



Successful Treatment of Chronic Vertigo with Pomegranate Concentrated Juice: A Report of Two Cases

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Abstract

Introduction: Chronic vertigo is a disabling disease that influences the quality of life. There are simple and low-cost treatments in Iranian traditional medicine (ITM) with minimal side effects for some subtypes of this disease based on the ancient classification. One of them is gastric-related vertigo (GRV) that is diagnosed by a rational relationship between digestive symptoms and vertigo.

Case Presentation: Two adult patients with chronic vertigo were visited in the Behesht - Iranian traditional- medicine outpatient clinic of Iran University of Medical Sciences in Tehran, Iran, in the year 2017. They were evaluated and treated according to gastric-related vertigo management. The patients received 5 mL of pomegranate concentrated juice after each meal for four weeks. Their symptoms were checked after four weeks and the validated Persian version of dizziness handicap inventory (DHI) was completed for them as a pre-treatment and post-treatment monitoring tool.

Conclusions: Pomegranate concentrated juice as a stomach tonic led to the improvement of the digestive symptoms and vertigo. The six-month follow-ups after treatment were normal.

Keywords: Complementary, Gastric, Iranian Traditional, Medicine, Pomegranate, Punicagranatum, Vertigo

1. Introduction

Vertigo is a medical condition defined as the illusion of rotation, spinning, or swaying in the objects around or in the patient himself (1). Over the past decade, vertigo has been the most common complaint in the general population requiring specialist care and its prevalence increases with age (2, 3). A 7.4% lifetime prevalence of vertigo was observed among adults aged 18 to 79 years; also, its prevalence and annual incidences were 4.9% and 1.4%, respectively (4). Vertigo is usually classified into peripheral and central forms, based on the location of the dysfunction in the vestibular pathway (1). Peripheral vertigo is more common and occurs primarily due to inflammation, infection, and stimulation of various auditory organs or nerves. It is characterized by an episodic attack of vertigo along with precipitating factors; moreover, some autonomic symptoms like sweating, pallor, nausea, or vomiting may exist. Peripheral vertigo may also be associated with tinnitus, hearing loss, and auditory fullness. Central vertigo is often related to migraines, cerebrovascular dis-

ease, or cerebellopontine angle (CPA) tumors. In this disease, the autonomic symptoms are not severe, and hearing loss is uncommon. Central vertigo begins gradually and is associated with neurological symptoms such as visual changes (diplopia), weakness, numbness, dysarthria, ataxia, and loss of consciousness (1, 5).

Some of the patients have no complete treatment and long-term treatments have side effects and high costs; therefore, the use of complementary and alternative treatments has been emphasized.

In the current literature, there is some evidence of the efficacy of complementary remedies in the treatment of dizziness and vertigo.

Ginkgo biloba is as effective as betahistine in vertigo management (6). A clinical trial in an elderly population showed that the homeopathic preparation and Ginkgo biloba have similar effects in the treatment of vertigo (7). Moreover, medicinal herbs like *Zingiber officinale* (ginger) root could reduce the effects of vertigo better than did manual repositioning, such as the Epley maneuver alone

(8). Furthermore, Gongjindan is completely effective in the treatment of subjects with chronic dizziness and vertigo (9).

There was a significant improvement in vertigo in a woman with chronic vertigo when the patient received four-month traditional Chinese medicine (TCM) treatment (10).

Another study suggested that the use of radical scavengers, i.e., rebamipide, vitamin C, and glutathione, could become a new effective treatment for Ménière's disease (11).

Iranian traditional medicine (ITM) scholars were familiar with vertigo. They explained the etiology, clinical manifestations, and treatments of vertigo under the topic of "Dowar and Sadar" in their manuscripts. "Dowar" is defined as a disease with rotation sensation or spinning objects around the head and the body; as a result, sitting or standing becomes difficult for the patient (12-15). "Sadar" is described as feeling lightheaded or dizzy after standing up. However, this term is not exactly the same as dizziness or vertigo and it is similar to orthostatic hypotension.

According to the ITM textbooks, there are some simple remedies to be used in the treatment of vertigo. These remedies are simple and low-cost with minimal side effects; some of them are classified as food, with definite therapeutic effects in different diseases in addition to their nutritional value. This study reports the results of complementary approaches for the diagnosis and treatment of vertigo based on ITM concepts.

