

Effect of Cervical Traction verses Strengthening Exercises in patients of Cervical Radiculopathy

SANA TAHIR¹, ARIF ALI RANA², NOMAN GHAFFAR³, SAJJAD ALI SAJJAD⁴, QASIM IDREES⁵, ALI RAZA⁶

¹Physiotherapist, Central Park Medical College, Lahore

²Associate Professor/HOD Physiotherapy, Central Park Medical College,

³Lecturer/ Physiotherapist, Central Park Medical College, Lahore

⁴Assistant Professor/HOD, ABWA College of Physiotherapy, Jaranwala Faisalabad

⁵Assistant Professor /Physiotherapist, Central Park Medical College, Lahore

⁶Consultant Physiotherapist, Central Park Medical College, Lahore

Correspondence to Dr. Arif Ali Rana, Email: Arifalirana@gmail.com, Cell No. +923334557818

ABSTRACT

Background: Cervical radiculopathy is one of the regularly happened conditions caused by the pressure of nerve roots and manual exercise based recuperation has the key part in its administration. Both the strengthening activities and traction has its adequacy, and the present investigation was intended to evaluate their belongings.

Aim: To determine the effects of traction on cervical region verses effects of strengthening exercises in patients diagnosed with cervical radiculopathy.

Methods: A total of 20 patients (10 males and 10 females) were arbitrarily chosen and retained into two groups A and B. The inclusion standard was patients who were with diagnosed cervical radiculopathy on physical examination with age ranged 25-50 years. The Group A was treated with cervical traction, while group B was treated with strengthening exercises for 3 weeks. The NDI (Neck Disability Index) and Visual Analogue Scale (VAS) were used to amount and measure the disability and searing pain. To analyze the data SPSS version 21 was used and paired t- test was applied at 95% level of implication to determine the statistical results.

Results: Patients in group A showed marked improvement as compare to group B. P-value (0.000) less than 0.05 is considered significant.

Conclusion: It is concluded that manual traction is far more operative and effective than strengthening exercises for the management of disability and radicular pain in patients diagnosed with cervical radiculopathy.

Keywords: Cervical radiculopathy, Manual Traction, Strengthening exercises

INTRODUCTION

Cervical radiculopathy is a medical condition which occurs due to inflammation or compression of cervical nerve root in the area of the neural foramen, frequently it is caused due to herniation of cervical disc and cervical spondylosis^{1,2}. Most common signs and symptoms of cervical radiculopathy are pain in upper-extremity, abnormal sensations as numbness or paresthesia, weakness or a combination of these^{3,4}.

However there are many causes of radiculopathy but they all result in compression or irritation of affected nerve root⁵. Hypothesis is made that the combination of specific manual therapy techniques along with exercise will have a positive effect in reducing the pain and disability associated with CR, but at this time there is little verification to support this theory⁶.

There may be two options to manage cervical radiculopathy i.e. surgical and conventional treatment. Both have objectives to alleviate pain and reduce symptoms of cervical radiculopathy⁵. Up till now, No study has proved that alone surgical intervention is effective for CR⁷.

The most common complications of cervical radiculopathy are vertigo, brachial plexus compression, headache and other motor and sensory syndromes⁸. People who have a combination of neck pain along with upper extremity pain, they experience more discomfort than the people who have only neck pain⁷. Conservative approach to manage CR accompany the use of manual therapy, mechanical or manual cervical traction, strengthening the deep neck flexors, use of cervical collars, and postural correction^{9,10}. Cervical spine (C6) and cervical spine (C7) are those nerve roots that are most often involved in degenerative disc disease. Certain activities that reduce the size of vertebral foramen, make the symptoms worse¹¹.

Frequently the Cervical Radiculopathy is diagnosed with thorough physical examination and detailed history, but to confirm the diagnosis, an MRI and CT should be used¹². Immobilization, anti-inflammatory medications, manual therapy, and cervical

traction are the mainstream of conservative management to treat CR. Typically the cervical radiculopathy, in 75%-90% patients who are receiving non operative treatment, is self-limiting¹³.

We established proof that combination of yoga, strengthening, flexibility, and ROM are successful in managing the symptoms of chronic neck pain¹⁵. However it was not found that one exercise intervention is superior to other¹⁶. The aim of this study was to find out the effects of cervical traction and strengthening exercises on cervical radiculopathy to maintain the working capacity of affected population. For this purpose we have used Neck Disability Index (NDI) and Visual analogue scale to measure the effects of both interventions. NDI is designed to measure the limitations of movement and its impact in daily life¹⁷. While Visual Analogue Scale is designed to measure characteristics or attitude and pain intensity in terms of continuum of values, has been widely used in diverse adult populations^{18,19,20}.

MATERIALS AND METHODS

It was a Randomized Clinical Trial which was conducted in Physiotherapy Department of Mayo Hospital, Lahore. All participants with cervical radiculopathy pain were included according to the criteria after IRB permission:

Twenty four patients were incorporated into this study and were divided into two groups. Four patients, however dropped out so twenty patients were considered in this study. Their selection was made on the basis of examination test performed such as spurling test and neck distraction test. The patients in group A were treated with manual cervical traction which was applied in supine position for 10 seconds with 5 seconds rest period and applied for 5-7 times a day. The patients in group B were treated with strengthening exercises which included deep neck flexors and scapula-thoracic muscles strengthening. For deep neck flexor strengthening exercises, the patient was positioned in supine lying, the cervical spine was placed in neutral position, the patient was instructed to nod his head in order to flatten the curve of the neck. This position was maintained to ten seconds and this was repeated five to seven times. For the strengthening of serratus anterior and

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both middle and lower trapezius scapula-thoracic exercises were included.

