

Observation on the therapeutic efficacy of acupuncture plus tuina for cervical vertigo

针刺结合推拿治疗颈性眩晕疗效观察

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Abstract

Objective: To observe the clinical efficacy and action mechanism of Jin's three-needle acupuncture plus Long's chiropractic tuina manipulations in treating cervical vertigo.

Methods: By adopting a randomized controlled method, 80 eligible patients were randomized into an observation group of 41 cases and a control group of 39 cases. The control group was intervened by Jin's cervical three-needle acupuncture plus acupuncture at the vertigo-pain points and Fengchi (GB 20); the observation group was by Long's chiropractic tuina manipulations in addition to the treatment given to the control. For both groups, the intervention was given once a day, 7 sessions as a treatment course, with a 1-day interval after a course, for 2 courses in total. The therapeutic efficacy was evaluated after the first session and the second treatment course, at the 3-month and 6-month follow-ups.

Results: After the first session, the recovery plus markedly effective rate of the observation group was significantly higher than that of the control group ($P < 0.01$); the rate was markedly higher in the observation group than that in the control group after 2 treatment courses ($P < 0.01$); at the 3-month follow-up, the relapse rate was 2.5% in the observation group versus 13.5% in the control, and the between-group difference was statistically insignificant ($P > 0.05$); the 6-month follow-up study showed that the relapse rate was 5.0% in the observation group versus 21.6% in the control group, and the between-group difference was statistically significant ($P < 0.05$); at the 6-month follow-up, the total relapse rate was 7.5% in the observation group versus 35.1% in the control group, and the inter-group difference was statistically significant ($P < 0.01$).

Conclusion: The two treatment protocols are both effective in treating cervical vertigo. However, due to its more significant efficacy, more efficient action and lower relapse rate compared to acupuncture alone, acupuncture plus tuina can be regarded as a verified protocol for cervical vertigo.

Keywords: Acupuncture Therapy; Electroacupuncture; Jin's Three-needle; Tuina; Massage; Manipulation, Chiropractic; Cervical Spondylosis; Vertigo

【摘要】目的: 观察靳三针结合龙氏推拿正骨法治疗颈性眩晕的临床疗效和机理。**方法:** 采取随机对照的方法, 将符合纳入标准的 80 例患者随机分为观察组 41 例和对照组 39 例。对照组采用靳氏颈三针、晕痛针加风池治疗; 观察组在对照组治疗基础上加用龙氏推拿正骨治疗。两组均每日治疗 1 次, 7 次为 1 个疗程, 疗程间休息 1 d, 共治疗 2 个疗程。观察治疗 1 次、2 个疗程结束后和治疗结束 3 个月、6 个月随访时的疗效。**结果:** 观察组治疗 1 次后的愈显率明显优于对照组($P < 0.01$); 2 个疗程结束后观察组愈显率明显优于对照组($P < 0.01$); 随访 3 个月时观察组复发率为 2.5%, 对照组为 13.5%, 但两组复发率无统计学差异($P > 0.05$); 随访 6 个月时观察组复发率为 5.0%, 对照组为 21.6%, 两组复发率有统计学差异($P < 0.05$); 6 个月随访时观察组总复发率 7.5%, 对照组为 35.1%, 两组总复发率有统计学意义($P < 0.01$)。**结论:** 两种治疗方案对颈性眩晕均有疗效, 但针刺结合推拿疗效优于单纯针刺治疗, 具有见效快、复发率低的特点, 可作为治疗颈性眩晕的可行方案。

【关键词】 针刺疗法; 电针; 靳三针; 推拿; 按摩; 手法; 脊椎按摩疗法; 颈椎病; 眩晕

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The incidence rate of cervical vertigo has been increasing significantly during the recent years, and thus has attracted the medical workers to conduct

explorations from both Chinese and Western medicine. However, most of the studies are symptom observations, but they don't have unified diagnostic criteria, and the therapeutic efficacies vary significantly, not to mention the high recurrence rate. To seek an effective treatment protocol for cervical vertigo, this study observed the clinical efficacy of Jin's three-needle acupuncture plus chiropractic tuina manipulations in treating cervical

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vertigo, and conducted follow-ups to study the long-term efficacy. The report is given as follows.

