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Acupuncture Therapy for Peripheral Vestibular Vertigo (with Suspected Ménière's Disease)

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ABSTRACT

Background: Vertigo occurs in the balance system, both peripherally and centrally. Vertigo that occurs due to abnormalities in the peripheral balance system is called *peripheral vestibular vertigo*. Pharmacologic therapies, such as vestibular suppressants, antiemetics, and benzodiazepines, are often used for complaints of spinning dizziness, but these drugs are not indicated for long-term daily use. Acupuncture can be a therapeutic choice for treating vertigo.

Case: Mrs. T.R., age 66, had episodic spinning dizziness for 18 months. Her dizziness recurred 3–4 times per month, and lasted ~30 minutes to 2 hours. The dizziness was accompanied by cold sweating, but no nausea and vomiting. She also felt fullness in her right ear. A Rinne test was positive in both ears and a Weber test showed lateralization to the left. On a balance examination, the Fukuda stepping test showed 90° to the left. Her Vertigo Symptom Scale–Short Form (VSS-SF) score was 22. She was diagnosed with vestibular peripheral vertigo (Meniere's disease). Manual acupuncture therapy was performed 1–2 times per week at GV 20 (*Baihui*), TE 17 (*Yifeng*), GB 20 (*Fengchi*), LI 4 (*Hegu*), and LR 3 (*Taichong*).

Results: After 6 sessions of acupuncture therapy, this patient no longer experienced spinning dizziness and her score on the VSS-SF questionnaire was reduced to 4.

Conclusions: This case report shows that acupuncture therapy was very helpful for a patient with peripheral vestibular vertigo. Acupuncture can be used to treat patients who have vertigo and contraindications to pharmacologic therapies, and can to reduce side-effects of pharmacologic therapies. Further investigation of acupuncture therapy for peripheral vertigo is warranted.

Keywords: acupuncture, dizziness, Meniere's disease, vertigo

INTRODUCTION

VESTIBULAR BALANCE DISORDERS, such as vertigo and dizziness, are clinical problems that are quite common and affect almost 20% of the world's population.¹ After headache, vertigo and dizziness, are the most-common

clinical symptoms. The prevalence of vertigo ranges from 30%, and increases with age.² Benign paroxysmal positional vertigo abnormalities account for 39% of all vertigo cases in the adult population, and other diseases are Meniere's disease, vestibular neuritis, vascular causes, and malignancy.³

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Dizziness or vertigo is diagnosed by looking at clinical symptoms, assessing the nature of the dizziness disorder that occurs. Distinguishing characteristics of dizziness that can occur are (1) spinning dizziness, (2) lightheadedness, (3) imbalance, and (4) a fainting sensation. In vestibular vertigo, the predominant symptom is dizziness. By assessing the nature of the spinning dizziness that occurs, along with accompanying symptoms, the origin of the vestibular vertigo that occurs can be determined, namely, if it is central or peripheral.

The diagnostic criteria of vertigo are assessed based on: (1) the type of vertigo, which can be a sensation of spinning, postural imbalance, or lightheadedness; (2) the duration of the vertigo, which can occur within seconds to minutes, minutes to hours, or even days to weeks; (3) triggering factors for the vertigo at rest, when walking, when tilting the head, when changing head position, or when coughing and straining; and (4) accompanying symptoms, such as hearing loss, tinnitus, a feeling of fullness in the ears, or symptoms of higher nervous-system origin such as ataxia or double vision.²

Balance disorders that occur in patients can interfere with daily activities, and if such a disorder continues to occur and persists, thus becoming chronic, it can affect a patient's quality of life (QoL). Vertigo is sometimes influenced by psychologic symptoms, such as anxiety, so that a patient's QoL can also be affected.¹ This will induce a patient to seek treatment.

