Effectiveness of Active Release Technique verses Conventional Physiotherapy in Management of Upper Cross Syndrome

Prasad Risalda[1], Pratik Phansopkar[2], Waqar M. Naqvi[3]

[1]Final year B.P.T, Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences, Sawangi(M), Wardha, Maharashtra, [b]Assistant Professor, Department of Musculoskeletal Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences, Sawangi(M), Wardha, Maharashtra, [3]Professor and HOD, Department of Community Health Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences, Sawangi(M), Wardha, Maharashtra.

Abstract

Background: In upper cross syndrome (UCS), weaker neck flexors, anterior and middle serratus and lower trapezius along with rhomboids usually develop, and tightness of the levator scapulae, pectoralis major and upper trapezius are biomechanically adapted. Active Release Technique (ART) helps to reduce discomfort and improve the range of movement. Also, Active Release Technique (ART) is a manual procedure which is also being used for other soft tissue rehabilitation as well as for the management of the scar tissues. UCS and neck pain is common with uncomfortable job postures as well as in stress and anxiety, due to which muscle dysfunction starts which can further followed by altered posture around the neck.

Aim and Objective: To evaluate the effects of Active Release Technique verses conventional physiotherapy in management of upper cross syndrome physiotherapy.

Materials and Method: 35 patients will be grouped in two groups. Both groups will be treated for six sessions. Group A will be treated with active release technique and static stretching along with hydrocollator pack. The patients coming under Group B, conventional physiotherapy would be given which include upper trapezoid stretching, levator scapulae and pectoralis major as well as rhomboid strengthening, deep neck flexors, lower trapezius along with the hydrocollator pack.

Result: The parameters of outcome measures in interval of pre and post treatment will be analysed using the statistical test namely students paired T test.

Conclusion: Based on the previous data of ART we assume it will be beneficial in relieving the symptoms involved in UCS.

Key Words: *Active Release technique, Upper cross syndrome, Physiotherapy*

Introduction

Neck is a body part between the head and the shoulder and it also connects the head with the body. The position of the neck and the bottom of the head and shoulders is at greater risk as people sit in the wrong way for long periods of time as there is a rapid rise of time span in the following activities like studying, writing or using a computer. [1]

In upper cross syndrome (UCS), there will be weakened neck flexors, anterior and middle serratus and lower trapezius along with rhomboids, and you will observe the tightness of the levator scapulae, pectoralis major and upper trapezius. This condition is assigned cross name because it can draw "X" (a cross) across the upper body, in UCS primarily muscle imbalance occurs,

Corresponding Author:
Dr. Pratik Phansopkar
Assistant Professor, Department of Musculoskeletal Physiotherapy, Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences, Sawangi(M), Wardha, Maharashtra.
Email:- drpratik77@gmail.com ORCID ID- http://orcid.org/0000-0003-3635-8840

which eventually happens in tonic and phasic muscles.[2]

Individuals with upper cross syndrome may exhibit the following features which can be text neck posture, rounded upper back, elevated and prolonged shoulders, winged scapulae, and reduced thoracic spine mobility. The root of symptoms in mechanical neck pain is not well known, but has been hypothesized to be linked to various anatomical structures, especially the cervical spine's zygapophyseal or uncovertebral joint. A major reason of neck pain is awkward working posture, anxiety, fatigue, heavy lifting and physically challenging jobs. [3]

Manual material handling tasks can sometimes lead to the initiation of the musculoskeletal disorders, for example, employees who do their work in an unacceptable role or in an unhealthy posture and perform the same behaviour during their working day.[4] UCS may lead to irregular kyphosis in thoracic spine, as well as changed glenohumeral joint, altered cervical spine biomechanics, can result in loss of cervical curve and may lead to cervical spine degeneration. Changes in musculature function, in people having UCS frequently may cause these individuals to experience chronic headaches.[3] The occurrence of such disorders can be affected by various factors such as unsuitable posture at work and lack of regular exercise. Data suggests that in the shoulder-girdle and cerivco -thoracic area 6-48 percent of the UCS population complain of pain.[4]

