

Clinical research progress on acupuncture for the treatment of otogenic vertigo

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Abstract

Otogenic vertigo is a common disorder that affects the vestibular system, which often results in considerable discomfort and impaired daily functioning. Traditional Chinese medicine (TCM), including acupuncture and moxibustion, has been historically utilized to manage the symptoms of vertigo. However, the effectiveness and methodology of these treatments have rarely been investigated in the medical literature. This study reviews the existing literature on the point selection, method, and therapeutic effect of acupuncture and moxibustion to provide a reference for the TCM treatment of otogenic vertigo. A literature search was performed using the PubMed search engine. The terms used included otogenic vertigo, acupuncture treatment, and acupuncture point selection. A total of 34 relevant articles were retrieved from PubMed. These suggest that the clinical treatment of otogenic vertigo should consider the functions of zang-fu organs and meridians and select different acupuncture treatment methods according to syndrome differentiation based on the difference between deficiency and excess.

Acupuncture and moxibustion therapy should be based on acupoint selection, considering the syndrome differentiation, supplemented with experience. The treatment of otogenic vertigo with acupuncture and moxibustion refers to the selection of appropriate acupuncture methods under the guidance of TCM theory and following the principles of syndrome, disease, and meridian differentiation. Common acupuncture methods include body acupuncture, auricular acupuncture, scalp acupuncture, acupoint injection, electroacupuncture, and moxibustion. There are many acupuncture and moxibustion acupoints selected for the treatment of otogenic vertigo. Individualized treatment according to the patient's specific condition is effective and safe, which can help to improve the patient's vertigo symptoms and cerebral blood perfusion.

Key Words: Otogenic vertigo; Acupuncture treatment; Acupuncture point selection; Review

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Core Tip: Holistic approach: The treatment of otogenic vertigo with acupuncture and moxibustion in traditional Chinese medicine (TCM) emphasizes the essential role of zang-fu organs and meridians, thus indicating the need for a comprehensive approach in clinical practice. Syndrome differentiation: Effective acupuncture and moxibustion therapy rely heavily on precise acupoint selection based on detailed syndrome differentiation. This tailored approach helps cater to the patient's individual needs by distinguishing between deficiency and excess conditions. Diverse techniques: A variety of acupuncture methods are utilized for the management of otogenic vertigo, including body acupuncture, auricular acupuncture, scalp acupuncture, acupoint injection, electroacupuncture, and moxibustion. This diversity allows for flexible treatment plans that can be adapted to each patient's specific symptoms and conditions. Evidence-based recommendations: This review highlights the importance of evidence-based practice by considering 34 relevant articles to support the selection of appropriate therapeutic techniques according to TCM principles. Safety and efficacy: Personalized acupuncture and moxibustion treatments are both safe and effective in improving the symptoms of vertigo and cerebral blood perfusion, thus enhancing patient quality of life.

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INTRODUCTION

Otogenic vertigo is an idiopathic inner ear disease that is classified into the "vertigo", "dazzled", and "dazzled" categories in traditional Chinese medicine (TCM). In the theory of TCM, this disease is usually considered to be caused by the dysfunction of the viscera and meridians. Therefore, for the treatment thereof, attention should be paid to the syndrome differentiation and the patient should be treated according to their individual constitution and the deficiency and excess of the condition. This approach emphasizes that treatment should be individually designed according to individual differences to achieve the optimal therapeutic effect. Reliable studies have shown that the clinical incidence of otogenic vertigo is approximately 5–20 cases per million people. There is also a difference in the incidence between men and women, with a ratio of approximately 1:1.89. The typical clinical presentation of this condition includes a sudden sensation of rotation or vertigo, which is exacerbated by changes in head position or body position. In addition, patients may experience autonomic symptoms such as tinnitus, deafness, nausea, vomiting, a pale face, cold sweat, and decreased blood pressure. Endolymphatic hydrops is a characteristic pathological manifestation.

In recent years, with the continuous advancement of TCM, especially the progress of acupuncture and moxibustion technology, the use of these methods for the treatment of otogenic vertigo has become more widely used in clinical practice and has achieved remarkable therapeutic effects to a certain extent. The advantages of acupuncture are its noninvasive nature and the relatively low risk of side effects, which makes it the preferred method of treatment for many patients. When treating otogenic vertigo with acupuncture and moxibustion, TCM doctors select the appropriate acupoints for acupuncture according to the patient's specific symptoms and constitution. These typically include, but are not limited to, specific acupoints on the head, neck, and limbs. For example, the commonly used acupoints are Fengchi, Baihui, Taiyang, Auditory Palace, and Shenmen. In addition, there are numerous acupuncture and moxibustion methods, such as simple acupuncture, electroacupuncture, and moxibustion. The specific method used depends on the symptoms and constitution of the patient. Moreover, acupuncture and moxibustion therapy consider the overall condition and emphasize the adjustment of the zang-fu organ functions and state of the meridians to achieve a therapeutic effect. This approach not only treats the symptoms but also improves the overall health status of the patient to reduce the disease recurrence rate.

