# **Clinical Study**

# Clinical effect observation on liver-regulating and blood-tonifying acupuncture for cervical spondylosis of vertebral artery type

调肝养血针刺法治疗椎动脉型颈椎病疗效观察

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# Abstract

**Objective:** To observe the clinical effect of liver-regulating and blood-tonifying acupuncture in the treatment of cervical spondylosis of vertebral artery type.

**Methods:** A total of 60 cases meeting the inclusion criteria were randomized into an observation group and a control group, 30 cases in each group. Cases in the observation group received liver-regulating and blood-tonifying acupuncture, in which Jiaji (EX-B 2) points of  $C_{3}$ - $C_{7}$ , Ganshu (BL 18) and Geshu (BL 17) were used; cases in the control group received routine acupuncture treatment in which Jiaji (EX-B2) points of  $C_{3}$ - $C_{7}$ , Ganshu (BL 18) and Geshu (BL 17) were used; cases in the control group received routine acupuncture treatment in which Jiaji (EX-B2) points of  $C_{3}$ - $C_{7}$  were used. Both groups received 5 times of treatment in a week with a 2-day rest, symptoms evaluation was done after 4 weeks of treatment, and then therapeutical effect was evaluated.

**Results:** The total effective rate was 90.0% in the observation group, 73.3% in the control group, and inter-group comparison showed a statistical significance (P<0.05). After treatment, the symptoms and signs scores in both groups all substantially dropped, showing statistical significances (both P<0.05); inter-group comparison showed that the improvements in subscales of dizziness, pressing pain along vertebrae and revolve-cervix test in the observation group were superior than those in the control group, showing statistical significances (all P<0.05), while the inter-group comparisons of subscales of headache and vomiting and nause didn't show any statistical significances after treatment (both P>0.05).

**Conclusion:** Liver-regulating and blood-tonifying acupuncture is effective in treating cervical spondylosis of vertebral artery type, and it can significantly improve patients' symptoms and signs.

**Keywords:** Acupuncture Therapy; Spondylosis; Cervical Spondylosis; Dizziness; Points, Cervical; Point, Ganshu (BL 18); Point, Geshu (BL 17)

【摘要】目的:观察调肝养血针刺法治疗椎动脉型颈椎病的临床疗效。方法:将 60 例符合纳入标准的患者按随机数字表法分为观察组和对照组,每组 30 例。观察组接受调肝养血针刺法,取穴为颈 3-7 夹脊穴,肝俞和膈俞;对照组予普通针刺,取穴为颈 3-7 夹脊穴。两组均每星期治疗 5 次,休息 2 d,治疗 4 星期后观察两组症状及体征 评分变化,并评价临床疗效。结果:观察组总有效率为 90.0%,对照组为 73.3%,两组差异有统计学意义(P<0.05)。治疗后两组症状、体征评分均较本组治疗前下降,组内差异有统计学意义(P<0.05);组间比较,观察组眩晕、椎 旁压痛点及旋颈试验改善情况优于对照组,组间差异有统计学意义(均 P<0.05),而头痛、恶心呕吐改善情况两组 差异无统计学意义(均 P>0.05)。结论:调肝养血针刺法治疗椎动脉型颈椎病疗效确切,能明显改善患者的临床症 状和体征。

【关键词】针刺疗法; 椎关节强硬; 颈椎病; 眩晕; 穴位, 颈部; 穴, 肝俞; 穴, 膈俞 【中图分类号】R246.2 【文献标志码】A

With the wide spread of electronic devices, especially smart phone, more and more young people are becoming phubbers, who are easily affected by cervical spondylosis, and cervical spondylosis of vertebral artery type (CSA) is the most common type. CSA is characterized by episodic dizziness; the imbalanced spinal biomechanics is its primary pathological basis<sup>[1-2]</sup>. Clinical researches showed that acupuncture has certified effect for CSA with no obvious adverse reactions<sup>[3-4]</sup>, and its mechanism includes regulation of haemodynamics, blood rheology, neurotransmitters, inflammatory factors, free radical metabolism, humoral factors and spinal biomechanics<sup>[5-6]</sup>. Based on traditional Chinese medicine (TCM) theory and after a long term of clinical observation, we found that the pathogenesis of CSA is liver blood deficiency and malnourishment of meridians. Some scholars also confirmed the effectiveness of treating CSA from liver<sup>[7]</sup>. We have observed the clinical effect of liver-regulating and

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blood-tonifying acupuncture for CSA, and the results are shown as follows.

