



PHYSIOTHERAPY MANAGEMENT FOR CERVICAL RADICULOPATHY : A CASE STUDY

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Abstract

Introduction: Cervical radiculopathy (CR) is a disorder of the peripheral nervous system where the resulting cervical nerve root (CNR) pathology produces chronic pain and disability.¹¹ which is manifested by neurological impairments caused by tightness of neck muscles due to poor postural alignment.¹³ Cervical radiculopathy(CR) patients demonstrate sensori motor problems radiating along the distribution of a nerve root in the upper limb, multimodal therapeutic program had significant improvement in CR.^{7,14,21}

Case Presentation: A 45-year-old female administration worker presented as direct access to physical therapy with symptoms suggestive of cervical radiculopathy. Her examination revealed strength, tingling sensation, and restriction of rotate her neck to the left side. Following two weeks of conservative treatment, consisting of multimodal intervention, exercise therapy, home program and education.

Management and Outcome: A multimodal physical therapy was shown to be effective in reducing pain, functional disability and increasing cervical range of motion in old people with degenerative cervical radiculopathy.^{22,23}

Discussion: In most patients with cervical radiculopathy, nonoperative treatment is effective. In a one-year cohort study of 26 patients diagnosed with herniated nucleus pulposus and symptomatic radiculopathy, a focused, non-operative treatment program was successful in 92% of patients. Little high- quality evidence supports the use of an individual nonoperative treatment; however, a multimodal approach may lighten symptoms.^{23,20,}

Conclusion: Physiotherapy management in the group setting use the two weeks of multimodal intervention and exercise program. The specific technique of multimodal intervention and exercise were used to treat the cervical radiculopathy.^{23,24,25}

Keyword: cervical radiculopathy, CR management, physiotherapy, multimodal intervention



Introduction

Cervical radiculopathy (CR) is a neurologic common condition that results from dysfunction of the cervical spine nerve roots exiting the spinal cord.^{1,2,16} This is often caused by a cervical disc herniation, spondylotic spur, cervical osteophyte or other space-occupying lesion, resulting in nerve root inflammation, impingement or both which may lead to chronic pain and disability.^{3,21} It is characterized by upper extremity (UE) pain and is often accompanied by a combination of sensory loss, motor loss, or impaired reflexes in the segmental distribution of the affected cervical nerve root.^{4,6,7}

Signs and symptoms of CR can be attributed to mechanical compression, chemical irritation due to inflammatory cytokine activity, or neuropraxia of the nerve roots.^{1,7} This is commonly caused by intervertebral disc (IVD) herniation and narrowing of the intervertebral foramen, or spondylosis, due to degenerative changes of the cervical spine.^{4,24} More serious conditions that may cause CR include trauma, infection, and tumor.⁴ Risk factors for developing CR include older age, caucasian, cigarette smoking, and history of lumbar radiculopathy.^{6,22}

No prognostic factors have been studied regarding CR, but 75% spontaneous improvement has been estimated.⁶ In the working population seems to be quite persistent and takes a recurrent course; 60% to 80% of workers with neck pain will report neck pain 1 year later.⁶ In the population with trauma-related neck pain, an improvement in pain and disability mainly occurs within the first 3 months following the accident.⁵ The average annual incidence rate of cervical radiculopathy is 83 per 100,000 with an increased prevalence occurring in the 5th decade of life (203 per 100,000).⁵ Some reports show that it is predominant in men and others shown predominance in women.¹ The estimated annual incidence of CR in the United States (US) per 100,000 persons is estimated to be 83.2 for the total population, 107.3 for men and 63.5 for women. The age group with the highest incidence rate is 50 to 54 years of age.^{5,23} Of individuals with CR, 21.9% can be attributed to cervical disc herniation and 68.4% can be attributed to a combination of discogenic and spondylotic causes.^{5,25}

Research has shown that the following tests are the most valid physical examination: the Upper Limb Tension Test for the nervus medianus, the Spurling test (a combination of side bending and extension of the cervical spine), and the traction/distraction test.⁵ A negative Upper Limb Tension Test result is considered to be valid as a highly sensitive test (sensitivity range = 0.72–0.97; specificity range = 0.11–0.33) for ruling out cervical radiculopathy. The Spurling test (sensitivity range = 0.90–1.00; specificity range = 0.94–1.00) and the traction/distraction test (sensitivity = 0.44; specificity range = 0.90–0.97) are considered to be valid as specific tests for ruling in cervical

radiculopathy.^{5,24} Common forms of physical examination are inspection at rest, inspection during movement, and assessment of physical functions such as joint function, muscle control, and movement patterns.¹⁹ In an evaluation of the validity of physical examination or provocation tests, the reliability of the procedure is also an issue.²⁰ Studies evaluating the reliability of physical examination of the neck often find low to moderate reliability ($\kappa = 42\%–82\%$).⁵

