



A Long-Term Impact of Oscillatory Mobilization and Mckenzie Retraction Exercises in Cervical Radiculopathy Management: A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. All authors made best contribution for the concept, assessment and evaluation, data acquisition and analysis and interpretation of the data. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Cervical radiculopathy (CR) is the second most common problem in field of physiotherapy. The main aim of this case report is to determine the effect of oscillatory Mobilisation and Mckenzie retraction exercises in cervical radiculopathy. A case study was conducted at Musculoskeletal Department of MGM Physiotherapy Aurangabad. We approached patient treatment from multiple aspects which mainly include oscillatory mobilisation and McKenzie retraction exercises. We evaluated our outcome variables using numeric pain rating scale (NPRS), cervical range of motion and scapular muscle strength. We found that oscillatory mobilization associated to Mckenzie retraction exercises significantly decrease pain and improve cervical mobility and scapular muscle strength.

Keywords: Oscillatory mobilization; Mckenzie retraction exercises; cervical radiculopathy.

1. INTRODUCTION

Cervical radiculopathy (CR) is the second most common health issue seen in Physiotherapy [1]. The annual incidence of cervical radiculopathy is estimated around 83.2 per 100,000 people in general population males are more affected than females and the prevalence is greater in the fifth decade [2].

Cervical radiculopathy results from nerve root inflammation and reduction of intervertebral foramina secondary to disc prolapse. Depending on the level of the affected nerve root, symptom pattern and location may differ. Patients suffering from cervical radiculopathy may present neck pain and associated numbness or upper limb weakness [3]. Risk factors include: white race, cigarette smoking etc [4].

Physical therapy evidenced that neck pain treatment is feasible and is a valid alternative [5]. Other exercises focusing on strength, endurance conditioning, relaxation and stretching exercises showed a major impact on cervical pain in short-term rehabilitation [1]. On the other hand, manual therapy is effective in reducing symptoms and functional disabilities in patients with cervical radiculopathy and has been improving postural and biomechanical performance. The mckenzie procedure, widely used in lumbar radiculopathy may also be used in the management of radicular neck pain [6-7]. Yet to the best of our knowledge, very few studies focused on oscillatory mobilization in association with McKenzie exercises in the management of cervical radiculopathy [8], tempting us to conduct the following study.

2. CASE PRESENTATION

A 28-year-old male was referred to the Musculoskeletal Department of MGM Physiotherapy Aurangabad. His main complaint was pain that presented for 2 months that radiated to the upper arms bilaterally and mostly interested the right fourth and fifth fingers. The pain was of a deteriorating sharp nature and was eventually associated with paraesthesia towards the right arm, the patient refers that symptoms typically intensified over the course of the day and trouble his sleep. Prescription medications and neck extension relieved his pain. The patient reported pain 8/10 on Numeric pain rating scale (NPRS) on the initial day pretreatment.

3. PHYSICAL EXAMINATION

The examination started with a postural evaluation showing a hyper lordosis of cervical joint. There were no signs and symptoms of vertebral artery occlusion in the patient. We measured the cervical range of motion and performed further analysis using a universal goniometer.

The Scapular muscles featured weakness bilaterally. In both limbs; biceps, triceps and deltoid muscles evidenced no strength deficits and shoulders featured a full range of motion. Cervical muscles in pre-treatment MRC muscle power graded 4. Spurling test and distraction test were positive. On neurological examination, sensory proprioception and deep tendon reflexes were physiological bilaterally yet the examination of bilateral upper trapezius, scalene, and levator scapulae revealed spasms and tenderness.



Fig. 1. Cervical side rotation ROM measured using goniometer



Fig. 2. Stretching of upper fiber of trapezius



Fig. 3. Oscillatory Mobilization on cervical spinous process

3.1 Investigation

MRI confirmed cervical pain of secondary nature; disc dehydration and multiple cervical disc protrusions concerned C2-C3, C3-C4, C4-C5 and C5-C6 levels. Four clinical tests formulated clinical prediction rules (CPR) demonstrating accuracy and reliability in cervical radiculopathy diagnosis. The evaluation of CPR includes the following tests: (1) the Spurling Compression Test, (2) the distraction test, (3) the rotation of the cervical spine to the ipsilateral side by less than 60° and (4) the upper limb tension test. The CPR had 99 percent specificity and 94

percent specificity when three items were positive [6].

The patient presented a positive Spurling compression test, a positive distraction test and a cervical rotation to the ipsilateral side less than 60 degrees.

4. DIAGNOSIS

Based on subjective and objective evaluation and investigations report the case was diagnosed as cervical radiculopathy.

4.1 Interventions

We followed the patient for six weeks. And the aim was to relieve our patient's pain, reduce numbness and improve strength, flexibility and posture in order to restore function without limitation

1st week:

During first week of treatment, we educate the patient on postural alignment correction during sitting, standing and getting up from lying position. Whenever necessary, the patient was supported with verbal feedback as well as informed the patients regarding his prognosis and emphasized the importance of physical therapy.

We applied interferential quadripolar current (IFT) on the upper back and performed intermittent cervical traction for 15 minutes.

The patient did isometric exercises twice a day for 10 repetitions focusing on neck flexion, extension, bilateral side flexion, right and left side rotation with application of 15 minutes of hot packs.

2nd week - 4th week:

From the second week, Manual therapy interventions and strengthening exercises including cervical isometrics, stretching, oscillatory mobilisation and McKenzie retraction exercises is performed with IFT current and hot packs.