# **1** Clinical Materials

## 1.1 Diagnosis criteria

The Western medicine diagnosis was based on the Third National Cervical Spondylosis Symposium, 2008<sup>[8]</sup>: having typical root symptoms (arm numbness or pain), with the same innervated area of the cervical spinal nerve; positive carotid compression test or Eaten test; imaging test (X-ray or MRI) conforming to clinical manifestations; excluding other diseases causing pain in the upper limbs which are not related with cervical vertebrae including thoracic outlet syndrome, tennis elbow, carpal tunnel syndrome, cubital tunnel syndrome, scapulohumeral periarthritis and tenosynovitis of bicipital muscle of arms.

TCM diagnosis criteria (liver blood deficiency) were based on the *Guiding Principles for Clinical Study of New Chinese Medicines*<sup>[9]</sup>: swelling and heaviness in the neck area, dizziness, headache, vomiting and nausea, a pale complexion, numbness in the limb, tinnitus, palpitation, a pale tongue with white coating, a deep, thready and weak pulse.

## 1.2 Inclusion criteria

Conforming to both the Western medicine criteria of CSA and TCM criteria for liver blood deficiency; aged between 18-60 years, male or female; informed consent.

# 1.3 Exclusion criteria

Didn't conform to the inclusion criteria above; other types of cervical spondylosis; non liver blood deficiency pattern; dizziness caused by Meniere's syndrome or high blood pressure; with serious systematic diseases; with mental disorder; during pregnancy or lactation or preparing for pregnancy; afraid of acupuncture treatment or failed to follow the treatment.

# 1.4 Statistical methods

The data processing was done using the SPSS 21.0 version software. The unranked enumeration data comparison was conducted by the Chi-square test. The mean  $\pm$  standard deviation ( $\overline{x} \pm s$ ) was used to describe measurement data of normal distribution, the independent sample *t*-test was used for between-group comparison, whereas paired sample *t*-test was used for inter-group comparison. The *Ridit* analysis was used for ranked data. A *P*-value of less than 0.05 indicated a statistical significance.

## 1.5 General data

The total 60 cases in this study were all from the Rehabilitation Department of Shekou People's Hospital of Shenzhen City between May 2015 and May 2016. Patients in the observation group (n=30) were aged between 18 and 57 years and their duration lasted for 0.5-7.0 years. Patients in the control group (n=30)

were aged between 19 and 60 years and their duration lasted for 1.0-7.0 years. Between-group comparison showed no statistical significances (all P > 0.05), indicating that the two groups were comparable (Table 1).

Table 1.	Between-groun	comparison	in	haseline data	
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C		Gender (case)		Mean age	Mean duration	
Group	n	Male	Female	$(\overline{X}\pm s, year)$	$(\overline{X}\pm s, year)$	
Observation	30	17	13	34.1±3.5	2.6±0.4	
Control	30	16	14	33.7±4.1	2.6±0.4	

# 2 Treatment Methods

# 2.1 Observation group

Points: Bilateral Jiaji (EX-B 2) points from  $C_3$  to  $C_7$ , Ganshu (BL 18) and Geshu (BL 17).

Method: Patients took a supine position. After routine sterilization, disposable filiform needle of 0.25 mm in diameter and 25-40 mm in length were punctured by 30 ° lateral to the spine with a depth of 13 mm at C<sub>3</sub>-C<sub>7</sub> Jiaji (EX-B 2) points on bilateral sides, and reducing manipulation of twirling and rotating were performed after qi arrival; obliquely punctured towards spine for 13-20 mm at Ganshu (BL 18) and Geshu (BL 17) and did even reinforcing-reducing manipulation after qi arrival. Needles were retained for 30 min, manipulated the needles every 10 min, 30 s each time. The treatment was done 5 times a week with a 2-day rest.