Mechanical neck pain usually presents as neck and/or shoulder pain with mechanical features which may include signs triggered due to sustained postures of the neck, neck movement, or cervical muscle palpation. The root cause of mechanical neck pain symptoms is not completely recognized. Uncomfortable job posture, anxiety, exhaustion, heavy weight lifting and physically demanding jobs are typical causes of the neck pain.[5] Mechanical dysfunction, which triggers unusual joint movement, is a common cause of neck pain, because abnormal cervical joint mobility inside the joint capsule can restrict neck motion. What's more, unbalanced soft tissue around

The head and neck structure can set limits on the head's range of motion (ROM) and cause discomfort to the neck. Therefore, once the muscle dysfunction starts, traditional muscle imbalance trends and altered posture follow.[6]

Active Release Technique (ART): The Active Release Technique (ART) is a manual procedure for the soft tissue rehab requiring the removal of scar tissue which can cause or which is causing discomfort, stiffness, muscle fatigue and irregular symptoms such as mechanical muscle dysfunction, myofascia and soft tissue.[6] Furthermore, in patients with a partial tendon tear. ART has been documented to be beneficial for carpal tunnel syndrome, Achilles tendonitis, and tennis elbow, all of which include soft tissue near joints in the distal body parts). ART also has effectiveness in minimizing pain and increasing ROM in patients with a partial tendon tear). Most patients with chronic neck pain experience pain and limitation of movement caused by soft tissue dusfunction.[6] ART helps to reduce discomfort and improve the range of movement. Thacker D. et.al. determined the use of Active Release Technique (ART) and use of prescribed exercises and they demonstrated progress in the anterior head carriage relative to traditional physical therapy with prescribed exercises.[7]

Jun Ho Kim. et.al. determined the effects of the active release technique on discomfort and cervical range of movement in cases with prolonged neck pain and result in post sessions were, the Active Release Technique (ART) showed substantial increase in each parameter of the neck joint and no notable effects were present in the conventional physical therapy management.[6]

Samy S. Abu Naser. et.al. determined a knowledge-based neck pain management method and an description of neck diseases were identified and described, disease causes were sketched and disease care was given at any time possible.[1]

As for now there stands a paucity of studies on the upper cross syndrome. The aim of the study is to treat the patients with the upper cross syndrome through the process of the Active Release Technique (ART) and prescribed traditional or conventional physiotherapy treatment and to compare their effects that can affect cervical flexibility and to improve the symptom parameters. The goal is to enhance flexibility by using the method called Active Release Technique.

Objective

To evaluate the effects of Active Release Technique verses conventional physiotherapy in management of

upper cross syndrome physiotherapy.

Methods

This study will be carried out at Ravi Nair Physiotherapy College (RNPC), Musculoskeletal OPD, Sawangi (Meghe), Wardha, Maharashtra, India after approval from Institutional Ethics Committee of Datta Meghe Institute of Medical Sciences (DU).

Study design: Interventional study

Study setting: 'Ravi Nair Physiotherapy College (RNPC), Musculoskeletal OPD, Sawangi (Meghe), Wardha, Maharashtra, India'.

Participants:

Inclusion criteria - i. mechanical neck pain

ii. Age group between 18-35 years

iii. Based on assessment for neck pain

Exclusion criteria- i. History of trauma or surgery in cervical region.

ii. traumatic pain

iii. cervical pathologies

iv. subjects taking analgesics/ muscle relaxants

v. cervical pain with radiculopathy

vi. Non- cooperative patients

VARIABLES

Outcome measures:

1. Neck Disability Index (NDI) Scale

2. Visual Analog Scale (VAS)

3. Cervical ROM

4. Length of Muscle (Pectoralis Major)

DATA SOURCE MEASUREMENT

1. The NDI Scale validity and reliability is high, the NDI exhibits excellent reliability (ICC = 0.88; [0.63 to 0.95]). [8]

2. The VAS has good validity and reliability score the ICC for all paired VAS scores was 0.97 [95% CI = 0.96 to 0.98]. [9]

3. Reliability score of cervical goniometer ranged from 0.999 to 0.931 for all cervical movements (r= 0.999-0.931).[10]

4. The length of Muscle (Pectoralis Major) will be calculated for the length of the pectoralis major muscle before the start of the treatment session and after the 6th treatment session.

SAMPLE SIZE: 35

Group A: 18 patients will be treated with the process of the active release technique and also by static stretching.

