

Efficacy study on pestle needle combined with Chinese herbal fumigation for cervical spondylosis

杵针结合中药熏洗治疗颈椎病的临床疗效研究

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Abstract

Objective: To observe the clinical effect of pestle needle combined with Chinese herbal fumigation on cervical spondylosis and provide a safe effective therapy for this condition.

Methods: A total of 54 cases were randomly allocated into two groups (27 cases in each group) according to their sequence of consultation. Patients in both groups were treated with the same Chinese herbal fumigation. Patients in the treatment group were additionally treated with pestle needle therapy on a unique set of *Ba Zhen* points around Dazhui (GV 14), Fengfu (GV 16) and the distance between Naohu (GV 17) and Dazhui (GV 14) along the *He Che* pathway, whereas patients in the control group were additionally treated with routine acupuncture therapy. Then the short-term and long-term efficacies were observed and compared after treatment using the visual analog scale (VAS) and pain rating index (PRI).

Results: At the end of treatment, VAS scores were significantly decreased in both groups, and the VAS score in the treatment group was lower than that in the control group ($P < 0.05$). The intra-group differences were statistically significant in VAS scores 1 month, 3 and 6 months after treatment (all $P < 0.05$). At the end of treatment, the sensory and total PRI scores in the treatment group were significantly lower than those in the control group, showing statistically significant differences (both $P < 0.01$); and there was no significant between-group difference ($P > 0.05$) in the affective PRI score. At the end of treatment, the total effective rate was 85.2% in the treatment group, versus 65.4% in the control group, showing a statistical significance ($P < 0.05$). The follow-up six months later showed that the total effective rate was 92.6% in the treatment group, versus 76.9% in the control group, showing a statistical significance ($P < 0.05$).

Conclusion: Pestle needle therapy is a stable and positive therapy for cervical spondylosis.

Keywords: Massage; Pestle Needle; Cervical Spondylosis; Drugs, Chinese Herbal; Funigation; Pain Measurement; Visual Analog Scale

【摘要】目的: 观察杵针结合中药熏洗治疗颈椎病的临床效果, 为颈椎病治疗提供更安全有效的治疗方法。**方法:** 将 54 例颈椎病患者按就诊顺序随机分为 2 组, 每组 27 例, 两组患者均采用相同的中药熏蒸治疗。治疗组在中药熏洗基础上加用杵针大椎八阵穴、风府八阵穴、河车路脑户至大椎段治疗, 对照组则加用常规针刺治疗。观察两组治疗前后疼痛视觉模拟量表(visual analog scale, VAS)评分及疼痛分级指数(pain rating index, PRI)积分, 比较两组近期及远期临床疗效。**结果:** 治疗结束时, 两组 VAS 评分均较本组治疗前下降, 且治疗组 VAS 评分低于对照组 ($P < 0.05$)。治疗结束后 1 个月、3 个月及 6 个月, 两组 VAS 评分均与本组治疗前差异有统计学意义 ($P < 0.05$)。治疗结束时, 治疗组 PRI 感觉分及 PRI 总分的减少值均高于对照组, 组间差异均有统计学意义 (均 $P < 0.01$), 而 PRI 情绪分的减少值组间无统计学差异 ($P > 0.05$)。治疗结束时治疗组总有效率为 85.2%, 对照组为 65.4%, 两组总有效率具有统计学差异 ($P < 0.05$); 治疗结束 6 个月后随访, 治疗组总有效率为 92.6%, 对照组为 76.9%, 两组总有效率差异具有统计学意义 ($P < 0.05$)。**结论:** 杵针治疗颈椎病疗效肯定且稳定。

【关键词】 按摩; 杵针; 颈椎病; 中草药; 熏蒸; 疼痛测定; 视觉模拟量表

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As a common clinical condition, cervical spondylosis affects at least 90% of us some time in our lives. Some

patients may need surgery. Most patients respond well to nonsurgical therapies. Today, this condition affects millions of patients across the world annually and causes suffering to the patients and great labor loss to the society. External therapies for cervical spondylosis include acupuncture, tuina, external application of medicine, local injection of analgesic drugs and

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electrotherapy, etc. The non-invasive pestle needle therapy integrates acupuncture and massage. Unfortunately it's not widely used in clinical practice yet. This study intends to find a safe, effective therapy for cervical spondylosis. We observed the effect of pestle needle therapy combined with herbal fumigation and compared with standard acupuncture combined with herbal fumigation. The results are now summarized as follows.

