Clinical Study

Observation on instant analgesic effect of Governor Vessel-regulating and collateral-unblocking acupuncture method for primary headache

调督通络针法治疗原发性头痛的即刻镇痛效果观察

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Abstract

Objective: To observe the instant analgesic effect of Governor Vessel-regulating and collateral-unblocking acupuncture method in treating primary headache and to inherit and carry forward the academic achievements of Gao's acupuncture school in Yanzhao (Hebei Province) area.

Methods: Eighty eligible primary headache patients were randomized into an observation group and a control group following their visiting sequence, 40 patients in each group. The observation group was intervened by Yanzhao Gao's Governor Vessel-regulating and collateral-unblocking acupuncture, and the control group was intervened by ordinary acupuncture method. The visual analogue scale (VAS) was used to evaluate the headache intensity before and after the first treatment session in the two groups, to compare the instant analgesic effect of the two acupuncture methods.

Results: After the first treatment session, the VAS scores dropped significantly in both groups (both P<0.05). The change of VAS score after the initial treatment in the observation group was significantly different from that in the control group (P<0.05). The percentage of patients with headache completely vanished instantly after the first treatment was markedly higher in the observation group than that in the control group (P<0.05).

Conclusion: The two acupuncture methods both can produce a significant instant analgesic effect in treating primary headache, while Yanzhao Gao's Governor Vessel-regulating and collateral-unblocking acupuncture method is superior to ordinary acupuncture method.

Keywords: Acupuncture Therapy; Acupuncture Analgesia; Headache; Governor Vessel; Gao's Acupuncture Academic School in Yanzhao Area; Visual Analogue Scale

【摘要】目的:观察调督通络针法治疗原发性头痛的即刻镇痛效果,传承燕赵高氏针灸学术思想。方法:将80名符合纳入标准的原发性头痛患者按就诊的先后顺序随机分为治疗组和对照组,每组40名。观察组采用燕赵高氏调督通络针法治疗,对照组采用常规针法治疗。两组患者均于首次治疗前后对头痛程度进行视觉模拟量表(VAS) 评分,根据 VAS 评分对两种针法的即时镇痛效果进行比较。结果:与本组治疗前相比,两组患者首次治疗后的头痛程度 VAS 评分均明显下降(均 P<0.05)。治疗组首次治疗前后头痛程度的 VAS 评分差值与对照组有统计学差异(P<0.05)。治疗组首次治疗后即刻头痛完全消失患者所占比率显著高于对照组(P<0.05)。结论:两种针刺方法对原发性头痛均有明显的即刻镇痛作用,燕赵高氏调督通络针法对原发性头痛的即刻镇痛效果优于常规针法。

【关键词】针刺疗法;针刺镇痛;头痛;督脉;燕赵高氏针灸学术流派;视觉模拟量表

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Primary headache includes migraine, tension-type headache, cluster headache, trigeminal autonomic cephalgias (TACs)^[1], of which, tension-type headache and migraine have the highest incidence^[2]. There are

various factors causing primary headache, and its pathogenesis is also complicated. Currently, oral medication is predominantly used for treatment, but not suggested for long-term administration due to the possible side or adverse effects. Acupuncturemoxibustion therapy is effective in treating primary headache without causing adverse reactions but with good compliance. Yanzhao (Hebei Province) Gao's Governor Vessel-regulating and collateral-unblocking

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acupuncture method is a specific needling method for different types of headache, invented by professor Gao Yu-chun, based on the inherited acupuncturemoxibustion academic theories and clinical practice. By adopting a design of randomized controlled clinical trial, this study was to analyze the instant analgesic effect of Yanzhao Gao's Governor Vessel-regulating and collateral-unblocking method in treating primary headache.

1 Clinical Materials

1.1 Diagnostic criteria

By referring to the diagnosis criteria of primary headache of *International Classification of Headache Disorders-Second Edition* (ICHD-II) stipulated by International Headache Society (IHS) in 2004^[1].

1.2 Inclusion criteria

Conforming to the diagnosis criteria of primary headache of ICHD- $\rm II$; disease duration >3 months; in the stage of attack; willing to accept the involved intervention in this study and having signed the informed consent form.

1.3 Exclusion criteria

With disturbance of understanding, unable to understand the requirement of evaluation; co-morbid with severe organic diseases, such as heart, liver and kidney, or severe disorders of other systems; complicated with mental disorders or severe neurosis; patients who received other treatments within the recent 2 weeks or those still receiving other treatments for headache.

