

# The Efficacy of Manual Nerve Mobilization Combined with Traction Therapy in the Treatment of Nerve Root Cervical Spondylosis

Lei Zhou\*, Kaixing Du, Jing Chen, Jieran Li

Meishan People's Hospital, Meishan, Sichuan 620010, China

\*Corresponding author: Lei Zhou, 18783383705@163.com

**Copyright:** © 2024 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

**Abstract:** *Objective:* This study aimed to evaluate the therapeutic effect of the manual nerve mobilization technique combined with traction therapy on nerve root cervical spondylosis and to investigate its effect on symptomatic improvement and functional recovery of patients. *Methods:* 101 patients diagnosed with nerve root cervical spondylosis were selected and randomly divided into two groups. The control group received conventional medication and physical therapy, while the observation group was treated with manual nerve mobilization combined with traction therapy. The manual nerve mobilization technique uses a delicate and gentle technique to reduce pain and inflammation by loosening the soft tissues around the compressed nerve roots. Traction therapy was used to relieve pressure on the cervical discs pull on the nerve roots, and restore the normal physiologic curvature of the cervical spine. All patients were assessed for pain scores and neck mobility before and after treatment. *Results:* At the end of the treatment, the pain scores of the patients in the observation group were significantly reduced and neck mobility was significantly improved, with a significant difference compared with the control group ( $P < 0.001$ ). No serious adverse events occurred in the patients of the observation group after the completion of treatment. *Conclusion:* Manual nerve mobilization combined with traction therapy has good efficacy in the treatment of nerve root cervical spondylosis. This therapy can effectively reduce patients' pain and improve neck motor function. Therefore, the promotion and application of this therapy in rehabilitation therapy will play a positive role in the recovery of patients with radiculopathy.

**Keywords:** Manual nerve mobilization; Traction therapy; Radiculopathy; Efficacy

**Online publication:** March 29, 2024

## 1. Introduction

Neurogenic cervical spondylosis is a common type of cervical spondylosis, which is caused by cervical spine lesions compressing the nerve roots. This condition is mostly seen in middle-aged and elderly people, with poor posture as the main trigger<sup>[1]</sup>. Symptoms of nerve root cervical spondylosis mainly manifest as neck and shoulder pain, accompanied by radiating upper limb pain and numbness, and in severe cases, muscle atrophy and weakness. Conventional management includes cervical traction, physical therapy, acupuncture, medication,

and so on. Surgery may be required for severe cases. However, the treatment effect of nerve root cervical spondylosis varies with individuals and is prone to recurrence [2]. Therefore, prevention is key and can be achieved by maintaining the correct sitting posture, avoiding prolonged use of cell phones or computers with the head down, and performing regular neck exercises to strengthen the neck muscles [3].

## 2. Information and methods

### 2.1. General information

Patients diagnosed with nerve root type cervical spine were selected from May 2022 to December 2023 in the hospital rehabilitation department of the study for a total of 101 cases with 56 male cases and 45 female cases. The age range of the patients was between age 37 years 2 months to 74 years 9 months. The patients were randomly divided into two groups, 51 cases in the control group with 29 males and 22 females, and an average age of  $55.6 \pm 3.2$  years. The second group is the observation group with 50 cases, consisting of 27 males and 23 females, and an average age of  $53.8 \pm 3.4$  years. There was no statistical difference in the general information of patients in the two groups as shown in **Table 1** ( $P > 0.05$ ), and they were comparable.

**Table 1.** Basic information on cases in the control group and observation group

Groups	Number of cases (n)	Sex		Average age (years)
		Male	Female	
Control group	51	29	22	$55.6 \pm 3.2$
Observation group	50	27	23	$53.8 \pm 3.4$

### 2.2. Inclusion and exclusion criteria

All the enrolled patients met the diagnostic criteria of neurogenic cervical spondylosis according to the guideline recommendations [4]. The diagnosis of neurogenic type was based on the following. The patients have more typical radicular symptoms, such as numbness and pain, and the range was consistent with the area innervated by the cervical spinal nerves. The head pressure test or brachial plexus pull test has positive results. The imaging findings are consistent with the clinical manifestations. The closure of the pain point is not effective, this test may not be performed if the diagnosis is clear. Apart from the diseases caused by extra cervical vertebrae, such as thoracic outlet syndrome, tennis elbow, carpal tunnel syndrome, elbow tube syndrome, frozen shoulder, biceps tenosynovitis, and so on, the patient's family members should sign the informed consent for treatment.

The exclusion criteria include the following. The patient is suffering from diseases or illnesses that prohibit any exercise. The weight of traction causes excessive strain on the spine. The patient is showing symptoms of acute strains, sprains, and acute inflammation. The patient is suffering from vascular disease. The symptoms of patients aggravated during traction.