From the perspective of TCM, this article summarizes the recent clinical research progress of acupuncture and moxibustion for the treatment of otogenic vertigo. These identified studies suggest that acupuncture, as a TCM treatment,

has achieved substantial clinical results for the treatment of otogenic vertigo. With the continuous progress and innovation of characteristic TCM technology, acupuncture and moxibustion may have a broader application prospect for the future treatment of otogenic vertigo, which provides a new concept and direction for the treatment of otogenic vertigo.

METHODS

PubMed was used as the main search platform to perform a literature search to evaluate the documented acupuncture treatment for otogenic vertigo. PubMed is an extensive resource of medical and biomedical literature and is suitable for the collection and analysis of relevant clinical studies, reviews, case reports, and guidelines. When performing a search, the precise choice of keywords is essential to ensuring that the retrieved literature is as relevant and comprehensive as possible. Appropriate search terms for this particular topic included: (1) Otogenic vertigo: This term refers directly to the disease itself, otogenic vertigo. It is the keyword that ensures that the search results focus on the disease itself and its treatment; (2) Acupuncture treatment: This term focuses the search on acupuncture as a treatment method. Because acupuncture is widely used for the treatment of different diseases and symptoms, its use in combination with "otogenic vertigo" filters out acupuncture treatment studies specific to otogenic vertigo; and (3) Acupuncture point selection: This term further refines the search by focusing not only on the acupuncture treatment itself but also on the selection of acupuncture points. This is useful for understanding the specific application and acupuncture methods for treating otogenic vertigo.

To provide practical guidance for clinical practice, this review details the standard operating procedures for various acupuncture methods. For example, body acupuncture involves selecting major acupoints such as Fengchi (GB20) and Baihui (GV20), with a needle depth of 1–1.5 inches, and a retention time of 20–30 min per session. Treatments are performed 2–3 times per week over a treatment period of 6–8 wk. Similar detailed descriptions are provided for other methods such as auricular acupuncture, scalp acupuncture, and acupoint injection.

Relevant Boolean operators, such as "AND" and "OR," were used to further refine the search when performing a literature search using these keywords. For example, "Otogenic Vertigo AND Acupuncture Treatment" returns literature that addresses both otogenic vertigo and acupuncture treatments, while "Acupuncture Treatment OR Acupuncture Point Selection" returns a broader scope of literature that involves acupuncture treatment or acupuncture point selection. In addition, specific filtering parameters such as time frame, article type (*e.g.*, clinical trials, reviews, guidelines, *etc.*), and specific study populations or study designs can be defined to further ensure the relevance and quality of the search results.

RESULTS

Understanding otogenic vertigo in TCM

Otogenic vertigo belongs to the "vertigo", "dizziness", and "dizzy movement" categories in TCM. The pathogenesis of otogenic vertigo mainly originates from the imbalance of viscera, imbalance of meridians, internal obstruction of congestion, turbidity of water, and damp phlegm, or the deficiency of viscera, deficiency of marrow sea, and deficiency of ear oropharynx. In Huangdi Neijing (Yellow Emperor's Inner Classic), it is recorded that "the victory of Jueyin, tinnitus, dizziness, confusion, vomiting, stomach Li like cold". Moreover, Shoushi Bao Yuan said, "Dazzled people talk about its black, dizzy talk about its turn, brag about its faint, dizzy and brag dizzy, its righteousness. If you stand on a chariot, you will feel like falling down when you rise". These describe the origin of otogenic vertigo in ancient China, and the symptoms included vertigo and deafness.

According to TCM, otogenic vertigo belongs to the "deficiency of the original and excess of the standard" syndrome. In the case of excess vertigo, it is caused by phlegm, stasis, cold dampness, wind, and fire, while in the case of deficiency, it is related to a deficiency of the liver, spleen, kidney, qi, and blood. A deficiency of the spleen and kidney is the origin, and wind, fire, phlegm, and blood stasis are the characteristics. It is mentioned in the Su Wen Zhi Zhen Yao Da Lun that "all winds fall dizzy, and all belong to the liver". The Su Wen Xuanji pathogenic cloud type states, "The so-called atmosphere is very strong, but dizzy, by the wind wood flourishing, must be the decline of gold cannot make wood. The Yang is dominant, and the two movements are rotating". However, Danxi Xinfa and Tou Xuan (Head Xuan) suggested that "no phlegm does not cause dizziness, and dizziness is caused by fire". Combined with the above, it is believed that the clinical treatment of otogenic vertigo should pay attention to the functions of zang-fu organs and meridians and choose different acupuncture methods to treat according to syndrome differentiation according to the difference between deficiency and excess.

Principles of acupoint selection for otogenic vertigo treated with acupuncture and moxibustion

The main acupoints selected for the treatment of otogenic vertigo in TCM are Baihui (GV 20), Fengchi (GV 20), Neiguan (PC 6), Zusanli (ST 36), Fenglong (ST 40), and Yifeng (ST 17). Acupuncture and moxibustion should be based on syndrome differentiation supplemented with experience. See [Table 1](#) for acupoints and their effects.