# 2.2 Control group

Points: Jiaji (EX-B 2) points from  $C_3$  to  $C_7$  on bilateral sides.

Methods: Same as that in the observation group.

A course of treatment lasted for 4 weeks. Patients were asked not to lower head during using phone and computer; taking a low pillar and keeping warm around neck area.

# **3 Therapeutic Effect Observation**

No dropout cases in both groups during treatment. **3.1 Symptoms and signs scale** 

Symptoms including dizziness, headache, vomiting and nausea were evaluated according to the syndrome-classification scale in the *Guiding Principles for Clinical Study of New Chinese Medicines*<sup>[9]</sup>, in which number 0-3 was used to represent no, mild, middle, and severe symptoms separately. The evaluation was done before and after treatment.

The visual analogue scale (VAS)<sup>[10]</sup> was used for evaluating the pressing pain along cervical vertebrae. VAS <1 was recorded as 0 point; VAS  $\geq$ 1 but <4 as 1 point; VAS  $\geq$ 4, but <7 as 2 points; VAS  $\geq$ 7 as 3 points.

Revolve-cervix test: Negative was recorded as 0; positive and the range of motion between 20 ° and 30 ° as 1 point; between 10 ° and 20 ° as 2 points; <10 ° as 3 points.

#### 3.2 Evaluation criteria

This was based on the therapeutic efficacy evaluation in *Guiding Principles for Clinical Study of New Chinese Medicines*<sup>[9]</sup>.

Recovery: Symptoms and signs score decreased by  $\geq$  95%, and X-ray of cervical vertebrae showed no problems.

Marked effect: Symptoms and signs score decreased by  $\geq$ 75%, but <95%, and X-ray of cervical vertebrae showed significant improvement.

Improvement: Symptoms and signs score decreased by  $\geq$  30%, but <70%, and X-ray of cervical vertebrae showed improvement.

Invalid: Symptoms and signs score decreased by less than 30%, and X-ray of cervical vertebrae didn't show any improvement.

# 3.3 Results

#### 3.3.1 Comparison of clinical efficacy

The total effective rate was 90.0% in the observation group, versus 73.3% in the control group, and the between-group comparison showed a statistical significance (P < 0.05), indicating that liver-regulating and blood-tonifying acupuncture was better than routine acupuncture treatment (Table 2).

# 3.3.2 Comparison of the symptoms and signs score

There were no between-group statistical significances in comparing symptoms and signs scores before treatment (P > 0.05). After treatment, there were intragroup statistical significances in comparing symptoms and signs scores in both groups (P < 0.05); inter-group comparison showed that the improvements in subscales of dizziness, pressing pain along vertebrae and revolve-cervix test of the observation group were better than those in the control group, showing statistical significances (P < 0.05), while there were no between-group statistical significances in comparing headache, vomiting and nausea (P > 0.05), (Table 3).

#### Table 2. Comparison of clinical efficacy (case)

Group	п	Recovery	Marked effect	Improvement	Invalid	Total effective rate (%)		
Observation	30	10	13	4	3	90.0 <sup>1)</sup>		
Control	30	6	9	7	8	73.3		

Note: Intra-group comparison, 1) P<0.05; between-group comparison after treatment, 2) P<0.05

#### Table 3. Comparison of symptoms and signs scores ( $\overline{x} \pm s$ , point)

Group	п	Time	Dizziness	Headache	Vomiting and nausea	Pressing pain along vertebrae	Revolve-cervix test
Observation	30	Before treatment After treatment	$\begin{array}{c} 2.17{\pm}1.24\\ 0.32{\pm}0.07^{1)2)} \end{array}$	$2.42\pm1.36$ $0.57\pm1.02^{1)}$	2.09±1.33 0.59±0.76 <sup>1)</sup>	$2.43{\pm}1.35\\0.62{\pm}1.04^{1)2)}$	$\begin{array}{c} 2.41{\pm}1.68\\ 0.87{\pm}1.53^{1)2)} \end{array}$
Control	30	Before treatment After treatment	2.21±1.15 0.68±0.13 <sup>1)</sup>	2.47±1.21 0.64±1.15 <sup>1)</sup>	2.11±0.89 0.64±0.48 <sup>1)</sup>	$2.51\pm1.55$ $1.18\pm1.27^{1)}$	2.48±1.71 1.21±1.62 <sup>1)</sup>