Pharmacologic therapies, such as vestibular suppressants, antiemetics, and benzodiazepines, are often used to treat spinning dizziness, but these drugs are not indicated for long-term daily use. Acupuncture is a nonpharmacologic therapy that uses fine needles at acupuncture points to address treat disorders. Needling at acupuncture points can activate nerve fibers and peripheral afferent receptors, produce sensory interactions at various levels of the central nervous system, and release various transmitters and modulators, inducing anti-inflammatory effects via neuroendocrine and neuroimmune signals.⁴

CASE

Mrs. TR, age 66, had spinning dizziness for 18 months. Her spinning dizziness recurred ~3–4 times a month, with the duration of dizziness varying ~30 minutes to 2 hours. The spinning dizziness was accompanied by cold sweating, but without nausea and vomiting. When her dizziness recurred, she patient could only lie on her left side; whereas, if she lay on his back or right side, the spinning dizziness was exacerbated. Her spinning dizziness mainly occurred when she tilted her head for too long, had a lack of sleep, or ate too late. Antivertigo drugs did reduce the dizziness. She was also experiencing a sensation of fullness in her right ear; she

did not have tinnitus or hearing loss. She consulted a general practitioner at a hospital routinely, but had never visited a specialist.

Her physical and neurologic parameters were within normal limits. With respect to otologic testing, her Rinne test was positive in both ears and her Weber test lateralized to her left side. A balance examination with a Fukuda stepping test showed 90° to the left. Her Vertigo Symptom Scale–Short Form (VSS-SF) score was 22, which was the sum of the scores for the following items:

- Vertigo (< 20 minutes)
- Chills or hot flashes
- Nausea and/or vomiting
- Vertigo (> 20 minutes)
- Heart pounding or fluttering
- Dizziness (all day)
- Headache
- Difficulty in standing or walking
- Shortness of breath
- Unsteadiness (> 20 minutes)
- Excessive sweating
- Feeling faint
- Unsteadiness (< 20 minutes)
- Chest pain
- Dizziness (< 20 minutes).

(Table 1) shows the individual scores for each before and after treatment.

This patient was diagnosed with vestibular peripheral vertigo with suspected Ménière's disease as the cause of her symptoms. Manual acupuncture therapy was performed at GV 20 (*Baihui*), TE 17 (*Yifeng*), GB 20 (*Fengchi*), LI 4 (*Hegu*), and LR 3 (*Taichong*), for 30 minutes with a mild stimulation technique (Fig. 1).⁵ A 0.14×13-mm filiform

TABLE 1. VERTIGO SYMPTOM SCALE–SHORT FORM (VSS-SF)

Item #	Question	Before	After
1	Vertigo (< 20 min)	2	0
2	Chills or hot flashes	0	0
3	Nausea, vomiting	1	0
4	Vertigo (> 20 min)	3	0
5	Heart pounding or fluttering	0	0
6	Dizziness (all day)	3	2
7	Headache	2	0
8	Difficulty in standing or walking	3	0
9	Shortness of breath	0	0
10	Unsteadiness (> 20 min)	0	0
11	Excessive sweating	3	0
12	Feeling faint	0	0
13	Unsteadiness (< 20 min)	3	0
14	Chest pain	0	0
15	Dizziness (< 20 min)	2	2
Total		22	4

min, minutes.

