Clinical Effect of Tendon Loosening Rotatory Thrust Tuina in Supine Position for the Treatment of Cervical Spondylotic Radiculopathy

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Abstract: Objective: To observe the curative effect of traction combined with tendon loosening rotatory thrust in supine position. Methods: 72 patients of cervical spondylotic radiculopathy (CSR) were randomly divided into a treatment group (39 patients) and a control group (33 patients). The treatment group was treated with the method of traction combined with the method of tendon loosening rotatory thrust in a supine position, and the control group was treated with the method of mechanical traction combined with oral administration of nonsteroidal anti-inflammatory drugs. Liquid medicine is injected into acupoints. Through the gradual absorption at acupoints, drugs have a slow and sustained effect on acupoints and access the affected site along meridians and collaterals. The therapeutic effect was observed after two courses of treatment. Results: The total effective rate was 92.3% in the treatment group and 81.8% in the control group. Conclusions: Traction combined with tendon loosening rotatory thrust in a supine position is an effective method for the treatment of CSR.

1. Introduction

Disc degeneration is the leading cause of cervical spondylosis. In adults, there is no distribution of blood vessels and nerves in the intervertebral disc except the periphery of the fibrous ring [1-2]. The nutrition of the intervertebral disc mainly comes from the infiltration and dispersion of blood vessels through the cartilage plate. The elasticity and tension of the disc also depend on the permeability of the cartilage plate and the permeability of the nucleus pulposus [3-4]. Such permeability is decreasing continuously, which stops at about 30 years old, causing the continuous loss of water (dehydration) in the nucleus pulposus of the intervertebral disc, further reduction of the internal pressure and expansion force, resulting in an overall reduced height of the intervertebral disc [5]. Where the height decreased, the fibrous ring of intervertebral disc became longer and bulged under the compression of the nucleus pulposus, even beyond the outer edge of the adjacent vertebra, forming the anatomical expansion of intervertebral disc [6].

In recent years, the incidence of cervical spondylosis has been increasing. It has become a common and frequently occurring disease that seriously affects the quality of human life. Cervical spondylosis is a variety of diseases caused by cervical osteoarthritis or (and) soft tissue lesions inside and outside the cervical spinal canal. Based on clinical manifestations, it can be divided into five types. Radicular Cervical spondylosis is the most common type of cervical spondylosis, with a high incidence, accounting for 50% - 60% of cervical spondylosis. In clinical practice, 39 cases of this disease are treated with traction combined with tendon loosening rotatory thrust in a supine position and mechanical traction combined with oral administration of nonsteroidal anti-inflammatory drugs. The report is as follows.

2. Clinical Data

2.1 General Information

Seventy-two patients at the Tuina Clinic of Division II, Affiliated Hospital of Changchun

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University of Traditional Chinese Medicine from September 2017 to March 2019 were selected and randomly divided into a treatment group (39 patients) and a control group (33 patients). In the treatment group, there were 11 males and 28 females; the youngest was 26 years old, and the oldest was 63 years old; the shortest course of disease was 1 month, and the longest was 15 years. In the control group, there were 12 males and 21 females; the youngest was 28 years old, and the oldest was 66 years old; the shortest course of disease was 3 weeks, and the longest was 12 years.

2.2 Diagnostic Criteria

According to the “arthralgia syndrome” as the diagnostic standard in the “diagnostic efficacy standard for disease syndromes of traditional Chinese medicine” issued by the State Administration of traditional Chinese medicine [1]. (1)mostly developed in the middle-aged and the elderly; or young adults with a history of injury, strain, neck deformity or other inducements, etc.; (2)slow onset in most cases; or acute attack with a history of neck trauma or strain, long course of disease, sometimes mild, sometimes severe, possible repeated attacks; (3)presenting typical symptoms (pain, numbness), the range consistent with the area dominated by the cervical nerve, positive in the brachial plexus traction test; (4)X-ray of the cervical vertebra showed that the curvature of the cervical vertebra was not stable or osteophyte was formed, the joint of the uncinate vertebrae was hyperosteogeny, and the sagittal diameter of the spinal canal was narrow.

2.3 Diagnosis of Exclusion

Patients with vertebral artery, sympathetic nerve, and spinal cord type cervical spondylosis are excluded, except thoracic outlet syndrome, tennis elbow, carpal tunnel syndrome, cubital tunnel syndrome, shoulder periarthritis, etc.

