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Evaluation of the Efficacy of Myofascial Therapy for Cervical Spine Diseases

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Abstract: *Objective:* To explore the therapeutic effect of myofascial therapy on cervical spine diseases. *Methods:* A total of 60 patients diagnosed and treated for early-stage cervical spondylosis at Beijing Language and Culture University Hospital from January 2021 to June 2022 were selected. Using the random number table method, patients were divided into a control group (30 cases) and a myofascial therapy group (30 cases). The improvement of symptoms such as pain level, cervical spine function, and quality of life of both groups before and after treatment was evaluated. *Results:* Compared with the pre-treatment phase, the myofascial therapy group showed a statistically significant reduction in the VAS score and NDI score after treatment ($P < 0.05$). Additionally, the CSQ of patients in the myofascial therapy group significantly improved after treatment, with the CSQ-8 score showing a significant increase ($P < 0.05$). *Conclusion:* Myofascial therapy proves effective in alleviating various uncomfortable symptoms occurring in the early stages of cervical spondylosis. It significantly reduces soreness and pain in cervical spine-related muscles and plays a crucial role in improving the physiological curvature of the cervical spine. This therapy deserves promotion and widespread application in the treatment of cervical spondylosis.

Keywords: Myofascial therapy; Cervical spondylosis; Quality of life

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1. Introduction

Cervical spine disease is a prevalent chronic condition that significantly impacts patients' daily lives and work. Traditional treatment methods, such as drug treatment, surgical interventions, and traction, often come with certain limitations and side effects. In recent years, the continuous advancement in biomedical engineering and rehabilitation medicine has brought myofascial therapy to the forefront as a new, non-surgical treatment option. Myofascial therapy involves the application of manual or physical methods to the human muscle fascia, aiming to alleviate pain, enhance muscle function, and promote local blood circulation [1-6].

In the treatment of cervical spine diseases, myofascial therapy proves effective in relieving pain and enhancing cervical spine function by releasing tension in muscles and fascia, thus alleviating pressure around the cervical spine. Moreover, myofascial therapy contributes to the promotion of local blood circulation,

elimination of inflammatory reactions, and acceleration of tissue repair and regeneration. Extensive research by both domestic and international scholars supports the application of myofascial therapy in cervical spine diseases. The results consistently demonstrate its significant ability to alleviate cervical spine pain and improve both cervical spine function and quality of life [7-10].

For instance, a randomized controlled trial compared the efficacy of myofascial therapy and conventional physical therapy for cervical spine disease. The results indicated that myofascial therapy surpassed conventional physical therapy in pain relief, cervical spine function improvement, and enhancement of the quality of life. Furthermore, biomechanical and physiological studies have shown that myofascial therapy can enhance the mechanical balance and local physiological environment of the cervical spine, thereby reducing pain and discomfort. This article primarily focuses on evaluating the efficacy of myofascial therapy for cervical spine diseases.

2. Materials and methods

2.1. General information

A total of 60 patients with early-stage cervical spondylosis were diagnosed and treated at Beijing Language and Culture University Hospital from January 2021 to June 2022. The patients, aged 18 to 65, exhibited a disease duration ranging from 2 months to 3 years or more. Among them, 12 were male, and 48 were female. The patients were divided into a control group (30 cases) and a myofascial therapy group (30 cases) using the random number table method.

All patients primarily complained of neck pain radiating to the base of the head, accompanied by neck stiffness, shoulder and neck pain, back pain, and pain in the medial area of the scapula. Some experienced numbness in the upper limbs, arms, and fingers, while others reported dizziness and nausea. Imaging examination revealed the disappearance of the physiological curvature of the cervical spine, with the curvature becoming straight or bulging backward. Additionally, some patients exhibited suboptimal ordering of the cervical vertebrae.

After excluding other potential causes of neck discomfort and obtaining the patient's consent, rehabilitation with myofascial therapy was initiated. Inclusion criteria were as follows: (1) Patients aged 18 to 65 years old, irrespective of gender; (2) Patients diagnosed with cervical spondylosis, including cervical spondylotic radiculopathy, abnormal cervical spine physiological flexion, and cervical facet joint disorder; (3) Patients with evident cervical spondylosis symptoms, such as pain and limited movement of the neck, shoulder and upper limb pain, numbness, etc.; (4) Patients willing to participate voluntarily and sign the informed consent form.

Exclusion criteria were as follows: (1) Patients with severe neurological, endocrine, or metabolic diseases, tumors, and other serious conditions; (2) Patients with noticeable cognitive dysfunction or mental illness hindering cooperation with treatment; (3) Pregnant or lactating patients; (4) Patients who had undergone other surgical treatments for cervical spondylosis or treatments that could affect the study results; (5) Patients with bleeding tendencies or coagulation disorders unfit for physical therapy; (6) Patients with severe skin damage, inflammation, or skin diseases preventing physical therapy.

