

# Research progress in Chinese and Western medicine for vestibular migraine

Yue Zhou<sup>1,a</sup>, Zhihong Yang<sup>2,b,\*</sup>, Yu Kang<sup>1,c</sup>, Kaijun Zhou<sup>1,d</sup>

<sup>1</sup>Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, China

<sup>2</sup>The Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, China

<sup>a</sup>1273749412@qq.com, <sup>b</sup>729056079@qq.com, <sup>c</sup>2213850982@qq.com, <sup>d</sup>1729624016@qq.com

\*Corresponding author

**Abstract:** Vestibular migraine (VM) is a genetically predisposed disorder in which recurrent dizziness or vertigo, with or without headache, is the main clinical manifestation. It is one of the main causes of recurrent vertigo, with a predominance of middle-aged women. Its pathogenesis is not fully understood, and there are no authoritative treatment guidelines, and it is mostly managed in the same way as migraine. In order to further clarify the progress of Chinese and Western medical treatment of vestibular migraine, we have integrated the current relevant literature and presented it in the context of Chinese and Western medical understanding and treatment in order to provide reference for subsequent clinical treatment and research.

**Keywords:** vestibular migraine, research progress

Vestibular migraine is a genetically predisposed disorder with recurrent dizziness or vertigo with nausea and vomiting, with or without headache as the main clinical manifestation [1]. As a type of recurrent vertigo, the pathogenesis of VM is not fully understood and involves multiple theories, with a tendency to cluster in families. There are no authoritative treatment guidelines, and it is still managed in the same way as migraine, but in clinical practice, the treatment of VM has been expanded in both Chinese and Western medicine, and its treatment and management can be divided into Chinese and Western medicine and patient education. In Chinese medicine, oral Chinese medicine, acupuncture, auricular pressure beans and moxibustion are the main treatment modalities; in Western medicine, acute treatment, preventive treatment and rehabilitation are the main treatment modalities; and patient education is the main treatment modality to avoid exposure to triggers of attack and to relieve anxiety and worry. Currently, the above Chinese and Western medical treatment modalities are widely used in clinical practice. Therefore, the research progress of Chinese and Western medical treatment for vestibular migraine is reviewed in the light of the relevant literature on Chinese and Western medical treatment for vestibular migraine.

## 1. Chinese medicine's understanding of the etiology and pathogenesis of VM

Vestibular migraine has recurrent dizziness or vertigo as its main clinical manifestation, so it is mostly classified as "vertigo". In the Nei Jing, "all winds and vertigo belong to the liver", "if the medulla is insufficient, the brain turns to tinnitus", "if the upper qi is insufficient, the brain is dissatisfied ..... and the head is tilted by bitterness and the eyes are dizzy". The treatises on vertigo and dizziness are all closely related to the liver and kidney, and are associated with various factors such as deficiency of the marrow sea, blood deficiency, external evil, and qi depression [2]. Zhang Zhongjing of the Eastern Han Dynasty believed that phlegm and beverages were the causative factors of vertigo; Yan Youhe of the Song Dynasty first proposed the idea that the six perversions and seven emotions cause vertigo [3]; Liu Wansu, in Suwen - Xuanji Original Disease Style, said, "The so-called wind is very strong, and the head and eyes are dizzy, because the wind and wood are strong, it must be because the gold is weak and unable to control the wood, and the wood and fire are fighting against each other, so it is rotating [4]. Li Dongheng believes that vertigo is caused by "deficiency of qi in the spleen and stomach and the upward movement of phlegm" and should be treated from the spleen and stomach [5]; Zhu Danxi advocates "no vertigo without phlegm" and advocates "treating phlegm with qi deficiency and fire". "In the Ming Dynasty, Zhang Jiebin believed that "no deficiency makes vertigo" and that treatment should be based on tonifying deficiencies; Yu Tuan's Medical Zhengzhuan pointed out that vertigo should be treated according to different body types. It can be seen that vertigo is related to

emotional and mental disorders, old age and infirmity, poor diet, injuries from falls and puffs, as well as external evil, resulting in internal wind, fire, deficiency, phlegm and stasis, leading to internal movement of wind and vertigo, disturbance of the clear orifices, and loss of nourishment of the brain and vertigo.