1 Clinical Materials

1.1 Diagnostic criteria

According to the *Guidelines on Diagnosis Treatment and Rehabilitation of Cervical Spondylosis* stipulated by the Committee of Cervical Spondylosis of Chinese Association of Rehabilitation Medicine in 2010, cervical spondylosis is divided into different types based on the affected tissues and structures: neck type (also named soft tissue type), nerve root type, spinal cord type, sympathetic type, vertebroarterial type, and other types (so far, majorly esophageal compression type). It would be called mixed type if there is a coexistence of two or more of the above types. For the diagnosis of cervical vertigo, the criteria haven't been unified yet^[1]. Some people hold that cervical vertigo is just the cervical spondylosis of vertebroarterial type; Chen XQ, *et al* believe that cervical vertigo should be associated with the uncovertebral joint disorders^[2]; Yu TB, *et al* think that it should be related to cervical spondylosis of sympathetic type^[3]; it's also said that the development of cervical vertigo is directly influenced by the degenerative intervertebral disc^[3]. The diagnostic criteria adopted in the current study were made based on considering the relevant literatures.

1.1.1 Clinical manifestations

The vertigo was paroxysmal, sometimes accompanied by nausea, vomiting, tinnitus, deafness, and nystagmus; the vertigo often happened at getting up from bed, turning head, or over-raising neck, and could be released or mitigated by ceasing the above movements; male and female run an equal risk of developing this disease, and the blood pressure was basically normal; the accompanied headache usually occurred in occiput or one side of the head, presenting dull pain, throbbing pain, or diffuse pain; fainting may occur in severe cases but without loss of consciousness.

1.1.2 Physical signs

Limited neck movement, cervical spinous process deviation possibly found by palpation majorly in atlantoaxial spine, and tenderness beside the spine; alteration of the line of cervical spine or cervical axis; positive Fenz sign.

1.1.3 Examinations

X-ray or magnetic resonance imaging (MRI) examination revealed lateral atlantodental interval and atlantoaxial space asymmetry, asymmetry of external margin of atlantoaxial spine, unequal distances between the odontoid process axis and the outer margin of axial spine, or unparallel between the odontoid process axis and the axis of atlantoaxial spine, posterior tubercle of the axis curled up, degeneration of cervical vertebral

body, intervertebral disc, and uncovertebral joint, and/or calcification of nuchal ligament, alterations of cervical curve; ultrasonic sound found vertebrobasilar insufficiency.

1.2 Inclusion criteria

Conforming to the above diagnostic criteria; X-ray or MRI confirmed that the dizziness or vertigo was caused by cervical problems; patients were able to finish the whole treatment sessions; patients had signed the informed consent form.

1.3 Exclusion criteria

Those against the above diagnostic and inclusion criteria; vertigo not caused by cervical problems; coupled with severe osteoporosis, tumor, or tuberculosis; those unable to finish the whole study.

1.4 Statistical methods

The SPSS 21.0 version software was adopted for data analyses. The measurement data were expressed by mean \pm standard deviation ($\bar{x} \pm s$), and between-group comparisons were performed by independent sample *t*- or *t'*-test; the enumeration data were expressed by frequency, ratio, or mean rank, the small-sample size ratios were compared by Mann-Whitney *U* test, and the Fisher's exact probability test was used for fourfold table data. With $\alpha=0.05$, $P<0.05$ was regarded to have a statistical significance.