1 Clinical Materials

1.1 Diagnostic criteria

This was based on the diagnostic criteria stipulated in the Interpretation of Guidelines for Diagnosis, Treatment and Rehabilitation of Cervical Spondylosis^[1]: a history of chronic strain/trauma or presence of congenital deformity or degeneration of cervical vertebrae; aged over 40 coupled with long-standing computer work or inappropriate posture; pain in the neck, shoulder and back, headache, dizziness, neck rigidity and numbness in the upper limbs; limited neck movement, tenderness or ropy nodules on the spinous process of involved vertebrae and on the medial superior angle of the scapula on the affected side, muscle weakness or atrophy of the upper limbs, and a positive Spurling's sign; cervical hyperplasia or deviated odontoid process in anteroposterior X-rays, straightened or inverted cervical curve, stenosis of intervertebral space, and hyperplasia or calcification of ligaments in lateral radiography and smaller intervertebral foramen in oblique radiography.

1.2 Pattern identification in Chinese medicine

Wind-cold-dampness: pain and numbness in the neck, shoulder and upper limbs, a heave sensation of the head, neck rigidity, impaired neck movement, intolerance of wind and cold, neck pain aggravating upon contraction of wind cold or in cold rainy days, cold limbs and aversion to cold. The tongue is pale with a white or greasy coating. The pulse is deep tense or soft and delayed.

1.3 Inclusion criteria

Those who met the above diagnostic criteria and pattern identification in Chinese medicine; aged between 20 and 80 years; duration between 1 and 3 months; having a stable condition and clear consciousness; an ability to follow and complete the treatment for efficacy evaluation and willing to sign the informed consent.

1.4 Exclusion criteria

Those who didn't meet the above inclusion criteria; having complications of major problems involving the heart, lung, liver and kidney; having severe conditions that are contraindicated for conservation therapy, such

as spinal tuberculosis, compression fracture, spinal tumor, cervical spondylolisthesis and huge cervical disc herniation; pregnant or breast-feeding women; and a history of drug allergy or having adverse reactions to acupuncture.

1.5 Statistical process

The SPSS 21.0 version software was used for statistical analysis. The Chi-square test was used for enumeration data. The *t*-test was used for measurement data, which were expressed as mean \pm standard deviation ($\bar{x} \pm s$). The *Ridit* analysis was used for efficacy comparison. A *P* value of less than 0.05 indicated a statistical significance.

1.6 General materials

A total of 54 cases outpatients and inpatients treated between January and October 2015 were randomly allocated into a treatment group and a control group (by the ratio of 1:1). Cases in the treatment group were aged between 26 and 80 years and their duration lasted from 3 days to 8 years. Cases in the control group were aged between 20 and 75 years and their duration lasted from 7 d to 8 years. There were no between-group significant differences in baseline data (*P* > 0.05), indicating that the two groups were comparable (Table 1).

Table 1 Between-group comparison in baseline data

Group	<i>n</i>	Gender (case)		Average age ($\bar{x} \pm s$, year)	Average duration ($\bar{x} \pm s$, year)
		Male	Female		
Treatment	27	12	15	48.4 \pm 22.3	4.2 \pm 1.3
Control	27	14	13	45.5 \pm 25.2	3.9 \pm 2.3