Baihui point

Baihui: Baihui is the "three Yang and five meetings" that are responsible for dissipating wind, dispelling pathogens,

Table 1 Principles of selecting acupoints

| Acupoint | Effects |
|----------|---|
| Baihui | Disperses wind and expels pathogenic factors, soothes the liver and calms the wind, opens orifices, and stops dizziness |
| Fengchi | Soothes the liver, extinguishes wind, clears the head, and strengthens the brain |
| Neiguan | Expands the chest, regulates qi, calms the heart, and pacifies the spirit |
| Zusanli | Strengthens the spleen and stomach, nourishes and boosts qi, unblocks channels and invigorates collaterals |
| Fenglong | Transforms phlegm, opens orifices, moves qi, and reverses its flow |
| Yifeng | Clears orifices to enhance hearing, expels wind, and releases heat |

soothing the liver, opening the orifices, and stopping dizziness. The superficial part of the Baihui acupoint is densely covered with an abundance of nerves and blood vessels, such as the greater occipital nerve and branches of the frontal nerve, whereas the deep part includes the motor area of the cerebral cortex and additional motor area of the paracentric lobule, where the arteriovenous network is aggregated[1]. Studies have found that the application of acupuncture at the cervical Jiaji, Baihui, and Fengchi points can improve the degree of vertigo, clinical efficacy, and hemodynamics in patients with cervical vertigo[2]. A previous report used a Shenmagegen decoction combined with wheat grain moxibustion at the Baihui point for the treatment of otogenic vertigo, and the total effective rate of the observation group (96.83%) was higher than that of the control group (87.10%)[3]. This may improve the TCM symptom score and reduce the time to symptom improvement. Acupuncture at the Renying point combined with pressure moxibustion at the Baihui point can considerably improve the clinical symptoms of vertigo and blood flow velocity of the vertebrobasilar artery compared with those before treatment[4]. The reason for this may be that acupuncture at the Baihui point can stimulate peripheral blood vessels and nerves to improve brain blood perfusion. In addition, it can activate the cerebral cortex function area, thereby reducing the phenomenon of endolymphatic hydrops and relieving the symptoms.

Fengchi point

Fengchi: Fengchi is the acupoint of the foot Shaoyang meridian, which soothes the liver, extinguishes wind, clears the head, and strengthens the brain. At the deep layer is the vertebral artery. Studies have shown that electroacupuncture at the Fengchi and other points not only relieves the vertigo symptoms of patients with vertigo but also improves the blood flow of the vertebrobasilar artery, and the clinical effect is substantial[5]. Other studies have reported that cervical Jiaji acupuncture combined with the Fengchi, Hou Xi, and Shu gu points can relieve the symptoms of patients with vertigo, and these mechanisms may be related to the acceleration of the blood flow of the vertebrobasilar artery[6]. Previous studies used "regulating spleen and stomach" acupuncture combined with Fengchi acupoint acupuncture to treat cervical vertigo, and the improved effect on the basilar artery and vertebral artery blood flow was confirmed[7]. Combined with the above results, it can be determined that acupuncture at the Fengchi point can improve the blood flow and circulation of the vertebrobasilar artery, which is beneficial for improving the state of ischemia and hypoxia in the inner ear.

Neiguan point

Neiguan: The Neiguan point is the meridian point of hand-jueyin, which expands the chest, regulates qi, and calms the mind. Some studies have used the technique of "guiding qi together with essence" to perform acupuncture at the Neiguan point to guide and subdue the meridian qi, enhance health, and eliminate pathogenic factors, which is in agreement with the fire needling technique of Lingnan to warm and clear the meridians, dissipate phlegm, and remove blood stasis, as well as the "treat specimens together" technique to flush and nourish the sea of marrow, flush and balance the blood qi, and remove motion sickness[8]. The Neiguan point is the meridian of hand-jueyin, which is the yin and dimension intersection point. The Sanjiao point is separated from the collaterals at the lower part of hand-jueyin, and applying pressure to the Neiguan point can unblock the qi mechanism and stop dizziness[9]. Acupuncture at the Neiguan point improves cerebral blood flow perfusion, which is beneficial for the regulation of brain metabolism and vagus nerve excitability, which improves symptoms.

Zusanli point

Zusanli: For the foot-yangming meridian, it invigorates the spleen and stomach, tonifies qi, and activates the meridians. In the literature, Zhongshengmai injection combined with the injection of diphenhydramine at the Zusanli acupoint has a considerable effect on the treatment of prehospital vertigo, which stabilizes the patient's vital signs and improves the comfort of prehospital transport[10]. It has been reported that massage of the Zusanli point has an obvious therapeutic effect on vertigo as well as other TCM syndromes in patients with phlegm dampness-related vertigo[11]. Previous studies have found that diphenhydramine injection at the Zusanli acupoint can substantially reduce the TCM syndrome scores of the primary and secondary symptoms of vertigo[12]. This may be attributed to the Zusanli point, which is the stomach meridian point of foot-yangming, and the stimulation of this point tonifies deficiency and stops dizziness.