1.5 General data

The 80 subjects were all recruited from our hospital from August 2014 to February 2015. Among the subjects, 52 patients had minor dislocation of atlantoaxial joint, 56 had dislocated uncovertebral joint, 73 had alteration of cervical axis or cervical kyphosis, and 65 patients had 2 or 3 of the above items. The subjects were randomized into an observation group of 41 cases and a control group of 39 cases. In the observation group, the age ranged from 25 years old to 69 years old, and the disease duration was from 1.5 d to 31 months. In the control group, the age ranged from 24 years old to 68 years old, and the disease duration was from 1 d to 31 months. There were no significant differences in comparing the average age, ratio of gender, disease severity, and average disease duration between the two groups ($P>0.05$), indicating the comparability (Table 1).

The patients had signed the informed consent form before the treatment started, and they all presented with good compliance during the process, without drop-outs.

2 Treatment Methods

2.1 Observation group

Patients in the observation group were given acupuncture and tuina treatment.

2.1.1 Acupuncture

Major points: The three cervical points on both sides [Tianzhu (BL 10), Jingbailao (EX-HN 15)]; the vertigo-pain points [Sishenzhen: 1.5 cun respectively from left, right, anterior, and posterior to Baihui (GV 20), plus Yintang (GV 29) and Taiyang (EX-HN 5)], and Fengchi (GB 20).

Adjunctive points: Qihai (CV 6), Zusanli (ST 36), and

Sanyinjiao (SP 6) were added for qi-blood insufficiency; Taixi (KI 3), Sanyinjiao (SP 6), Zusanli (ST 36), and Xuanzhong (GB 40) for kidney essence deficiency; Taichong (LR 3), Taixi (KI 3), and Yongquan (KI 1) for hyperactivity of liver yang; Fenglong (ST 40), Zhongwan (CV 12), and Zusanli (ST 36) for phlegm blocking the middle jiao.

Table 1. Comparison of the general data

Group	n	Gender (case)		Mean age ($\bar{x} \pm s$, year)	Mean duration ($\bar{x} \pm s$, month)	Disease condition		
		Male	Female			Mild	Moderate	Severe
Observation	41	20	21	48.1±20.4	6.3±2.1	10	21	10
Control	39	19	20	47.8±16.4	6.4±2.1	9	20	10

Operation: Filiform needles of 0.30 mm in diameter and 40 mm in length were used to puncture the above points after standard sterilization with slow and gentle twirling manipulation. Tianzhu (BL 10), Jingbailao (EX-HN 15), and Dazhu (BL 11) were inserted for about 1 cun, and Dazhu (BL 11) should be punctured obliquely inward till the qi sensation was obtained; Sishenzhen (Extra), Yintang (GV 29), and Taiyang (EX-HN 5) were inserted obliquely by 1.0-1.2 cun, and then connected to Huatuo brand electroacupuncture apparatus with sparse-dense wave and frequency at 2-50 Hz. The needles were retained for 30 min, once a day, 7 sessions as a course, with a 1-day interval after a course, for 2 courses in total.

2.1.2 Chiropractic tuina manipulations

According to the palpation from the external occipital protuberance along cervical spine (from the atlas vertebra till C₇), and the X-ray and MRI examinations, the patient was treated with ordinary thumb Tui-pushing and Gun-rolling manipulations along the occipital line and cervical spine to relax muscles and tendons. Afterwards, corresponding chiropractic manipulations were applied based on the affected cervical segment and the type the displacement^[4].

Swinging-head manipulation in a supine position: The patient took a supine position on a thin pillow, and the practitioner sat by one side of the head of the patient and held the jaw with one hand and the occiput with the other hand. Raised up the jaw, turned the head aside, and slowly swung the head 2-3 times. When the patient was asked to relax the neck, the practitioner turned the patient's head till a comparatively limited range and applied a sudden force. Usually, a cracking sound could be heard at the time that the displaced joint was corrected. This stroke is usually used for the displacement of occipito-atlantoid and atlantoaxial joints (Figure 1).

Swinging-head manipulation in a lateral position: The patient took a lateral position on a thin pillow with neck

flexion by 20-30°. The practitioner held the patient by the head with one hand, and pressed the affected vertebral joint with the thumb of the other hand. Raised up the head to do lateral flexion and then swung the head to correct the displacement. This manipulation is usually used for the rotation displacement of C₂₋₆ uncovertebral joints (Figure 2).