2. Case Presentation

Two adult patients with chronic vertigo visited the Behesht ITM outpatient clinic of Iran University of Medical Sciences. The demographic characteristics of the patients are displayed in Table 1.

2.1. Patient 1

A 36-year-old woman with a history of vertigo came to Behesht traditional medicine clinic on 11 Sep 2017. She was living in Tehran and suffered true vertigo twice a day that lasted at least three hours for three months. She had sometimes tinnitus and no hearing loss. She felt heaviness and hotness in the head and a headache every day after each meal. Her vertigo tended to get worse when she was hungry and soon after the meal. If she ate some types of food like garlic, onion, raisins, grapes, date, sweets, greasy foods, and pepper, her vertigo would have got worse. She had gastric reflux, flatus, and feeling of gastric heaviness. Sometimes, she had heartburns during vertigo. No medicine had been prescribed when she came to the complementary medicine clinic.

2.2. Diagnostic Tests

2.2.1. Lab Tests

Electrolyte levels, vitamin D level, thyroid function tests, BUN, creatinine, and uric acid were normal. WBC was normal but hemoglobin was 11 gm/dL and LDL was 128 mg/dL. The lab tests were repeated after treatment and six months later, and the results were almost the same.

2.2.2. Imaging

Brain MRI was recommended for her, but the patient ignored this advice because she tended to be treated with traditional medicine.

2.3. Patient 2

A 47-year-old man from Birjand (a city in eastern Iran) with a history of vertigo visited the Behesht traditional medicine clinic on 27 Nov 2017. He had true vertigo almost every two weeks with a duration of two hours for four years. When he was visited in the complementary medicine clinic, he felt heaviness, fullness, and hotness in his head. His vertigo got worse right after the consumption of greasy meal or spicy foods and it reoccurred after five hours. He had flatus, burps and sometimes, gastric heaviness after each meal and nausea while he had vertigo.

He visited a neurologist four years ago and brain MRI was normal; his audiometry showed a sensory neural hearing loss in the left ear and he took Betaserc (betahistine dihydrochloride) 8 mg daily for one year as prescribed by the neurologist; but if he was not taking the medicine, his vertigo would come back.

Each patient took 5 mL of pomegranate-concentrated juice after each meal for four weeks. Gastric heaviness, burps, flatus, and vertigo disappeared after four weeks.

The Dizziness Handicap Inventory (DHI) score as a pre-treatment and post-treatment measurement tool was used for both patients.

DHI has been developed to evaluate emotional, functional, and physical impairments due to dizziness (16). This scale is a patient-rated outcome that is widely used for patients with dizziness. The scale consists of 25 items (0 - 100 scores with 0, 2, or 4 scores/item). It has been validated in Iran (17).

Their symptoms were evaluated after the treatment and the results as pre-treatment and post-treatment scores are displayed in Table 2.

Their gastric symptoms got better, their vertigo's attacks disappeared, and a six-month follow-up was normal.

Table 1. Demographic Characteristics, Clinical and Para-Clinic Exams of the Patients

Characteristics	Patient 1	Patient 2
Gender	Female	Male
Age, y	36	47
Job	Professor	Employee
Education	High	Low
Parity	Yes	Yes
City of residence	Tehran	Birjand
Date of the first visit	11 Sep. 2017	20 Nov. 2017
Frequency of attack	Every day	Every two weeks
History of head trauma	Negative	Negative
History of otolaryngeal surgery	Negative	Negative
Previous treatment	Negative	Negative
Abnormal physical examination	Mild gastric and periumbilical tenderness	Mild periumbilical tenderness
Abnormal neurologic examination	-	Hearing loss in the left ear
Abnormal lab tests	Hemoglobin = 11 gm/dL, LDL = 128 mg/dL	-
Brain MRI	Not performed	Normal
Audiometric test	Not performed	Sensory neural hearing loss in the left ear

Table 2. Pre-Treatment and Post-Treatment DHI Scores

No. of Patient	Score
Patient 1	
Pre-treatment	48
Post-treatment	12
Patient 2	
Pre-treatment	72
Post-treatment	6

3. Discussion

Two general types of vertigo have been explained and classified in ITM:

1- Vertigo due to external causes: various cases of vertigo are caused by external factors (factors that are outside the human body) such as looking at a spinning object or turning around, sudden exposure to extreme cold or heat, head trauma, poisons, and drugs (12-15).