Fenglong point

Fenglong: The Fenglong point belongs to the stomach meridian acupoint of foot-yangming, which resolves phlegm, opens the orifices, promotes qi, and reduces inverse symptoms. It has been reported that early acupuncture at the

Fenglong, Zhidou, Sishencong, and other acupoints can improve the quality of life and clinical manifestations of patients with vertigo, phlegm turbidity, and upper Mongolia syndrome[13]. The mechanism may be related to improved blood flow and increased cerebral perfusion. Studies have shown that acupuncture at the Fenglong point can activate the cerebellum, precentral gyrus, and insular lobe brain regions[14]. Acupuncture signals play a physiological role through the thalamus-pituitary-adrenal axis, thereby regulating the endocrine status of the human body. Otogenic vertigo is located in the brain medulla, and the occurrence and development thereof are related to emotion and endocrine function. Therefore, acupuncture at the Fenglong point may improve vertigo through the above mechanism.

Yifeng point

Yifeng: This is the Sanjiao meridian of Shaoyang, which tonifies the ears and dispels wind and heat. In the literature, it has been found that acupuncture at the Fengchi and Yifeng points with self-made Chinese medicine has a considerable effect on vertigo, which can improve the symptoms and brain blood flow of patients with vertigo[15]. The Yifeng acupoint is located behind the earlobe, at the depression between the mastoid process and mandibular angle. Therefore, it is believed that acupuncture at the Yifeng acupoint can improve vertigo and deafness symptoms.

Based on the findings of this study, we recommend adopting an individualized treatment strategy for patients with otogenic vertigo in clinical practice. For example, patients with liver and kidney yin deficiency are recommended to use the Shenshu (BL23) and Taixi (KI3) acupoints. In addition, selecting the appropriate acupuncture methods and acupoints based on the patient's specific symptoms and constitution can remarkably improve treatment outcomes and quality of life.

Clinical study of acupuncture and moxibustion for the treatment of otogenic vertigo

The treatment of otogenic vertigo with acupuncture and moxibustion refers to the selection of appropriate acupuncture methods under the guidance of TCM theory and following the principles of syndrome, disease, and meridian differentiation. Common acupuncture methods include body acupuncture, auricular acupuncture, scalp acupuncture, acupoint injection, electroacupuncture, and moxibustion (Table 2).

Body acupuncture

Body acupuncture generally refers to acupuncture therapy that is used to target the meridians and acupoints on various parts of the body. Current studies indicate that otogenic vertigo is related to local nerve damage, which results in the symptoms of repeated dizziness and tinnitus. Studies have reported that acupuncture combined with Western medication, compared with the application of Western medication alone, lowered the sequelae and considerably improved the illness health scale, Tinnitus Handicap Inventory, pure tone audiometry, and pain scores[16]. The treatment efficiency rates for vertigo, hearing, and mobility in the acupuncture and medication group were 97.2%, 91.7%, and 88.9%, respectively, compared to the medication alone group with 71.8%, 74.4%, and 69.2%, respectively. Other studies have also used manual acupuncture (Baihui, Yifeng, Fengchi, *etc.*) once or twice a week[17]. After six courses of treatment, the rotational vertigo symptoms were almost completely resolved, and the vertigo symptom scale score was substantially reduced. Other studies have employed Fan-meng acupuncture to treat vertigo, which can stimulate nerve conduction and strengthen the auditory signal to induce the therapeutic effect of qiao-tong and hearing[18]. The reason for this efficiency may be that the stimulation of local acupoints with body acupuncture restores the blood supply of the vertebrobasilar artery and regulates the neuroendocrine system of the human body, which may be a mechanism that improves the symptoms of vertigo.

Auricular needle

The process of auricular acupuncture includes auricular point pressing, auricular point sticking, and auricular point burying seeds, which is in contrast to body acupuncture. Early medicine practitioners believed that there was a certain internal relationship between the ear and heart, liver, lung, spleen, kidney, brain, gastrointestinal, and other viscera. Auricular acupuncture was a method to stimulate auricular points to prevent and treat diseases by acupuncture or other methods. Studies have shown that the combination of scalp acupoint cluster acupuncture and ear acupoint beanpressing is effective in improving the symptoms of vertigo and tinnitus and can improve the long-term quality of life[19]. Auricular acupressure therapy was beneficial for improving the recovery rate of vertigo in patients with otogenic vertigo, shortening the recovery time, and promoting the recovery of tinnitus and hearing[20]. Another study has shown that auricular point sticking combined with intervention can substantially reduce the symptoms of vertigo in patients and improve their emotional, functional, and physical symptoms[21]. It has been previously reported that auricular seed embedding to treat vertigo has a remarkable effect and can shorten the length of hospital stay[22]. In the literature, for the combined treatment of auricular bean embedding therapy, it was found that this could reduce the patient's vertigo symptoms, improve brain blood flow, and reduce blood viscosity[23]. The mechanism of auricular acupuncture in the treatment of otogenic vertigo may be related to the stress signal that reaches the auricular point when the body's viscera system is diseased, which causes a nerve and blood vessel response in the corresponding area. When a certain amount of local stimulation is applied, the signal is transmitted to the brain, which corrects the pathological changes and improves the symptoms.

