

Complementary Role of Dry Needling for Myofascial Pain in Thoracic Outlet Syndrome: A Case Report

Torasik Outlet Sendromuna Eşlik Eden Miyofasiyal Ağrıda Kuru İğne Tedavisinin Tamamlayıcı Rolü: Bir Olgu Sunumu

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ABSTRACT

Thoracic outlet syndrome (TOS), is caused by compression of the brachial plexus, subclavian vessels in the thoracic space and leading to painful symptoms and signs. In this study a 46-year-old man suffered from TOS received five sessions of dry needling therapy. After the five dry needling sessions and therapeutic exercises, the numbness disappeared, the pain decreased by approximately 85% (VAS = 1), and the sleep quality increased by 80%. Results show that trigger points can be treated with dry needling as an adjunctive treatment for managing pain in TOS patients.

Keywords: Thoracic outlet syndrome, myofascial pain, dry needling

ÖZET

Torasik Outlet Sendromu (TOS), torasik çıkış bölgesinde brakiyal pleksus, subklavian damarlara baskı sonucunda ortaya çıkmakta ve ağrılı semptom ve bulgulara neden olmaktadır. Bu çalışmada, TOS tanısı almış 46 yaşında bir erkek hastaya 5 seans kuru iğne tedavisi uygulandı. Beş seans kuru iğne tedavisi ve egzersiz programı sonrasında hastanın uyuşma şikayetleri kayboldu, ağrı şiddeti %85 oranında azaldı, uyku kalitesi ise %80 oranında arttı. Sonuçlar TOS hastalarında ağrı yönetiminde diğer tedavilere kombine olarak tetik noktaların kuru iğne ile tedavi edilebileceğini göstermektedir.

Anahtar sözcükler: Torasik outlet sendromu, myofasiyal ağrı, kuru iğne

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Introduction

(TOS) is a clinical condition that results from pathological processes at the thoracic outlet compressing the brachial plexus and subclavian artery and vein. The neurovascular structures are generally compressed in the interscalene triangle or costoclavicular or rectopectoralis spaces (1). These spaces can be narrowed as a result of abnormalities of the cervical rib, transverse process of C7, and scalene muscle, resulting in compression in TOS. Poor posture, neck or back injury, sleep disorders, participating in sports that involve repetitive arm movement, and tumors in the upper chest all increase the risk of TOS

(2,3). TOS is characterized by non-localized extremity and neck pain and restricted upper extremity mobility, especially the shoulders. The pain is usually accompanied by paresthesias, muscle fatigue, and muscle weakness. Vasomotor and vascular symptoms can aggravate the patient's complaints (1). Although the diagnosis of TOS is based on medical history, provocative tests, and EMG, there is no specific diagnostic protocol. The most common initial treatment for TOS is physical therapy, patient education, behavior modification, ergonomic and posture corrections and exercise. But there is no standardized treatment algorithms for TOS (1,4,5).

The Patient

A 46-year-old man had suffered from pain radiating to his arms, numbness of the left forearm and 4th and 5th fingers, and sleep disturbance for 4.5 years. He described the pain intensity as 6/10 using a visual analog scale (VAS). He had attended different institutions and received various physical and medical therapies with no benefit. On physical examination, we observed increased dorsal kyphosis and dropped shoulders. There were myofascial trigger points and taut bands in the cervical-dorsal paravertebral muscles, trapezius, and supraspinatus muscles, especially on the left side. The left shoulder movements were minimally painful and restricted. The thoracic outlet provocation tests were positive on the left side. Electromyography (EMG) revealed neurogenic TOS. Cervical magnetic resonance imaging (MRI) demonstrated a herniated disc causing compression of the roots of C5-C6. Arterial Doppler ultrasonography (USG) indicated a decrease in the blood flow of the left subclavian artery on left arm extension, compared to the neutral position, which is consistent with TOS.