The patient's position was cervical spine neutrally aligned, while the therapist applies resistance in all four directions, enhancing the deep cervical flexor and scapulothoracic musculature the patient was able to perform 5 repetitions of 10 second holds.

Exercises targeted scapular muscle strengthening Stretching was performed for 3 repetitions with 30 sec hold the upper fiber of the trapezius muscle and levator scapulae. Manual therapy in the form of Oscillatory mobilisation was performed on cervical spinal processes while the patient was prone and central posterior to anterior glide was given on spinal processes for 10 repetitions 3 sets.

With the head out of the couch, Mckenzie retraction exercises were performed and patient is instructed to relax his head on therapist hand

and perform chin tucks holding the position for 10 seconds. And the therapist does patients cervical extension 10 times repeatedly.

The same treatment followed till fourth week.

5th week:

The patient reported 0/10 on NPRS and no tingling or numbness, strength and stability increased. Range of motion reached 80 degrees. The patient reported no exacerbation of the symptoms. He was provided with ergonomic advices and the dos and don'ts were explained.

4.2 Outcome

We evidenced significant improvement in symptoms correlated to the patient's cervical radiculopathy.

5. DISCUSSION

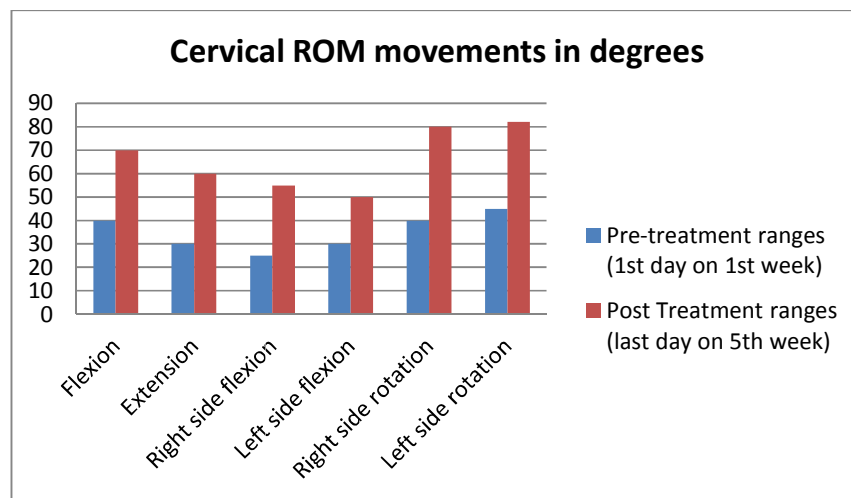
This case report illustrates the physical management of a patient with cervical radiculopathy. ROM, strength and functionality were compromised. The patient exhibited significant symptomatic improvement with physical therapy literature demonstrates that patients with cervical radiculopathy can benefit from a multi-treatment approach including intermittent cervical traction, interferential therapy and therapeutic exercises [2]. Rathore S Recommended employing McKenzie exercises in neck pain treatment [6]. Cleland et al described that in comparison to those who received a single intervention; patients who received a multi-treatment approach had a more positive outcome [1].

In this case, the patient received an intervention program involving manual therapy techniques and therapeutic exercises that targeted the flexors of the deep neck and scapular stabilizers. Hassan F et al described that oscillatory and continuous stretch mobilization strategies were found to be beneficial for pain, range of motion, functional impairment, in the management of cervical radiculopathy. However, in terms of practical ability and range of motion, oscillatory mobilization was found to be superior [2].

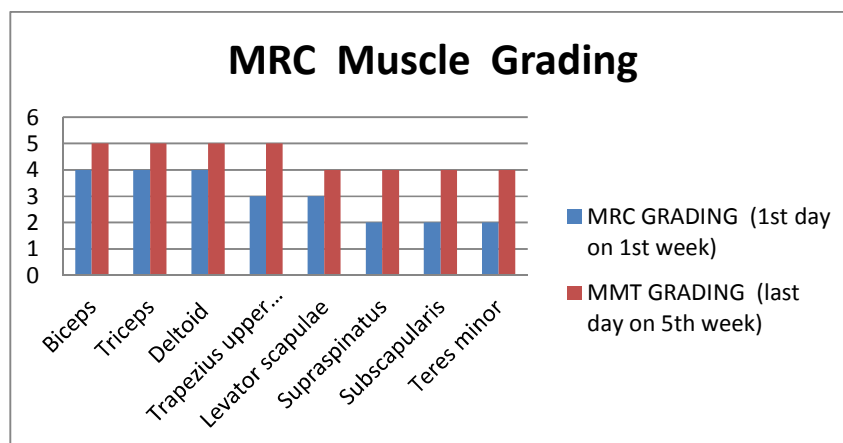
In the current case report we implemented the basic neck exercises along with Manual therapy and McKenzie approach .This offered the patient a gain of functionality and a positive overall outcome improving his quality of life.



Fig. 4. Mckenzie retraction neck exercise



Graph 1.1. Cervical ROM in degrees pre-treatment measurement (1st day on 1st week) and post treatment (last day on 5th week)



Graph 1.2. MRC Muscle power grading Pre-treatment measurement (1st day on 1st week) and post treatment (last day on 5th week)

6. CONCLUSION

Oscillatory mobilization along with McKenzie retraction exercises for the cervical radiculopathy is beneficial in reducing pain, improving cervical range and its function.

PATIENT PERSPECTIVE

The patient shared his perspective that compared to the day one he found his Neck pain to be reduced significantly and didn't felt tingling or numbness by the fifth week his quality of life was improved.

CONSENT

As per international standard or university standard, patients' written and informed consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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