1.4 Dropout criteria

Failed to accomplish the required treatment or observation regardless of reason.

1.5 Statistical analysis

The data were processed by using concise statistics software 10.31. Measurement data in normal distribution with homogeneity of variance were expressed as mean \pm standard deviation ($\overline{x} \pm s$) and analyzed by *t*-test; rank-sum test was used for the between-group comparison of the score difference before and after the first treatment session (equal variances not assumed); Chi-square test was adopted for enumeration data. *P*<0.05 was considered to have a statistical significance.

1.6 Clinical data

A total of 80 headache patients were enrolled from the Acupuncture-moxibustion Department of Hebei General Hospital between December 2014 and October 2016. Based on the requirement of the study, the subjects were asked to draw a grouping number randomly according to their visiting sequence. The subjects were then randomized into a observation group and a control group, 40 cases each. In the observation group, the patients were aged 18-79 years old, with disease duration ranged 0.42-50 years; in the control group, the patients were aged 15-84 year old, with disease duration ranged 0.25-40 years. There were no significant differences in comparing the data of gender, age, and disease duration between the two groups (all P > 0.05), indicating the comparability (Table 1).

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Group	n	Gender (case)		Average age	Average duration
		Male	Female	$(\overline{X}\pm s, year)$	$(\overline{X}\pm s, year)$
Observation	40	12	28	48.7±15.7	9.6±10.3
Control	40	9	31	46.1±16.0	5.9±7.9

2 Treatment Methods

2.1 Observation group

Patients in the observation group were intervened by Yanzhao Gao's Governor Vessel-regulating and collateral-unblocking acupuncture method.

Points: By following the specific points grouping method of Yanzhao Gao's Governor Vessel-regulating and collateral-unblocking needling method, the points were classified into 4 sections to be treated: Baihui (GV 20) and Dazhui (GV 14); tender points in the nape (with one hand holding the head of patient, the practitioner sought tender nodules along the head and neck with thumb of the other hand); points selection based on Zi Wu Liu Zhu (midnight-noon ebb-flow) theory [calculating the points activation time according to Tian Gan Di Zhi (heavenly-stems-based and earthlybranches-based midnight-noon ebb-flow method)]: the activated point would be treated if its function is related to the treatment of headache^[3]; if not related, this point would be neglected; Yanzhao Gao's empirical points for headache [Fengchi (GB 20) and Qiuxu (GB 40) for lateral headache; Cuanzhu (BL 2) and Jiexi (ST 41) for frontal headache; Tianzhu (BL 10) and Kunlun (BL 60) for posterior headache; Baihui (GV 20) and Yongquan (KI 1) for parietal headache].

Method: Different points were punctured by filiform needles of different sizes, 0.25 mm in diameter and 25 mm in length or 0.30 mm in diameter and 40 mm in length. After standard sterilization, the practitioner gently pressed the to-be-treated area to locate the points or fix the tender nodules with the left hand, and then punctured needles with the right hand. First, Baihui (GV 20) and Dazhui (GV 14) were treated with swift needling to activate yang qi. After needling qi arrival, the needles were removed immediately. Tender nodules on head and neck were needled with *Cang Gui Tan Xue* (dark tortoise seeking hole) manipulation, which was to insert needles in different directions to penetrate tender nodules with lifting-thrusting movements for unblocking nodules and improving the circulation of gi and blood. The needles were removed immediately after the operation. Afterwards, the activated points according to midnight-noon ebb-flow theory which were in accordance with the treatment of the disease were needled. Finally, based on the site of headache, Yanzhao Gao's empirical points for headache were treated from the distant to the proximal. When points of the last two sections were punctured, lifting-thrusting and twirling manipulations were performed for 3-5 times at small amplitude until needling gi was obtained. The needles were retained for 30 min. Therapeutic efficacy was evaluated after 1 treatment.

2.2 Control group

Patients of the control group were treated with ordinary acupuncture.