2- Vertigo with internal causes: in this type, vertigo results from diseases of body organs, and it is divided into two subtypes based on the origin of attack: (A) vertigo originating from intracranial causes for which the brain, clinical manifestations, and treatment methods have been mentioned in detail and (B) vertigo in relationship with the diseases of other body organs, which is named participatory vertigo. In this condition, some dysfunctions in an

organ far from the brain like the stomach, the uterus, the bladder, the kidney, and the liver can influence the brain, which may be responsible for vertigo (12). The most important organ that participates in vertigo is the stomach (12, 14).

Gastric-related vertigo (GRV) is defined as vertigo that originates from the stomach. The etiology and symptoms of this type of vertigo have been discussed in detail and some medical herbs have been proposed for its treatment. There are some criteria for the diagnosis of GRV based on ITM references, including:

- The presence of vertigo or the increase of its severity along with symptoms of dyspepsia (digestions weakness) like the feeling of gastric heaviness or reflux, sour eructation, preference of spicy food, drooling of the saliva or suffer from

- The presence of vertigo or the increase of its severity by hunger and relief after eating food along with other gastric symptoms like the feeling of bitterness and dryness in the mouth, excessive thirst, and being satisfied with it with cold water, or bad-smell burp.

- The presence of vertigo along with symptoms of stomachache, periumbilical pain, flatus, or gastric reflux.

- Nausea and vomiting before vertigo and relief of vertigo after vomiting.

- The presence of vertigo or the increase of its severity after eating some food likes garlic, pepper, onion, cabbage, melon, and date along with other gastric symptoms likes

flatus, burps, nausea, and mouth bitterness (12-15).

In ITM, the treatment of the stomach is the first step of disease management in these patients. The treatment is completed by the prescription of cerebrotonic foods and herbs to prevent recurrence and relapse (12). In this study, we used pomegranate-concentrated juice for improving gastric symptoms in two patients. Several studies suggest that pomegranate has some effects on the gastrointestinal tract. Pomegranate (*Punicagranatum L.*) is a remedy considered as a gastric tonic agent by ITM. It has a tonic effect on the cardia and stomach, and improves digestion and reflux (12-15).

Pomegranate has many phytochemical compounds such as polyphenols and flavonoids, tannins, and anthocyanin (18). The phenolic compounds of pomegranate have prophylactic and therapeutic utilities against various pathological infections, as well as non-infectious disorders (19). Pomegranate polyphenols, especially ellagitannins and ellagic acid, have antioxidant and anti-inflammatory properties (20) and have therapeutic effects on inflammatory bowel disease (21-23). Pomegranate tannins play a protective role against gastric ulcer (24, 25). Pomegranate has effectiveness in reducing nausea and vomiting during pregnancy (26). It has anti-*H. pylori* and anti-inflammatory effects in the gastrointestinal tract (27, 28). Moreover, it shows antibacterial activity against intestinal flora (28, 29). It also has an inhibitory effect on gastric mucosal injury (30).

In our patients, GRV was suggested as a differential diagnosis because vertigo occurred or got worse when they were hungry, soon after each meal, and when eating some types of food. They had some gastric symptoms like flatus, burps, and gastric heaviness.

Therefore, they were treated with pomegranate concentrated juice. The avoidance of garlic, pepper, raw onion, cabbage, melon, date, and greasy food was recommended for four weeks. Their gastric symptoms got better, their vertigo's attacks disappeared, and a six-month follow-up was normal.

We did not find any evidence of the direct effect of pomegranate on the vestibular system of the ears but its effect on gastric diseases has been proved. Reducing gastroesophageal reflux and preventing the effect of pepsin on the middle ear may be considered an explanation (31).

3.1. Suggestion

Future studies can focus on the more accurate evaluation of the efficiency of pomegranate on vertigo, creating simple questionnaires for the diagnosis of GRV, evaluation of other recommended gastric tonics in ITM on ver-

tigo, and evaluation of the possible effects of these tonic foods and ingredients on the vestibular system.

