Withania somnifera as an Intervention for Vertigo in the Management of Ménière's Disease: A Case Report

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ABSTRACT

Ménière's disease (MD) is a disorder of the inner ear, with a triad of symptoms consisting of spontaneous and episodic vertigo, aural fullness and/or tinnitus and sensorineural hearing loss. Increasing evidence suggests that psychological factors may play a significant role in the onset of the disease and/or its progression. Current conventional treatment does not provide a cure, nor complete relief of symptoms, and there is limited literature on alternative treatment options. This case report describes a 47-year-old Portuguese female who presented with a diagnosis of MD wanting relief from daily episodes of vertigo after conventional treatment failed. Botanical intervention with *Withania somnifera*, an adaptogen, was recommended at a dose of 500 mg daily. The patient reported a complete resolution of vertigo within one week of supplementation. Symptom resolution continued after five months of treatment. Further research is warranted to evaluate the use of *Withania somnifera* in improving vertigo in individuals with MD.

Key Words Ashwagandha, endolymphatic hydrops, inner ear, tinnitus, hearing loss

INTRODUCTION

Case Background

Ménière's disease (MD), also known as endolymphatic hydrops, is a disorder of the inner ear that is associated with a triad of symptoms consisting of spontaneous and episodic vertigo that lasts longer than 20 minutes, aural fullness and/or tinnitus, and sensorineural hearing loss.[1,2] No population-based studies have been conducted to investigate the incidence or the prevalence of MD; however, global studies have suggested that the prevalence of MD is between 120 and 513 per 100,000 individuals.[1] The literature has also found that MD affects males and females equally and is more prevalent in Caucasian patients.[1] The average age of onset is between the fourth and fifth decade of life.[1,2] Additional signs and symptoms that can occur during an episode of vertigo include nausea, vomiting, sweating, and diarrhea. Current conventional treatments are limited and do not provide a cure for MD.[1,2] Conventional treatment goals are to alleviate symptoms, and none have proven to provide complete symptom relief.[1,2]

The etiology and pathogenesis of MD remain unclear. One theory suggests an association with an increased volume of inner ear fluid or, in other words, an excessive build-up of endolymph fluid.[2] An association between psychological factors and MD has also been observed and has been shown to play a significant role in the development and disease progression of MD, as well as impacting quality of life in these patients.[3] One theory proposes that life stressors result in increased levels of tension, which can trigger the onset of MD, suggesting the patient may lack the ability to cope with stress.[3] A proposed mechanism of action is related to increased levels of stress-related hormones (i.e., vasopressin) and how this may affect the endolymph.[4] Another theory suggests that stress can aggravate symptoms of MD and lead to its progression.[3,4] What is certain is that there is a decrease in quality of life for patients with MD, especially those individuals who fear the sudden onset of symptoms, especially that of vertigo.[3] This case report details the use of an adaptogen, with periodic stress management, in a patient with MD.

Background

Supplementation with *Withania somnifera* was recommended for this patient to address the stress component of the disease. *Withania somnifera*, commonly known as ashwagandha, is a widely used herb in Ayurveda medicine.[5] It is known as an adaptogen, which helps to support an individual's ability to cope with stress, increasing the body's resilience to mental, physical, and emotional stress.[5,6,7] The available literature also suggests that it is an effective anxiolytic and antidepressant.[6] The active constituents of the *Withania somnifera* plant that provide therapeutic benefits include withanolides and sitoindosides. It has been suggested that these decrease cortisol levels associated with chronic stress and play a role in the hypothalamus-pituitary-adrenal axis.[6,7]

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A recent randomized, placebo-controlled study on the safety of *Withania somnifera* was conducted with 80 healthy volunteers. Supplementation with either *Withania somnifera* or a placebo was given at a dose of 300 mg twice a day for 8 weeks. Throughout the study, vital signs were consistently within normal limits and hematological parameters remained stable, as did liver function and thyroid hormone levels. None of the participants in this study reported any adverse events. *Withania somnifera* at a dose of 600 mg daily was shown to be well tolerated and safe.[8]

Currently, no study has evaluated the use of *Withania somnifera* as an intervention for MD. This case report seeks to further the knowledge of naturopathic medicine and to shape the direction of future research for patients diagnosed with MD who experience vertigo and for whom conventional treatment may have failed.