3. Treatment

In the treatment of cervical spondylosis, physical therapy can play many roles, which is also a relatively effective and commonly used treatment method. Its mechanism is to eliminate inflammation and edema of nerve root and surrounding soft tissue, improve the blood supply and nutritional status of spinal cord, nerve root and neck, relieve muscle spasm of neck by cervical traction, improve the blood circulation of neck soft tissue, delay or reduce the progress of calcification and ossification of light intervertebral joint, joint capsule and ligament, thereby enhancing muscle tension, improving the function of small joint, the metabolism of calcium and phosphorus, and the function of the autonomic nervous system.

All the patients first received conventional Tuina treatment, taking a decubitus position. (1) The physician used the thumb and the other four fingers as a relative force to lift and pinch rhythmically on both sides of the cervical spinous process. (2) Pressing and rubbing method is used. One or two palms are placed close to the shoulder, pressing both shoulder back muscle groups from light and heavy. (3) Acupoints. Along the Fengchi points on both sides with the second finger of thumb and food of right hand, then along the neck and chest Jiaji point from top-down to the 7th thoracic vertebra, and then from the 7th thoracic vertebra to the 1st thoracic vertebra along the bladder. (4) Method: From the 5th thoracic vertebra, moving up to Yamen point along the circulation line of both bladder meridians and Du vessels. (5) Using the right hand to hold the back of the patient's head and the left hand to hold the lower jaw, slowly making a circular shaking. (6) Percussion was performed on the neck and shoulder of patients. Finally, lifting bilateral shoulder wells and tapping Dazhui point were performed to complete the tendon loosening manipulation.

3.1 Treatment Group

3.1.1 Traction in a Supine Position

The patient lies on the back with a low pillow, head, and body straight, hands flat on the side of the body, and the whole body relaxed. The surgeon stands at the head of the bed and has an assistant press the patient's legs to fix the patient's body. The physician holds one hand (hereinafter referred to as “fixed hand”) on the patient's headrest, and the fingers support the cervical vertebra; the other

hand (hereinafter referred to as “traction hand”) holds the lower jaw and tilts it later, maintains the cervical vertebra in a later extension state with the “fixed hand” fingers supporting the cervical vertebra, and the two hands coordinate to pull the patient's head upward along the longitudinal axis, and the operator's lumbar back exerts force, taking the patient's body as the degree of slight traction, holding for about 30s, and then exerting force instantaneously along the longitudinal axis before suspension in a sudden (in this operation, a “Click” sound of joint reduction can often be heard), and then slowly relaxing the traction to make the patient's neck slowly retract.

3.1.2 In the Treatment Group, Pull the Inclined Plate with Bare Hands:

The patient is placed on the treatment bed, and the physician is standing on the side of the patient's head, with both forearms pressed against the patient's lower neck and external occipital protrusion to perform traction on the patient slowly and forcefully. When the physician is performing traction on the patient's body, the assistant presses the patient's double impetuosity to imply counter traction, and the patient is required to raise his/her hands for 2 min until he/she feels uncomfortable. After rest for 2 minutes, traction is performed on the patient again for three consecutive times. After traction, the patient lies on his/her back for 5 min. Then the physician clasps the lower neck of the patient with one hand and holds the occipital part with the other to perform traction slowly and forcefully and make left and right rotations several times. After about 1 min, the patient's neck is bent forward, the head is turned to one side to the maximum extent, and both hands are pulled in the opposite direction simultaneously until a “click” sound is heard. Finally, the physician gently messages the neck muscles with both hands for 3 min of relaxation.

3.1.3 Acupoint Injection

After the traction is performed on the patient in a supine position, the tendon loosening rotatory thrust manipulation in a supine position is carried out. The patient sits or crouches in the decubitus position. Both C5 and C6 Jiaji points are selected. After conventional disinfection, a 5 ml syringe is used to inject 4 ml of Compound Angelica Sinensis Injection. The needle is inserted vertically for 1.5 cm, withdrawn without blood, pushed slowly or lifted up/down for insertion until it brings about a sense of soreness (the sensation accessing the shoulders, arms, elbows, and fingers is desired). Subsequently, the solution is slowly injected into each acupoint, 1 mL per point.