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Footnotes

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References

1. Flint P, Haughey B, Lund V, Niparko J, Robbins K, Thomas JR, et al. *Cummings otolaryngology-head and neck surgery e-book*. Saunders, an imprint of Elsevier Inc; 2015.
2. Bisdorff A, Bosser G, Gueguen R, Perrin P. The epidemiology of vertigo, dizziness, and unsteadiness and its links to co-morbidities. *Front Neurol*. 2013;4:29. doi: 10.3389/fneur.2013.00029. [PubMed: 23526567]. [PubMed Central: PMC3605504].
3. Neuhauser HK, Lempert T. Vertigo: Epidemiologic aspects. *Semin Neurol*. 2009;29(5):473-81. doi: 10.1055/s-0029-1241043. [PubMed: 19834858].
4. von Brevern M, Neuhauser H. Epidemiological evidence for a link between vertigo and migraine. *J Vestib Res*. 2011;21(6):299-304. doi: 10.3233/VES-2011-0423. [PubMed: 22348934].
5. Hilas O. Management of dizziness and vertigo. *US Pharm*. 2012;37(1):30-3.
6. Sokolova L, Hoerr R, Mishchenko T. Treatment of vertigo: A Randomized, double-blind trial comparing efficacy and safety of ginkgo biloba extract EGB 761 and betahistine. *Int J Otolaryngol*. 2014;2014:682439. doi: 10.1155/2014/682439. [PubMed: 25057270]. [PubMed Central: PMC4099171].
7. Issing W, Klein P, Weiser M. The homeopathic preparation Vertigo-heel versus Ginkgo biloba in the treatment of vertigo in an elderly population: A double-blinded, randomized, controlled clinical trial. *J Altern Complement Med*. 2005;11(1):155-60. doi: 10.1089/act.2005.11.155. [PubMed: 15750375].
8. Ni FL, Zhang LP, Hu SS. Clinical observation on ginger-partitioned moxibustion plus manual repositioning for benign paroxysmal positional vertigo (BPPV). *J Acupuncture Tuina Sci*. 2016;14(1):31-5. doi: 10.1007/s11726-016-0897-3.
9. Shin S, Kim J, Yu A, Seo HS, Shin MR, Cho JH, et al. A herbal medicine, gongjindan, in subjects with chronic dizziness (GOODNESS Study): Study protocol for a prospective, multicenter, randomized, double-blind, placebo-controlled, parallel-group, clinical trial for effectiveness, safety, and cost-effectiveness. *Evid Based Complement Alternat Med*. 2017;2017:4363716. doi: 10.1155/2017/4363716. [PubMed: 29387128]. [PubMed Central: PMC5745661].
10. Wu TC. A case report of vertigo with Chinese medicine treatment upon syndrome differentiation. *7th International Conference & Exhibition on Traditional & Alternative Medicine*. China Medical University, Taiwan Chung Shan Medical University Hospital, Taiwan. 2018.
11. Takumida M, Anniko M, Ohtani M. Radical scavengers for Meniere's disease after failure of conventional therapy: A pilot study. *Acta Otolaryngol*. 2003;123(6):697-703. [PubMed: 12953767].

