

Case report

Efficacy of Dry Needling in the Treatment of Painful Arc Syndrome: A CASE STUDY

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Abstract

Painful arc syndrome is a clinical syndrome that occurs when the tendons of the rotator cuff muscles become irritated and inflamed as they pass through the subacromial space, the passageway below the acromion. This can cause pain, weakness and loss of movement in the shoulder. This can result in pain, weakness and loss of movement at the shoulder. Dry Needling is a treatment that involves a very thin needle being pushed through the skin to stimulate a trigger point. A 35-years old woman met with a road accident during which she had a sudden blow on her left shoulder which gave her immediate symptoms of pain and instability in the shoulder. She visited an orthopedic clinic and the othopedician suggested for surgery but she didn't undergo surgery and started physiotherapy treatment. In this patient, we mainly focus on dry needling treatment which was effective in improving her ROM and pain and this will also give early recovery and improves the quality of life.

Keywords: Dry Needling; Painful Arc Syndrome; Shoulder Joint

Introduction

Painful arc Syndrome is a common musculoskeletal disorder in which the treatment is very costly [1, 2]. Shoulder conditions such as bursitis, tendinosis, supraspinatus tendinopathy, partial rotator cuff tear, biceps tendinitis, and rotator cuff degeneration are subtypes of

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painful arc syndrome [3]. Myofascial pain or “myofascial trigger points” (MTrP) are hyperirritable points in skeletal muscle accompanied by a palpable knot that can cause localized or referred pain when pressed [4]. Myofascial pain is complex, and its pathophysiology remains elusive. Recent evidence shows that specific MTrP biomarkers, systemic biomarkers, and sensitization of the nervous system could all play a role in the development of myofascial pain [5]. Altered blood flow associated with myofascial pain and surrounding soft tissue [6, 7] is another physiological mechanism for myofascial pain. Dry needling (DN) is a technique that physiotherapists use all over the world [8]. Dry needling is a treatment that involves piercing by a thin acupuncture needle to treat a trigger point (TrP) [9]. The tight bands associated with trigger points get released by the dry needling technique; this decreases the pain and improves the function [10].

Case Presentation

A 35-year-old woman by profession she was a software expert met with a road accident because of suddenly bus hit her scooty from the back and it gets slept so her left shoulder hit on the surface and got injured. So, she visited an orthopedic clinic after 15 days of this incident with the complaint of pain and instability in the left shoulder where radiographic investigations were done, but there were no changes found. In MRI findings, lateral down sloping of acromion causing impingement of supraspinatus tendon, suggestive contusion or mild rupture of supraspinatus tendon and mild effusion. Orthopedician suggested surgery but she didn't undergo for surgery she was suggested for physiotherapy treatment. Then after one week she visited a physiotherapy clinic for further treatment. The patient had pain during daily activities like combing her hair, showering and during lifting of any object. The onset of pain was sudden and intermittent. Initially, she rated her pain 7 on NPRS during activity and 5 on NPRS while resting. The patient complained of a dull aching type of pain.

Clinical Evaluation

On postural evaluation in posterior view patient had a depressed right shoulder and left shoulder elevated. The patient had tightness in the rotator cuff muscles. During the examination, initially, her ranges were different between left and right shoulder. Flexion, extension, abduction, adduction, internal and external rotation of the left shoulder joint were affected which was incomplete and painful (Tables 1 and 2 shows the selective tissue tension test). End feel of flexion, extension, abduction, adduction, internal and external rotation movement is empty due to pain. Manual muscle testing examination finding gave ranges between left and right shoulder (Tables 3 and 4 shows the MRC muscles power grading of both left and right shoulder). Special test like Neer impingement test and Hawkins-Kennedy was done and both were positive.

Active ROM (left shoulder)	Passive ROM (left shoulder)
Flexion - 90 degree	Flexion - 95 degree
Extension - 20 degree	Extension - 20 degree
Abduction - 90 degree	Abduction - 95 degree

Adduction - 90-0 degree	Adduction - 95-0 degree
Internal rotation - 20-30 degree	Internal rotation - 25-35 degree*
External rotation -10 degree	External rotation -10 degree*
	*passive ROM is restricted & painful.