## 2. Western medical understanding of VM

The etiology of vestibular migraine is not fully understood, but it is often thought to run in families and is more common in middle-aged women, with dizziness or vertigo as the main first symptom<sup>[1]</sup>. VM lacks specific signs and biomarkers and has a complex and varied clinical presentation, and the diagnosis is usually based on history and long-term observation. The main pathogenic mechanisms of VM include<sup>[6]</sup>: (1) neurotransmitter abnormalities, in which neurosensitizing transmitters increase the associated permeability, produce aseptic inflammation and stimulate nociceptive fibres to the centre; (2) abnormal trigeminal-vascular function, which activates mast cells to release vasoreactivity and increase inflammatory responses; (3) ion channel deficiencies, which are a major factor in episodic ataxia, familial migraine and many other attacks. (4) ion channel defects are the cause of many seizure disorders such as ataxia, familial migraine and hemiplegic migraine; (5) abnormalities in central signalling integration and genetic abnormalities can lead to abnormal integration of signalling pathways and gene mutations that affect neuronal activity.

## 3. VM and Chinese medicine treatment

Chinese medicine is widely used in clinical practice for the treatment of VM, as it is highly effective, less prone to recurrence and helps to shorten the course of the disease.

### 3.1 Oral Chinese medicine or proprietary Chinese medicine

Oral Chinese medicine or TCM is the most important form of TCM treatment and has the advantages of outstanding efficacy, low side effects, less recurrence and long lasting effect. Contemporary Chinese medicine treatment of vertigo is often based on evidence and is classified as hyperactivity of liver and yang, deficiency of kidney essence, phlegm and dampness, deficiency of qi and blood, and internal obstruction of blood stasis<sup>[2]</sup>. In Chinese herbal treatment, the classical formulas (supported by Chinese medical texts), combined formulas and self-prescribed formulas are widely used, among which the classical formulas are Hanxia Diarrhea Heart Soup with Addition, Hanxia Baijiao Tianma Tang, Tianma and Hooked Vine Drink, Warm Gall Bladder Soup, Bazhen Tang, Da Ren Yuan Decoction, Ze Xie Tang, and Antelope and Hooked Vine Soup. Tang, He's Phlegm-Relieving Soup, Wind-Excluding and Dizziness-Relieving Soup, Qing Dizziness Soup, Ma Zhen Quenching Wind Soup, Nourishing Yin and Dizziness-Relieving Soup, and Chai Hu Six Flavours Soup, etc., which show the feasibility of Chinese herbal treatment for VM. For example, Liu Yin et al<sup>[7]</sup> treated vestibular migraine with Han Xia Bai Zhu Tian Ma Tang with additional flavour, and the results showed significant efficacy in reducing the risk of falls and improving vertigo symptoms. Yang Jianxin<sup>[8]</sup> also achieved better therapeutic results in the treatment of vestibular migraine with the addition of Ze Di Tang. Hao Shanshan et al<sup>[9]</sup> used the formula of Zhuangyao San combined with Sour Jujube Ren Tang to treat the liver-depression and spleen-deficiency type of VM, which could effectively reduce the number of attacks, shorten the duration of attacks and alleviate the symptoms of vertigo. Not only are oral tonics outstandingly effective in the treatment of VM, but also proprietary Chinese medicines, such as Zhuangyao Wan, Nourishing Blood and Clearing Brain Granules, Chai Lian Ding Dazzling Capsules, Long Baicalin Ding Dazzling Granules, Chuan Xiong Qing Brain Granules, Xu Yu Tong Pulse Capsules and Headache Granules, which are commonly used in clinical practice. Tang Yingchao<sup>[10]</sup> observed the clinical efficacy of nourishing blood and clearing the brain granules to prevent and treat vestibular migraine of blood deficiency and liver hyperactivity type. Liu Yin et al<sup>[11]</sup> used Chai Lian Ding Dazzling Granules to treat vestibular migraine with liver-stomach disharmony evidence with anxiety and depression state, and the results showed that it could effectively improve patients' vertigo symptoms and anxiety and depression. Wang Yang<sup>[12]</sup> used headache granules to conduct a clinical study on VM of the wind-yang upheaval type and found that the headache granules could reduce the patients' symptoms and improve their quality of life. It can be seen that both oral Chinese medicine and proprietary Chinese medicine have better efficacy in vestibular migraine.