Figure 1. Swinging-head manipulation in a supine position

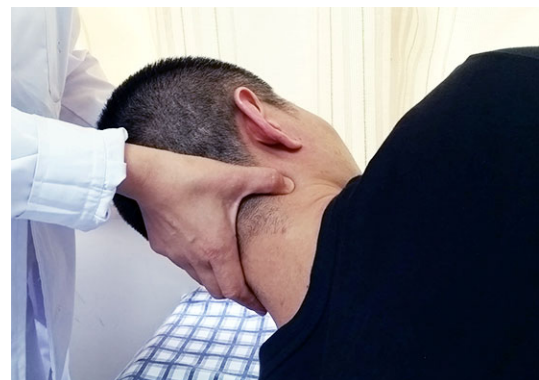


Figure 2. Swinging-head manipulation in a lateral position

Swinging-head manipulation with head bowed: The patient took a lateral position with head bowed (neck flexion by 20-30°). The practitioner held the patient by the occiput with one hand and pressed the displaced

transverse process or protuberance with the thumb as the fixed point, and then held the patient's cheek as the moving point. Turned the head till the limited range and applied a sudden force with the hand at the moving point and restored the displacement. This manipulation was repeated 2-3 times, usually used for the rotation displacement of the posterior joints of C₂₋₆ (Figure 3).

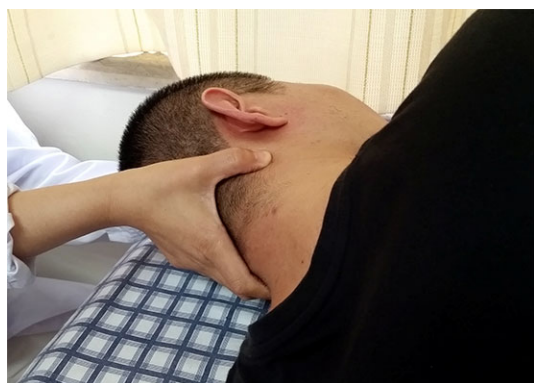


Figure 3. Swinging-head manipulation with head bowed

Pushing manipulation in a lateral position: The patient took a lateral position with head bowed. The practitioner held the sides of the protuberant spinous process as the fixed point, and held the jaw to flex and raise the neck. When the patient's head was raised, the practitioner used the hand at the fixed point to slightly push forward, for correcting the displacement during movement. For slip displacement, the practitioner should raise the patient's head with both hands during the pushing manipulation, for better correcting the displacement. This manipulation is usually used for cervical spondylolisthesis, especially for straight or reverse physiological curvature of cervical vertebrae (Figure 4).

Crossing-angle moving pressing manipulation: The patient took a lateral position on the healthy side with neck flexion by 30°. The practitioner gently plucked the tense cervical muscles with thumb to induce out the incarcerated synovia, and then fixed at the protuberant point of the affected vertebral joint. Afterwards, the practitioner held the patient's head by the healthy side with the other hand. When the patient was asked to relax, the practitioner would move the patient's head towards the healthy side in an anteriolateral flexion by 45°, then raised the head up by 45° towards the affected side, applied slight force to the fixed point for 10-15 s, and finally swung the moving hand for 2-3 times to finish the operation (Figure 5). This method is usually used for the displacement of the posterior joints of C₂₋₄ of the mixed type (commonly seen in cervical spondylosis of sympathetic type), (Figure 5).

The above mentioned are the common manipulations used for cervical vertigo, and can be combined accordingly based on the patient's condition.

For patients who need a traction treatment, the traction should be used after the chiropractic manipulations, for avoiding the aggravation of vertigo.

The chiropractic tuina manipulations were performed once a day, 7 d as a treatment course, with a 1-day interval between 2 courses, for 2 successive courses in total.