CASE PRESENTATION

History of Present Illness

L.O. is a 47-year-old female born in Portugal, who immigrated to Canada at the age of 14. She presented to the Robert Schad —Naturopathic Clinic (RSNC) via telemedicine on July 8, 2020, with a diagnosis of Ménière's disease. She reported that her symptoms had begun 2 years prior with the onset of tinnitus that was accompanied by pressure and tightness in the neck and shoulders. She noted that acute stress, due to feeling rushed, was a trigger for this pressure and tightness and had found temporary relief with massage therapy. One year after the onset of tinnitus, L.O. started to experience dizziness, which she described as the room spinning, with fullness in her ears, preceded by the tinnitus. She stated that the left ear was worse than the right. The tightness soon progressed and became associated with numbness of the left arm and hand.

In February 2020, she was diagnosed by an otolaryngologist with MD after magnetic resonance imaging (MRI) of the head, and audiologic and vestibular testing confirmed loss of hearing in the left ear. L.O. had no history of trauma to the head but did report her father had been diagnosed with Ménière's disease. She was prescribed 16 g of Teva betahistine for her daily debilitating vertigo. She discontinued betahistine after 2 to 3 months, as she found no relief, and started using *Ginkgo biloba* on the advice of friends.

The patient only presented for telemedicine video appointments as the global pandemic restricted her ability to attend in-person visits. She reported no drainage from the ears, change in vision, headaches, loss of consciousness, or loss of balance and had no cardiovascular, gastrointestinal, or genitourinary complaints. She stated restrictions and limitations in cervical range of motion. She reported dry ears bilaterally and noted that she tired easily with minimal activity. Her main complaint was daily episodes of sudden vertigo resulting in fear of driving and working.

L.O. reported using 120 mg daily of *Ginkgo biloba* 1 month prior to her initial visit at the RSNC. She reported a slight improvement in the intensity of the vertigo with the use of the *Ginkgo biloba*, but the daily episodes continued to occur.

Relevant Medical History

This patient has a past medical history of iron deficiency anemia and suffers from seasonal allergies that result in frontal sinus pressure and epiphora. She has no history of smoking, alcohol use, or use of recreational drugs. Her family history is significant for hypertension, heart disease, and lymphoma in her mother and colon cancer and MD in her father. Upon presentation to the RSNC, this patient was taking Teva betahistine (16 g daily, for vertigo), a multivitamin (1 capsule daily), elemental magnesium (oxide, gluconate, lactate = 250 mg, daily), gentle iron by Jamieson (provides 28 mg of ferrous bisglycinate) and *Ginkgo biloba* (120 mg daily for vertigo). Her diet was mostly vegetarian, and she did not consume eggs or fish. She drank on average two cups of coffee daily. She did report living a sedentary lifestyle, with no daily physical activity.

Psychosocial History

L.O. is married with 2 children, ages 18 and 16, and is a seamstress for a textile factory. She lives with her husband and two children and reports she has no stress at home or at work. She did state an inability to cope with acute stress, which causes her significant neck and shoulder stiffness that results in fullness and tinnitus in the ears. She stated that she feels stressed when she feels rushed or when activities are fast-paced. She shared that her fear of having an episode of vertigo while driving or at work had started to cause her stress levels to increase, and this feeling had begun to disrupt her daily activities. She also indicated that just prior to the onset of tinnitus, she had been let go from her current employment due to the sale of the company, and job security at that time was uncertain. While she was unemployed for several months, she now works within the same industry in a different position. She has no history of elevated blood pressure and reports a decreased cervical range of motion. No physical examinations could be done due to limitations as a result of the COVID-19 virus.

Treatment

First Visit

Her response to stress was a primary modifiable factor in this case and, as such, ashwagandha (root extract 5% *withanolides*, 500 mg per capsule, CA$0.50/capsule) was recommended at a dose of 1 capsule daily at bedtime. Dietary recommendations were also provided, with instructions to limit sodium intake and caffeine. The patient was also counseled on stress management and encouraged to incorporate 15 to 30 minutes of daily meditation.

