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Evaluation of the Role of Tuina in Acupuncture Combined Therapy for Cervical Spine Pain

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Abstract: This paper evaluates the efficacy of combined Traditional Chinese Medicine (TCM) tuina (therapeutic massage) and acupuncture in treating cervical radiculopathy. Ninety-four patients diagnosed with cervical radiculopathy at our hospital were randomly divided into two groups (47 in each group). The control group received acupuncture treatment, while the study group received a combination of TCM tuina and acupuncture. Clinical symptom scores, pain levels, and quality of life were compared post-treatment between the two groups. The overall effectiveness rate of the treatment in the study group was 93.62%, significantly higher than the 78.72% observed in the control group (P=0.021). The study group also reported lower scores for neck and shoulder pain, upper limb numbness, cervical muscle pain, and skin sensation compared to the control group (P<0.001). Furthermore, the pain intensity scores were lower in the study group (P<0.001), and scores for physical pain, vitality, emotional well-being, and general health were higher compared to the control group (P<0.001).

1. Introduction

Cervical spondylosis is a common orthopedic condition primarily induced by degenerative changes such as disc herniation and cervical strain, potentially compressing the spinal cord and cervical arteries[1]. Cervical radiculopathy (CSR) is the most prevalent form of this condition, typically manifesting symptoms such as radicular pain, neck discomfort, and reduced muscle strength[2]. Although pharmacological and surgical interventions can control the condition to an extent, cervical spondylosis is prone to recurrence and may cause lasting spinal damage, impeding recovery[3].

Traditional Chinese Medicine (TCM) associates CSR with invasion of cold and dampness, overstrain, and cervical muscle spasms. TCM tuina effectively alleviates nerve compression and adjusts vertebral alignment, while acupuncture aids in pain relief and enhances blood circulation[4].

Clinical manifestations of CSR include radiating pain, neck and shoulder pain, restricted finger movement, and weakened upper limb muscle strength, significantly impacting patients' quality of life[5]. Studies suggest an incidence rate ranging from 3.08% to 17.6%, with no significant gender disparities, commonly occurring in individuals aged 30-35 years[5,6]. Modern lifestyle factors such as prolonged use of air conditioning and computers also increase the risk of developing this condition.

Common clinical treatments include surgery, conservative treatment, and minimally invasive procedures, with conservative treatments like tuina, acupuncture, traction, and pharmacotherapy preferred due to their definitive effectiveness, non-invasiveness, and cost-efficiency[7].

This study aims to evaluate the efficacy and quality of life improvement in patients with cervical radiculopathy treated with a combination of TCM tuina and acupuncture.

2. Materials and Methods

2.1 Study Subjects

This study included 94 patients with cervical radiculopathy treated at our institution, randomly divided into the research and control groups, with 47 participants each. Inclusion criteria were a confirmed diagnosis of cervical radiculopathy with complete medical records; exclusion criteria included psychiatric disorders, severe hepatic or renal diseases, allergies, and pregnancy.

The study was approved by the Medical Ethics Committee, and all participants provided informed consent.

2.2 Intervention Measures

Both groups received routine clinical examinations and symptomatic treatment.

(1) The control group received acupuncture at acupoints including Yintang, Taiyang, and Tianzhu, with each session lasting 30 minutes, conducted daily over a two-week period.

(2) The research group received combined TCM tuina treatments, including cervical tuina and ear-screen tuina, also administered daily over two weeks.

2.3 Observational Indices

2.3.1 Efficacy Assessment

The therapeutic effects were evaluated using the "TCM Disease and Syndrome Diagnostic Criteria[8]," categorized into cured, significantly effective, effective, and ineffective.

2.3.2 Symptom Scoring

Symptoms were assessed using a cervical disease-related scale, including neck and shoulder pain, upper limb numbness, cervical muscle pain, and skin sensation, scored from 0 to 4, with higher scores indicating more severe symptoms[9].

2.3.3 Pain Intensity

The Visual Analogue Scale (VAS) was used to assess pain intensity, with scores ranging from 0 to 10, where lower scores indicate less pain

2.3.4 Quality of Life

The SF-36 Health Survey was used to evaluate the quality of life, including vitality, bodily pain, general health, and emotional role functioning, with higher scores indicating better quality of life[10].

3. Research Results

3.1 General Demographic Characteristics of Study Participants

Both the research and control groups comprised 47 patients. The research group included 32 males and 15 females, aged between 32-77 years, with an average age of (47.33±10.39) years, and a disease duration ranging from three months to three years, averaging (1.58±0.34)years. The control group included 28 males and 19 females, aged between 31-78 years, with an average age of (50.60±10.41) years, and a disease duration ranging from five months to four years, averaging (1.70±0.30) years. There were no statistically significant differences between the groups in terms of gender composition (x^2=0.4147, p=0.5196), age (t=-1.5066, p=0.1353), and disease duration (t=-1.8451, p=0.0683).