Points: The points were selected based on syndrome differentiation of headache in Traditional Chinese *Medicine*^[4]. Headache was classified into 4 different syndromes: headache due to kidney deficiency, headache due to liver yang, headache due to turbid phlegm, and headache due to blood stagnation. Baihui (GV 20), Guanyuan (CV 4), Qihai (CV 6), Shenshu (BL 23), Taixi (KI 3) and Tinggong (SI 19) (all with reinforcing manipulation) were selected for headache due to kidney deficiency; Xuanlu (GB 5), Hanyan (GB 4) and Neiguan (PC 6) (with even reinforcing-reducing manipulation), Taichong (with reducing manipulation), and Taixi (with reinforcing manipulation) were selected for headache due to liver yang; Zhongwan (CV 12), Fenglong (ST 40), Baihui (GV 20), and Yintang (GV 29) (all with reducing manipulation) were selected for headache due to turbid phlegm; Ashi point (with reducing manipulation), Hegu (LI 4) and Sanyinjiao (SP 6) (with reinforcing manipulation) were selected for headache due to blood stagnation.

Method: Different points were punctured with filiform needles of different sizes accordingly. After standard sterilization, the practitioner gently touched the to-be-treated area and located the point with the left hand, and punctured needle with the right hand. After insertion, the needles were applied with lifting-thrusting and twirling manipulations at small amplitude for 3-5 times until needling qi was obtained. Twirling reducing or reinforcing manipulations were performed when necessary. The needles were retained for 30 min. Therapeutic efficacy was evaluated at the end of the first treatment session.

3 Results

Patients in the two groups all accomplished the required treatment, so there were no dropouts.

3.1 Observation item

Visual analogue scale (VAS) was adopted to estimate the intensity of headache respectively before and after

the first treatment^[5].

Method: Patient was asked to point out his headache intensity on a ruler. One end of the ruler was marked with 0, representing painless; the other end was marked with 10, representing the most intensive pain. The corresponding calibration line pointed by the patient was considered as the score of VAS. The VAS scores were recorded. The patients with pain completely gone (VAS score 0) after the first treatment were highlighted.

3.2 Treatment result

The VAS scores were significantly changed after the first treatment in both groups (both P < 0.05); there was a significant difference in comparing the score difference between the two groups (P < 0.05), indicating that the two methods both produced remarkable analgesic effects, while Yanzhao Gao's Governor Vessel-regulating and collateral-unblocking needling method was superior to the ordinary needling method (Table 2).

There was a significant difference between the two groups in comparing the number of patients with pain completely gone after the first treatment ($P \le 0.05$), suggesting that Yanzhao Gao's Governor Vesselregulating and collateral-unblocking needling method produced a more significant instant analgesic effect compared with the ordinary needling method (Table 3).

Table 2. Comparison of VAS score ($\overline{x} \pm s$, point)

Group	n	Pre-treatment	Post-treatment	Difference score
Observation	40	5.43±1.66	$2.01{\pm}1.62^{1)}$	$3.42 \pm 2.36^{2)}$
Control	40	5.31±1.61	$3.07{\pm}1.48^{1)}$	2.25±1.56

Note: Intra-group comparison, 1) P<0.05; compared with the control group, 2) P<0.05

Table 3. Comparison of pain management after the first treatment (case)

Group	п	Pain completely gone	Pain partially gone
Observation	40	10	30
Control	40	3	37

4 Discussion

As one of the most common symptoms, headache seriously affects patient's work and life. ICHD-II classifies headaches into primary headaches, secondary headaches, and the third type including cranial neuralgias, central and primary facial pain and other headaches^[6]. The incidence of primary headaches ranks the top among the three types of headaches^[7]. The pathogenesis of primary headaches is related to various factors such as education level, career, family history, depression, and anxiety^[8]. Of which, the pathogenesis of migraine is closely related to neurovascular factors; tension-type headache almost has nothing to do with neurovascular factors, but has great correlation with psychosomatic tension caused by mental or psychological factors; cluster headache is often thought to be caused by intracranial and extracranial vascular dilatation, and is associated with histamine and neurovascular factors. Due to significant adverse reactions, drugs for this disease can't be taken for a long term, not to mention the high risk of relapse after discontinuation of drugs^[9]. Therefore, patients usually are reluctant to accept drugs. It's been proven by modern research that acupuncture-moxibustion can treat this disease via improving cerebral microcirculation, regulating nervous system, influencing neurotransmitters^[10], mitigating anxious^[11] and depression^[12] state. Numerous clinical trials have reported the significant efficacy of acupuncturemoxibustion in treating primary headache^[13-15]