12. Ibn-e-sina. *Al-Qānūn fi al-tibb [Canon of medicine]*. Beirut: Dare Ehyae al-Torathe al Arabi; 2005. Arabic.
13. Jorjani E. *Zakhireye Kharazmshahi [Treasure of the Khwarazm Shah]*. Qom: Ehya-e Tebb-e Tabiee Institution; 2012. Persian.
14. Kermani N. *Sharh al-asbab wa al-alamat [Explanation of causes and signs]*. Qom: Ehya-e Tebb-e Tabiee Institution; 2012. Arabic.
15. Majūsi-Ahvazi A. *Kāmil al-Sināa al tibbiya [The perfect book of the art of medicine]*. Qom: Ehya-e Tebb-e Tabiee Institution; 2008. Arabic.
16. Jacobson GP, Newman CW. The development of the dizziness handicap inventory. *Arch Otolaryngol Head Neck Surg*. 1990;**116**(4):424-7. [PubMed: 2317323].
17. Jafarzadeh S, Bahrami E, Pourbakht A, Jalaie S, Daneshi A. Validity and reliability of the Persian version of the dizziness handicap inventory. *J Res Med Sci*. 2014;**19**(8):769-75. [PubMed: 25422664]. [PubMed Central: PMC4235099].
18. Jaisinghani RN, Makhwana S, Kanojia A. Study on antibacterial and flavonoid content of ethanolic extract of Punica granatum (pomegranate) peel. *Microbiol Res*. 2018;**9**(1). doi: 10.4081/mr.2018.7480.
19. Saeed M, Naveed M, BiBi J, Kamboh AA, Arain MA, Shah QA, et al. The promising pharmacological effects and therapeutic/medicinal applications of Punica granatum L. (Pomegranate) as a functional food in humans and animals. *Recent Pat Inflamm Allergy Drug Discov*. 2018;**12**(1):24-38. doi: 10.2174/1872213X12666180221154713. [PubMed: 29473532].
20. Verotta L, Panzella L, Antenucci S, Calvenzani V, Tomay F, Petroni K, et al. Fermented pomegranate wastes as sustainable source of ellagic acid: Antioxidant properties, anti-inflammatory action, and controlled release under simulated digestion conditions. *Food Chem*. 2018;**246**:129-36. doi: 10.1016/j.foodchem.2017.10.131. [PubMed: 29291831].
21. Mijan MA, Lim BO. Diets, functional foods, and nutraceuticals as alternative therapies for inflammatory bowel disease: Present status and future trends. *World J Gastroenterol*. 2018;**24**(25):2673-85. doi: 10.3748/wjg.v24.i25.2673. [PubMed: 29991873]. [PubMed Central: PMC6034142].
22. Kamali M, Tavakoli H, Khodadoost M, Daghighzadeh H, Kamalinejad M, Gachkar L, et al. Efficacy of the Punica granatum peels aqueous extract for symptom management in ulcerative colitis patients. A randomized, placebo-controlled, clinical trial. *Complement Ther Clin Pract*. 2015;**21**(3):141-6. doi: 10.1016/j.ctcp.2015.03.001. [PubMed: 26256131].
23. Li Z, Summanen PH, Komoriya T, Henning SM, Lee RP, Carlson E, et al. Pomegranate ellagitannins stimulate growth of gut bacteria in vitro: Implications for prebiotic and metabolic effects. *Anaerobe*. 2015;**34**:164-8. doi: 10.1016/j.anaerobe.2015.05.012. [PubMed: 26051169].
24. Lai S, Zhou Q, Zhang Y, Shang J, Yu T. [Effects of pomegranate tannins on experimental gastric damages]. *Zhongguo Zhong Yao Za Zhi*. 2009;**34**(10):1290-4. Chinese. [PubMed: 19673398].
25. Chauhan I, Agrawal S, Goel R. Status of inflammatory markers and growth factor in gastric ulcer protective effects of Punica granatum L. peel extract in rat. *Nat J Physiol Pharm Pharmacol*. 2018;**8**(1):1. doi: 10.5455/njppp.2018.8.0309317072017.
26. Abdolhosseini S, Hashem-Dabaghian F, Mokaberinejad R, Sadeghpour O, Mehrabani M. Effects of pomegranate and spearmint syrup on nausea and vomiting during pregnancy: A randomized controlled clinical trial. *Iran Red Crescent Med J*. 2017;**19**(10). doi: 10.5812/ircmj.13542.
27. Colombo E, Sangiovanni E, Dell'agli M. A review on the anti-inflammatory activity of pomegranate in the gastrointestinal tract. *Evid Based Complement Alternat Med*. 2013;**2013**:247145. doi: 10.1155/2013/247145. [PubMed: 23573120]. [PubMed Central: PMC3612487].
28. Reddy MK, Gupta SK, Jacob MR, Khan SI, Ferreira D. Antioxidant, antimicrobial and antimicrobial activities of tannin-rich fractions, ellagitannins and phenolic acids from Punica granatum L. *Planta Med*. 2007;**73**(5):461-7. doi: 10.1055/s-2007-967167. [PubMed: 17566148].
29. Ghodrattollah N, Hassanpour-Fard M, Bodhankar S, Dikshit M. [Pomegranate, bottle gourd, antibacterial activity, tetracycline]. *J Birjand Univ Med Sci*. 2010;**17**(4):257-64. Persian.
30. Ajaikumar KB, Asheef M, Babu BH, Padikkala J. The inhibition of gastric mucosal injury by Punica granatum L. (pomegranate) methanolic extract. *J Ethnopharmacol*. 2005;**96**(1-2):171-6. doi: 10.1016/j.jep.2004.09.007. [PubMed: 15588667].
31. Viliusyte E, Macaityte R, Vaitkus A, Rastenyte D. Associations between peripheral vertigo and gastroesophageal reflux disease. *Med Hypotheses*. 2015;**85**(3):333-5. doi: 10.1016/j.mehy.2015.06.007. [PubMed: 26115947].