Figure 4. Pushing manipulation in a lateral position



Figure 5. Crossing-angle moving pressing manipulation

2.2 Control group

The control group only received the same acupuncture treatment, with the same points and needles, following the same method and treatment duration.

3 Observation of Therapeutic Efficacy

3.1 Criteria of therapeutic efficacy

Recovery: The symptoms and signs were gone, and X-ray or MRI examination showed normal.

Markedly effective: The symptoms and signs were basically gone, and X-ray or MRI examination showed generally normal.

Improved: The symptoms and signs were improved, and X-ray or MRI examination showed improvement.

Invalid: The symptoms and signs were not changed, and X-ray or MRI examination showed no discernable improvement.

3.2 Results

3.2.1 Comparison of clinical efficacy after the first session

After the first treatment session, 3 cases were cured, 16 showed markedly effective, 20 showed improved, and 2 failed in the observation group; 0 subject was cured, 9 showed markedly effective, 23 showed improved, and 7 failed in the control group. There was a significant difference in comparing the recovery rate between the two groups after the first session ($U=553.000$, $P=0.008$). The total effective rate was 92.7% in the observation group, higher than 82.1% in the control group, but the difference had no statistical significance ($P=0.084$), (Table 2).

3.2.2 Comparison of clinical efficacy after 2 treatment courses

After 2 treatment courses, 25 cases were recovered, 10 showed markedly effective, 5 showed improved, and 1 failed in the observation group; 4 cases were recovered, 18 showed markedly effective, 15 showed improved, and 2 failed in the control group. The recovery plus markedly-effective rate of the observation group was significantly higher than that of the control

($U=19.408$, $P=0.001$). Although the total effective rate of the observation group was higher than that of the control, the difference had no statistical significance ($P=0.611$), (Table 3).

3.2.3 Comparison of follow-up studies

Criteria of relapse: After treatment, the patient was evaluated as recovered, but the symptoms recurred afterwards; or, in the markedly effective cases, the improved symptoms became worse, and X-ray or MRI examination also revealed an aggravation compared to the condition at the end of the treatment.

Three months after the intervention, the relapse rate was 2.5% in the observation group versus 13.5% in the control group, and the difference was statistically insignificant ($P=0.105$); six months after the intervention, the relapse rate was 5.0% in the observation group versus 21.6% in the control group, and the difference was statistically significant ($P=0.043$). The total relapse rate was 7.5% in the observation group 6 months after the intervention, significantly lower than 35.1% in the control group ($P=0.004$).

Table 2. Comparison of clinical efficacy after the first session (case)

Group	<i>n</i>	Recovery	Markedly effective	Improved	Invalid	Recovery and markedly effective rate (%)	Total effective rate (%)
Observation	41	3	16	20	2	46.3 ¹⁾	92.7
Control	39	0	9	23	7	23.1	82.1

Table 3. Comparison of clinical efficacy after 2 courses (case)

Group	<i>n</i>	Recovery	Markedly effective	Improved	Invalid	Recovery and markedly effective rate (%)	Total effective rate (%)
Observation	41	25	10	5	1	85.3 ¹⁾	97.6
Control	39	4	18	15	2	56.4	94.9

Note: Compared with the control group, 1) $P<0.01$

Table 4. Comparison of the follow-up studies on the relapse rate (case)

Group	<i>n</i>	3 months later	6 months later	Total relapse rate (%)
Observation	40	1	2 ¹⁾	7.5 ²⁾
Control	37	5	8	35.1

Note: Compared with the control group, 1) $P<0.05$, 2) $P<0.01$

3.3 Safety

Thanks to the safety education prior to the intervention, the patients all showed content compliance, and there were no events of fainting during acupuncture, needle stuck, needle broken, or needle bent. Meanwhile, because the practitioner always paid attention to comfort the patients, they all managed to well relax themselves during the operation of manipulations. One case from each group had slight

bleeding once after acupuncture treatment, no pain, but mild bruise occurred afterwards, and was recovered the next day.