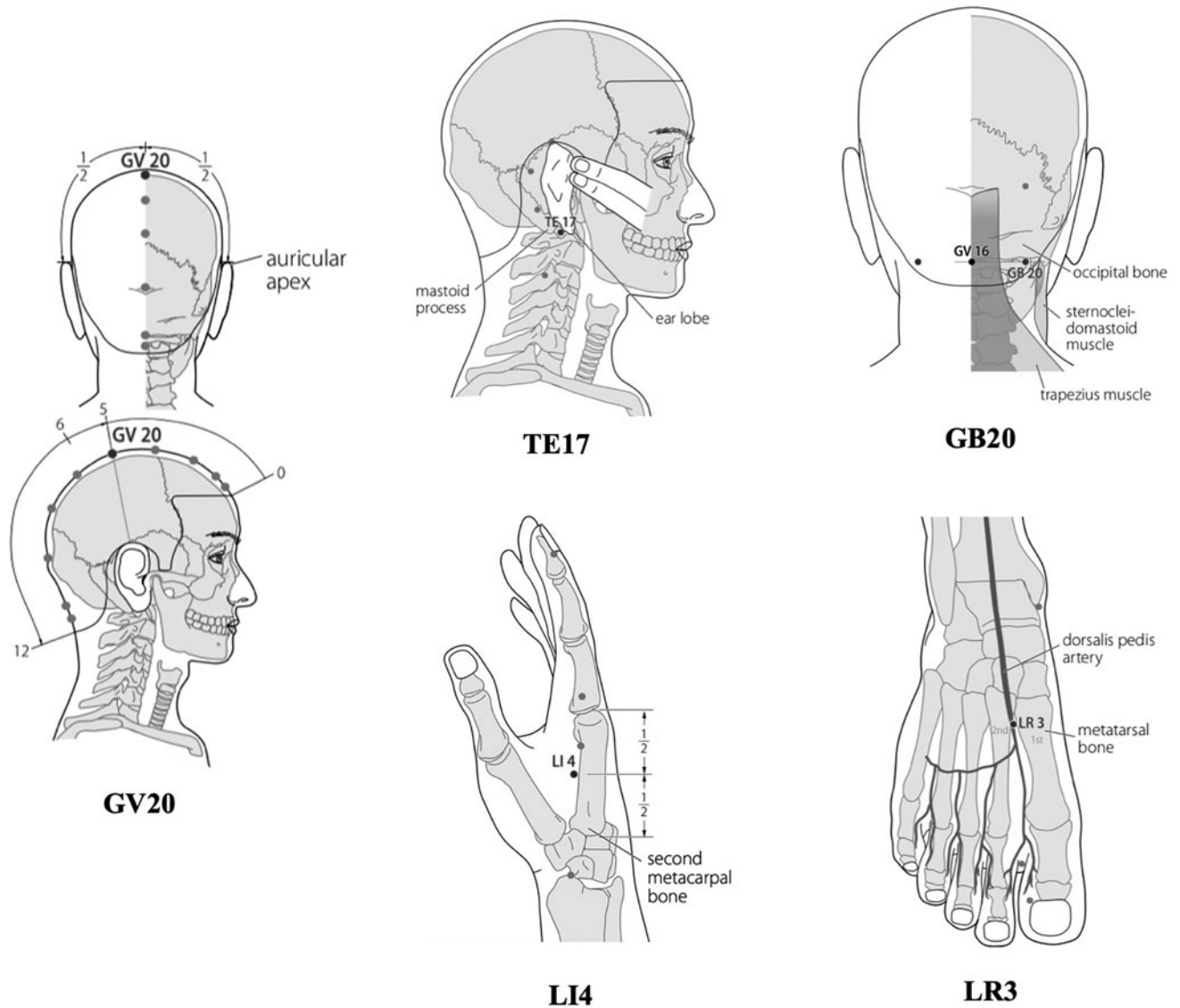


FIG. 1. Acupuncture point locations of GV 20, TE 17, GB 20, LI 4, and LR 3 used in the 66-year-old woman with peripheral vestibular vertigo (suspected Ménière’s disease as the cause).

needle (Huanqiu, China) was used at GV 20 and a 0.16 × 25-mm filiform needle was used at the other points. At GV 20, horizontal needling was performed at an angle of 15° to the anterior. At the TE 17 and GB 20, perpendicular needling was performed with an approximate insertion depth of 2 cm, and at LI 4 and LR 3, perpendicular needling was performed with an approximate insertion depth of 1 cm. Acupuncture therapy was done given twice per week, for 6 sessions.

RESULTS

After 6 sessions of acupuncture therapy with a 1-month follow-up, this patient no longer had any spinning dizziness and her VSS-SF score was reduced to 4 (Table 1).

