynovitis is characterized by distension of the synovial sheath around the tendon. Tendons are connective tissue that connects muscles and bones to help move bones. Inflamed tendons will swell and be painful to move. Tendon abnormalities occurring in the wrist include tenosynovitis, paratendinitis, tendinosis, and tendon tears. The etiology of tenosynovitis is not clear, and it can be caused by degenerative, traumatic, proliferative, inflammatory, and infectious processes.[1,2]

De Quervain's tenosynovitis is a disease with pain in the area of the styloid process due to chronic inflammation of the tendon sheath of the abductor pollicis longus and extensor pollicis brevis muscles at the level of the distal radius, accompanied by narrowing of the tendon sheath and often also found thickening of the tendon sheath.[1] The functions of these two muscles and tendons are to control position, orientation, load resistance, and maintain stabilization of the thumb joint.[3]

The US incidence of this disease is relative, especially among people who engage in repetitive hand activities, such as company secretaries and workers installing certain machine parts. Another study stated a higher ratio in women than men, which was about 8:1, in household chores that use fingers and wrists, such as carrying children, and washing and wringing clothes.[4,5] This disease is also commonly found in pregnant women. Soft tissue oedema, fluid retention, and ligamentous stretch during pregnancy influence the inflammatory response and put pressure on the first dorsal compartment. The highest prevalence occurs at the age of 30-55 years.[6,7] If treated quickly, de Quervain's tenosynovitis can be cured with medication and therapy. However, in chronic cases, patients need to get further treatment to overcome them. This study aims to describe the treatment of de Quervain's tenosynovitis with prolotherapy.

Case Presentation

A woman, 49 years old, working as a cleaning service, came to the hospital with complaints of pain in her right thumb and wrist. Pain has been felt since 1,5 years ago, especially when using the hand and moving the thumb. The pain has been getting worse in the last 4 months and is sometimes swollen and red near the thumb. There was no history of falls

or trauma. The patient claimed to have taken analgesics prescribed by an orthopedic doctor, namely mefenamic acid and meloxicam. The patient has also been placed in a splint for immobilization of the right thumb and wrist in combination with physiotherapy. During the last 3 months, the patient no longer took medication even though the pain was still often felt.

Physical examination showed vital signs within normal limits. There is a nodule measuring 2x1 cm in the right radial region (Figure 1), positive tenderness, positive Allen test, active and passive movement of digit 1, rotation and adduction inhibition, wrist extension and digitorum positive, wrist flexion and digitorum positive, and a positive Finkelstein test. The patient was diagnosed with de Quervain's tenosynovitis dextra. Prolotherapy was carried out as pain management in this patient.

Figure 1. Nodules in the right radial region (red arrow).

The procedure for prolotherapy with ultrasound guidance is as follows. The patient is positioned supine with the arm at the side of the patient in a neutral rotation position. The ulnar aspect of the forearm is positioned on a table with the wrist in a neutral position, with the styloid process of the radius facing upward. The first compartment is located above the styloid process of the radius. The ultrasound position is placed in front of the operator or on the contralateral side of the area to be injected. Identification of the area around the carpometacarpal I with ultrasound guidance with a short-axis approach. The needle is inserted parallel to the transducer slowly from lateral to medial (in the plane). The bevel of the needle is kept away from the tendon to avoid intratendinous injection. After the injection, the patient feels less pain. There was no sign of a hematoma on the injection site. The patient was advised for evaluation and reinjection 2 weeks later.

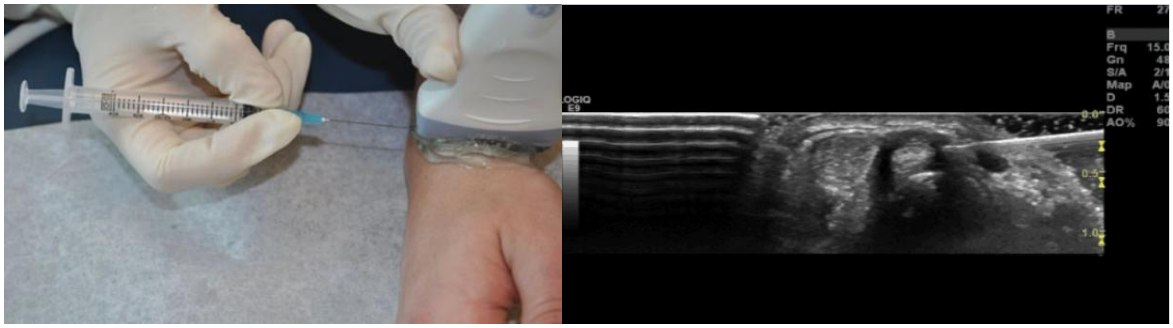

Figure 2. Position of needle injection.

Discussion

The principles of management of de Quervain's tenosynovitis include nonsurgical and surgical treatment aimed at treating inflammation in the first dorsal compartment.[1,6] Conservative treatment can be started with NSAIDs and physical therapy. Another conservative treatment is education by avoiding work that uses fingers. Patients are advised to rest the wrist for about 4-6 weeks to prevent edema from continuing, and cold compresses can also be used to reduce edema. If it persists, anti-inflammatory injections can be given. Immobilization can also be done by using a spica splint to reduce the movement that may occur in the joint.[7,8]

In patients who do not respond to analgesic modalities, intervention can be done using corticosteroid injections, but the side effect that can occur due to corticosteroid injections is the tearing of the joints.[9-12] Another alternative to the pain management of this disease is prolotherapy. Prolotherapy is an injection therapy using a natural irritant fluid, generally hypertonic dextrose, for chronic musculoskeletal injuries that can trigger a local healing reaction in the injected tissue. These irritating fluids serve as nutrients, as well as to stimulate the body's natural ability to repair damaged tissue. Various studies have also revealed that prolotherapy is effective in relieving joint pain because this therapy can repair and re-strengthen joint tissue. Because prolotherapy relies on the body's natural ability to regenerate itself, it is believed that prolotherapy can increase stability and improve joint function naturally and permanently.[13]

Prolotherapy treatment usually consists of several injection sessions given every 2-6 weeks over several months. The solution injected simultaneously is thought to result in the enlargement and strengthening of damaged ligaments, tendons, and intra-articular structures.[14] Dextrose is the most commonly used proliferant today. The concentration of dextrose used

varies. The higher the concentration of dextrose, the more cells at the injection site are dehydrated, the more cells are activated, and the more tissue is repaired so as to facilitate the repair of structures that stabilize joints and surrounding tissues. Solutions commonly used in prolotherapy are lidocaine, dextrose 5%, 10%, 15%, 20%, 30%, marcain, or prilocaine.[13,14]

Absolute contraindications to prolotherapy are acute infections, e.g., cellulitis, local abscesses, and septic arthritis. Relative contraindications include acute gouty arthritis, acute fractures, long-term use of high doses of narcotics because they can decrease the immune response, and use of systemic corticosteroids because they have the opposite effect of the inflammatory process.[15] The main risks of prolotherapy are pain and minor bleeding due to the needle. Post-injection pain often occurs within the first 72 hours after injection and usually responds well to acetaminophen or paracetamol. While other side effects such as lightheadedness, allergic reactions, infections, or neurological damage are very rarely reported.[13-15]

Conclusion

Treatment with injection prolotherapy of patients with complaints of de Quervain's tenosynovitis using a mixture of D40% solution and lidocaine has a good prognosis for symptom improvement and relatively minimal complications.

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