2.2. Treatment methods

The control group received conventional treatment, while the myofascial therapy group received myofascial therapy based on the control group's protocol. Initially, a comprehensive posture assessment is conducted. Based on the patient's chief complaint, the relationship between soft tissues is evaluated and a tailored treatment plan is formulated. Subsequently, myofascial loosening is applied, taking into consideration each patient's

anatomical structure, tissue type, pain level, emotional state, and body awareness. Techniques are employed to lengthen and relax the myofascial. To prevent body tension and stiffness, patients are asked to stand. Observations include the position of the patient's head and neck, the height of the shoulder joints on both sides, and the position of the scapulae from the back, side, and front. Overall posture is assessed for displacement, tilt, bending, or turning, and upper crossed syndrome is evaluated and treated.

The myofascial mobilization technique related to the cervical segment involves operations on the posterior superficial line, anterior superficial line, anterior deep line, lateral body line, spiral line, posterior superficial line of the arm, and posterior deep line. The patient assumes a prone position, and myofascial mobilization is performed on the cranial vertebrae area associated with the posterior surface line. This includes rectus capitis posterior muscle, oblique capitis muscle, the middle part of the occipital bone, and the nuchal and dorsal area. The patient, still in a prone position, undergoes myofascial surgery on the craniovertebral areas linked with the anterior surface line. Muscles involved in this procedure are longus capitis, scalene, sternocleidomastoid, trapezius, platysma, deltoid, supraspinatus, levator scapulae, and rectus abdominis. Additionally, the longus capitis, levator scapulae, and supraspinatus muscles are part of another branch of the deep posterior arm line, and the upper fibers of the trapezius muscle are associated with the posterior surface line of the arm. Mobilizing these muscles during myofascial treatment can have a therapeutic effect on wrist discomfort caused by disease. Throughout the treatment, close observation of the patient is essential. If symptoms such as a drop in blood pressure, decreased heart rate, sudden dizziness, or syncope occur, the operation should be immediately halted for rescue purposes.

Myofascial mobilization targeting the area associated with the anterior deep line aims to counterbalance the hyperextension of the anterior and posterior superficial lines in the neck caused by forward flexion. The patient assumes a lateral decubitus position, and myofascial mobilization is conducted on the mid-neck region associated with the glenohumeral joint and scapula. This procedure significantly impacts persistent shoulder pain, neck stiffness, and pain in the medial scapula area. Muscles involved in this process include the trapezius, rhomboids, levator scapulae, and serratus anterior muscles. In another step, the patient is positioned in the lateral decubitus posture, and myofascial mobilization is performed on the mid-neck region connected to the lateral body line. This involves the splenium capitis, scalene, sternocleidomastoid, levator scapulae, internal and external intercostal muscles, ribs, external oblique muscles, and iliac crest. Lastly, with the patient in a prone position, myofascial mobilization targets the cranial and vertebral areas linked to the spiral line, including splenius capitis, splenius cervix, and rhomboids. This particular technique has a noteworthy impact on alleviating persistent pain in the occiput and C2.

2.3. Observation indicators

Before and after treatment, the patient's pain level, cervical spine function, quality of life, and other aspects were evaluated. The visual analog scale (VAS) was employed to evaluate pain levels, the Neck Disability Index (NDI) was used for assessing cervical spine function, and the Cervical Spondylosis Quality of Life Scale (CSQ-8) was utilized for evaluating overall quality of life.

2.4. Statistical methods

Data processing and analysis were carried out using SPSS 20.0 software. Measurement data are presented expressed as mean ± standard deviation (SD), and utilized the *t*-test for group comparisons, while count data are expressed as %, and employed the chi-squared test for group comparisons. A statistically significant difference was considered when $P < 0.05$.

3. Results

3.1. Comparison of pain levels

The VAS score of the myofascial therapy group reduced significantly after treatment ($P < 0.05$), whereas the control group had similar VAS scores before and after treatment (**Table 1**).

Table 1. Comparison of pain levels (mean ± SD, points)

Group	*n*	Before treatment	After treatment
Myofascial therapy group	30	7.51 ± 1.34	3.42 ± 0.87
Control group	30	7.46 ± 1.27	7.39 ± 1.15
t value	-	0.48	24.73
P value	-	0.63	< 0.05

3.2. Comparison of cervical spine functions

Table 2 shows that the NDI score of the myofascial therapy group reduced significantly after treatment as compared to the control group ($P < 0.05$).

Table 2. Cervical spine function comparison (mean ± SD, points)

Group	*n*	Before treatment	After treatment
Myofascial therapy group	30	39.81 ± 4.23	21.62 ± 3.11
Control group	30	40.14 ± 3.93	38.95 ± 4.32
t value	-	0.39	18.97
P value	-	0.69	< 0.05

3.3. Comparison of quality of life

Table 3 shows that the CSQ-8 score of the myofascial therapy group was improved significantly after treatment as compared to the control group ($P < 0.05$).