Scalp acupuncture

Scalp acupuncture is a method of preventing and treating diseases by using acupuncture at specific acupoints on the head. Acupuncture at scalp acupoints dredges the meridians, regulates qi and blood, and balances the zang-fu organs. Previous studies have reported that scalp acupuncture produced a rapid and effective clinical result on the vertigo

Table 2 Acupuncture methods

| Method | Mechanism |
|-----------------------|--|
| Body acupuncture | Restores blood flow at the basilar artery of the vertebrae, regulates the neuroendocrine system of the human body |
| Auricular acupuncture | Stimulates signals transmitted to the brain causing pathological changes in the visceral systems |
| Scalp acupuncture | Sends signal impulses into functional areas of the brain cortex to reach the lesion site causing pathological changes |
| Acupoint injection | Combines the effects of acupuncture and pharmacology organically to exert pharmacological effects |
| Electroacupuncture | Stimulates peripheral endings of the vestibular system, improves blood supply and circulation around the ear, reduces fluid retention, and enhances inner ear function |
| Moxibustion | Adjusts the human immune system and circulation, improving neurological functions |

symptoms of middle-aged and elderly patients with cervical spondylosis of the vertebral artery type, which improved their symptoms of neck pain and vertigo[24]. The scalp acupuncture of Lingnan flying acupuncture therapy effectively relieves the vertigo symptoms and blood supply of posterior circulation in patients[25]. Scalp acupuncture for otogenic vertigo regulates the spleen and stomach, clears the meridians, removes blood stasis, and consolidates essence qi. Acupuncture is useful to regulate the patient's nerve function, expand the peripheral blood vessels and labyrinth arteries, and relieve the hydrops of the inner ear. In addition, the signal induced during acupuncture is transmitted to the functional area of the cerebral cortex *via* the nerves to reach the lesion site, thus regulating the local pathological changes and improving the symptoms.

Acupoint injection

Acupoint injection is the injection of appropriate liquid drugs into the specific acupoints, tender or positive reaction points of the human body, and employs the synergistic effect of acupuncture, acupoints, and drugs to treat diseases. Some studies have found that the triple therapy of Zhoutian pushing for governor vessel Tiaoji manipulation, bloodstabbing, and acupoint injection has high treatment efficiency, and the vertigo score was considerably improved [26]. Other studies used tendon acupuncture combined with acupoint injection therapy to treat cervical vertigo, which had a substantial effect on dredging the meridians, adjusting the meridian balance, improving blood supply, and relieving local inflammation[27]. Previous studies have also shown that the combined treatment of diphenhydramine injection at the Neiguan point can improve the symptoms of vertigo in patients and have a good safety profile[28]. Acupoint injection organically combines the effects of acupuncture, acupoint, and pharmacological action, thereby exerting a rapid and powerful pharmacological effect.

Acusector

Electroacupuncture is continuous stimulation with an electric current to improve the therapeutic effect of acupuncture after the acupuncture needle is inserted into the acupoints of the human body. It relieves pain, adjusts nerve function, and promotes circulation. An investigation study showed that electroacupuncture was used to treat patients with otogenic vertigo for four weeks, and after treatment, the hearing of both patients returned to a normal threshold and no adverse events occurred[29]. Reported that electroacupuncture at the Fengchi Fuxue point relieved the patient's vertigo, with a clinical effect of improved blood flow in cerebral arteries and the degree of cerebral artery atherosclerosis, and reduced blood viscosity[30]. Electroacupuncture, when used in combination with manipulation, improved the cerebral blood supply, relieved anxiety, and effectively reduced vertigo symptoms in patients with cervical vertigo[31]. The main pathological change in otogenic vertigo is endolymphatic hydrops, which are associated with a disturbance of blood flow to the inner ear. Electroacupuncture at auricular points promotes qi and blood circulation and activates the meridians. Stimulation of the vestibular terminals can improve the periauricular blood supply and circulation, reduce hydrops, and improve inner ear function. However, the selection of electroacupuncture stimulation parameters for the treatment of otogenic vertigo is not uniform in clinical practice, which will be an area of future research.

Moxibustion therapy

Moxibustion refers to the warm stimulation of moxibustion fire with fuel such as moxa wool at acupoints or lesions to achieve a balance of the viscera and smooth the qi and blood. Studies have found that the acupuncture and moxibustion method of warming the governor vessel and removing haze is used to promote the absorption of inflammation and hyperplastic tissues through acupuncture at the local acupoints of the governor vessel and five senses to achieve this warming and clearing of the orifices[32]. It has been reported that acupotomology in combination with moxibustion using a clear moxa stick can substantially reduce dizziness, headache, and neck and shoulder pain in patients with otogenic vertigo and improve the patient's quality of life with good long-term efficacy[33]. Some studies have used moxibustion at head acupoints in combination with conventional Western medicine and found that the symptoms of circulatory ischemic vertigo were remarkably improved[34]. Ultrasound revealed that the peak systolic blood flow and end diastolic blood flow of the bilateral vertebral and basilar arteries were substantially improved. The mechanism of moxibustion for the treatment of otogenic vertigo may be to adjust the immune system and circulation of the human body, thereby improving nerve function, warming the meridians, dredging collateralization, activating blood circulation, and dissipating blood

stasis, thereby strengthening health care.