Table 1: Pre-treatment evaluation of selective tissue tension test of Left Shoulder Joint (first day of first week)

*Active and passive ROM of right shoulder is within the normal limit.

Active ROM (right shoulder)	Passive ROM (right shoulder)
Flexion - 70 degree	Flexion - 170 degree
Extension - 55 degree	Extension - 55 degree
Abduction - 170 degree	Abduction - 170 degree
Adduction - 170-0 degree	Adduction - 170-0 degree
Internal rotation - 60-65 degree	Internal rotation - 60-70 degree
External rotation -10 degree	External rotation - 10 degree

Table 2: Pre-treatment evaluation of selective tissue tension test of Right Shoulder Joint (first day of first week).

• Flexion	Grade-4	• Extension	Grade 4
• Abduction	Grade-4	• Adduction	Grade 4+
• Internal rotation	Grade 3+	• External rotation	Grade 3

Table 3: Pre-treatment evaluation of MRC muscle power grading at base line Left shoulder (first day of first week).

• Flexion	Grade-4	• Extension	Grade 4
• Abduction	Grade-4	• Adduction	Grade 4+
• Internal rotation	Grade 3+	• External rotation	Grade 3

Table 4: Pre-treatment evaluation of MRC muscle power grading at base line Right shoulder(first day of first week).

Diagnosis

The diagnosis was done based on subjective and objective evaluation and according to MRI findings shows lateral down sloping of acromion causing impingement of supraspinatus tendon. Suggestive contusion or mild rupture of supraspinatus tendon. Rest of the rotator cuff muscles appears normal. GH joint appears normal.

Intervention

This patient was treated 4 times per week over 1 month (4 weeks). The patient was treated by a course of DDN to the affected muscles in combination with the conventional physiotherapy treatment like including therapeutic exercise, patient education, IFT and cryotherapy. Dry needling was applied on the upper trapezius, levator scapulae, deltoid, infraspinatus, supraspinatus, teres minor and subscapularis muscles.

Outcome Measures

Shoulder ranges were improved and the tightness was reduced due to DDN (Tables 5 and 6 shows selective tissue tension test of Left Shoulder Joint and the MRC muscle power grading).

Active ROM (left shoulder)	Passive ROM (left shoulder)
Flexion - 110 degree	Flexion - 120 degree
Extension - 30 degree	Extension - 40 degree
Abduction -110 degree	Abduction - 120 degree
Adduction -110-0 degree	Adduction - 120-0 degree
Internal rotation -25-30 degree	Internal rotation - 30-40 degree
External rotation -15 degree	External rotation - 15 degree

Table 5: Post-treatment evaluation of selective tissue tension test of Left Shoulder Joint (Measurement at last day of 4thweek).

Flexion Grade - 4+	Extension Grade - 4+
Abduction Grade - 4+	Adduction Grade - 4+
Internal rotation Grade - 4	External rotation Grade - 3+

Table 6: Post-treatment evaluation of MRC muscle power grading at base line of left shoulder Joint (Measurement at last day of 4thweek).

Discussion

The aim of this case study was to see the Efficacy of Dry Needling in the treatment of Painful Arc syndrome. In this study, the patient showed significant improvement in the ROM (Active and Passive), Pain and Functional outcome. The conventional physiotherapy treatment is IFT, Therapeutic exercise, Patient education, and cryotherapy [9]. The rotator cuff muscle tendons pass through a narrow space between the acromion process and the humerus head. Anything which causes further narrowing of this space can result in painful arc syndrome. This can be caused by bony structures such as subacromial spurs osteoarthritic spurs on the acromio-clavicular joint, and variations in the shape of the acromion. Thickening of the coracoacromial ligament can also cause painful arc syndrome. Loss of function of the rotator cuff muscles, due to injury or loss of strength, may cause the humerus to move superiorly, resulting in painful arc syndrome. Inflammation and subsequent thickening of the subacromial bursa may also cause painful arc syndrome [11].

Conclusion

The result of this case study demonstrates that DDN plays a very important role in the management of painful arc syndrome, in this patient a lot of improvement was seen and patient was able to returned back to her functional activity however, more studies need to be carried out for painful arc syndrome.

Patient Consent

Informed consent of patient was taken.

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