### **3.2 Acupuncture treatment**

Acupuncture has a good therapeutic effect on brain disorders and pain, and is also widely used in clinical practice due to its affordability. Zhang Xi <sup>[13]</sup> found that acupuncture treatment of VM could reduce the number of recurrences of vertigo and shorten the duration of vertigo, with better long-term efficacy. Luo Ying et al <sup>[14]</sup> used the acupuncture method of waking up the brain and opening up the orifices, selecting the main acupuncture point Indang, Shangxing through Baihui and Sanyinjiao for acupuncture, supplemented by Fengchi, Wanbone, Tianzhu, Sun and Taichong, and observed that the treatment of VM was effective and could reduce the number of attacks and shorten their duration. Li Zhen et al<sup>[15]</sup> concluded that the foot Shaoyang gallbladder meridian and the hand Shaoyang Sanjiao meridian both pass through the lateral head, so the use of specific points of the Shaoyang meridian, Fengchi, Ruigu, Waiguan and Yanglingquan, combined with up and down, can channel the Qi of the Shaoyang meridian in the lateral part of the head and temporal area and clear the fire of the liver and gallbladder. Ma Lin et al <sup>[16]</sup> used the Dingkun acupuncture method to perform acupuncture in the dizzy hearing area using Baihui, bilateral Fengchi, Si Shencong, bilateral Neiguan and bilateral Shenmen. The results suggested that the Dingkun acupuncture method could reduce serum CGRP levels in patients with vestibular migrainous vertigo, indicating that the therapy could inhibit cerebral vasodilation and reduce vasoactive mediators. It can be seen that acupuncture treatment is also one of the better treatment routes.

### **3.3 Ear point bean pressure and moxibustion treatment**

Ear acupuncture point pressure bean and moxibustion are traditional Chinese medicine specialties, which have the effect of unblocking the meridians, supporting the righteousness and eliminating the evil, and nourishing the deficiency and strengthening the root. Fan Dihui et al<sup>[17]</sup> used moxibustion at Baihui point to treat VM with deficiency of qi and blood, which could enhance the body's yang energy, promote the operation of qi and blood, and make the clear orifices nourished, so that the dizziness would stop. Li Dongmei et al<sup>[18]</sup> treated VM with auricular point pressure dou with similar overall efficacy as betahistine mesylate tablets, but outperformed the drug in terms of long-term efficacy, and had the advantage of shortening the duration of vertigo and reducing the number of episodes. Warm acupuncture has a better effect on vertigo of the Qi and Blood type. Zhao Ziyue et al <sup>[19]</sup> treated VM with warm acupuncture, which significantly reduced the symptoms of vertigo and lowered the recurrence rate. In a clinical study, Tu Jia<sup>[20]</sup> confirmed that auricular acupressure of dou could significantly improve vertigo symptoms in the early stage of VM, and the efficacy was better in patients with both deficiency of kidney essence and hyperactivity of liver yang.

## **4. VM and Western medical treatment**

Western medical treatment of VM is not yet available and is based on symptomatic treatment. At present, the treatment of migraine is mostly managed according to the treatment model of migraine, which can be divided into four aspects: acute phase, preventive phase, rehabilitation treatment and patient education.