2. Treatment Methods

2.1 Treatment group

2.1.1 Chinese herbal fumigation

Ingredients of modified *Huo Xue Zhi Tong Tang* (Blood-circulating and Pain-alleviating Decoction): *Dang Gui* (*Radix Angelicae Sinensis*) 40 g, *Su Mu* (*Lignum Sappan*) 40 g, *Chuan Xiong* (*Rhizoma Chuanxiong*) 20 g, *Hong Hua* (*Flos Carthami*) 20 g, *Ru Xiang* (*Olibanum*) 20 g, *Mo Yao* (*Myrrha*) 20 g, *San Qi* (*Radix et Rhizoma Notoginseng*) 20 g, *Chi Shao* (*Radix Paeoniae Rubra*) 20 g, *Chen Pi* (*Pericarpium Citri Reticulatae*) 20 g, *Gui Zhi* (*Ramulus Cinnamomi*) 20 g, *Di Bie Chong* (*Eupolyphaga seu Steleophaga*) 20 g, *Tou Gu Cao* (*Caulis Impatiensis*) 30 g, *Bai Jie Zi* (*Semen Sinapis*) 30 g, *Xi Xin* (*Radix et Rhizoma Asari*) 30 g and *Ma Huang* (*Herba Ephedrae*) 30 g.

Method: Place the above herbs into the fumigator, keep the temperature at 41 °C and enable the steaming to face the neck (30 min for each fumigation).

2.1.2 Pestle needle therapy

Area to treat: *Ba Zhen* points around Dazhui (GV 14) [Figure 1: a set of 8 points formed by the radius 1, 2 and 3 cun lateral to Dazhui (GV 14) on both sides], *Ba Zhen* points around Fengfu (GV 16) [Figure 1: a set of 8 points formed by the radius 1, 2 and 3 cun lateral to Fengfu (GV 15) on both sides], the distance between Naohu (GV 17) and Dazhui (GV 14) along the *He Che* pathway [Figure 2: a set of 7 lines including the line between Naohu (GV 17) and Dazhui (GV 14), and 0.5, 1.5 and 3 cun lines lateral to the spine on both sides], Fengchi (GB 20), Neiguan (PC 6), Lieque (LU 7) and Houxi (SI 3)^[2].

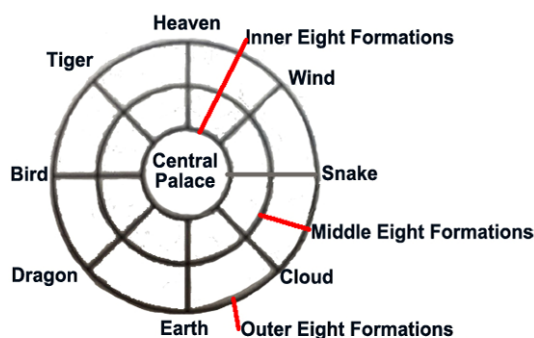


Figure 1. The *Ba Zhen* diagram

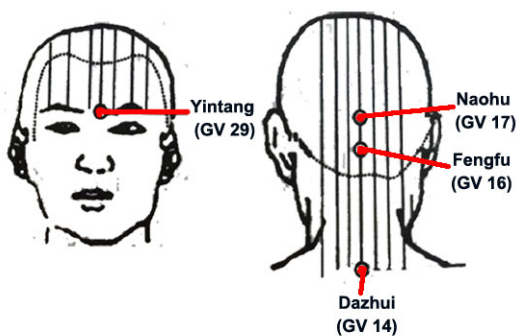


Figure 2. The *He Che* pathway
[Naohu (GV 17) to Dazhui (GV 14)]

Method: With a sitting position of the patient, the practitioner applied rotating manipulation 7 times (approximately 3 min) to *Ba Zhen* points of Dazhui (GV 14) and Fengfu (GV 16) using a 7-star pestle needle; digital tapping to Dazhui (GV 14) 49 times (approximately 1 min) like a sparrow pecking at food using a 5-star pestle needle (Figure 4); opening and closing manipulation to Fengfu (GV 16) 21 times (approximately 1 min) using the tip of a vajra pestle (Figure 5); ascending and descending manipulation to the distance between Naohu (GV 17) and Dazhui (GV 14), 7 times for each line (approximately 2 min); digital tapping from top to bottom along the 7 lines

using the tip of a 5-star pestle needle (approximately 2 min); and opening and closing manipulation to Fengchi (GB 20) 21 times (approximately 1 min) using the tip of a pen-shaped pestle needle [Method: enable the tip of a pestle needle to contact with the skin, thrusting (within the patient's tolerance) is called opening manipulation to circulate qi and blood peripherally and lifting is called closing] (Figure 6). Same opening and closing manipulation to Fengchi (GB 20) was applied to Neiguan (PC 6), Lieque (LU 7) and Houxi (SI 3).