### 2.3. Treatment method

The study selected 101 patients diagnosed with neurogenic cervical spondylosis and randomly divided them into two groups. The control group ( $n=51$ ) received conventional drugs and physical therapy, while the observation group ( $n=50$ ) was treated with manual nerve mobilization combined with traction therapy. The manual nerve mobilization technique was performed twice a day for about half an hour each time to reduce pain and inflammatory reaction by loosening the soft tissues around the compressed nerve roots with a fine and gentle

technique. Traction therapy was performed once a day for 20 minutes each time to relieve the pressure of the cervical disc and the pull of the nerve root, and to restore the normal physiological curvature of the cervical spine.

## 2.4. Clinical observation and evaluation methods

The two groups of patients were evaluated for pain scores and neck mobility before and after treatment.

The pain scoring used the numerical rating system (NRS) with 0–10 to represent different degrees of pain, with 0 being no pain and 10 being severe pain. The pain level grading criteria are, 0: no pain, 1–3: mild pain, 4–6: moderate pain, and 7–10: severe pain.

Appropriate scores were selected according to the degree of neck activity limitation of the patients. The neck mobility score grading is as follows, 0: without any activity limitation, 1: mild activity limitation, only affecting some specific movements, 2: moderate activity limitation, affecting daily activities but coping with them, 3: severe activity limitation, unable to carry out routine activities, 4: complete activity limitation, unable to carry out normal activities.

## 2.5. Statistical analysis

SPSS 20.0 statistical software was used for data processing, and the measurement data were expressed as  $\pm s$ , and the *t*-test was used, the count data were tested by  $\chi^2$  test.  $P < 0.05$  was regarded as the difference was statistically significant.

## 3. Results

The pain score of the observation group after treatment was lower than that of the control group,  $p < 0.05$ , as shown in **Table 2**.

**Table 2.** Comparison of pain scores between the two groups of patients before and after treatment

Groups	Comparison of pain scores (points)		<i>t</i>	<i>P</i>
	Pre-treatment	Post-treatment		
Observation group	5.14 ± 1.14	2.31 ± 0.66	15.305	0.001
Control group	5.11 ± 1.15	3.76 ± 0.68	7.163	0.001
<i>t</i>	0.132	10.875	-	-
<i>P</i>	0.896	0.001	-	-

After treatment, the neck mobility score of the observation group was lower than that of the control group, with a *P*-value of  $< 0.05$ , as shown in **Table 3**.

**Table 3.** Comparison of neck mobility scores between the two groups of patients before and after treatment

Groups	Comparison of neck mobility scores (points)		<i>t</i>	<i>P</i>
	Pre-treatment	Post-treatment		
Observation group	3.14 ± 0.54	1.04 ± 0.31	24.027	0.001
Control group	3.12 ± 0.53	2.65 ± 0.42	4.933	0.001
<i>t</i>	0.188	21.949	-	-
<i>P</i>	0.851	0.001	-	-

## 4. Discussion

Cervical spondylosis is a common disease in clinical practice, among which neurogenic cervical spondylosis is a common type of cervical spondylosis. Due to the compression of nerve roots by cervical spondylotic lesions, the patients often suffer from symptoms such as pain, activity limitation, and sensory abnormalities. Manual nerve mobilization and traction therapy are commonly used therapies in rehabilitation, and they have good efficacy in the treatment of radiculopathy<sup>[5]</sup>. The purpose of this paper is to explore the effect of manual nerve mobilization combined with traction therapy in the treatment of neurogenic cervical spondylosis and to discuss its efficacy in depth. The nerve mobilization technique, also known as the neural tension technique, is a manipulative technique for the treatment of pain caused by nerve tissues. It is based on the anatomical structure and physiological function of nerves and applies force to the abnormal nerve tissues through specific manipulation and limb movement to produce extension and tension changes, as well as promotes microcirculation and impulse conduction between nerve tissues, reduces neural adhesion, improves neural tension, and enhances nerve function. Thus, it can improve the therapeutic effect of pain, numbness, sensory abnormalities, muscle weakness, and so on<sup>[6]</sup>. Traction therapy, on the other hand, stretches the cervical vertebrae through external force to increase the volume of the cervical spinal space and intervertebral foramina, thus reducing the compression of the nerve roots, relieving pain, and improving the function of the cervical vertebrae<sup>[7]</sup>. The combined application of manual nerve mobilization and traction therapy can utilize both of their advantages, complement each other, and improve the therapeutic effect. In this study, a randomized controlled trial of 49 patients with nerve root-type cervical spondylosis found that manual nerve mobilization combined with traction therapy was superior to traction therapy alone in terms of pain relief, improvement of cervical motor function, and quality of life. After treatment, the pain scores and neck mobility scores of the combination therapy group were significantly lower than those of the control group, and the recurrence rate of the combination therapy group was also significantly lower than that of the control group during the follow-up period. These results suggest that manual nerve mobilization combined with traction therapy has better efficacy in the treatment of neurogenic cervical spondylosis<sup>[8-9]</sup>. This study found that manual nerve mobilization combined with traction therapy has significant advantages in the treatment of radiculopathy of the cervical spine, which can effectively reduce patients' pain and improve neck motor function<sup>[10]</sup>. However, the efficacy and safety of this therapy need to be further confirmed with long-term follow-up and larger studies. In addition, the development of personalized treatment plans for different patients should also be the focus of future research<sup>[11]</sup>.

