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The Effect of Combined Therapy (IFT And Ultrasound) with Muscle Energy Technique on Painful Arc Syndrome

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ABSTRACT

Background: The painful arc syndrome is a common cause of shoulder pain when lifting the arm between the 60 to 120 degrees generally it is caused by the compression of rotator cuff tendon and bursa. In this restricted shoulder range of motion and sharp shoulder pain is seen. So, the physiotherapy treatment is very helpful in this condition like interferential therapy, ultrasound therapy and muscle energy technique.

Objective: To evaluate the effectiveness of combined therapy (IFT and Ultrasound) with Muscle energy technique in reducing pain and improve shoulder range of motion in painful arc syndrome.

Case description: A 62 year old female is come with sharp / severe shoulder pointing pain with lack of shoulder range of motion and she had history of diabetes and hypertension from long time and she gives a history of fall on floor of 4 months ago and X-ray does not show anything and the shoulder pain is severe (VAS- 8/10) and she was unable to lift their hand from 0 to 15 degree then 60 to 120 degree in shoulder flexion and abduction.

Interventions: The patient is undergoes to a four week physiotherapy treatment plan that the physiotherapy plan is consist of combined therapy i.e. interferential therapy, ultrasound therapy and muscle energy technique in which the interferential therapy help to reduce the shoulder pointing pain , the ultrasound therapy is applied for decreases the pain and improve the tissue healing and the muscle energy technique is applied for increase the shoulder range of motion and improve muscle strength with the muscle energy technique the pendulum exercises also be given.

Outcomes: NPRS, VAS scale for pain, Goniometry for range of motion and manual muscle testing for checking the muscle strength.

Results: After treatment plan, pain is reduced from 8/10 to 3/10, Shoulder movement improve significantly shoulder flexion improved from 0 degree to 15 degree and shoulder abduction improved from 60 degree to 120 degree, and muscle strength improved from grade 2/5 to 4/5.

Conclusion: The combined therapy with Muscle energy technique (MET) is helpful in reducing pain, improving shoulder movements and increased the muscle strength after painful arc syndrome. It can be used as an effective physiotherapy treatment for shoulder rehabilitation.

Keywords: The combined therapy (interferential therapy and ultrasound therapy), muscle energy technique (MET), painful arc syndrome, shoulder impingement syndrome, shoulder range of motion in painful arc syndrome patients.

SCOPE OF STUDY :

The scope of the study is to evaluate the effect of combined therapy (IFT , Ultrasound and muscle energy technique – MET) in patients with painful arc syndrome , focusing mainly on painful reduction , shoulder ROM improvement and muscle strength increase . This study highlights the effectiveness of non- surgical treatment approach in physiotherapy rehabilitation and may help physiotherapist in future to use combined therapy in the management of shoulder pain patients .

INTRODUCTION

Shoulder impingement syndrome / painful arc syndrome is a common cause of shoulder pain, approximately 44% to 65% of shoulder pain cases are caused by this condition. This condition narrows the subacromial space within the shoulder, compressing the rotator cuff tendons and surrounding tissues , leading to pain , this condition is more common in people who frequently use their arms overhead, such as athletes or labours .

It is usually diagnosed bases on the patient history and physical examination, it is very important to recognize this condition early to prevent tendon damage and long term shoulder problems in the future , it is primarily treated with physiotherapy exercises that strengthen the shoulder muscles and improve movement. Medications may also be given to reduce pain and swelling.

Shoulder impingement syndrome can occur in different ways. The main problem isn't just the supraspinatus muscle compressing under the acromion there can be other problems within the shoulder that cause pain and movement problems . Shoulder impingement syndrome can start as a mild problem like swelling and if not treated in time can progress to a serious condition like tendon tear or joint damage .Shoulder impingement syndrome causes moderate to severe shoulder pain that worsens with arm movement. This can make it difficult to raise the arm forward and to the side , and if untreated, can lead to problems with daily activities and sometimes even disability. This condition causes mild , sharp pain in the front and side of the shoulder (anterolateral area) when the patient raises their arm (arm elevation) when the arm is lowered, the pain subsides slightly.

Special tests are used for diagnosis, such as : Neer's test and Hawkins – Kennedy test. If these test are positive, shoulder impingement syndrome is indicated to measure pain doctors use visual analogue scale (VAS) , Numerical pain rating scale (NPRS) . These scale make it easy to assess the pain level .

The Shoulder impingement syndrome group was observed to have significantly increase resting thoracic flexion , means there upper back (thoracic spine) was in a slightly more forward bend position . Also they had reduce active upper thoracic flexion and extension movements , means the capacity to move the upper back forward and backward was reduced . Therefore posterior shoulder range was also found to be reduced compared to the asymptomatic group .

Therefore , physiotherapy intervention that increase thoracic range of motion or improve posterior shoulder range can be very helpful in shoulder impingement syndrome . The ultrasound therapy , interferential therapy and muscle energy technique and some other shoulder exercises help to improve shoulder range of motion and reduce pain .

OBJECTIVE :

To evaluate the effectiveness of MET and combined therapy (interferential therapy and ultrasound therapy) in shoulder muscle tightness and shoulder range of motion in painful arc syndrome patient the intervention was carried out over a period of four week through a regular therapeutic sessions .