Figure 3. A 7-star pestle needle



Figure 4. A 5-star pestle needle

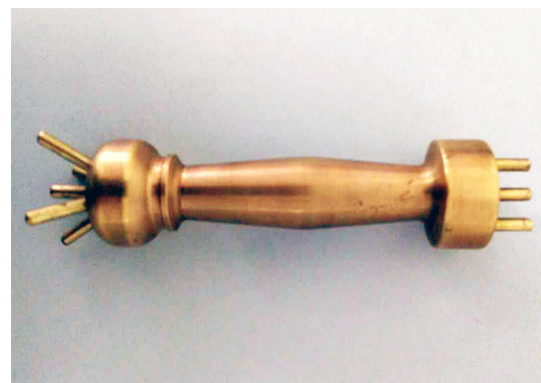


Figure 5. A vajra pestle needle



Figure 6. A pen-shaped pestle needle

2.2 Control group

In addition to the same herbal fumigation, patients in the control group received standard acupuncture therapy.

Points: Fengchi (GB 20), Fengfu (GV 16), Tianzhu (BL 10), cervical Jiaji points (EX-B 2), Fenglong (ST 40), Lieque (LU 7), and Houxi (SI 3)^[3-6].

Method: The patient was asked to take a supine lying position. After routine disinfection of the points using 75% alcohol, stainless steel filiform needles of 0.30 mm in diameter and 40-50 mm in length were used to insert points according to the sequence of neck, upper limbs and lower limbs. The depth was based on the patients' body figure. Upon arrival of qi, even reinforcing-reducing manipulation was applied. The needles were retained for 30 min.

For both groups, the treatment was done once a day, 5 d a week and there was a 2-day interval between two courses of treatment. The efficacies were observed 4 weeks after treatment and the follow-up was made 1, 3 and 6 months after treatment.

3 Efficacy Observation

3.1 Observation items

3.1.1 The visual analog scale (VAS) score

The VAS score was graded before treatment, at the end of treatment and 1, 3 and 6 months after treatment.

0 point: No pain.

<3 points: Mild tolerable pain.

4-6 points: Sleep-disturbed pain but still tolerable.

7-10 points: Excruciating, unbearable pain that affects appetite and sleep.

3.1.2 The pain rating index (PRI) score

The McGill pain questionnaire (MPQ) consists of 20 pain descriptors in four categories (1-10: sensory; 11-15: affective; 16: evaluation; and 17-20: miscellaneous). Each patient was asked to select 1 word that matches his/her pain intensity (it's ok not to select if there is none), coupled with a corresponding serial number. The

added numerical value is the pain rating index. The scores were graded and compared before treatment and at the end of treatment.

3.2 Efficacy criteria

They were based on the *Criteria of Diagnosis and Therapeutic Effects of Diseases and Syndromes in Traditional Chinese Medicine*^[7].

Recovery: Absence of symptoms, normal muscle strength, functional recovery of the neck and limbs and return to normal work and life.

Better: Alleviation of symptoms, relieved pain in the neck, shoulder and back coupled with improved functions of the neck and limbs.

Failure: Symptoms remain unchanged.

3.3 Results

During treatment, except for 1 case in the control group, the rest of cases were all included for result analysis.