In light of these findings, we diagnosed neurovascular TOS and planned a therapeutic exercise program and performed deep dry needling in the taut bands and trigger points on a weekly basis for five sessions (Figure 1). 0.25x25 mm acupuncture needle was guided toward the trigger points until the resistance was felt and elicited local twitch response. The needle was then focus in other neighboring areas by drawing the needle back toward the subcutaneous tissue and then redirecting it toward

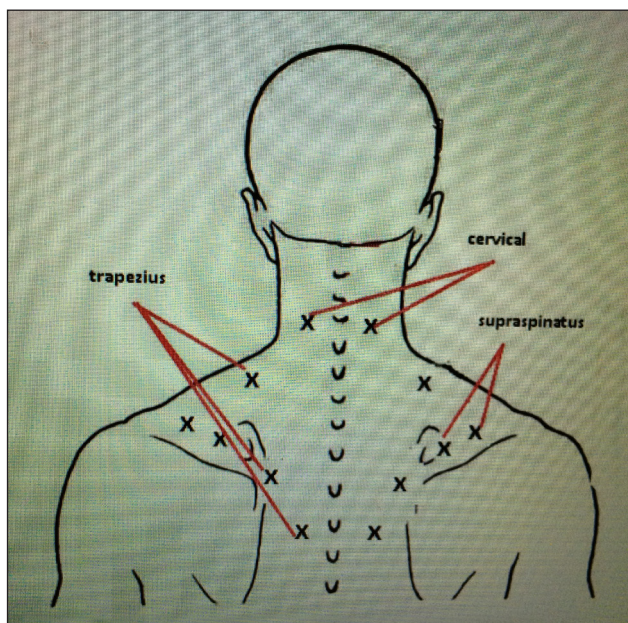


Figure 1. Trigger points performed dry needling.

the remaining trigger points. After the five dry needling sessions and therapeutic exercises, the numbness disappeared, the pain decreased by approximately 85% (VAS = 1), and the sleep quality increased by 80% according to the patient's description. The patient was in good condition at the 1- and 3-month follow-ups.

Discussion

In TOS, the purpose of physical therapy and exercises is to increase the range of motion of the neck and shoulders, strengthen muscles, and promote better posture. Improving the poor posture is very important for the treatment of TOS. Recent studies have shown that TOS is more common in women than men, particularly those with poor muscle development and poor posture. In addition, cervical muscle spasm causes traction on the brachial plexus and subclavian artery and vein in TOS. Muscle spasm leads to muscle edema and narrowing of the thoracic outlet. Following edema, the formation of scars and fibrosis complicates the problem. It seems reasonable to target the muscle spasm and trigger points for the treatment of TOS (6).

Our patient had taut bands and trigger points in the cervical-dorsal paravertebral muscles, trapezius, and supraspinatus muscles. These trigger points and the muscle imbalance due to poor posture increased the compression on the neurovascular structures in the thoracic outlet and aggravated the patient's symptoms.

Recently, there has been increased interest in the use of dry needling therapy to treat the trigger points. Studies shows that the local oxygen saturation at a trigger point may be less than 5% of normal. Reduced oxygen levels and hypoxia drops the tissue PH and leads to release several nociceptive chemicals. Inflammatory chemicals stimulate the muscle nociceptors and leads local tenderness and referred pain (7,8).

The objectives of dry needling are to normalize the chemical environment of an active trigger point and inactivate it, to elongate the muscle by releasing the muscle spasm, to normalize the peripheral nerve sensitization, and to decrease spontaneous muscle activity. Dry needling also may influence the microcirculation of skin and muscle. Needle insertion increases local blood flow to the trigger point region by changing the inflammatory mediator levels (9).

In our case, the pain intensity declined after five dry needling sessions accompanied by therapeutic exercises. The results of this study suggest that trigger points can be treated with dry needling as an adjunctive treatment for managing pain in TOS patients.

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