Group B: 17 patients will be treated with the process of conventional physiotherapy which will include specific prescribed exercises.

Sampling technique is purposive sampling method as in this short duration of study finding maximum many cases of upper cross syndrome will be difficult so 35 is selected as sample size.

PROCEDURE

The institutional ethics committee (IEC) clearance will be obtained before the start of the study. A proper consent will be taken from the patients and the patients will be thoroughly explained about the study. The patients who wish to participate in the study will be taken into isolation in order to respect their privacy and will be given the Visual Analogue Scale (VAS) to assess the pain before the start of the treatment and the Neck Disability Index (NDI) will be given to assess the disability present before treatment at the neck[3] and will be categorised into either group by random sampling using envelop method which will be namely Group A and Group B.

The people placed under the group A will be managed according to the active release technique and by the static stretching along with the hydrocollator pack.[3] The patients coming under the group B will be managed with the conventional physical therapy would include the upper trapezoid stretching, levator scapulae and pectoralis major as well as rhomboid musculature strengthening, deep neck flexors, lower trapezius along

with the hydrocollator pack with six to eight layers of towel over the hydrocollator pack.[3] Active Release Technique (ART) : The ART will consist of protocols on both sides for the pectorals, the levator scapulae and the upper trapezius. The treating physiotherapist must examine the subjects for the musculature involved at each scheduled session. During a therapy session, the active release procedure will be administered once to the musculature involved for 8-10 minutes. The physiotherapist would then only perform the procedure to the musculature that was found to be affected during the examination process.[7]

Static Stretching: For levator scapulae stretching, the subjects will be advised to take the seating position holding the seat with one hand to prevent depression of the shoulder, then relaxing and turning the neck to opposite side by keeping another palm behind of the skull and gradually moving below towards the underarm. They will be asked to keep the stretch for 15-20 sec on each side, with 2-3 reps. Repeat stretching 2,3 times per session.

Participants will be supposed to be in the standing position in front of the door frame with elbow bent at 900 for the pectoral muscle stretch and to lean forward without going forward. The stretch is felt around the anterior chest and is kept with around 2-3 reps per session up to 15-20 sec.

Conventional physiotherapy:

Exercises: Exercises which will be used for the treatment of Upper Cross Syndrome (UCS) will be as follows:

Cervical Nod: The patient will be told to lie down on the floor or to stand up against a wall, pretending to touch the back of your neck to the wall or floor behind you. It is not going to strike, but you can feel your chin tuck slightly and the head lift crown. That would almost look like you've got a double chin. Placing a rolled up towel behind the neck may be useful in having something to push into. This motion strengthens the muscles on the front of the neck and lengthens the muscles at the base of the head, thereby helping to establish an ideal balance of length / strength in the cervical spine (back). Perform the repetitions for 10 – 15 times.

Resistance band row: The physiotherapist should make a loop of the resistance band around anything that is about hip-height (usually a door knob is good and preferred). Then, facing the doorknob or anchor point, the patient is told to keep the body tall and the elbows in (not splaying open) while the patient is using both the upper limbs (UL) to pull the resistance band towards him . Depending on the resistance band tension the patient is allowed to change the standing position. The patient will be told to bring together the shoulder blades, and to draw back the elbows. He / she will be told to raise the chest and to hold the heart engaged. He / she will be asked to perform 15-20 repetitions depending on the band's resistance), the release will also be applied with the hot pack.

Expected Results

Once the study result is complete, statistical analysis will be analysed using paired T-test and presented in the form of research paper.

Discussion

To our knowledge, this study will be the first study to evaluate effects of the active release technique in upper crossed syndrome and also to compare the effects of active release technique with the conventional physiotherapy treatment. According to the previous studies the effects of conventional physiotherapy in management for the upper cross syndrome is proven, but to our knowledge, this will be the first study to compare the effects of active release technique with the conventional physiotherapy among UCS patients. More over this study will employ well established and widely used methods with appropriate reliability and validity to assess the pain, neck disability, cervical ROM and the length of muscle. The limitation of the study would be the active release technique may not be effective as conventional physiotherapy treatment in UCS patients to help in alleviating the neck disability and to improve the cervical ROM of the patients. Therefore, this study intends to compare active release technique and conventional physiotherapy treatment in UCS patients.

Conflict of Interest- None

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