3.3.1 Between-group comparison in VAS scores

As for the treatment group, there were significant intra-group differences in VAS scores at the end of treatment, and 1, 3 and 6 months after treatment ($P=0.035$, $P=0.026$, $P=0.019$, $P=0.012$). As for the control group, there were also significant intra-group differences in VAS scores at the end of treatment and 1 month, 3 and 6 months after treatment ($P=0.042$, $P=0.032$, $P=0.025$, $P=0.020$). The between-group difference was statistically significant in VAS score ($P=0.038$). This indicated that pain was better improved in patients in the treatment group than those in the control group (Table 2).

Table 2. Between-group VAS comparison ($\bar{x} \pm s$, point)

Time	Treatment group ($n=27$)	Control group ($n=26$)
Before treatment	6.05 ± 1.35	6.60 ± 1.55
At the end of treatment	$3.85 \pm 1.43^{1)2)}$	$4.65 \pm 1.58^{1)}$
1 month after treatment	$3.64 \pm 1.23^{1)}$	$3.85 \pm 1.54^{1)}$
3 months after treatment	$3.35 \pm 1.17^{1)}$	$3.50 \pm 1.78^{1)}$
6 months after treatment	$2.88 \pm 1.57^{1)}$	$3.30 \pm 1.20^{1)}$

3.3.2 Between-group comparison in PRI scores

At the end of treatment, there were significant between-group differences in both sensory PRI score [(4.81 ± 1.13) vs. (3.78 ± 1.05)] and total PRI score [(7.35 ± 2.01) vs. (5.85 ± 1.79)], (both $P < 0.01$); and there was no significant between-group difference in affective PRI score [(2.54 ± 0.84) vs. (2.28 ± 0.52)], ($P > 0.05$). This indicated that pain was better alleviated in patients in the treatment group than those in the control group.

3.3.3 Between-group efficacy comparison

At the end of treatment, the total effective rate was 85.2% in the treatment group, versus 65.4% in the

control group, showing a statistical significance ($P=0.042$), (Table 3).

The follow-up 6 months later showed that the total

effective rate was 92.6% in the treatment group, versus 76.9% in the control group, showing a statistical significance ($P=0.039$), (Table 4).

Table 3. Between-group efficacy comparison at the end of treatment (case)

Group	<i>n</i>	Recovery	Improvement	Failure	Total effective rate (%)
Treatment	27	3	20	4	85.2 ¹⁾
Control	26	1	16	9	65.4

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

Table 4. Between-group efficacy comparison 6 months after treatment (case)

Group	<i>n</i>	Recovery	Improvement	Failure	Total effective rate (%)
Treatment	27	4	21	2	92.6 ¹⁾
Control	26	2	18	6	76.9

Note: Intra-group comparison before and after treatment, 1) $P<0.05$; compared with the control group over the same period, 2) $P<0.05$

4 Discussion

Cervical spondylosis is caused by abnormal growths or spurs on the cervical spine, facet joint subluxation and lesions involving the cervical discs and peripheral soft tissues. Over time, these changes may compress the vertebral artery, nerve root and spinal cord. In modern medicine, this condition is associated with overstrain of cervical muscles. Inducing factors include extraction of wind cold, humidity, and inappropriate pillow or sleeping posture. These factors may cause local muscle tension or spasm to affect metabolism and result in secondary aseptic inflammation. Local inflammation, edema and adhesion may elevate the myofascial intraluminal pressure, increase the myofascial surface tension and cause pain via sensory nerve ending^[8].

In Chinese medicine, cervical spondylosis falls under the category of Bi-impediment syndrome. Ache, pain, numbness and heaviness of joints, muscles, tendons and bones, impaired joint flexion and extension, stiffness, swelling and deformity due to wind, cold, and dampness (or heat) affecting the circulation of meridian qi and blood^[9]. As a result, the treatment principles are to remove wind, dissipate cold, resolve dampness, alleviate pain, circulate blood, relax tendons and unblock collaterals.

The pestle needle therapy was initiated by the Li's family ancestor Li Er-fei, who learned from *Ru Huan* immortal in his childhood. Although there were no written records, the academic idea was originated in ancient *Zhou Yi (Book of Changes)* and *Yin Fu Jing (Hidden Talisman Classic)* regarding pattern identification, treatment principle, and point selection, etc. Today, this therapy has been passed down through a lineage to its 17th generation inheritor, Li Zhong-yu.