3.2 Control Group

Mechanical traction is adopted. The patients took a decubitus position, neck flexion 15° - 30°, weight 10% - 15% of body weight, 20-30 min each time, traction for 40-60 s, intermittent relaxation 10-20s. Oral administration of non-steroidal anti-inflammatory drug dexibuprofen tablets (Jiangxi Huiren Pharmaceutical Co., Ltd., gyzz h20020155), 3 times a day, 2 capsules each time.

Two groups of patients were treated 6 times a week, 12 days as a course of treatment. The therapeutic effect was observed after two courses of treatment.

4. Treatment Effect

4.1 Efficacy Criteria

Recovery: pain, numbness, and other symptoms disappeared, and X-ray photography was normal.

Significant effect: pain, numbness, and other symptoms were relieved, and X-ray photography showed improvement.

Effective: pain, numbness, and other symptoms were relieved, but X-ray showed no significant improvement.

Ineffective: The pain, numbness, and other symptoms were not relieved, and X-ray showed no changes.

4.2 Statistical Methods

T-test was used for measurement data, chi-square test was used for comparison of two sample

rates, and Ridit analysis was used for grade data.

4.3 Treatment Results

It can be seen from Table 1 that the total effective rate in the treatment group is 92.3% and that in the control group is 81.8%. The difference between the two groups is statistically significant ($P < 0.05$), suggesting that the total effective rate in the treatment group is superior to that in the control group.

Table 1 Comparison of Clinical Efficacy between the Two Groups

Group	n	Cured	Markedly effective	Effective	Ineffective	Total effective rate /%
Treatment group	39	5	21	10	3	92.3[1)]
Control group	33	2	11	14	6	81.8

Note: Compared with the control group, $P < 0.05$

The general data analysis of the two groups showed that there was no significant difference in age, gender, etc. ($P > 0.05$), as shown in Table 2. The results suggested that the two groups were comparable in general.

Table 2 Comparison of Age between the Two Groups

Group	Number of cases	Age	P
Acupoint embedding group	13	49.67±7.95	0.597
Routine Tuina group	20	50.73±7.60	

The results showed that the symptoms, signs and pain degrees in the two groups were significantly improved, and the effect of the acupoint embedding group was superior to that in the conventional electroacupuncture group, as shown in Table 3

Table 3 Comparison of The Symptoms and Function of Cervical Spondylosis of Fine Wine Before and after Treatment between the Two Groups

Group	Number of cases	Before treatment	After the first course of treatment	After treatment
Acupoint embedding group	13	10.50±1.28	12.77±1.13	16.77±1.31
Routine Tuina group	20	10.63±1.42	13.00±1.46	15.47±1.85

The statistical data showed that after the first course of treatment, the treatment effects in the two groups were significant, The symptoms and signs of patients have improved. The effect in the conventional electroacupuncture group is slightly superior to that of the acupoint injection. After the treatment, the difference was statistically significant ($P < 0.05$), suggesting that the two groups were comparable.

5. Conclusions

Traction in a supine position is a compound manipulation of manipulative traction and reduction. According to the pathogenesis theory of “Imbalance of the dynamic force first, mainly imbalance of the static force”, soft tissue release manipulation is used to improve the mechanical properties of the muscles around the neck in patients with cervical spondylosis significantly, improve or even eliminate neck pain and other symptoms. On this basis, through traction and suspension, ti focuses on correct the sagittal displacement and instability of the cervical vertebra and improve the space size of the spinal nerve root canal and physiological curvature of the cervical vertebra. In this way, the stress distribution in the anterior and posterior spines of the lesion can be redistributed to reduce the compression load of anterior spine, thereby reducing cervical disc herniation, reconstructing static cervical balance, and restoring the endogenous stability of the cervical vertebra. The cervical flexion is corrected to reduce the head gravity distance, decrease the continuous contraction of the cervical extensor accordingly, reduce cervical vertebra load, improve the strain of cervical extensor, and consolidate the external stability of the cervical vertebra. In this paper, acupoints C5 and C6 are selected for acupoint injection. In addition to the effect of acupuncture, Angelica sinensis has the

function s of enriching the blood, promoting circulation, and relieving the pain. Acupoint drugs are used to access the affected area directly, alleviating or eliminating local symptoms, hence the marked curative effect.

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