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Review Article

Multimodal Management for Cervical Radiculopathy: A Review

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Abstract

Cervical radiculopathy is a disorder that occurs relatively frequently, which involves dysfunction of the nerve roots or spinal nerve as a result of them becoming inflamed or mechanically compressed. Minimal epidemiologic data is available regarding cervical radiculopathy [1]. The epidemiological study with the highest number of citations was conducted in Rochester, MN from 1976 to 1990, the findings of which indicated that cervical radiculopathy had annual incidence rates of 107.3 and 63.5 per 100,000 for males and females, respectively [2]. A study that was more recently conducted involving members of the United States military reported an incidence of 1.79 per 1000 person-years [3]. According to study findings, cervical radiculopathy has the highest incidence when individuals are in their 40s and 50s [4].

Keywords: Cervical Radiculopathy, Exercise, Manual Therapy

Introduction

In terms of aetiology, the underlying mechanism by which cervical radiculopathy occurs generally involves the cervical nerve roots being mechanically compressed or chemically irritated [5]. The factor that probably plays the most important role is foraminal stenosis as a result of osteoarthritic alterations in cervical spine joints instead of herniated discs [6]. The foraminal height is decreased by degeneration of the discs, causing osteophytes to be formed. Additional factors that contribute to the process by which intervertebral foramen are reduced include tumours, infections, and trauma [5].

Cervical radiculopathy symptoms could take the form of pain in the neck and upper limbs in addition to neurological indicators such as diminished reflex, sensory disturbance, and weakness of the muscles [7]. As previously mentioned, the clinical manifestations of cervical radiculopathy may vary, including diminished reflexes, objective weakness, and pain. In order to diagnose radiculopathy, it is firstly important that a history is accurately obtained. Those conducting such examinations should concentrate on where the pain is located, what patterns it exhibits, paraesthesia, as well as both motor and sensory deficits. In the majority of instances, it is possible to diagnose cervical radiculopathy purely according to the patient history [8]. Additionally, the process of diagnosing cervical radiculopathy can be aided through provocative tests such as the upper limb tension test (ULTT), neck distraction, Valsalva manoeuvre, shoulder abduction test, and the Spurling test (ULTT) [9].

Cervical radiculopathy can be treated using a variety of different approaches ranging from surgery to conservative management. Although the effectiveness of using surgery to treat cervical radiculopathy has been demonstrated, research has indicated that conservative treatment can produce similar positive outcomes and that this is frequently the recommended method as it allows the risks posed by surgery to be avoided [10,11]. Methods used in conservative treatment, specifically physical therapy, are generally preferred to initially treat cervical radiculopathy patients. Examples of physical therapy treatments such as therapeutic exercises [12], traction [13], as well as treatments in which the cervical spine is mobilised and manipulated have been shown to effectively relieve pain, enhance neck movement and improve function [14,15]. This review aims to briefly present specific evidence regarding the usage of multimodal management to treat cervical radiculopathy patients with exercise and manual therapy.

Multimodal exercise and manual therapy

Exercise

Examples of physical exercise can range from general aquatic or land-based exercises to those focused on neck muscle endurance, stretches, strength training, or McKenzie exercises. According to the findings of the recently conducted Cochrane review regarding

the use of exercises for mechanical neck disorders, a broad range of exercises had been assessed, including breathing, endurance, and strength exercises [16].

The assumption has been made by a number of researchers that when motor control in the deep cervical muscles is changed, this may be the cause of neck pain or the reason why it persists. A systematic review was recently conducted with the aim of investigating the aforementioned hypothesis, which assessed the effectiveness of using motor control exercises (e.g. cranio-cervical flexion exercises) compared with no interventions for individuals experiencing chronic neck pain [17].

Manual therapy

'Manual therapy' is frequently employed by physiotherapists with the aim of improving spinal joint motion and restoring range of motion. Numerous different approaches are used in manual therapy such as manipulations and mobilisations. According to a Cochrane review, as well as a different systematic review, the benefits of cervical mobilisations and manipulations for individuals suffering from non-specific neck pain were the same (moderate level evidence) [18].

The use of manipulations and mobilisations as a single therapeutic intervention is not common. They are more frequently applied in conjunction with guidance and/or exercise, where the effectiveness of treatments in which exercise and manipulations are combined (moderate level evidence) appears to be superior to exercise in isolation for immediate pain. However, this does not apply to all other outcomes for individuals experiencing neck pain [19]. For individuals whose chronic neck pain is radiating, the use of cervical manipulation was beneficial for the pain in the immediate term in comparison with mechanical traction [20].

Conclusion

In clinical practice, neck pain with radicular symptoms is frequently observed, comprising one of the four leading musculoskeletal disorders in terms of societal burden. The approach taken by clinicians could involve a multimodal intervention comprising manual mobilisation techniques coupled with exercise (e.g. functional aerobic, coordination, flexibility, endurance exercises) for cervical radiculopathy patients. In interventions involving manual therapy combined with exercises applied to patients suffering from radicular pain, symptom irritability should be monitored by clinicians such that they can make adjustments to the treatment where necessary. However, robust evidence is not used as the basis for the majority of interventions and management approaches and small effect sizes are achieved. Clinicians should be cognisant of this, ensuring that they remain up to date with the newly reported findings from the wide-ranging research focused on cervical radiculopathy management.

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