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The Pathogenesis, Diagnosis and Treatment of Cervical Vertigo

Shangzhi Wu[1], Wentao Hao[1], Ling Li[2]*

[1]Shaanxi University of Chinese Medicine, Xianyang 712046, Shaanxi, China
[2]Shaanxi Provincial Hospital of Chinese Medicine, Xi'an 710003, Shaanxi, China
**Correspondence Author*

Abstract: ***Cervical vertigo is a common clinical disease. With the continuous progress of science and technology and the continuous changes in lifestyle, the incidence of vertigo caused by cervical spondylosis is increasing with the increasing pressure of modern people's work and life, and it shows a trend of getting younger. Cervical vertigo has gradually become a common disease among young people. The pathogenesis of cervical vertigo is not yet clear, and there are various theories. At present, there is no clear standard for diagnostic methods, and the treatments of cervical vertigo in traditional Chinese medicine and Western medicine are also very different. This article discusses the pathogenesis, diagnostic methods and treatment methods of cervical vertigo by searching relevant literature on cervical vertigo.***

Keywords: Cervical Vertigo, Pathogenesis, Diagnostic, Treatment.

1. Pathogenesis

1.1 Traditional Chinese Medicine

Cervical vertigo belongs to the category of "vertigo" in traditional Chinese medicine. From the perspective of traditional Chinese medicine theory, cervical vertigo is caused by factors such as external pathogenic factors and imbalance of movement, which lead to poor circulation of meridians and qi and blood in the neck, resulting in pain, stiffness, soreness, deficiency of the liver and kidney, qi deficiency and blood loss, poor blood circulation, insufficient nutrition for bones and muscles, and qi and blood failing to nourish the brain. It is also accompanied by symptoms such as headache, dizziness, tinnitus, deafness, blocked meridians, poor circulation of qi and blood, pain and numbness in the upper limbs. Ling Shu · Da Huo Lun says, "When the pathogen attacks the neck and meets the body's deficiency..." In the brain, it will feel dizzy, indicating that external pathogens can cause dizziness. Ling Shu · Hai Lun says, "If the sea of marrow is insufficient, there will be dizziness, tinnitus, soreness in the shins and dizziness", emphasizing that deficiency can cause diseases. Sun Simiao in the Tang Dynasty first proposed the view that wind-heat phlegm leads to vertigo in Qian Jin Yao Fang. Liu Wansu put forward "fire" as the basis of his theory. Zhu Danxi believed that "vertigo is always caused by phlegm". In addition, there is also the theory of "blood stasis". Modern scholars' understanding of the etiology and pathogenesis of cervical vertigo mostly considers from the perspectives of "all wind-induced dizziness and vertigo are related to the liver" in Nei Jing, Zhang Jingyue's "vertigo is always caused by deficiency" and Zhu Danxi's "vertigo is always caused by phlegm". They believe that vertigo is characterized by deficiency in the root and excess in the branch. The deficiency in the root lies in the liver, spleen and kidney, while the excess in the branch is mostly wind, fire, phlegm and blood stasis [1].

1.2 Western Medicine

1.2.1 Vertebral Artery Stenosis Theory

The stenosis of the vertebral artery causes posterior circulation ischemia. The terminal arteries of the vestibular system and the inner ear supplied by it have transient ischemia, accompanied by other manifestations of posterior circulation ischemia. Ultrasound examination can find that the velocity of the vertebral artery decreases when the head rotates. MRA and TCD can be used to diagnose the compression and lesion risk of the vertebral artery.

1.2.2 Sympathetic Nerve Stimulation Theory

If the sympathetic nerve is stimulated, it will cause reflex spasm of the vertebrobasilar artery, resulting in insufficient blood supply to the vestibular system. Magnetic resonance imaging of the cervical spine will show degeneration of the cervical intervertebral disc. Clinical manifestations include vertigo, headache, tinnitus, blurred vision, dilated pupils, nausea, vomiting and other manifestations of sympathetic nerve stimulation.

1.2.3 Vascular Active Factor Theory

The vascular active factors secreted by the cervical vascular endothelial cells or the trigeminal nerve vascular endothelial cells are out of balance. It may be accompanied by very typical migraine. Abnormal indicators of vascular active factors can be found through laboratory tests.