Second Visit

On August 12, 2020, the patient presented for her second telemedicine appointment. She reported that taking the ashwagandha supplement caused her to wake at 3:00 am for 3 consecutive nights. She then decided to take the ashwagandha first thing in the morning. Upon further questioning, L.O. indicated that she found reducing her sodium and caffeine consumption to be challenging. She stated the need to consume coffee daily and did not change her sodium consumption. She did start meditating for

15 minutes periodically. L.O. reported that she had not experienced an episode of dizziness, headache, or vertigo within one week of starting supplementation with ashwagandha and periodic meditation. She also noticed significant improvement in stress reduction and an increase in relaxation overall, despite continued neck stiffness. She did not notice fullness in the ears but did continue to report tinnitus that improved with movement. A cervical pillow and magnesium bisglycinate (200 mg) were recommended at the second visit to aid with the neck stiffness. She was advised to discontinue her elemental magnesium.

Third Visit

The patient returned for her third telemedicine appointment on September 2, 2020. She continued to report no episodes of headaches or vertigo. She also noted significant relief from neck and shoulder stiffness with the cervical pillow. L.O. did state that when she forgot to take the magnesium bisglycinate one night, the next day she experienced heaviness and tinnitus in the left ear that lasted for 3 days, but she did not experience the vertigo during these 3 days. The patient was counseled on compliance with all previous recommendations.

Fourth Visit

The patient presented for her fourth appointment on November 25, 2020, and continued to report no episodes of headache or vertigo. She stated that she had decided to stop taking the ashwagandha for several days and noticed an increase in localized pressure behind the left ear. However, when she resumed the supplementation, this pressure resolved. She also reported that the ashwagandha had significantly helped improve her reaction to stressful events as she felt more relaxed and better able to manage being rushed or feeling pressured. During this visit, the patient stated that she had reduced her salt intake; however, this was a challenge as there were family members who did not support this change. She also noted that she had stopped drinking coffee and did not feel the need to use caffeine. She reported good quality sleep with no trouble falling or staying asleep and waking up feeling refreshed.

DISCUSSION

This case report describes the treatment of a 47-year-old female with MD for whom conventional treatment with betahistine failed and who found complete resolution of vertigo with supplementation of *Withania somnifera* and several other stress management interventions (meditation, magnesium, Gingko) and lifestyle modifications. This report could provide evidence that warrants further investigation into the pathogenesis of MD in relation to psychosocial factors.

Differential Diagnosis

It is important to note that the hallmark triad of MD overlaps with other conditions that require further investigation.[3,4,9] This patient had an extensive medical work-up that included an MRI of the brain, which ruled out a cerebrovascular accident (stroke), intracranial tumours (e.g., acoustic neuroma, multiple sclerosis, aneurysms), brain infections, and signs of traumatic brain injury. This patient was also assessed by her primary care provider for orthostatic hypertension, dehydration, and cardiogenic causes, all of which returned negative findings. An extensive evaluation by her otolaryngologist determined that she did not have vestibular migraines, vestibular neuronitis, viral labyrinthitis, or benign paroxysmal positional vertigo. Her diagnosis of MD was given by her otolaryngologist after audiologic and vestibular testing confirmed hearing loss in her left ear, with the presence of vertigo, aural fullness and tinnitus. Due to the limitations of COVID-19, an in-person physical examination could not be performed. There are no current established biomarkers in bloodwork that have been identified to diagnose MD.[1]

Treatment/Interventions

Conventional treatment for MD includes both non-invasive and invasive intervention but no treatment has proven to be curative or provide complete symptom relief.[1,10] Non-invasive treatment options include diuretics, SERC (betahistine) and antiemetics, while invasive treatment options include gentamicin injections, endolymphatic sac decompression, vestibular neurectomy, labyrinthectomy, and steroid injections. Counseling on lifestyle modifications is now also routine and includes a reduction in caffeine and alcohol intake, as well as sodium and monosodium glutamate.[10]

Botanical medicine has been used in the treatment of MD.[11,12] One botanical treatment that has shown some benefit is *Gingko biloba*. One study suggested that *Gingko biloba* was as effective as betahistine in a double-blind, randomized controlled trial.[11] Seventy-nine percent of patients who received *Gingko biloba* reported significant improvement compared with 70% of patients in the betahistine group. This study also found that *Gingko biloba* was better tolerated than the betahistine, with fewer adverse effects. There was significant conflict of interest with the investigators, and the sample size was small. However, *Gingko biloba* is a botanical treatment option, with limitations.[13] For those patients on anticoagulant therapy, the use of *Gingko biloba* may not be a treatment option as it can increase the risk of bleeding. This patient had seen only a slight improvement in her symptoms with the use of *Gingko biloba* and sought naturopathic treatment for further support.