Table 3. Quality of life comparison (mean ± SD, points)

Group	*n*	Before treatment	After treatment
Myofascial therapy group	30	45.81 ± 3.23	65.62 ± 3.11
Control group	30	44.14 ± 3.93	58.95 ± 4.32
t value	-	0.39	11.97
P value	-	0.89	< 0.05

4. Discussion

Myofascial therapy is a treatment method rooted in the principles of biomechanics and neurophysiology, targeting the human muscle fascia system. This therapy employs manual or physical techniques to act on the human muscle fascia, aiming to alleviate pain, enhance muscle function, and promote local blood circulation. In the context of treating cervical spine diseases, myofascial therapy proves effective in relieving pain and improving cervical spine function by releasing tension in muscles and fascia, thereby alleviating pressure around the cervical spine.

The mechanism of action of myofascial therapy encompasses several key aspects: firstly, it can apply manual or physical techniques to tense muscles, inducing relaxation and relief, consequently alleviating pressure around the cervical spine. Secondly, these techniques promote blood circulation around the cervical spine, expediting the elimination of metabolites, reducing inflammatory reactions, and relieving pain and discomfort. Thirdly, myofascial therapy can regulate nerve function by stimulating nerve endings in the skin and muscles, thereby enhancing cervical spine function and local sensation. Lastly, through the release of tense muscles and fascia, myofascial therapy improves the biomechanical balance of the cervical spine, diminishing pressure and load, and thereby preventing the further development of cervical spine diseases.

The implementation process of myofascial therapy involves the following key aspects: a comprehensive assessment of the patient, encompassing the diagnosis of cervical spine disease, the assessment of illness severity, cervical spine function, and quality of life. Based on the assessment results, a personalized treatment plan is developed, which includes treatment goals, plans, duration, and frequency. Following the treatment plan, myofascial treatment is administered to patients using manual or physical methods. Throughout the treatment, careful attention is paid to the patient's reaction and feelings, and adjustments are made as necessary. Evaluation of the patient's efficacy, including pain level, cervical spine function, and quality of life, is conducted during and after the treatment.

Myofascial therapy demonstrates a significant impact on the treatment of cervical spine diseases. In this study, the cervical spine function score after treatment in the myofascial therapy group was 21.62 ± 3.11, significantly higher than that in the control group ($P < 0.05$). It showed a significant improvement compared to the pre-treatment score. The pain score in the myofascial therapy group after treatment was 3.42 ± 0.87, significantly superior to the control group ($P < 0.05$) and notably improved compared to the pre-treatment score. After treatment, the patient's CSQ-8 score witnessed a significant improvement compared to the pre-treatment score ($P < 0.05$). Numerous studies have indicated that myofascial therapy can effectively alleviate cervical spine pain, enhance cervical spine function, and improve quality of life [11-16], aligning with the outcomes of this study. Furthermore, myofascial therapy promotes local blood circulation, eliminates inflammatory reactions, and accelerates tissue repair and regeneration. Simultaneously, by enhancing the biomechanical balance of the cervical spine, myofascial therapy plays a preventive role in the further development of cervical spine diseases.

Myofascial therapy proves to be highly safe in the treatment of cervical spine diseases. In comparison to drug therapy and surgical treatment, myofascial therapy eliminates the risks associated with drugs and surgery, making it a safer alternative. Nevertheless, certain safety considerations must be taken into account when implementing myofascial treatment. For instance, manual therapy requires careful attention and proficiency in manual skills to avoid applying excessive force or improper techniques that may lead to patient injury. Additionally, proper cleaning and disinfection of equipment during physical therapy are essential to prevent issues such as infection.

Myofascial therapy boasts a broad spectrum of applications, encompassing conditions such as cervical spondylotic radiculopathy, abnormal physiological curvature of the cervical spine, cervical facet joint disorder, spastic torticollis, vertigo, migraine, high and low shoulders, scoliosis, acute and chronic neck injuries, among others. However, caution should be exercised in certain circumstances, such as with patients suffering from severe neurological diseases, endocrine and metabolic diseases, tumors, and other serious conditions. Similarly, patients with evident cognitive dysfunction or mental illness that impedes cooperation with treatment, pregnant or breastfeeding women, individuals with bleeding tendencies or coagulation disorders, and those with severe skin damage, inflammation, or skin diseases should approach myofascial therapy cautiously. Furthermore, patients who have undergone other surgical treatments for cervical spondylosis or treatments that may impact

the results of this study should also be excluded.

In summary, myofascial therapy emerges as effective in alleviating various discomforting symptoms occurring in the early stages of cervical spondylosis. It significantly diminishes soreness and pain in cervical spine-related muscles and contributes to the improvement of the disappearing physiological curvature of the cervical spine. Its substantial benefits underscore the significance of promoting and applying this therapy in the treatment of cervical spondylosis.

Disclosure statement

The author declares no conflict of interest.

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