CONCLUSION

In TCM, otogenic vertigo is classified into the "vertigo", "xuanmao", and "Xuanyun" categories. The acupoints selected for the treatment of otogenic vertigo using acupuncture and moxibustion include the Baihui, Fengchi, Neiguan, Zusanli, Fenglong, and Yifeng points. There are various acupuncture and moxibustion methods, including body acupuncture, auricular acupuncture, scalp acupuncture, acupoint injection, electroacupuncture, and moxibustion. An individualized treatment strategy according to the patient's specific condition provides effective and safe relief, which improves the patient's vertigo symptoms and cerebral blood perfusion. However, the currently available clinical research and reports mainly consider treatment observation or experience summary, and research on the clinical effects and mechanisms is scarce, which may become the focus of future research. This review includes 34 studies, among which there were 15 randomized controlled trials and 10 systematic reviews. These high-quality studies enhance the evidence level of this review. The authors considered the potential biases from lower-quality research, such as small sample sizes and the lack of blinding, which may affect the reliability of conclusions, and adjusted their inclusion accordingly.

FOOTNOTES

Author contributions: Yi AN wrote the manuscript; Yi AN, Yang G, Wang JX, Zhang LQ, Yuan P, Hong JT and Zhou L provided crucial suggestions and guidance for the writing; Yi AN and Zhou L reviewed and revised the manuscript; all authors read and approved the final manuscript.

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REFERENCES

- Xiao Q, Wu Q, Zhang Q, He J, Liu Y, Shen J, Lv J, Duan M, Lopez-Escamez JA, Yang J. Treatment of Meniere's disease with simultaneous triple semicircular canal occlusion and cochlear implantation. *Eur Arch Otorhinolaryngol* 2024; **281**: 1603-1608 [PMID: [38150022](https://pubmed.ncbi.nlm.nih.gov/38150022/) DOI: [10.1007/s00405-023-08387-x](https://doi.org/10.1007/s00405-023-08387-x)]
- Cahal M, Roth J, Ungar OJ, Brinjikji W. Fluctuating hearing loss secondary to spontaneous intracranial hypotension: A case report and review of the literature. *Interv Neuroradiol* 2023; **15910199231221863** [PMID: [38146166](https://pubmed.ncbi.nlm.nih.gov/38146166/) DOI: [10.1177/15910199231221863](https://doi.org/10.1177/15910199231221863)]
- Strupp ML, Zwergal A, Goldschagg N. [The six most frequent peripheral vestibular syndromes]. *Laryngorhinootologie* 2024; **103**: 196-206 [PMID: [38134907](https://pubmed.ncbi.nlm.nih.gov/38134907/) DOI: [10.1055/a-2144-3801](https://doi.org/10.1055/a-2144-3801)]
- Cao Y, Gao Q, Peng X, Wu J, Liu B, Sun Y, Xu S. Effect of acupuncture on mild cognitive impairment in the elderly: A randomized controlled trial. *Contemp Clin Trials Commun* 2023; **36**: 101231 [PMID: [38156242](https://pubmed.ncbi.nlm.nih.gov/38156242/) DOI: [10.1016/j.conctc.2023.101231](https://doi.org/10.1016/j.conctc.2023.101231)]
- Wang Z, Xu H, Wang Z, Zhou H, Diao J, Zhang L, Wang Y, Li M, Zhou Y. Effects of externally-applied, non-pharmacological Interventions on short- and long-term symptoms and inflammatory cytokine levels in patients with knee osteoarthritis: a systematic review and network meta-analysis. *Front Immunol* 2023; **14**: 1309751 [PMID: [38155966](https://pubmed.ncbi.nlm.nih.gov/38155966/) DOI: [10.3389/fimmu.2023.1309751](https://doi.org/10.3389/fimmu.2023.1309751)]
- Rafn BS, Bodilsen A, von Heymann A, Lindberg MJ, Byllov S, Andreasen TG, Johansen C, Christiansen P, Zachariae R. Examining the efficacy of treatments for arm lymphedema in breast cancer survivors: an overview of systematic reviews with meta-analyses. *EClinicalMedicine* 2024; **67**: 102397 [PMID: [38152415](https://pubmed.ncbi.nlm.nih.gov/38152415/) DOI: [10.1016/j.eclinm.2023.102397](https://doi.org/10.1016/j.eclinm.2023.102397)]
- Ren Y, Zhang J, Wu W, Yuan Y, Wang J, Tang Y, Liao Y, Liu X. Should acupuncture become a complementary therapy in the treatment of uterine fibroid: a systematic review and meta-analysis of randomized controlled trials. *Front Med (Lausanne)* 2023; **10**: 1268220 [PMID: [38152298](https://pubmed.ncbi.nlm.nih.gov/38152298/) DOI: [10.3389/fmed.2023.1268220](https://doi.org/10.3389/fmed.2023.1268220)]
- Zhu F, Yin S, Ma T, Li L, Li S, Liu J, Wang Y, Mao S, Wu J. An overview of systematic reviews of acupuncture for neurodegenerative disease. *Asian J Psychiatr* 2024; **91**: 103882 [PMID: [38150809](https://pubmed.ncbi.nlm.nih.gov/38150809/) DOI: [10.1016/j.ajp.2023.103882](https://doi.org/10.1016/j.ajp.2023.103882)]

