

Effectiveness of Rhomboid and Accessory Muscle Strengthening in Cervical Radiculopathy: A Case Study

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Abstract

Cervical radiculopathy is a neurological condition resulting from compression or irritation of cervical nerve roots, commonly caused by intervertebral disc herniation, degenerative spondylotic changes, or osteophyte formation. It presents with symptoms such as neck pain radiating to the upper limb, sensory disturbances, and motor weakness. The condition is more prevalent in individuals above the age of 50 and is often associated with poor posture and sedentary lifestyle habits.

Although various conservative and surgical treatment options are available, there is no universally accepted standard protocol for its management. This case study aims to evaluate the effectiveness of rhomboid and accessory muscle strengthening exercises combined with physiotherapy interventions in improving symptoms and functional outcomes in a patient with chronic cervical radiculopathy.

Introduction

Cervical radiculopathy is characterized by compression of one or more cervical nerve roots, leading to pain, paresthesia, and weakness in the neck and upper extremity. The condition often develops gradually due to degenerative changes in the cervical spine, including disc degeneration and spondylosis.

Modern lifestyle factors such as prolonged sitting, excessive use of smartphones, lack of physical activity, and poor ergonomic habits contribute significantly to altered spinal biomechanics. These changes lead to muscle imbalance, reduced stability, and increased stress on cervical structures.

Weakness of stabilizing muscles such as the rhomboids and deep cervical muscles, along with tightness in accessory muscles like the upper trapezius and levator scapulae, further aggravates the condition.

The most commonly affected nerve roots are C6 and C7, and studies suggest that:

Disc pathology alone accounts for approximately 22% of cases. Combined disc and spondylotic changes contribute to nearly 68% of cases.

Objective

To evaluate the effectiveness of rhomboid and accessory muscle strengthening exercises, along with physiotherapy management, in reducing pain, improving muscle strength, correcting posture, and enhancing functional ability in cervical radiculopathy.

3. Case Description and Assessment

Patient Information

Age: 62 years

Gender: Male

Occupation: Farmer

Chief Complaints

Neck pain radiating to upper limb
Tingling and numbness in arm and fingers
Weakness in upper limb
Difficulty in neck movements
Shoulder stiffness

History of Present Illness

The patient reported a gradual onset of symptoms over the past 2 years. The pain was described as radiating from the cervical region to the shoulder, arm, and fingers. Symptoms were aggravated by:

Neck movements

Prolonged sitting

Lifting activities

Relief was obtained with:

Rest

External support

Medication

No history of trauma was reported.

Past History

Cervical spondylosis

Diabetes mellitus (5 years duration)

Observation

Forward head posture

Excessive neck flexion

Shoulder asymmetry

Habitual mobile phone use (prolonged)

No visible deformity but guarded posture

Palpation

Tenderness over cervical spine

Muscle tightness in:

Upper trapezius

Levator scapulae

Presence of trigger points

Range of Motion (ROM)

Flexion: Painful and restricted

Extension: Painful

Lateral flexion: Pain on affected side

Rotation: Limited and uncomfortable

Reflexes

Biceps reflex (C5–C6): Slightly diminished

Triceps reflex (C7): Normal

Brachioradialis reflex (C6): Reduced

Special Tests

Spurling's Test: Positive (radiating pain)

Distraction Test: Symptom relief

Valsalva Maneuver: Pain increase

Shoulder Abduction Test: Symptom relief

Functional Assessment

Difficulty in daily activities (lifting, farming tasks)

Reduced grip strength

Reduced work efficiency

Functional limitation in upper limb use

Physiotherapy Diagnosis

Cervical radiculopathy associated with nerve root compression leading to:

Radiating pain

Sensory disturbance

Muscle weakness

Postural dysfunction

Problem List**Pain**

Reduced cervical ROM

Muscle weakness (rhomboids, stabilizers)

Tight accessory muscles

Poor posture

Functional limitations

Intervention (Treatment Protocol)

The patient was treated with a comprehensive physiotherapy program focusing on muscle balance and postural correction.

Exercise Therapy**Strengthening Exercises**

Rhomboid strengthening (scapular retraction exercises)

Deep cervical flexor activation

Scapular stabilizer strengthening

Accessory Muscle Management

Stretching of:

Upper trapezius
Levator scapulae

Postural Correction

Education on proper neck alignment
Ergonomic advice for daily activities
Reduction of excessive phone use

Range of Motion Exercises

Gentle cervical ROM exercises
Progression to active movements

Functional Training

Task-specific training for daily activities
Gradual return to occupational tasks

Outcome / Results

After consistent physiotherapy intervention:
Reduction in pain intensity
Improvement in cervical ROM
Increased muscle strength
Decrease in muscle tightness
Improved posture
Better functional ability in daily and occupational tasks
The patient reported:
Reduced discomfort during activities
Improved ability to perform farming tasks
Enhanced quality of life

6. Discussion

Cervical radiculopathy is strongly associated with muscle imbalance and poor posture, especially in individuals with sedentary habits or repetitive strain activities.

In this case:

Weakness of rhomboid muscles contributed to poor scapular stability

Tightness in accessory muscles increased cervical load

Forward head posture worsened nerve root compression

Strengthening of rhomboids improved scapular positioning, while stretching of accessory muscles reduced abnormal tension. This combination helped restore biomechanical balance and reduce symptoms.

The results support the importance of targeted strengthening and postural correction in managing cervical radiculopathy conservatively.

Limitations

Single patient case study

No long-term follow-up
Subjective variation in pain reporting
Influence of comorbid conditions (diabetes)

Conclusion

The study concludes that:

Strengthening of rhomboid and accessory muscles is effective in cervical radiculopathy

It helps in:

Reducing pain

Improving posture

Enhancing functional ability

A structured physiotherapy program focusing on muscle balance, posture correction, and functional rehabilitation plays a crucial role in conservative management of cervical radiculopathy.

References

1. Cervical Radiculopathy – Clinical Review Articles
2. National Library of Medicine – Cervical Spine Disorders
3. Physiotherapy Management of Cervical Radiculopathy Studies
4. Evidence-Based Rehabilitation for Neck Pain