Conservative treatment demonstrates positive outcomes in the management of cervical radiculopathy including temporary immobilization, cervical traction, joint mobilization, soft tissue massage, modalities and neck exercises.²⁵ Little high quality evidence supports the use of an isolated treatment technique in the management of cervical radiculopathy, instead a multimodal approach may be more effective.⁷

Case Presentation

This 45-year-old female administration worker presented for the treatment of the neck problem movement and Her primary aggravating factor was prolonged sitting for computer-related work. The radiating tingling sensation and there is pain from the left side of the back cervical region. the tingling sensation from the neck region to the left side of the fingers. When she's extended her neck up to 35° degree, the primary pain on the left backside of the neck region and make the worst movement for the cervical region. She can't rotate her neck, especially to the left side with full ranges of motion. The patient describes the pain as having an intensity of up to 6 out of ten. Accompanied by the feeling of tension and heaviness in the back of the neck. the pain was particularly bad with the tingling sensation to the left fingers when the patient Extention her neck too much up to the sky or chin-up motion, and the pain is more intent when she rotates her neck to the left side. Aspirin provides some relief, seems like a little bit of pain or stress when she rests from the work.

Sometimes when she rides the motorcycle it can be a more tingling sensation and some pain in her neck. There is no family history of pain in the neck and radiating tingling sensation. Examination revealed an otherwise fit-looking middle-aged woman. Cervical active ranges of motion were full and painless except for some restriction rotation of the head to the left and for Extention because of the tingling sensation. These motions were accompanied by discomfort in the left side of the neck. cervical compression and decompression of the neck in the neutral position did not create discomfort. however, the Spurling test produced some tingling sensation left side from the back neck to the left fingers. Valsava maneuver were positive. With the patient in the prone lying position, static palpation revealed tender trigger points bilaterally in the cervical musculature and left trapezius. Motion palpation revealed restrictions of the left rotation in the upper cervical spine. Blood pressure 120/80 mmHg.

Management and Outcome

The patient received a multimodal intervention, heat therapy (IR) and transcutaneous electrical nerve stimulation (TENS) in combination for 15 minutes prior to neurodynamic mobilization, three times per week for a week. In the second week, the patient received UltraSound (US), Muscle Release, Neurodynamic mobilization and will continue with the exercise therapy. Stretching exercises for muscles prone to get short including pectoralis, upper trapezius, scalene, sternocleidomastoid, and levator scapulae. Strengthening exercises for muscles weakness including the middle and lower trapezius, rhomboids and deep neck flexor and the last session patient received some home program exercises for the optimal treatment, Cervical ROM Exercises, Shoulder ROM Exercises and ULTT. Education for the patient, good posture, home program exercises, hot pack for the muscle thigness and cervical collar recommendation. The patient achieved improvements cervical ranges of motion neck trotation to he left side, reduce right upper extremity paresthesia, tolerance of functional activities, level of disability, and participation in family, recreational, and work activities. The patient was discharged to continue living at home with a home exercise program.

Discussion

Cervical radiculopathy often causes neck and arm pain as a result of disc herniation or cervical spondylosis.^{16,17} Through medical history taking and physical examination, along with radiographic and electrodiagnostic studies can help identify pathologies and exclude other causes of upper limb dysfunction.¹⁸ Cervical radiculopathy is initially treated conservatively.²² The patient was examined at the initial encounter with a complete subjective and objective examination, including pain intensity, neurological screening, grip strength, cervical range of motion, cervical radiculopathy testing, and administration of a Neck Disability Index.²³ A plan of care was established to address pain, paresthesia, decreased cervical range of motion, disability, and restricted participation in family, work, and recreational activities.¹⁹

Main goals for the patient were to eliminate pain and paresthesia in the right upper extremity so that he could improve ability to perform activities such as reaching overhead, looking down, and sleeping to enable the patient to resume participation in the care of his son and home responsibilities, and improve his ability to exercise and work from his computer.⁸ Main interventions used were manual therapy, therapeutic exercise, and patient education for the reduction of pain and radicular symptoms and improvement in tolerance of functional activities.¹⁰ When the patient suffers from intractable pain or progressive neurology, operative treatment can be considered.¹² There is no clearly established consensus regarding indications for CRS treatments.⁹

A common approach recommends surgical treatment when there are several neurological deficits, when there is a strong correlation between imaging and clinical signs and symptoms or when there is a failure or relapse of symptoms after six weeks of conservative treatment.¹⁴ Among the several systematic reviews investigating the effectiveness of conservative approaches and physiotherapy in the treatment of CRS, most have reported qualitative synthesis.¹⁵

Conclusion

At 2-week follow-up, Multimodal Intervention, for the first week of treatment using Infra Red, TENS, Neurodynamic Mobilization, Exercise therapy and the second week of the treatment using UltraSound, Muscle Release, Neurodynamic Mobilization, Exercise Therapy resulted in improved outcomes in pain, range of motion, functional and disability in patients with CR.

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