In conclusion, this study demonstrated that manual nerve mobilization combined with traction therapy has good efficacy in the treatment of neurogenic cervical spondylosis. Therefore, the promotion and application of this therapy in rehabilitation will play a positive role in the recovery of patients with neurogenic cervical spondylosis. However, long-term follow-up and larger studies are needed to further validate the effectiveness and safety of this therapy. Meanwhile, personalized treatment plans for different patients are also an important direction for future research.

## Disclosure statement

The authors declare no conflict of interest.



## References

- [1] Huang L, Jiang T, Lin XD, et al., 2023, Analyzing the Efficacy of Acupuncture Therapy Combined with Auricular Point Pressure Bean in the Treatment of Nerve Root-Type Cervical Spondylosis based on a Novel Quantitative Muscle Evaluator. *Journal of Guangzhou University of Traditional Chinese Medicine*, 40(12): 3072–3077.
- [2] Wu Y, Zhang SF, Wang WJ, 2023, Clinical effect of Acupuncture and Moxibustion Combined with Tuina in the Treatment of Neurogenic Cervical Spondylosis in the Elderly. *Chinese Journal of Gerontology*, 43(22): 5532–5534.
- [3] Liang LB, Zuo XT, Mo HF, et al., 2021, Observation on the Curative Effect of Manual Nerve Loosening Combined with Suspension Training Technique in the Treatment of Cervical Radiculopathy. *The Journal of Cervicodynia and Lumbodynia*, 42(6): 881–883.
- [4] Xu QX, Shi GL, Tian WJ, 2023, Warm Acupuncture and Moxibustion Combined with Cervical Fukang Granules for the Treatment of Neurogenic Cervical Spondylosis in 30 Cases. *Guangming Traditional Chinese Medicine*, 38(22): 4421–4423.
- [5] Liu WF, Jin Y, Zhao LJ, et al., 2023, Clinical Study on the Treatment of Lumbar Intervertebral Disc Herniation by Multidimensional Traction. *Chinese Orthopedics*, 35(11): 1–4 + 9.
- [6] Cai SP, Li ZY, Li SC, et al., 2023, Clinical Observation on the Treatment of Neurogenic Cervical Spondylosis by Electrothermal Needling Combined with Picking Four Sutures. *Journal of Guangzhou University of Traditional Chinese Medicine*, 40(11): 2820–2825.
- [7] Liu ZH, 2023, Comparison of Clinical Effect and Safety of Proximal Femoral Anti-spin Intramedullary Nail Fixation and Tibial Tuberosity Distraction in Treating Intertrochanteric Femur Fracture in the Elderly. *Heilongjiang Medicine*, 36(05): 1161–1163.
- [8] Li C, Li J, Mao ZT, et al., 2023, Clinical Efficacy of Orthopedic Method under Long's Traction in the Treatment of Cervicogenic Frozen Shoulder. *Journal of Guangzhou University of Traditional Chinese Medicine*, 40(09): 2225–2230.
- [9] Liang LB, Zuo XT, Mo HF, et al., 2021, The Efficacy of Unarmed Nerve Release Combined with Suspension Training Technique in the Treatment of Nerve Root Cervical Spondylosis. *Journal of Neck and Low Back Pain*, 42(06): 881–883.
- [10] Wang Y, Pei F, Kang LR, et al., 2015, Clinical Observation on Treatment of Peripheral Nerve Injury of Lower Extremity by Cluster Acupuncture at Head Point Combined with Nerve Loosening. *Journal of Clinical Acupuncture and Moxibustion*, 2015(5): 5–8.
- [11] Pei F, Wang Y, 2012, Research Progress of Peripheral Nerve Release. *China Rehabilitation*, 27(06): 462–464.

### Publisher's note

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.