DISCUSSION

Vertigo is a sensation of movement or a sense of movement from the body such as rotation, without the sensation of actual spinning. It can seem as if the surroundings were spinning or as if the body were rotating.² Vertigo is a balance disorder that is expressed as dizziness, staggering, or a sensation of floating.⁶

Normally, afferent nerves from otolith organs and semi-circular canals in each ear will maintain balance. This perception is sent through the vestibular nucleus to the center of balance. If there is an imbalance between the activity of the vestibular system in both ears—and disturbances in the vestibular pathway, both at the central and peripheral levels—this will lead to vertigo.⁷

The vestibular system is one of 3 systems that function to maintain body positioning and balance. The other 2 systems are (1) the somatosensory system (i.e., proprioceptive) and (2) the visual system. The vestibular system is divided into: (1) the peripheral vestibular system, which consists of vestibular organs (otolith and semicircular canal), the vestibular ganglion and the vestibular nerve; and (2) the central vestibular system, which consists of the cerebellum, vestibular nucleus in the brainstem and the vestibular cortex. Vestibular abnormality plays a role in causing clinical problems, because the vestibular organs contribute 65% to maintaining balance and disorders will, therefore, affect balance negatively.²

Vestibular system disorders are quite varied, including unsteadiness, dizziness, swaying or floating, or spinning, which can be accompanied by—or without—autonomic symptoms, such as cold sweating, nausea, and vomiting. Some patients with acute conditions do not even dare to open their eyes due to a sense of spinning, having a fear of falling, and not venturing to move, which, in turn, reduces QoL in these patients.

The diagnostic criteria of vertigo are based on: (1) the type of vertigo (spinning sensation, postural imbalance, or feeling dizzy); (2) the duration of vertigo (seconds to minutes, several minutes to hours, or even several days to several weeks); (3) trigger factors for vertigo (at rest, when walking, when tilting the head, when changing the position of the head, or when coughing and straining); and (4) accompanying symptoms (hearing loss, tinnitus or fullness in the ears) or symptoms originating from the higher nervous system (ataxia or double vision).² In vestibular vertigo, the most dominant symptom is spinning dizziness. By assessing the spinning dizziness that occurs, along with the accompanying symptoms, the cause of vestibular vertigo, which is central or peripheral, can be determined.

In the current case, the patient experienced episodic spinning dizziness, with a long duration of ~30 minutes to 2 hours. She had relapses 3–4 times per month. Triggers for her vertigo included certain positioning of her head and lack of sleep or eating late. Given her history, it was concluded that she had vestibular vertigo caused by peripheral abnormalities. This patient also experienced a sensation of fullness in her right ear, which indicated endolymph hydrops in the vestibular system of her inner ear, thus it was suspected that she had Ménière's disease. This vestibular problem was confirmed by the results of otologic examinations, which showed lateralization to the left on the Weber test and her stepping 90° to the left during the Fukuda balance examination. In Ménière's disease, symptoms can be accompanied by a feeling of fullness in the affected ear, hearing loss (sensorineural hearing loss); during the Fukuda stepping test, the patient will tend to walk away from the affected side.

Manual acupuncture therapy was performed, because this patient had never had acupuncture therapy before. The points chosen were GV 20, TE 17, GB 20, LI 4, and LR 3,

according to several studies that noted the effectiveness of acupuncture for addressing vertigo.^{8–11} The mechanism of action of acupuncture on vertigo mainly occurs locally and centrally. Needle punctures at an acupuncture point that causes microtrauma will cause the release of substance P, calcitonin gene-related peptide (cGRP), and local β -endorphins. Substance P will activate mast cells and macrophages, and through regulation of nitric oxide (NO), mast cells will release serotonin, histamine, and cytokines. cGRP causes vascular vasodilation through NO and vasoactive intestinal polypeptide (VIP) stimulation.

Through this mechanism, acupuncture can help patients who have peripheral vestibular vertigo abnormalities such as Ménière's disease, wherein through vasodilation of blood vessels, endolymph hydrops can potentially be reduced. Central stimulation by acupuncture can activate the ascending reticulo–spinal cerebellar pathway and modulate the activity of the lateral vestibular nucleus, which is the basis of the vestibulospinal reflex. In addition, acupuncture activates the hypothalamus–pituitary axis so that there is a balance of neurotransmitters, an increase in β -endorphins, and a decrease in plasma cortisol to reduce stress. Acupuncture will also affect the balance of the autonomic nervous system, through sympathetic–parasympathetic balance, so that autonomic symptoms, such as nausea, vomiting, and cold sweating can be reduced.