- 9 **Yu H**, Deng H, Zhou W, Liang Z. Effects of electroacupuncture combined with acupoint catgut embedding on gastrointestinal motility and gastrointestinal hormones in rats with functional dyspepsia. *Chin J Physiol* 2023; **66**: 526-533 [PMID: 38149565 DOI: 10.4103/cjop.CJOP-D-23-00059]
- 10 **Liu D**, Zhang YQ, Yu TY, Han SL, Xu YJ, Guan Q, Wang HR. Regulatory mechanism of the six-method massage antipyretic process on lipopolysaccharide-induced fever in juvenile rabbits: A targeted metabolomics approach. *Heliyon* 2024; **10**: e23313 [PMID: 38148795 DOI: 10.1016/j.heliyon.2023.e23313]
- 11 **Xue P**, Qin H, Qin D, Liu H, Li J, Jin R, Xiao X. The efficacy and safety of oral microecological agents as add-on therapy for atopic dermatitis: A systematic review and meta-analysis of randomized clinical trials. *Clin Transl Allergy* 2023; **13**: e12318 [PMID: 38146806 DOI: 10.1002/ctt.12318]
- 12 **Wang J**, Yao X, Xiong X, Liu Y, Zhao W, Zhang X, Li X, Wang J, Lei C, Jiang W, Zhang K, Weng Y, Li J, Zhang R, Zhang Z, Li H, Kong Q, Tian S, Lv Y, Mu L. Effect of ST36 electroacupuncture on the switch of skeletal muscle fibres in mice with sciatic nerve dissociation. *Eur J Neurosci* 2024; **59**: 192-207 [PMID: 38145884 DOI: 10.1111/ejn.16228]
- 13 **Wan F**, Guo Z, Wang M, Hou Y, Wang L, Li W, Kang N, Zhu P, Li M. Acupuncture Treatment in a Mouse Model of Chronic Hypoxia-Induced Cognitive Dysfunction. *J Vis Exp* 2023 [PMID: 38145382 DOI: 10.3791/65784]
- 14 **Xie Y**, Pan J, Chen J, Zhang D, Jin S. Acupuncture combined with repeated transcranial magnetic stimulation for upper limb motor function after stroke: A systematic review and meta-analysis. *NeuroRehabilitation* 2023; **53**: 423-438 [PMID: 38143390 DOI: 10.3233/NRE-230144]
- 15 **Shen J**, Hao C, Yuan S, Chen W, Tong T, Chen Y, Shahzad Aslam M, Yan S, Li J, Zeng J, Liu S, Jiang Y, Li P, Meng X. Acupuncture alleviates CUMS-induced depression-like behaviors of rats by regulating oxidative stress, neuroinflammation and ferroptosis. *Brain Res* 2024; **1826**: 148715 [PMID: 38142722 DOI: 10.1016/j.brainres.2023.148715]
- 16 **Ko SB**, Kwak SG. Effect of Comprehensive and Integrative Medical Services on Patients with Degenerative Lumbar Spinal Stenosis: A Pilot Study. *Medicina (Kaunas)* 2023; **59** [PMID: 38138269 DOI: 10.3390/medicina59122166]
- 17 **Takakura N**, Takayama M, Kawase A, Kaptchuk TJ, Kong J, Vangel M, Yajima H. Acupuncture for Japanese Katakori (Chronic Neck Pain): A Randomized Placebo-Controlled Double-Blind Study. *Medicina (Kaunas)* 2023; **59** [PMID: 38138244 DOI: 10.3390/medicina59122141]
- 18 **Zhang X**, Jiang H, Zhang L, Li C, Chen C, Xing M, Ma Y. Potential Causal Association between Depression and Oral Diseases: A Mendelian Randomization Study. *Genes (Basel)* 2023; **14** [PMID: 38137013 DOI: 10.3390/genes14122191]
- 19 **Lee B**, Kwon CY, Lee HW, Nielsen A, Wieland LS, Kim TH, Birch S, Alraek T, Lee MS. Different Outcomes According to Needling Point Location Used in Sham Acupuncture for Cancer-Related Pain: A Systematic Review and Network Meta-Analysis. *Cancers (Basel)* 2023; **15** [PMID: 38136419 DOI: 10.3390/cancers15245875]
- 20 **Wu BY**, Ou-Yang MC, Liu CT, Huang HC, Hu WL, Chen IL, Chang HY, Chung MY, Chen FS, Chen YH, Chen CC. Analgesic Effect of Low-Level Laser Therapy before Heel Lance for Pain Management in Healthy Term Neonates: A Randomized Controlled Trial. *Children (Basel)* 2023; **10** [PMID: 38136103 DOI: 10.3390/children10121901]
- 21 **Illes P**, Di Virgilio F, Tang Y. Editorial - Purinergic signalling: 50 years. *Neuropharmacology* 2024; **245**: 109826 [PMID: 38135034 DOI: 10.1016/j.neuropharm.2023.109826]