As a noninvasive and non-drug therapy, pestle needle has two functions: needling and massage. It mainly acts

to circulate meridian qi and blood using unique opening, closing and revolving manipulation. Pestle needle is very similar to spoon needle, one of the nine classic needles to press meridians (instead of inserting to intermuscular areas) to circulate qi and remove pathogenic factors. There are four pestle needle tools for different body parts and conditions^[10]. Over the recent years, there have been more reports on pestle needle therapy for cervical spondylosis^[11] and pain^[12-13]. In addition, there have been reports on its action mechanism. To investigate the analgesic action mechanism of pestle needle therapy, Zhou QZ^[14] observed its effect on monoamine neurotransmitter levels in different brain area of normal rats and (PCPA)-injected (intraperitoneal) rats and then compared with electroacupuncture (EA). The results have shown that like EA, pestle needle therapy can significantly improve the 5-hydroxytryptamine (5-HT) and 5-hydroxyindole acetic acid (5-HIAA) levels in the interbrain and endbrain of rats after stimulating Zusanli (ST 36) ($P<0.01$), and significantly reduce the NE levels in the interbrain ($P<0.01$), and had no noticeable effect on NE in the endbrain and dopamine (DA) in the two encephalic regions. Upon intraperitoneal injection of PCPA, the 5-HT and 5-HIAA levels in the brain of rats were both significantly reduced ($P<0.01$). The pestle needle therapy can up-regulate 5-HT and 5-HIAA when compared with the medication group and combined EA and medication group ($P<0.05$ or $P<0.01$). The results have shown that both pestle needle and EA can restore the normal NE levels in the interbrain and endbrain; however, only pestle needle can decrease the interbrain DA level. Liu YM, *et al* observed the effect of pestle needle on liver GSH levels in mice and compared with the acupuncture effect^[15]. The results have shown that the liver GSH level in the EA was higher than that of control group. This indicates that pestle needle therapy has better effect on liver GSH levels.

This study employed *Ba Zhen* points and the distance between Naohu (GV 17) and Dazhui (GV 14) for cervical spondylosis. *Ba Zhen* points here include a set of 8 points around Baihui (GV 20) and Fengfu (GV 16). The set of 8 points of Baihui (GV 20) contain Baihui (GV 20) and Yintang (GV 29) and act to improve blood supply to the brain. The set of 8 points around Fengfu (GV 16) act to unblock meridians, regulate qi and blood, ascend clear yang, inhibit liver wind and benefit the brain. The distance between Naohu (GV 17) to Dazhui (GV 14) along the *He Che* pathway covers the Governor Vessel, Bladder Meridian and Gallbladder Meridian as well as cervical Jiaji (EX-B 2) points. Stimulating these areas can improve blood supply to the head and neck and relax muscle spasm. In terms of neuroanatomy, there are posterior rami of spinal nerve adjacent to these *Ba Zhen* points. Stimulating the receptors and nerve fibers in deeper areas can activate thick fibers, inhibit pain signals from the thin fiber, and alleviate pain^[4]. In addition, herbal fumigation was combined for Bi-impediment syndrome due to wind, cold and dampness. The fumigation formula was based on *Huo Xue Zhi Tong Tang* (Blood-circulating and Pain-alleviating Decoction). Of the ingredients, *Dang Gui* (*Radix Angelicae Sinensis*), *Chuan Xiong* (*Rhizoma Chuanxiong*) and *Hong Hua* (*Flos Carthami*) circulate blood and stop pain; *San Qi* (*Radix et Rhizoma Notoginseng*), *Ru Xiang* (*Olibanum*) and *Mo Yao* (*Myrrha*) circulate blood and relax tendons; *Su Mu* (*Lignum Sappan*) and *Chen Pi* (*Pericarpium Citri Reticulatae*) circulate qi and stop pain; *Bai Jie Zi* (*Semen Sinapis*), *Ma Huang* (*Herba Ephedrae*), *Gui Zhi* (*Ramulus Cinnamomi*) and *Xi Xin* (*Radix et Rhizoma Asari*) warm meridians, dissipate cold, resolve dampness and unblock meridians. Herbal fumigation accelerates blood flow and helps to absorb local inflammation and relieve pain.