In vertigo caused by abnormalities as occurred in the current case, acupuncture can play a role in reducing dizziness through increasing microcirculation in the inner ear with cGRP secretion, which will increase secretion of NO and VIP, which, in turn, will have vasodilatory effects on blood vessels. The various neurotransmitters secreted will lead to local tissue repair.⁸ Acupuncture stimulation can also activate the ascending reticulo–spinal cerebellar pathway and modulate the activity of the lateral vestibular nucleus that is the basis of the vestibulospinal reflex.¹²

The improvement in this patient's VSS-SF scores was seen primarily in the vertigo-balance subscale, wherein the overall questionnaire score improved from 22 to 4 (Table 1) This indicated that acupuncture therapy for this patient was quite effective for correcting her balance disorder. This is in accordance with the mechanism of acupuncture in vertigo; acupuncture can reduce balance disorders caused by disorders of the inner ear as well as addressing emotional disturbances or stress, which were trigger factors for this patient.

CONCLUSIONS

This case report demonstrated that acupuncture therapy was very helpful for a patient with peripheral vestibular vertigo. Acupuncture may be a treatment option for patients who have contraindications to pharmacologic therapies for

vertigo and may reduce side-effects of pharmacologic therapies if they are used. Further investigation of acupuncture therapy for peripheral vertigo is warranted.

AUTHOR DISCLOSURE STATEMENT

The authors declare no conflict of interest.

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REFERENCES

1. Kondo M, Kiyomizu K, Goto F, et al. Analysis of vestibular–balance symptoms according to symptom duration: Dimensionality of the Vertigo Symptom Scale–Short Form. *Health Quality Life Outcomes*. 2015;13(1):4.
2. Brandt T, Dieterich M, Strupp M. *Vertigo and Dizziness, 2nd ed*. London, Heidelberg, New York, and Dordrecht: Springer; 2013.
3. Ishiyama G. Imbalance and vertigo: The aging human vestibular periphery. *Semin Neurol*. 2009;29(5): 491–499.
4. Cho Z, Hwang S, Wong E, et al. Neural substrates, experimental evidence and functional hypothesis of acupuncture mechanisms. *Acta Neurologica Scand*. 2006;113(6):370–377.
5. Lim S. WHO standard acupuncture point locations. *Evid-Based Complement Alternat Med*. 2010;7(2):167–168.
6. Soepardi EA, Iskandar N, Bashiruddin J, et al. *Textbook of Ear, Nose, Throat, Head & Neck Health Sciences*. Jakarta: Balai Penerbit FK UI; 2007.
7. Baloh RW. Vertigo. *Lancet*. 1998;352(9143):1841–1846.
8. Xue-Ying Z, Gui-Zhen Y. Treatment of 40 cases of cervical vertigo by acupuncture. *J Acupunct Tuina Sci*. 2003;1(2):41–42.
9. Satoh H. Acute effects of acupuncture treatment with *Baihui* (GV 20) on human arterial stiffness and wave reflection. *J Acupunct Meridian Stud*. 2009;2(2):130–134.
10. Long AF, Xing M, Morgan K, et al. Exploring the evidence base for acupuncture in the treatment of Ménière’s syndrome—a systematic review. *Evid Based Complement Alternat Med*. 2011;2011:429102.
11. Qiong H. Fifty cases of vertebrobasilar ischemic vertigo treated by acupuncture. *J Tradit Chin Med*. 2009;29(2):87–89.
12. Heikkilä H, Johansson M, Wenngren B-I. Effects of acupuncture, cervical manipulation and NSAID therapy on dizziness and impaired head repositioning of suspected cervical origin: A pilot study. *Manual Ther*. 2000;5(3):151–157.

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