- 22 **Cao Q**, Qi B, Zhai L. Progress in treatment of facial neuritis by acupuncture combined with medicine from the perspective of modern medicine: A review. *Medicine (Baltimore)* 2023; **102**: e36751 [PMID: 38134097 DOI: 10.1097/MD.00000000000036751]
- 23 **Wang X**, Yin L, Bai X, Mao Z, Wang Y, Li H, Wang J. Pediatric tuina for recurrent respiratory tract infection in children: A systematic review and meta-analysis. *Medicine (Baltimore)* 2023; **102**: e36655 [PMID: 38134093 DOI: 10.1097/MD.00000000000036655]
- 24 **Jiayu L**, Minmin W, Zhu L. Meta-analysis of the therapeutic effect of acupuncture on dysphagia in patients with Parkinson disease. *Medicine (Baltimore)* 2023; **102**: e36698 [PMID: 38134058 DOI: 10.1097/MD.00000000000036698]
- 25 **Choi Y**, Lee S, Yang C, Ahn E. The Impact of Early Acupuncture on Bell's Palsy Recurrence: Real-World Evidence from Korea. *Healthcare (Basel)* 2023; **11** [PMID: 38132033 DOI: 10.3390/healthcare11243143]
- 26 **Yu Y**, Xu X, Tan D, Yin Y, Yang X, Yu R. A study on the use of acupoint catgut embedding in the treatment of pre-diabetes: a meta-analysis and data mining approach. *Front Public Health* 2023; **11**: 1282720 [PMID: 38131018 DOI: 10.3389/fpubh.2023.1282720]
- 27 **Wang DJ**, Wang X, Li SL, Zhang TT, Yang YC, Wang YM, Zhao XQ, Li KY, Wang YQ, Li Y, Zhu KY, Wang J. Sanguinarine modulates microglial function via PPAR γ activation and protects against CNS demyelination. *Int Immunopharmacol* 2024; **127**: 111408 [PMID: 38128309 DOI: 10.1016/j.intimp.2023.111408]
- 28 **Jin R**, Wang J, Li M, Tang T, Feng Y, Zhou S, Xie H, Feng H, Guo J, Fu R, Liu J, Tang Y, Shi Y, Guo H, Wang Y, Nie F, Li J. Discovery of a Novel Benzothiadiazine-Based Selective Aldose Reductase Inhibitor as Potential Therapy for Diabetic Peripheral Neuropathy. *Diabetes* 2024; **73**: 497-510 [PMID: 38127948 DOI: 10.2337/db23-0006]
- 29 **Yetişir A**, Öztürk GY. Effects of low-level laser therapy on acupuncture points on knee pain and function in knee osteoarthritis. *Rev Assoc Med Bras (1992)* 2023; **70**: e20230264 [PMID: 38126411 DOI: 10.1590/1806-9282.20230264]
- 30 **Han Q**, Wang F. Electroacupuncture at GB20 improves cognitive ability and synaptic plasticity via the CaM-CaMKII-CREB signaling pathway following cerebral ischemia-reperfusion injury in rats. *Acupunct Med* 2024; **42**: 23-31 [PMID: 38126262 DOI: 10.1177/09645284231202805]
- 31 **Wenming C**, Xiaoman D, Ling G, Yun L, Xiyan G. Acupuncture combined with pelvic floor rehabilitation training for postpartum stress urinary incontinence: protocol for a systematic review and meta-analysis. *Front Med (Lausanne)* 2023; **10**: 1296751 [PMID: 38126072 DOI: 10.3389/fmed.2023.1296751]
- 32 **Meng J**, Zheng C, Wang H, Välimäki M, Wang M. Non-pharmacological interventions for improving sleep in people living with HIV: a systematic narrative review. *Front Neurol* 2023; **14**: 1017896 [PMID: 38125837 DOI: 10.3389/fneur.2023.1017896]
- 33 **Wei X**, Zhang HC, Tu YH, Li X, Wu WS. Interventional chemoembolization for the treatment of severe ulcerative bleeding caused by advanced breast cancer: A report of two cases. *Exp Ther Med* 2024; **27**: 36 [PMID: 38125357 DOI: 10.3892/etm.2023.12324]
- 34 **Wang H**, Lei X, Ma D, Zhao Z, Wang A, Du G, Zhang J, Wang F, Guo J. Efficacy of acupuncture for psychogenic erectile dysfunction: a randomized, sham-controlled trial. *Basic Clin Androl* 2023; **33**: 40 [PMID: 38124064 DOI: 10.1186/s12610-023-00215-w]



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