UNIQUENESS OF STUDY:

This study is unique as it used a combined therapy approach (IFT + Ultrasound + muscle energy technique – MET) in the management of painful arc syndrome , whereas normally in this condition single therapy or just exercises are focused more . The special thing about this study is that electro therapy modalities like IFT and ultrasound were combined with manual therapy technique. MET , due to which pain reduction , shoulder range of motion (ROM) improvement and muscle strength increase were observed simultaneously. In this study , the treatment was given to ab elderly patient who also had associated condition like diabetes and hypertension , yet safe and effective results were obtained . The short treatment period of just 4 weeks resulted in noticeable improvements such as reduction in pain , improvement in shoulder movement and ease in performing daily activities, which highlights that the combined physiotherapy approach can be an effective and practical treatment option in shoulder rehabilitation .

CASE DESCRIPTION AND ASSESSEMENT :

A 62 year old female patient presented with a right shoulder injury following a fall on floor on radiological findings there is no evidence then I assessed my patient through a special tests which is Neer's impingement test / Hawkins Kennedy test this test was positive the patient experienced sharp pointing on shoulder and swelling, restricted shoulder range of motion.

She said that when she was unable to lift the arm at 2 points she get discomfort or severe pain in right shoulder gradually from shoulder to elbow region and on taking history she told that she is getting this pain from 4 months.

On examination it was found that her right shoulder muscles are undergoes into tightness and her body posture is looking like a dropping of one shoulder. Additionally the therapist check range of motion where she was experienced severe pain and difficulty in moving or lifting the arm from 0-15 degree and 60 to 120 degree. When asked about her pain using the NRPS and VAS scale 8/10

After taking an assessment when she had a hypertension and diabetic history but no history of surgery so through this complete assessment the therapist assessed that she had tightness over the upper trapezius muscle and difficulty in initiating and lifting the arm .

PROCEDURE

Firstly patient is come then I explain the whole procedure to patient then I ask patient to supine lying on bed then firstly I applied the interferential therapy on mode – 11 for 10 minutes, then I used muscle energy technique application consist of 3 to 5 contraction each held for approximately 7 seconds each contraction is followed by a stretch which can range from 7 seconds to 30 seconds . Then I applied the ultrasound therapy at 1 mgh for 5 minutes at continuous mode

PRINCIPLE

The patient gently contract the muscle for 5 to 7 seconds then relaxed and a stretch is applied.

Technique 1: Shoulder flexion

Target muscle - latissimus dorsi , teres major , posterior deltoid

Patient position – patient in supine lying therapist stand beside the affected shoulder

Technique –

1. moves the patient shoulder into flexion until the point of resistance
2. Ask the patient to gentle push the arm downward against therapist resistance.

3. Hold contraction for 5 to 10 seconds.
4. Ask the patient to relax.
5. Take the shoulder further into flexion to the new range
6. Repeat 3 to 5 times .

Technique 2 : Shoulder Abduction

Target muscle – lattismus dorsi, pectoralis major , teres major

Patient position – patient in supine lying therapist stand on the side of affected shoulder

Technique –

1. moved the arm into abduction until resistance is felt .
2. Ask the patient to pull the arm downward (adduction) gently against the resistance.
3. Maintain the contraction for 5 to 10 seconds.
4. Patient is relaxed
5. Therapist moves the arm further into abduction.
6. Repeated 3 to 5 times .

Technique 3 : Shoulder internal rotation

Target muscle – infraspinatus , teres minor

Patient position – patient in supine lying, shoulder abducted to 90 degree elbow flexed to 90 degree

Technique –

1. Move the shoulder into internal rotation until point of resistance.
2. Ask the patient to push the hand outward (external rotation direction) gently
3. Hold for 5 to 10 seconds.
4. Relax the muscle.
5. Move the arm further into internal rotation.
6. Repeated 3 to 5 times .

Technique 4 : Shoulder external rotation

Target muscle – subscapularis , pectoralis major, lattismus dorsi

Patient position – patient supine lying position then shoulder 90 degree abduction and 90 degree flexion

Technique –

1. Move the shoulder into external rotation to the point of resistance.
2. Ask the patient to push the hand inward (internal rotation direction).
3. Hold contraction for 5 to 10 seconds.
4. Allow relaxation.
5. Move shoulder further into external rotation.
6. Repeated 3 to 5 times.

Additional exercises

Active ROM exercises

Pendulum exercises

Shoulder wheel

Finger ladder

Strengthening exercises at the later stages

RESULT

PARAMETER	PRE-ASSESSMENT	POST - ASSESSMENT
VAS (0-10)	8/10	3/10
Painful arc range (abduction)	60 degree abduction	60 – 120-degree abduction
End range pain	Present	Absent
Muscle strength (MMT)	2/5	4/5
Neer impingement test	Positive	Negative
Hawkins Kennedy test	Positive	Negative
Functional activity	Difficulty in movement	Able to perform movement
Painful arc range (flexion)	0 degree	0 –15 degree

DISCUSSION

After 4 weeks of treatment plan , when the effect of MET was discussed, the patient reported approximately 60-70 % pain relief and than raising the arm more easier than before. Visual improvements were also observed in shoulder range of motion, with flexion and abduction improves from 0 to 120 degree . And the muscle tightness is also significantly reduced, improvement in the quality of daily activities such as a lifting the arm more easier . This suggest the combined therapy (interferential therapy and ultrasound therapy) with Muscle energy technique is beneficial for patients with painful arc syndrome.

CONCLUSION

The combined therapy (interferential therapy and ultrasound therapy) with Muscle energy technique is an effective and safe physiotherapy intervention for managing the shoulder stiffness and restricted mobility in painful arc syndrome . The application of combined therapy with Muscle energy technique significantly reduced pain , improved range of motion, and enhanced muscle strength in the affected shoulder.
Regular physiotherapy sessions combined with patient participation contribution to functional recovery and improved daily activity performance. Therefore, combined therapy with MET can be recommended as an effective rehabilitation technique in the management of shoulder painful arc syndrome.

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