Primary headache belongs to the scope of headache or head wind in traditional Chinese medicine (TCM). Based on the cause, TCM divides headache into two types: headache due to external factors and headache due to internal factors. According to its features, primary headache majorly falls under the second type. Syndrome differentiation by meridians and syndrome differentiation by TCM internal medicine are most commonly used in the treatment. Meridian-based syndrome differentiation differentiates this disease by the affected sites according to the meridian theory. Generally, frontal headache belongs to Yangming meridians; parietal headache belongs to Jueyin meridians; occipital headache belongs to Taiyang meridians; bilateral temporal headache belongs to Shaoyang meridians^[16]. In the observation group of this study, Yanzhao Gao's empirical points in the treatment of headache also originate from the traditional meridian-based syndrome differentiation. Syndrome differentiation by TCM internal medicine used in the control group is based on the comprehensive analysis of body constitution, features of disease and inducing factors. Domestic doctors once investigated the relation between the classification in Western medicine and syndrome differentiation in TCM of primary headache^[17], finding that the most common syndromes in TCM are headache due to blood stagnation, headache due to turbid phlegm, headache due to liver yang, headache due to wind-dampness, and headache due to wind-cold. It's similar to the syndrome differentiation adopted in the control group of the current study, except that we excluded headache due to external factors from this study, i.e. headache due to wind-cold and wind-dampness, because headache caused by external factors usually has fever, which isn't accorded with the inclusion criteria. Compared with syndrome differentiation based on TCM internal medicine, meridian-based syndrome differentiation

works according to the affected site of headache and the routine of meridians, which is simple and easy to master. Besides, since acupuncture-moxibustion treats diseases by directly regulating meridians, qi and blood, meridian-based syndrome differentiation is often used in acupuncture-moxibustion therapy, especially for pain disorders which require to be treated by unblocking meridians. Syndrome differentiation based on TCM internal medicine combines several syndrome differentiation methods including Zang-fu organs, three jiao, qi-blood and body fluid. It's suitable for the treatment of various internal diseases, but not comparable to meridian-based syndrome differentiation for acupuncture-moxibustion therapy. It's possibly one reason causing the difference in the instant analgesic effect between the two treatment methods in this trial. But, syndrome differentiation based on internal medicine has its advantages in comprehensive analysis, improvement of body constitution, and extermination of rooted pathogenic factors, which will benefit the consolidation of treatment result. It's worthy of further research whether it can treat both the symptoms and causes, and simultaneously prevent the relapse of headache bv combining the two syndrome differentiation methods.

As a common problem in clinic, headache has attracted great attention from doctors of each generation and many precious treatment experiences have been concluded, such as San Tong (three unblocking) method^[18], regulating Governor Vessel and Gallbladder meridian^[19], and treatment based on the muscle regions of meridian^[20]. Despite different understandings of the disease, killing pain is always the key point. Governor Vessel-regulating and collateralunblocking needling method is a specific acupuncture method for headache invented by Yanzhao Gao's acupuncture school, and professor Gao Yu-chun (1930-), one of the first batch of acupuncture masters of Hebei Province, is the main inheritor of this school. Prof. Gao started to follow his father, Mr. Gao Ji-pei, to study TCM, and was also apprenticed to famous doctors in Beijing and Tianjin in his early ages, including Xiao Long-you, Wang Chun-yuan, and Guo Mei-chen. He has been working in clinic for over 60 years. With constant clinical practice and exploration, Prof. Gao Has gradually developed the academic school of Yanzhao Gao's acupuncture. The needling method of this school is featured by agility and accuracy, as well as the application of midnight-noon ebb-flow theory $^{\!\![3]},$ emphasis on the order of acupuncture $^{\!\![21]},$ and the combination of intension, gi and spirit, always achieving significant therapeutic efficacy. As one of the special needling methods of Yanzhao Gao's acupuncture school, Governor Vessel-regulating and collateral-unblocking needling method is characterized by rapid action, striking analgesic effect, and short treatment duration

when used to treat headache of different types. In this needling method, Baihui (GV 20) and Dazhui (GV 14) are initially used to regulate meridian gi of the Governor Vessel, and activate yang energy, so as to make the yang meridians which pass face and head work normally. Cang Gui Tan Xue (dark tortoise seeking hole) needling method is then applied to the tender nodules in scalp and neck to unblock qi and blood in meridians, creating a good local environment for the following steps. For those who have a fixed attack time of headache, Na Jia (heavenly-stems-based) method is adopted for treatment based on the time; for those who don't have a fixed attack time, either Na Zi (earthly branchedbased) or Na Jia (heavenly stems-based) of Zi Wu Liu Zhu (midnight-noon ebb-flow) method is used according to the condition of the patient. Finally, Yanzhao Gao's empirical points for headache are treated based on the affected sites. The four groups of empirical points all contain both local and distant points. The distant points are required to be punctured first, for improving symptoms, and the local points are treated later, for further promoting the therapeutic efficacy. In a summary, Yanzhao Gao's Governor Vessel-regulating and collateral-unblocking needling has combined multiple methods based on syndrome differentiation. This study shows that it can produce a more significant instant analgesic effect in treating primary headache compared to ordinary acupuncture, and is worth promotion in clinic.