1.2.4 Cervical Proprioceptor Theory

If the cervical proprioceptors send abnormal signals to the vestibular nucleus, the abnormal signals will lead to disorders of deep sensation, resulting in manifestations such as vertigo and balance disorders, as well as neck pain. It is more common after whiplash injury. Patients usually have a decline in balance function.

2. Diagnosis

2.1 General Manifestations

Vertigo is the main manifestation during an attack. Clinically, it usually shows a feeling of the world spinning, blurred vision,

a sense of physical imbalance, unsteady gait and even falling. The symptoms will be aggravated especially when the head is rotated, so the patient dare not rotate the head. It may also be accompanied by nausea, headache, vomiting, insomnia, rapid heartbeat, pain in the neck and shoulders, and numbness in the upper limbs [2].

2.2 Physical Examination

There is tenderness in the occipital, nuchal and scapular regions [2]. The muscle tenderness in some parts such as the spinous processes of the cervical vertebrae, suboccipital muscles and trapezius muscles is very obvious. The neck flexion test and neck rotation test are positive. Nystagmus is positive.

2.3 Auxiliary Examinations

The color Doppler ultrasound of the vertebral artery detects that the internal diameter of the bilateral vertebral arteries [4], the bilateral peak velocity, the bilateral blood flow and the total blood flow of the bilateral vertebral arteries are lower than those of normal people. Carotid ultrasound can directly reflect the lesions of the carotid artery wall [5], helping doctors to detect whether there is stenosis or plaques, so as to diagnose the corresponding diseases. The ultrasound diagnostic instrument can observe the shape and course of the bilateral vertebral arteries, detect whether there is stenosis, distortion or dilation of the lumen, and measure the internal diameter of the vertebral artery at the C2 - C6 level. Cervical spine X-ray can be used to observe whether there is a change in the physiological curvature of the cervical spine, whether there is degenerative hyperplasia of the uncovertebral joints, and whether the cervical spine is unstable. Magnetic resonance imaging of the cervical spine and magnetic resonance angiography of the neck can be used to observe whether there are compression signs of cervical vertigo or protrusion of the cervical intervertebral disc. The movement graph of the human body's center of gravity is abnormal in the closed-eye state [6], and it is mostly diffuse.

3. Treatment of Traditional Chinese Medicine and Western Medicine

3.1 Acupuncture Treatment

3.1.1 Common Acupuncture

Wei Hanrong, Xie Wei, et al [7] treated 30 cases in the treatment group with floating needle combined with head and tail acupoints, and 30 cases in the control group with conventional acupuncture. Both groups were treated once a day, and the effect was statistically analyzed after 10 treatments. The results showed that the treatment effect of the treatment group was better than that of the control group. Floating needle combined with head and tail acupoints has a very good clinical effect in the treatment of cervical vertigo, which can well improve the patient's vertigo symptoms, enhance local blood circulation, and uses fewer acupoints and simple operation methods. Lv Yanan, et al [8] treated the treatment group with filiform fire needle, once every other day for 3 times; the control group took Sibelium capsules orally, 10mg per day for 2 weeks. The results showed that both filiform fire needle and taking Sibelium capsules were effective for patients with cervical vertigo, but the effect of filiform fire needle was better than that of taking Sibelium capsules, and the recurrence rate was lower. Hu Xiaojun, etc [9] gave the control group intravenous drip of Xiangdan Injection, and the treatment group was treated with modified Huiyang Jiuzhen points on the basis of the control group. The course of treatment was 3 weeks. The results showed that the treatment group was better than the control group. On the basis of conventional treatment, the treatment of cervical vertigo with modified Huiyang Jiuzhen points can improve the treatment effect and promote the improvement of function and symptoms.

3.1.2 Acupotomy Treatment

Quan Wucheng, et al [10] treated the treatment group with acupotomy and the control group with western medicine. The results showed that the clinical treatment effect of acupotomy was significantly better than that of western medicine. Acupotomy is a relatively effective method for treating cervical vertigo. Li Fei, et al [11] treated the observation group with acupotomy combined with moxibustion of Baihui, Shenting, Tianzhu, Yuzhen, Touwei and other points with clear moxa sticks, and the control group was treated with oral betahistine mesylate and diclofenac sodium double release capsules. Both groups were treated continuously for 3 weeks. The results showed that the total effective rate of the observation group was significantly better than that of the control group. Acupotomy combined with moxibustion with clear moxa sticks can significantly relieve dizziness, headache, neck and shoulder pain of patients with cervical vertigo, and can improve the quality of life of patients. The treatment effect is better than that of western medicine and has a relatively good long-term treatment effect.