This patient presented to the Robert Schad Naturopathic Clinic (RSNC) with increased stress levels due to the symptoms associated with MD. This was in addition to stress experienced as a result of feeling occasionally rushed. She voiced her inability to cope with stress, and as a result, the recommendation was made to supplement with an adaptogen to help support the body's ability to counteract the effects of stress. *Withania somnifera* has long been used in Ayurvedic medicine to reduce stress and improve overall well-being.[14] The literature demonstrates the effectiveness of this botanical in the reduction of stress and overall improvement in quality of life.[5,14] A dose of 300 mg given twice a day was found to be effective in reducing stress levels.[8] One theory of the mechanism of action of *Withania somnifera* is its ability to decrease the activation of the hypothalamic-pituitary-adrenal (HPA) axis and reduce the release of cortisol in acute stress.[6]

In a study by Aoki et al., they evaluated the association of HPA axis-related hormones in patients with MD regarding cochlear symptoms. The authors found that hearing at high frequency was significantly reduced in patients with an elevated cortisol level. They also observed a significant correlation between serum cortisol levels and average levels of hearing. They suggested that the elevation of cortisol affected endolymph elevation, resulting in hearing loss.[15] There is also minimal evidence that suggests that patients who suffer from tinnitus have higher levels of cortisol.[16] Earlier studies have shown the presence of mineralocorticoid and glucocorticoid receptors in the cochlea, which could result in an imbalance in sodium and potassium levels in the endolymph, with hyperactivation as a result of stress, leading to vertigo and tinnitus in patients with MD.[16]

Currently, there are no known studies that evaluate the use of *Withania somnifera* in individuals with MD suffering from vertigo. This case report provides an additional avenue of investigation on the use of *Withania somnifera* in the management of MD.

Cost Analysis

According to a recent systematic review and meta-analysis on pharmacologic and surgical therapies for patients with MD, a leading cause of disability in Canada is hearing loss.[10] More than one million Canadians are affected by hearing loss, and this has been shown to significantly affect quality of life. While no data could be found for the economic burden of MD in Canada, a British analysis found that a treatment of MD was estimated to cost the health-care sector between US$829.9 and US$934.2 million annually, and on average US$5,112 to US$5,748 per person annually.[17] *Withania somnifera* as an oral supplement costs, on average, CA$0.50 per day for a dosage of 500 mg.[18] This case report suggests that intervention with this adaptogen could potentially resolve vertigo and provide symptomatic relief in patients with MD. Since psychosocial factors have been shown to be a potential trigger for MD, reducing stress levels with *Withania somnifera* may provide relief involving a lower an economic burden both on the health-care system and for the patient.[19]

Limitations

No validated outcome assessment, blinding, or placebo control were used in this case report. The finding of improved symptoms was subjective. By the very nature of a case report, data limitations exist due to a small population size. Concurrent interventions with meditation, magnesium, and *Ginkgo biloba*, used in addition to the *Withania somnifera,* could have contributed to the relief of symptoms.

CONCLUSION

Psychosocial factors may play a role in the development and/or progression of MD. Treatment intervention with *Withania somnifera,* along with multiple stress management interventions (e.g., meditation, magnesium, *Gingko*) and lifestyle modifications, may provide relief from debilitating vertigo associated with this condition. Currently, there are no known studies that evaluate the use of *Withania somnifera,* with or without stress management interventions, in individuals with MD suffering from vertigo. This case report is the first to report a complete resolution of vertigo in a patient diagnosed with MD with the use of an adaptogen. Currently, there are only limited successful treatment options for the treatment of vertigo in naturopathic medicine. Further research is warranted, such as blinded, randomized controlled trials, to evaluate the use of *Withania somnifera,* compared with other adaptogens and/or placebo, in providing relief of vertigo or other associated symptoms in patients diagnosed with MD. Studies of this nature could elucidate the potential pathogenesis of MD and that of vertigo and potentially provide further evidence for the use of adaptogens for acute stress. Future research could direct treatment with *Withania somnifera* in the management of vertigo in patients with MD.

Written informed consent was obtained from the patient for publication of their details.

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CONFLICTS OF INTEREST DISCLOSURE

We have read and understood the *CAND* Journal's policy on conflicts of interest and declare that we have none.