Note: Intra-group comparison, 1) P<0.05; between-group comparison after treatment, 2) P<0.05

## 4 Discussion

According to its clinical manifestation, CSA falls under the category of Bi-impediment syndrome, dizziness and stiffness of the neck in TCM and is usually caused by long-duration usage of phone, computer or other electronic devices. These are the main causes of stiffness and soreness around the neck and fatigue in eyes which pertain to *Wu Lao* (five consumptions) in TCM. *Su Wen* (*Essential Questions*) has recorded that exhaustion of sight harms blood, exhaustion of bed-rest harms qi, exhaustion of standing harms bone, and exhaustion of sight harming blood literally means staring at something for a long duration will drain up nutrient-blood and thus cause malnourishment of eyes and finally cause fatigue in eyes and decreased eyesight. TCM theory holds that liver stores blood and maintains the free flow of qi. On the one hand, it can restrain liver qi to prevent the over uplifting of liver yang, and on the other hand, by soothing qi movement, liver can transmit blood to every part of the body to nourish tissues and organs. At the same time, liver opens into the eyes. Long duration of lowering head and reading will harm liver blood and impact on blood regulation, therefore causing malnourishment of neck muscles and tendons. Therefore, the main causes of CSA in phubbers are deficiency of liver blood and malnourishment of meridians, causing deficient yang disturbing the clear orifices, and the treatment should be focused on regulating liver and tonifying blood.

Jiaji (EX-B 2) points in the prescription have the function of blood-activating and meridian-unblocking, and moving qi to relieve pain. Research has proven the effectiveness of these points for CSA<sup>[11-16]</sup>. Electroacupuncture at Jiaji (EX-B 2) points has a good efficacy for CSA with little adverse reaction, and can accelerate blood circulation of vertebrobasilar artery<sup>[17]</sup>; point injection at Jiaji (EX-B 2) points can adjust endothelin (ET) and calcitonin gene-related peptide (CGRP) level in CSA patients<sup>[18]</sup>. Back-Shu points are closely linked with Zang-fu organs and acupuncture at these points can regulate functions of Zang-fu organs in return. Modern research shows that the distribution of Back-Shu points coincides with the distribution of spinal nerves, and the reaction zone on body surface of internal organs are usually the location of the respective points<sup>[19-22]</sup>. Therefore, acupuncture at Back-Shu points can promote metabolism of tissues, relieve muscle spasm, remove suppression of blood vessels and nerves and thus alleviate or even eliminate the influence of body factors on visceral nerves. Ganshu (BL 18) locates where liver gi infusing on the body surface and has the functions of tonifying liver blood, relaxing sinews and activating collaterals; Geshu (BL 17) is the influential point of blood, and has the function of tonifying and activating blood, removing stasis and unblocking the meridians to stop pain. When combining Jiaji (EX-B 2) points with Back-Shu points, it can regulate liver and nourish blood, tonify meridians and also dredge meridians to stop pain. Yang RY, et al<sup>[23]</sup> have conducted a research to prove that the combination of Jiaji (EX-B 2) points and Back-Shu points can treat CSA effectively with an elevation of clinical efficacy.

Above all, Liver-regulating and blood-tonifying acupuncture has a significant therapeutic effect for CSA, and it can improve the symptoms and signs of patients. But, the sample size of this study was comparatively small, and there were no follow-up visits, so the long-term effect and mechanism require further investigation.

#### **Conflict of Interest**

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

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## **Statement of Informed Consent**

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

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