3.1.3 Blade Needle Treatment

Wang Huimin, Zeng Haobin, et al [12] treated 124 patients with cervical vertigo with blade needle release. The clinical cure rate of this group of diseases was 69.75%, the marked effective rate was 18.49%, and the total effective rate was 98.32%. There were no adverse reactions after the operation during the six-month follow-up. Blade needle release for the treatment of cervical vertigo can significantly relieve vertigo symptoms, quickly reduce the functional impairment caused by vertigo in patients, and is of great significance for optimizing the quality of life of patients with vertigo, with a relatively good treatment effect. Zhang Chong, Huang Yong [13] treated the control group with simple blade needle release, and the observation group with the combination of traditional filiform needle acupuncture on the basis of blade needle release treatment for 2 weeks. The results showed that the observation group was significantly better than the control group. The treatment of cervical vertigo with blade needle release combined with traditional acupuncture is more effective than simple blade needle release treatment and is worthy of active promotion and application in clinical practice.

3.1.4 Abdominal Acupuncture Treatment

Li Meiying, et al [14] treated the abdominal acupuncture

group with abdominal acupuncture and the traditional acupuncture group with conventional acupuncture. The results showed that the total effective rate of the abdominal acupuncture group was higher than that of the traditional acupuncture group. Both methods can effectively treat cervical vertigo, and the performance of the abdominal acupuncture group is better than that of the traditional acupuncture group. Zhang Jun, et al [15] randomly divided 90 patients with cervical vertigo into group A (abdominal acupuncture combined with moxibustion of Baihui point), group B (simple abdominal acupuncture therapy) and group C (simple moxibustion of Baihui point), with 30 cases in each group. The results showed that the TCD examination results and the evaluation of treatment effect of performance scores all showed that there were significant differences in the three groups after treatment compared with those before treatment, and group A was better than groups B and C. The treatment effect of abdominal acupuncture combined with moxibustion of Baihui point is significantly better than that of a single therapy, which may be related to adjusting the body's yin-yang balance and effectively improving the blood flow velocity of the vertebrobasilar artery.

3.1.5 Moxibustion Treatment

Liang Xuexing, et al [16] treated the control group with modified Banxia Baizhu Tianma Decoction, and the treatment group with moxibustion and the eight-character treatment method on the basis of the control group for 7 consecutive days. The results showed that the total effective rate of the treatment group was significantly higher than that of the control group. Moxibustion and the eight-character treatment method combined with Banxia Baizhu Tianma Decoction can improve various clinical manifestations of patients with cervical vertigo, improve the quality of life and work, and have a relatively good clinical treatment effect. Hu Peijia, Cheng Hongliang [17] divided the patients into a Huayu Tongluo Moxibustion group (67 cases) as the treatment group and a drug group (65 cases) as the control group. The results showed that the curative effect of the treatment group was higher than that of the control group. The treatment of cervical vertigo with Huayu Tongluo Moxibustion showed that after two courses of treatment, the improvement degree of sympathetic nerve manifestations and the treatment effect were better than those of the nimodipine group.

3.2 Tuina Manipulation Treatment

Zhang Jie, Zhang Mengmeng [20] treated the treatment group with acupoint tuina manipulation and the control group with oral Sibelium. One course of treatment was two weeks. The recovery and marked effective rate of the treatment group were higher than those of the control group. It shows that the effect of acupoint tuina in the treatment of cervical vertigo is better than that of Sibelium and is worthy of public adoption. Ning Zhenzhen, Ge Guimin, et al [18] treated the treatment group with Long's spinal correction manipulation and the control group with conventional tuina manipulation. The results showed that the curative effect of the treatment group was better than that of the control group. Long's spinal correction manipulation has a reliable clinical treatment effect on patients with cervical vertigo and is worthy of public adoption. Li Rui, Zhang Zhaojie, et al [19] treated the treatment group with tendon-relaxing and reduction manipulation and the control group with conventional traction treatment. Both groups of patients were treated for 2 weeks, and the patients were followed up 3 months after the treatment. The results showed that the treatment effect of the treatment group was better than that of the control group. The tendon-relaxing and reduction manipulation has a good treatment effect on cervical vertigo caused by atlantoaxial joint displacement, which can improve the deviation of the odontoid process of the axis and increase the mobility of the atlantoaxial joint, and the effect is better than that of the conventional traction treatment method.

