

Management of muscle trigger points causing subacromial pain using dry needling technique — a case report

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Abstract

We present a case of a 22-year-old university sportsman who presented at a private hospital in Lahore in December 2018 with complaint of severe pain in the anterolateral aspect of the right shoulder after playing cricket. On palpation, greater tubercle of the right shoulder was found to be tender along with the muscle belly of supraspinatus. A muscle trigger point was identified during palpation, while painful arc was also present on abduction. Physical tests, including Hawkins-Kennedy, Neers sign and empty can test, were found to be positive. The musculoskeletal ultrasound revealed that supraspinatus and bicep tendons were intact. The patient was managed by dry needling technique. The novelty of this clinical trial was the application of trigger point dry needling for the management of subacromial pain syndrome. Muscle trigger point symptoms can present as rotator cuff tears, supraspinatus tendonitis and bicipital tendonitis leading to misdiagnosis. Clinicians should look for muscle trigger points before making a differential diagnosis.

Keywords: Shoulder Impingement Syndrome, Athletes, Rotator Cuff, Physical Therapy.

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Introduction

Subacromial pain syndrome is a major cause of discomfort and affects the performance of athletes, particularly cricketers. It is a significant health problem with a prevalence rate of 25% in the general population.¹ The most common presentations are frozen shoulder (adhesive capsulitis), Rotator Cuff Tendinopathy and Muscle Trigger Points (MTrps). The complex pathomechanical situations and lack of sensitivity and specificity of special tests poses a very serious challenge in making a correct diagnosis. The rotator cuff is a key component in maintaining the dynamic and static

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stability of the glenohumeral joint. The pathology of rotator cuff typically presents with pain and weakness on external/internal rotation of the shoulder. Acute or traumatic tears are less common and are usually suspected when a young patient presents with pain and movement dysfunction after a traumatic event, though they are frequently misdiagnosed.^{2,3}

The diagnosis of subacromial pain syndrome is made by a combination of physical and radiological tests (MRI and ultrasound), as a combination of tests increases the post-test probability of a correct diagnosis. The sensitivity and specificity of ultrasound is equivalent to MRI for the diagnosis for subacromial pain syndrome, provided that high quality standardised equipment and expertise is available.⁴ Physical tests performed in combination include Hawkins-Kennedy test, Neers sign, empty can test, drop arm test, infraspinatus test and lift-off test. Measures of Range of Motion (ROM) through goniometer and inclinometer is an important outcome measure for determining the effectiveness of the treatment.² The aim of this case study was to highlight the role of muscle trigger points causing false positive clinical findings.

Case Study

A 22-year-old amateur male university player presented to the physical therapy OPD of a private hospital in Lahore on December 2018 with complaint of severe pain in the anterolateral aspect of the right shoulder after playing cricket (batting) for one week. The intensity of the pain decreased after the patient stopped his sports activity but increased at night while sleeping. He had experienced shoulder pain a month ago as well but the intensity and duration of the pain was comparatively less. The pain was managed by a general physician using analgesics and the patient responded well to the treatment in the past.

On palpation, greater tubercle of the right shoulder was found to be tender along with the muscle belly of supraspinatus. A muscle trigger point was identified during palpation, while painful arc was also present on abduction. Physical tests (Hawkins-Kennedy, Neers Sign, empty can test, drop arm test and lift off test) were

Table: Improvements in range of motion and pain intensity.

	Pre-treatment	After 1st Session	After 2nd Session	After 2 Weeks
Range of Motion	Flexion: 50 Degree Abduction: 45 Degree	Flexion: 85 Degree Abduction: 90 Degree	Flexion: 135 Degree Abduction: 150 Degree	Flexion: 160 Degree Abduction: 175 Degree
Pain Intensity (VAS)	8/10	6/10	4/10	2/10

performed. Hawkins-Kennedy, Neers Sign and empty can test were found to be positive. (Test Cluster)

Supraspinatus tendonitis, bicipital tendonitis, partial rotator cuff tear and muscle trigger point were the differential diagnosis until further investigations was carried out. The musculoskeletal ultrasound revealed that supraspinatus and biceps tendons were intact, there was no tear or inflammation in rotator cuff muscles.