Conflict of Interest

The authors declared that there was no 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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References

- Cheng XY, Wang JF, Liu B. The latest international classification of primary headaches. Shenjing Jibing Yu Jingshen Weisheng, 2005, 5(5): 398-400.
- [2] Wang P, Chen N, Guo J, He L. Study on the types of patients with primary headache in clinic. Huaxi Yixue, 2014, 29(6): 1106-1108.

- [3] Xing X, Wang YJ, Cui LH, Ji YX. Abstract of Gao Yu-chun's experiences in applying *Zi Wu Liu Zhu* acupuncture method. Guangzhou Zhongyiyao Daxue Xuebao, 2016, 33(4): 612-615.
- [4] Gao PX. Traditional Chinese Medicine. Beijing: People's Medical Publishing House, 2014: 334.
- [5] Huskisson EC, Jones J, Scott PJ. Application of visual analogue scales to the measurement of functional capacity. Rheumatol Rehabil, 1976, 15(3): 185-187.
- [6] Headache Classification Subcommittee of the International Headache Society. The International Classification of Headache Disorders: 2nd Edition. Cephalalgia, 2004, 24 (Suppl 1): 9-160.
- [7] Tao JQ. Etiology analysis of 2 061 patients with headache. Shandong Yiyao, 2014, 54(12): 82-84.
- [8] Wan ZR, Shang MQ, Kong Y, Wang LX. Analysis of risk factors of primary headache. Shenjing Sunshang Yu Gongneng Chongjian, 2016, 11(6): 497-499.
- [9] Ji ZG, Pang YJ. The pathogen and treatment of primary headache. Shandong Yiyao, 2011, 51(27): 108-110.
- [10]Dong XL, Wang YR. Research progress on action mechanisms of acupuncture for magarine. Zhongguo Zhongyi Jizheng, 2015, 24(6): 1039-1041.
- [11]Li XL, Song XG. Study overview of acupuncture for anxiety. Gansu Zhongyi, 2010, 23(12): 70-72.
- [12] Liu PF. A review on treating depression by acupuncture. Zhongyi Linchuang Yanjiu, 2014, 6(32): 147-148.
- [13] Liu L, Zhang SY. Analysis of literature data about acupuncture for migraine. Fujian Zhongyiyao, 2012, 43(3): 4-6.
- [14] Yi GQ, Wei L, Fang JM, Wang XL. Clinical general situation of acupuncture for tension headache. Zhenjiu Linchuang Zazhi, 2011, 27(4): 68-70.
- [15] Song DL, Peng XL, Yu CC, Wang C. General situation of acupuncture for cluster headache. Hunan Zhongyi Zazhi, 2014, 30(7): 193-195.
- [16] Cheng HY. Application of meridian differentiation in treatment of headache. Beijing Zhongyi, 2004, 23(6): 359-360.
- [17] Ge XY, Chen BT, Yu L, Ding GA, Bai FH. Investigate relationship of primary headache Western medicine type and TCM type. Xiandai Yixue, 2013, 13(7): 58-60.
- [18] Cui R, Wang LP, Lin W, Ma XY. Observation on the therapeutic effect of He's *Santong* needling methods on migraine. Zhongguo Zhen Jiu, 2004, 24(1): 21-23.
- [19] Zhao Y. Clinical experience of Wang Lin-peng in treating headache. Beijing Zhongyiyao, 2012, 31(12): 899-900.
- [20] Cui Q, Xing J, Xiao L, Jia ZJ, Wang Y, Zhang Y, Zhang C, Wang LX. Experience of acupuncture in the treatment of the disorder of tendon involvement. Zhongguo Zhongyiyao Xiandai Yuancheng Jiaoyu, 2016, 14(12): 125-127.
- [21] Wang YJ, Xing X, Cui LH. Professor GAO Yuchun's experience on 'sequential acupuncture leads to smooth movement of qi'. Zhongguo Zhen Jiu, 2016, 36(1): 78-80.

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