### **4.1 Treatment in the acute phase**

The acute treatment of VM is mainly aimed at relieving symptoms and alleviating the patient's pain, and is often based on symptomatic treatment <sup>[21]</sup>. Anti-emetic drugs such as ibuprofen and treprostin are commonly used to relieve pain <sup>[22-23]</sup>; anti-vertigo and antiemetic drugs such as diphenhydramine and promethazine are commonly used <sup>[24]</sup>; glucocorticoids are often used to control severe symptoms, and intravenous methylprednisolone can be administered if VM lasts for too long <sup>[25]</sup>. Currently, traptans and vestibular depressants are often used as the first choice for acute attacks of VM, which can reduce vertigo attacks by suppressing trigeminal nucleus excitability <sup>[26]</sup>. Steroid injections have been found to be effective in patients with prolonged vertigo <sup>[27]</sup>, and some studies have also found that external trigeminal nerve stimulation can reduce VM symptoms or terminate the disease process <sup>[28]</sup>. Although there are no authoritative treatment guidelines for the acute phase of VM, the actual clinical treatment of VM has been explored, mostly in small samples or non-randomised controlled studies, most of which lack evidence-based medical evidence, but it is still a guideline for the treatment of the acute phase of VM.

#### 4.2 Preventive treatment

VM is prone to recurrent and prolonged attacks, which makes treatment during the prophylactic phase particularly important. Prophylactic medication is intended to reduce the frequency and severity of VM seizures and increase the effectiveness of treatment during the acute phase [29]. The main drugs include calcium antagonists (flunarizine), antiepileptic drugs (topiramate, lamotrigine, valproic acid),  $\beta$ -blockers (propranolol and metoprolol), and antidepressants (amitriptyline, venlafaxine, nortriptyline) [1]. Because it is difficult to have a uniform measure of preventive medication, there is no recommended preventive medication for VM [30], but in China, only flunarizine has indications that include both migraine and vertigo [31], and domestic and international guidelines recommend flunarizine as the first-line preventive treatment for migraine [32-33]. As to whether flunarizine can be the first choice for the prophylactic phase of VM, further studies are needed.

#### 4.3 Vestibular rehabilitation

Vestibular rehabilitation is a therapeutic approach based on the central mechanisms of neuroplasticity, including adaptation and substitution, to promote vestibular compensation [34]. Vestibular rehabilitation exercises can increase tolerance to vertigo and should be performed as soon as possible, especially in patients following an acute episode of VM or in patients suffering from balance disorders [35-36]. Vitkovic et al [37] found that vestibular rehabilitation was an effective treatment measure for patients with VM; Liu et al [38] after 1 month of vestibular rehabilitation in patients with VM, Liu et al [38] found a significant reduction in vertigo disorder scale scores from baseline levels, indicating that the treatment was effective. The Expert Consensus on the Diagnosis and Treatment of Vestibular Migraine (2018) [1] also states that vestibular rehabilitation should be carried out promptly in patients with VM, which shows that vestibular rehabilitation has been recognized as an effective treatment modality for VM.

#### 4.4 Patient education

VM is recurrent and persistent, and can be physically and mentally damaging, so it is particularly important to improve patient education. Studies have shown that patients with VM are prone to anxiety and fear, and have a desire to seek medical help [39]. Therefore, we need to strengthen the scientific education of VM, so that patients can correctly understand the disease and recognize it, and guide them to establish a correct view of VM, as well as optimizing their diet, improving their lifestyle, reducing their exposure to triggering factors, etc. They should also actively regulate their emotions and keep their mood happy.

### 5. Summary

VM is a recurrent and persistent condition, which makes its treatment particularly important. The current treatment mainly refers to the experience of medication for migraine and preliminary studies on VM. Although most of them are empirical or clinically validated, all the above-mentioned Chinese and Western medical treatment modalities have significant effects on VM. Therefore, understanding the latest research advances in the treatment of VM, and the combination of Chinese and Western medical treatment modalities, provides a reference for clinicians to choose the appropriate treatment for their patients.

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