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REFERENCES

1. Wu V, Sykes EA, Beyea MM, Simpson MTW, Beyea JA. Approach to Ménière disease management. *Can Fam Physician*. 2019;65(7):463-467.
2. Basura GJ, Adams ME, Monfared A, et al. Clinical practice guideline: Ménière's disease executive summary. *Otolaryngol Head Neck Surg*. 2020;162(4):415-434. https://doi.org/10.1177/0194599820909439
3. Orji F. The influence of psychological factors in Meniere's disease. *Ann Med Health Sci Res*. 2014;4(1):3-7. https://doi.org/10.4103/2141-9248.126601
4. Kitahara T, Okamoto H, Fukushima M, et al. A two-year randomized trial of interventions to decrease stress hormone vasopressin production in patients with Meniere's Disease—A pilot study. *PLoS One*. 2016;11(6):e0158309. https://doi.org/10.1371/journal.pone.0158309
5. Chandrasekhar K, Kapoor J, Anishetty S. A prospective, randomized double-blind, placebo-controlled study of safety and efficacy of a high-concentration full-spectrum extract of ashwagandha root in reducing stress and anxiety in adults. *Indian J Psychol Med*. 2012;34(3):255-262. https://doi.org/10.4103/0253-7176.106022
6. Lopresti AL, Smith SJ, Malvi H, Kodgule R. An investigation into the stress-relieving and pharmacological actions of an ashwagandha (*Withania somnifera*) extract: A randomized, double-blind, placebo-controlled study. *Medicine (Baltimore)*. 2019;98(37):e17186. https://doi.org/10.1097/MD.0000000000017186
7. Liao LY, He YF, Li L, et al. A preliminary review of studies on adaptogens: Comparison of their bioactivity in TCM with that of ginseng-like herbs used worldwide. *Chin Med*. 2018;13:57. https://doi.org/10.1186/s13020-018-0214-9
8. Verma N, Gupta SK, Tiwari S, Mishra AK. Safety of ashwagandha root extract: A randomized, placebo-controlled, study in healthy volunteers. *Complement Ther Med*. 2020;57:102642. https://doi.org/10.1016/j.ctim.2020.102642
9. Takahashi M, Ishida K, Iida M, Yamashita H, Sugawara K. Analysis of lifestyle and behavioral characteristics in Meniere's disease patients and a control population. *Acta Otolaryngol*. 2001;121(2):254-256. https://doi.org/10.1080/000164801300043721

10. Ahmadzai N, Cheng W, Kilty S, et al. Pharmacologic and surgical therapies for patients with Meniere's disease: A systematic review and network meta-analysis. *PLoS One*. 2020;15(9):e0237523. https://doi.org/10.1371/journal.pone.0237523

11. 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. https://doi.org/10.1155/2014/682439

12. Issing W, Klein P, Weiser M. The homeopathic preparation Vertigoheel 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):155-160. https://doi.org/10.1089/acm.2005.11.155

13. Sierpina VS, Wollschlaeger B, Blumenthal M. *Ginkgo biloba*. *Am Fam Physician*. 2003;68(5):923-926.

14. Salve J, Pate S, Debnath K, Langade D. Adaptogenic and anxiolytic effects of ashwagandha root extract in healthy adults: A double-blind, randomized, placebo-controlled clinical study. *Cureus*. 2019;11(12):e6466. https://doi.org/10.7759/cureus.6466

15. Aoki M, Wakaoka Y, Hayashi H, et al. The relevance of hypothalamus-pituitary-adrenocortical axis-related hormones to the cochlear symptoms in Ménière's disease. *Int J Audiol*. 2011;50(12):897-904. https://doi.org/10.3109/14992027.2011.605807

16. Mazurek B, Haupt H, Olze H, Szczepek AJ. Stress and tinnitus—from bedside to bench and back. *Front Syst Neurosci*. 2012;6:47. https://doi.org/10.3389/fnsys.2012.00047

17. Tyrrell J, Whinney DJ, Taylor T. The cost of Ménière's Disease: A novel multisource approach. *Ear Hear*. 2016;37(3):e202-e209. https://doi.org/10.1097/AUD.0000000000000264

18. Healthy Planet. NFH. Accessed March 1, 2021. https://www.healthyplanetcanada.com/nfh-ashwagandha-sap-60-capsules.html

19. Sturgeon JA, Arewasikporn A, Okun MA, Davis MC, Ong AD, Zautra AJ. The psychosocial context of financial stress: Implications for inflammation and psychological health. *Psychosom Med*. 2016;78(2):134-143. https://doi.org/10.1097/PSY.0000000000000276