Patients who received cervical traction and strengthening exercises were interviewed for pain, range of motion and functional disability and were followed two days for three weeks. Results were compiled and gave our recommendations for further work in this field.

Procedure was done by the researcher and data was collected by the assessor by means of a pre-designed Performa. Heightening and improvement concerning the results of the treatment were measured by using goniometer, NDI (neck disability index) and visual analogue scale.

Data analysis: The Statistical test used was paired t- test for equaling and comparing the pre-intervention and post-intervention scores of each variable for all the 2 groups individually. Analysis of variance was done at the baseline and at the end of intervention to evaluate the baseline and post intervention between group differences. Independent paired t-test was used to compare the post intervention between both groups. Statistical significance was set at $P < 0.05$. $P \text{ value} > 0.05$ was deliberated as non-significant difference. Value of confidence interval was set at 95%. Statistical analysis was done by SPSS 21 version.

RESULTS

A total of 24 patients participated in this study, 4 patients however dropped out from study because they did not take treatments allocated to them regularly and according to advice of investigators. Among the subjects there were 10 males and 10 females in group A and 10 females and 10 males in group B. Mean age of group A patients were 43.40 ± 6.995 and mean age of group B patients was 38.70 ± 9.274 .

There was noteworthy modification regarding the baseline characteristics of patients between two groups. In group A there was marked improvement in condition of patients in response to treatment ($p < 0.005$). The ROM of cervical spine was significantly improved ($p < 0.005$) in flexion, extension, side flexion (right & left) and rotation. So cervical traction was found to be significant effective in reducing sign and symptoms of cervical radiculopathy. In group B there was also improvement in condition of patients in response to treatment ($p < 0.005$). The ROM of cervical spine was improved ($p < 0.005$) in flexion, extension, side flexion (right & left) and rotation. There was increased range of motion in both groups but there was significant more improvement in group A than group B.

Paired Samples Statistics

Pair 1	Mean	N	Standard Deviation	Standard Error Mean
pre visual analogue scale group A	5.20	10	1.398	.442
post visual analogue scale group A	2.50	10	1.269	.401

Paired Samples Statistics

Pair 1	Mean	N	Standard Deviation	Standard Error Mean
pre visual analogue scale group B	6.00	10	1.054	.333
post visual analogue scale group B	4.40	10	1.430	.452

Paired Samples Statistics

Pair 1	Mean	N	Standard Deviation	Standard Error Mean
pre neck disability index group A	43.60	10	12.633	3.995
post neck disability index group A	14.10	10	6.967	2.203

Paired Samples Statistics

Pair 1	Mean	N	Standard Deviation	Standard Error Mean
pre neck disability index group B	43.10	10	13.868	4.385
post neck disability index group B	26.60	10	13.277	4.198

Group Statistics

post visual analogue scale	Study Group	N	Mean	Standard Deviation	Standard Error Mean
	A	10	2.50	1.269	.401
	B	10	4.40	1.430	.452

Group Statistics

post neck disability index	Study Group	N	Mean	Standard Deviation	Standard Error Mean
	A	10	14.10	6.967	2.203
	B	10	26.60	13.277	4.198

DISCUSSION

The aim of this study is to observe the comparison between effectiveness of cervical traction and strengthening exercises in cervical radiculopathy. At the end of treatment program both the groups equally showed enhancement in range of motion and pain , and NDI score. Statistical analysis showed that there was huge distinctions between the gatherings and proved that cervical traction was more effective than strengthening exercises.

It is estimated that the utilization of particular manual treatment procedures joined with exercise will positively affect CR as estimated by decreased levels of agony, handicap, and enhanced scope of movement (ROM), yet there is insignificant confirmation to help this hypothesis. In this manner, the reason for this case arrangement is to watch the fleeting impacts of particular manual treatment strategies and exercise coordinated to the thoracic and cervical spine in patients with CR. [4] there is few research which proves the adequacy of traditionalist treatment in management of cervical radiculopathy. A latest literature review found that there is little documentation in the use of exercise therapy, cervical collar, mobilization and manipulation, or analgesics in patients with degenerative Radiculopathy of Cervical Region⁴.

Exercise training has a fruitful effect among the methods which are used in cervical radiculopathy to reduce pain and other symptoms. Although, no systematic review has summarized the efficacy of the exercise training on cervical radiculopathy, either as a post-op treatment option or as an alternative to surgery⁷.

In 2005, eleven back to back patients, average age: 51.7 years and Standard Deviation: 8.2) who gave cervical radiculopathy on the underlying examination was treated with an institutionalized approach, including manual non-intrusive treatment, cervical traction, and strengthening activities of the profound neck flexors and scapula-thoracic muscles. Ten of the 11 patients (91%) showed a clinically important change in agony and capacity following a mean of 7.1 (SD, 1.5) non-intrusive treatment visits and at the half year development. Ninety-one percent (10 of 11) of patients with cervical radiculopathy for this situation arrangement enhanced, as characterized by the patients grouping their level of change as in any event "significantly better" on the GROG. In any case, in light of the fact that a circumstances and end results relationship can't be deduced from a case arrangement, follow-up randomized clinical trials ought to be accomplished to additionally examine the adequacy of manual treatment, cervical traction, and reinforcing practices in a consistent gathering of patients diagnosed with cervical radiculopathy¹⁴. As the flaw of previous study was that it was not randomized control trial so my study used randomized control trial which has proved that cervical traction and strengthening exercises are effective in treating radiculopathy of cervical region.

CONCLUSION

This study revealed that both treatments, cervical traction given manually and strengthening exercises were operational and effective in tumbling pain, disability, and increasing range of motion, however the analysis showed that manual cervical traction was more effective than strengthening exercises in cervical radiculopathy patients.

Conflict of interest: Nil

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