The patient was managed by dry needling technique using 50mm needles with 0.25mm diameter, the trigger point was located via palpation method and an acupuncture needle was inserted into the trigger point. Once the first local twitch response was obtained, the needling was moved up and down (2 to 4 mm vertical motions); no more local twitch responses were elicited. Heating pads were applied after dry needling to enhance the blood supply of the area and for analgesic effect.⁵ Progressive resistance training exercise regimen was initiated with follow up after two days. Another session of dry needling was carried out followed by the application of heating pads. Progressive resistance training programme for strengthening of the upper limb, along with aerobic training was prescribed for two weeks. Range of Motion (ROM) and Numeric Pain Rating Scale readings were taken after two weeks. There was significant improvement in both ROM and Numeric Pain

Rating Scale values as stated in Table. Written consent was taken from the patient prior to writing the case report for publication.

Discussion

The novelty of this clinical trial was the application of TrP-DN for the management of subacromial pain syndrome. Physical examination tests pointed towards partial tear of supraspinatus, as the Test Item Cluster (TIC) of the Hawkins-Kennedy test, the infraspinatus muscle test and the painful arc sign together have the best statistical utility data that met the proposed post-test probability parameters. Post-Test probability for the TIC of the three above-mentioned tests is 95.5% if all three are positive.⁴ While ultrasound was done to confirm the diagnosis, it did not show any abnormality in the shoulder joint that led to the diagnosis of muscle trigger points in supraspinatus and resolution of the patient's symptoms. Due to financial limitations, the diagnosis couldn't be confirmed via MRI.

Literature suggests that there is a high prevalence of active and latent MTrPs in patients with neck or shoulder disorders. Trigger points are focal, hyper-irritable and discrete points in the taught band of a skeletal muscle.⁶ Acute trauma or repetitive micro-trauma may lead to the development of stress on the muscle and formation of trigger points. The patient in our study had a history of repetitive trauma that was probably the cause of the formation of trigger point.⁷

There is no gold standard diagnostic imaging test for muscle trigger points and clinicians must rely on the history and physical examination findings for the diagnosis of myofascial pain. Because of the reliance on physical examination, adequate intra-rater and interrater palpation reliability for the identification of MTrPs is important in construct validity.⁸

The inclusion of trigger point dry needling in the treatment resulted in clinical improvement in shoulder pain-related

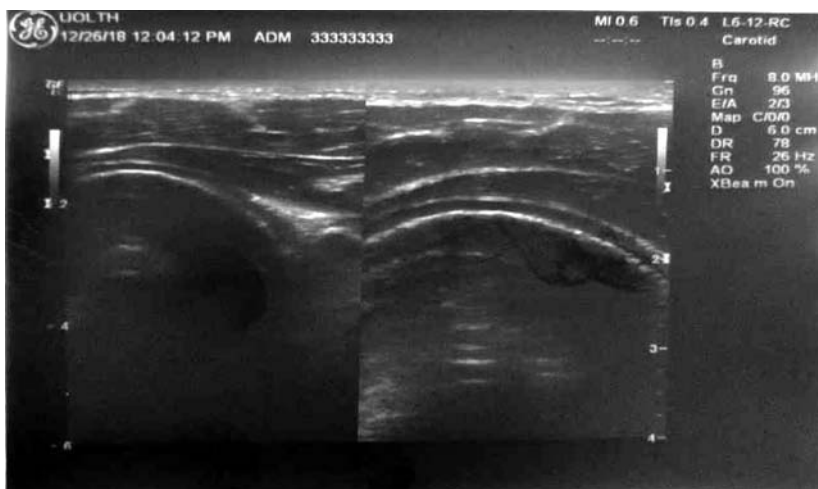


Figure-1: Musculoskeletal ultrasound showing intact rotator cuff muscles.

disorders in patients with subacromial pain syndrome.^{9,10} So, there is a chance that the shoulder pain can have a different pathophysiology than usually predicted by clinical tests.

Conclusion

Muscle trigger point symptoms can present as rotator cuff tears, supraspinatus tendonitis and bicipital tendonitis leading to misdiagnosis. Clinicians should look for muscle trigger points before making a differential diagnosis during physical exams as most of the musculoskeletal diagnosis are solely based on physical exams.

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Conflict of Interest: None.

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