3.3 Traditional Chinese Medicine Treatment

Sun Hua, Liu Xiaoli, etc [21] treated the patients in the control group with conventional therapy, that is, oral betahistine mesylate tablets, and the patients in the observation group with conventional therapy and Guizhi Gegen Decoction. The results showed that the effect of the patients in the observation group was better than that of the control group. Guizhi Gegen Decoction can improve the treatment effect of cervical vertigo, can better improve the patient's hemodynamics and vascular endothelial function, and can also improve the quality of life of patients, with fewer adverse reactions, and is worthy of promotion. Cheng Bingshan, etc [22] treated the control group with flunarizine hydrochloride capsules, and the experimental group with Yiqi Dingxuan Decoction combined with flunarizine hydrochloride capsules. The results showed that the curative effect of the experimental group after treatment was better than that of the control group. Yiqi Dingxuan Decoction combined with flunarizine hydrochloride capsules can improve the cerebral perfusion state and relieve vertigo symptoms. Dong Chenglin, etc [24] treated the control group with orthopedic treatment combined with acupuncture, and the treatment group took Xiaoxuan Zhiyun Tablets orally on the basis of the control group. The treatment lasted for 3 weeks. The results showed that the effect of the patients in the treatment group was better than that of the control group. On the basis of orthopedic treatment combined with acupuncture, taking Xiaoxuan Zhiyun Tablets orally has a good treatment effect on cervical vertigo. Niu Zhaoyang, Ju Baojun, etc [26] treated the treatment group with oral modified Zexie Decoction and the control group with oral betahistine mesylate for 2 consecutive weeks. The results showed that the effect of the treatment group was significantly better than that of the control group. Modified Zexie Decoction can effectively improve cervical vertigo of phlegm-turbidity obstruction type and is relatively safe.

3.4 Injection Treatment

Gao Haiyan, Cheng Hui, et al [25] injected Zhengqing Fengtongning Injection into bilateral Fengchi points in the acupoint injection group (that is, the treatment group), and the drug group (that is, the control group) took Sibelium capsules orally for 15 days. The results showed that the curative effect of the acupoint injection group was better than that of the drug group. The injection of Zhengqing Fengtongning Injection at acupoints has a good treatment effect on cervical vertigo. Ma Xiuping [27] injected Salvia Miltiorrhiza Injection into bilateral Fengchi points of patients, and the results showed that the treatment effect was remarkable. Injecting drugs into

acupoints can relieve symptoms such as vertigo.

3.5 Western Medicine Treatment

Chen Ping, Yin Qian [28] treated the observation group with flunarizine combined with betahistine, and the control group with betahistine alone. The treatment effect of the observation group was better than that of the control group. The treatment of flunarizine tablets combined with betahistine can improve the situation of vertigo and improve the quality of life. Lai Jianrong, Zhong Jianwei, etc [23] used alprostadil injection and flunarizine hydrochloride capsules in the treatment group on the basis of conventional treatment, and the control group used low molecular dextran on the basis of conventional treatment for 2 weeks. The results showed that the treatment group was significantly better than the control group. The treatment of alprostadil injection combined with flunarizine hydrochloride can quickly relieve the symptoms of cervical vertigo.

4. Conclusion

The etiology and pathogenesis of cervical vertigo in traditional Chinese medicine are caused by wind, fire, phlegm, blood stasis and deficiency. The pathogenesis of Western medicine may be the vertebral artery stenosis theory, sympathetic nerve stimulation theory, vascular active factor theory, cervical proprioceptor theory, etc. The specific pathogenesis is not yet clear and needs further research to draw a conclusion. The diagnosis of cervical vertigo needs to be further confirmed by detailed inquiry of the patient's medical history, analysis of the patient's symptoms, physical examination and some auxiliary examinations. The treatments of cervical vertigo in traditional Chinese medicine and Western medicine are also different. Traditional Chinese medicine can be treated by acupuncture, tuina manipulation, traditional Chinese medicine treatment and combined treatment. Western medicine is treated by surgery and drugs, as well as combined treatment of traditional Chinese medicine and Western medicine, which are all effective in the treatment of cervical vertigo.

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