3.2 Comparative Analysis of Treatment Outcomes between the Groups

Both the research and control groups consisted of 47 patients each. The treatment outcomes were as follows: In the research group, the cure rate was 31.91% (15/47), the significant effectiveness rate was 38.30% (18/47), the effectiveness rate was 23.40% (11/47), and the ineffectiveness rate was 6.38% (3/47), leading to a total effectiveness rate of 93.62% (44/47). In the control group, the cure rate was 27.66% (13/47), the significant effectiveness rate was 31.91% (15/47), the effectiveness rate was 19.15% (9/47), and the ineffectiveness rate was 21.28% (10/47), culminating in a total effectiveness rate of 78.72% (37/47).

Statistical analysis revealed significant differences in treatment outcomes between the two groups (χ^2=5.35, P=0.021). The total effectiveness rate of the research group was significantly higher than that of the control group. (see Table 1).

Table 1: Comparative Analysis of Treatment Outcomes (n=94)

Group	categorized into cured	significantly effective	effective	ineffective	Total effectiveness
Control Group	13(27.66)	15(31.91)	9(19.15)	10(21.28)	37(78.72)
Research Group	15(31.91)	18(38.30)	11(23.40)	3(6.38)	44(93.62)
x^2	5.35				
p	0.021				

3.3 Comparison of Symptom Scores between Study Groups

Patients in the research group showed significant improvements across all measured symptoms from baseline to post-treatment. The neck, shoulder, and back pain scores decreased from (2.15±0.57) to (0.17±0.06) compared to the control group, which decreased from (2.42±0.65)to(0.52±0.12). Similarly, scores for cervical muscle pain in the research group improved from (3.71±0.57) to (1.30±0.61), while the control group improved from(3.60±0.69) to(2.24±0.76). The scores for upper limb numbness and skin sensation also showed more marked improvements in the research group, with upper limb numbness scores decreasing from (2.88±0.83) to (1.22±0.62) and skin sensation scores from (0.39±0.03) to(0.05±0.01); in contrast, the control group showed decreases from (2.87±0.82) to (1.26±0.66) and (0.40±0.05)to(0.12±0.02)respectively. These results indicate statistically significant differences (P<0.001) in the improvements between the groups, suggesting superior efficacy of the treatment in the research group. (see Table 2).

Table 2: Symptom Score Comparison between Study Groups (n=94)

Group	Treatment Time	Neck and Shoulder Pain	Cervical Muscle Pain	Upper Limb Numbness	Skin Sensation
Research Group	Before	2.15±0.57	3.71±0.57	2.88±0.83	0.39±0.03
	After	0.17±0.06	1.30±0.61	1.22±0.62	0.05±0.01
Control Group	Before	2.42±0.65	3.60±0.69	2.87±0.82	0.40±0.05
	After	0.52±0.12	2.24±0.76	1.26±0.66	0.12±0.02
t		-16.62	-7.91	-3.58	-21.21
p		0*	0*	0.001	0*

Note:*p<0.001.

3.4 Comparison of VAS Pain Scores between Study Groups

Before treatment, there was no significant difference in VAS pain scores between the groups (t=−1.13, P=0.267), indicating similar initial pain levels. However, post-treatment, the research group's pain scores decreased significantly more, from (8.64±1.16)to (3.35±1.24), compared to the control group, which decreased from(8.33±1.16)to(4.66±1.75)(t=4.15，P=0.0001). This significant difference highlights the greater effectiveness of the treatment approach used in the research group.(see Table 3).

Table 3: VAS Pain Score Comparison between Study Groups (n=94)

Group	Treatment Time	VAS Pain Scores
Research Group	Before	8.64±1.16
	After	3.35±1.24
Control Group	Before	8.33±1.16
	After	4.66±1.75
t1	-1.13	
p1	0.267	
t2	4.15	
p2	0.0001	

Note: t1 and p1 refer to comparisons before treatment; t2 and p2 refer to comparisons after treatment.

3.5 Comparison of Quality of Life between Study Groups

Post-treatment, the research group exhibited significantly higher quality of life scores across all measured aspects than the control group. The scores for physical pain (89.39±3.45 vs.77.40±3.95), vitality (87.65±3.52 vs.75.84±4.38), emotional role functioning (89.05±3.76 vs.76.44±3.35), and general health (86.61±2.22 vs.76.64±2.85) were all notably higher in the research group, with statistically significant differences (P<0.001) demonstrating an overall better quality of life. (see Table 4).