4 Discussion

The over-using of cellphone, computer, and automobile gives the users a long-term tense neck, which is a major factor causing such a high incidence of cervical vertigo. The study of Wang ZC suggested that the vertebrobasilar insufficiency due to carotid artery stenosis should be one of the risk factors of ischemic stroke^[5], occupying 30% of cerebral infarction^[6]. Therefore, it's of great significance to seek a safe and effective treatment protocol for cervical vertigo. Many researchers have conducted a series of studies in this field, e.g., Huang GZ, *et al* focused on the causes of the disease^[7], Tu YH, *et al* studied from the aspects of

diagnosis and treatment^[8], and Wei JJ, *et al* searched from the aspect of auxiliary examinations^[9]. They all have achieved certain progresses. There were also explorations in the treatment method, such as Western medication, physical factors, and various gymnastics. Yu ZZ, *et al* observed the traction treatment^[10]; Quan WC, *et al* adopted the needle-knife treatment^[11]; Qiu HH, *et al* used stellate ganglion block^[12]; Ren LX, *et al* applied percutaneous laser disk decompression^[13]; Wei Z, Long CH, *et al* used chiropractic tuina manipulations^[4,14]. These methods all produced discernable effects.

In traditional Chinese medicine (TCM), cervical vertigo used to be discussed under the terms of nape Bi-impediment or vertigo, and the earliest record of vertigo appeared in *Huang Di Nei Jing (Yellow Emperor's Classic of Internal Medicine)*, named *Xuan Mao* (dizziness and fainting). Vertigo has a complicated pathogenesis, which involves deficiency, pathogenic wind, phlegm, and the liver. As a type of vertigo, cervical vertigo can be caused by various reasons, involving both the external and internal factors, including the disharmony of the liver and gallbladder, and deficiency of qi and blood. Numerous doctors fully played the advantage of TCM^[15] to treat cervical vertigo with integrated methods and achieved significant effect: Zhang T, *et al* used warm needling^[16]; Liu H adopted acupuncture at cervical Jiaji points (EX-B 2) plus blood-supply needling^[17]; Piao NJ used acupuncture plus cupping and tuina^[18]; Lu SC used Jin's three-needle acupuncture based on syndrome differentiation to treat cervical vertigo and produced a total effective rate of 95.4%^[19].

This study was to find a treatment protocol with a stable long-term effect for cervical vertigo. Modern biomechanics holds that bones and tendons provide the static balance for joints, while muscles offer the dynamic balance^[20-23]. Long's chiropractic tuina manipulations adopted in this study can improve both the static and dynamic balance of cervical vertebrae. It can release the spasm of the cervical tissues, relieve the compression on vertebral arteries and the stimulation to sympathetic nerves, correct the alterations of cervical curvature, and strengthen the joint stability. Besides, Jin's three-needle acupuncture based on syndrome differentiation used in the current study can improve the blood supply of vertebral arteries and basilar arteries^[19]. The combination of acupuncture and tuina works on both the superficial symptoms and underlying reasons, and it's efficient and can achieve a satisfactory long-term efficacy.

In addition to the subjective symptoms, X-ray and MRI were also used to measure the treatment results, which can keep the accordance with the diagnostic criteria and enhance the objectivity and accuracy in the diagnosis and the evaluation of therapeutic efficacy.

Concerning the invalid cases, there are several possible reasons: big hyperplasia at the compression of vertebral artery, short treatment term, or severe adhesion in the surrounding tissues. We think that longer treatment duration may reduce the invalid cases.

Moreover, the key to preventing cervical vertigo and avoiding relapse is to strike a proper balance between work and rest. It's one of the effective approaches in decreasing the incidences of cerebral infarction and vascular dementia to effectively treat cervical spondylosis and cervical vertigo. Hence, it's of positive significance to emphasize the prevention and treatment of cervical spondylosis.

Conflict of Interest

The author declared that there was no potential conflict of interest in this article.

Statement of Informed Consent

Informed consent was obtained from all individual participants included in this study.

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