This study has suggested that both pestle needle therapy and standard acupuncture work well for cervical spondylosis; however, the non-invasive pestle needle therapy integrates acupuncture and massage and therefore is easier to be accepted by patients.

Conflict of Interest

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.

References

- [1] Li L. Interpretation of guidelines for diagnosis, treatment and rehabilitation of cervical spondylosis. *Zhongguo Shiyong Xiangcun Yisheng Zazhi*, 2009, 14(12): 46-48.
- [2] Zhong SC. Science of Pestle Needle. Beijing: China Press of Traditional Chinese Medicine, 2006: 1-15, 73-75.
- [3] Sun Q, Fan XH. Evaluation of clinical efficacy of treatment combined with Chinese medicine on cervical spondylosis (100 patients were observed). *Chengdu Zhongyiyao Daxue Xuebao*, 2014, 37(4): 29-32.
- [4] Feng SL, Li WC. Effects of acupuncture combined with traditional Chinese medicine on scores of TCM syndrome and neck pain questionnaire in patients with cervical spondylosis with syndrome of cold locking the collaterals. *Zhongguo Zhongyiyao Xinxizazhi*, 2015, 22(2): 22-24.
- [5] Liu YS. Research of cervical spondylosis treated by acupuncturing on Lieque (LU 7) with the technique of fMRI. Master Thesis of Hubei Zhongyiyao Daxue Xuebao, 2006.
- [6] Zhou RF. The curative effect on the treatment of nerve-root type cervical spondylosis by Houxi (SI 3) acupoint of different-depth insertion. Doctor Thesis of Guangzhou Zhongyiyao Daxue, 2011.
- [7] State Administration of Traditional Chinese Medicine. Criteria of Diagnosis and Therapeutic Effects of Diseases and Syndromes in Traditional Chinese Medicine. Nanjing: Nanjing University Press, 1994: 201-202.
- [8] Dong FH. Anterior Cutaneous Nerve Entrapment Syndrome. Beijing: Beijing Science and Technology Press, 2002: 36-37, 70-71.
- [9] Wei WG, Dong CW, Hu WC, Lu Z. Clinical observation on acupuncture plus chiropractic treatment for cervical spondylosis. *J Acupunct Tuina Sci*, 2015, 13(5): 319-323.
- [10] Shen ZF, Yu SY, Hu YP. Theory and clinical application of pestle needle therapy. *Shanghai Zhenjiu Zazhi*, 2015, 34(6): 575-578.
- [11] Jiang ZY, Li CD. Clinical observation on treatment of cervical spondylosis with poking Dazhui Bazhen points. *Zhongguo Zhen Jiu*, 2001, 21(2): 94-96.
- [12] Tang SM, Li HC. Efficacy observation on pestle needles for vertebral artery insufficiency due to cervical spondylosis. *Zhongguo Minzu Minjian Yiyao*, 2010, 19(15): 158-159.
- [13] Yao J. Clinical observation on 98 cases of pain symptoms treated with clubbed needle. *Zhongguo Zhen Jiu*, 2001, 21(6): 357-358.
- [14] Zhou QZ, Song KY, Liu YM, Wei JL, Zhao JL. Influence of LI Zhongyu's clubbed needling stimulating Zusanli (ST 36) to the contents of monoaminergic neurotransmitter in central nervous system on rat. *Chengdu Zhongyiyao Daxue Xuebao*, 1999, 22(3): 28-29.
- [15] Liu YM, Song KY. The effect of Li Zhongyu pestle needles on liver GSH levels in mice. *Chengdu Zhongyiyao Daxue Xuebao*, 2003, 26(2): 34.

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