Table 4: Quality of Life Comparison between Study Groups (n=94)

Group	Physical pain	Vitality	emotional role	General health
Research Group	89.39±3.45	87.65±3.52	89.05±3.76	86.61±2.22
Control Group	77.40±3.95	75.84±4.38	76.44±3.35	76.64±2.85
t	15.49	14.25	16.99	18.69
p	0*	0*	0*	0*

Note: *p<0.001.

4. Discussion

In recent years, the incidence of cervical radiculopathy has been increasing annually, along with a trend toward younger patients, accelerated by changes in lifestyle and the pace of life [11]. Currently, clinical management of cervical radiculopathy includes both surgical and non-surgical treatments; however, using a single treatment modality often results in prolonged treatment duration and suboptimal outcomes [12]. Traditional Chinese Medicine (TCM) methods like tuina (massage) and acupuncture have been shown to significantly enhance treatment efficacy when used together, effectively alleviating clinical symptoms and improving the quality of life for patients with cervical radiculopathy[7,13]. This study indicates that the combined use of TCM tuina and acupuncture led to a significantly higher overall effectiveness in the research group compared to the control group, with statistically significant differences in reducing symptoms such as neck and shoulder pain, upper limb numbness, cervical muscle pain, and sensory disturbances ($P<0.001$).

Cervical radiculopathy is categorized within TCM as part of patterns like neck and shoulder pain, impediment syndrome, and stiff neck, primarily identified as patterns of deficiency in root and excess in manifestation. Pathological influences such as cold, wind, and dampness lead to qi and blood stagnation and meridian obstruction, manifesting clinically as neck stiffness, vertigo, and pain[14]. Treatment principles typically include invigorating blood and dispersing qi, warming and expelling cold, alleviating pain and reducing swelling, and unblocking channels to relax tendons[15]. Conservative treatments are usually preferred, encompassing traction, acupuncture, herbal applications, and tuina, with most patients experiencing symptom relief[16].

In this study, patients in the treatment group received a combined TCM tuina and acupuncture regimen targeting acupoints like Yintang, Taiyang, Tianzhu, Taixi, Dazhui, Kunlun, Sanyinjiao, Baihui, and Zusanli to enhance local blood circulation, repair damaged ligaments, muscles, and nerves, clear the channels and collaterals, and alleviate nerve root irritation and associated edema and inflammation, thus improving numbness and pain[15]. Tuina, a traditional Chinese manual therapy, involves non-pharmacological techniques using hands-on manipulation over meridians and specific points, effectively expelling pathogenic factors and supporting the body’s righteous qi to clear blocked meridians and alleviate pain, with enhanced effects when combined with acupuncture[17].

Additionally, this study found that the pain intensity was significantly lower in the research group compared to the control group ($P<0.001$), consistent with related research findings, confirming that the combined TCM tuina and acupuncture treatment effectively relieves pain in patients with cervical radiculopathy [7]. Cervical radiculopathy is common when intervertebral disc degeneration leads to decreased nucleus pulposus content and reduced elasticity of the surrounding fibrous ring, resulting in degenerative changes in the cervical spine and chronic soft tissue injuries[18]. Patients typically present with paravertebral muscle pain, neck pain, numbness, and muscle strength impairment in the affected roots, and in severe cases, bone spurs and muscle atrophy, which impact daily life. Modern studies have confirmed that acupuncture at the mentioned points can relieve muscle spasms, loosen adhesions, reduce local pain and swelling, enhance muscle tone, and improve joint function[13]. As a natural therapy, tuina is easy to administer clinically, showing quick effectiveness. Interventions such as plucking, kneading, and stretching the neck and shoulders can significantly improve patients' pain sensation and stabilize the physiological structure during stable periods, while massage of the neck and shoulder points facilitates meridian circulation, blood circulation, and qi movement, and repairs tendons.

Furthermore, the study found that physical pain, vitality, emotional functioning, and general health scores were all higher in the research group than in the control group, with statistically significant differences ($P<0.001$), suggesting that the combined TCM tuina and acupuncture treatment can enhance life quality and aid in the rapid recovery of patients with cervical radiculopathy. Further

studies are needed to explore the long-term effects of this treatment approach due to factors like time.

In conclusion, the combined TCM tuina and acupuncture treatment regimen for patients with cervical radiculopathy improves clinical symptom indicators, effectively relieves pain, and enhances quality of life.

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