BALKAN ORL-HNS

CASE REPORT
BALKAN ORL-HNS 2026;3:1-4

Acute Vertigo and Unilateral Tinnitus with Headache Induced by Psychological Stress: A Case Report

Najmeh Mosharaf Dehkordi[1]

Mohanna Javanbakht[2]

Pardis Poursabbagh[3]

Shokuh Sadat Farzaneh Dehkordi[4]

[1]Department of Audiology, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
[2]Department of Audiology, Pediatric Neurorehabilitation Research Center, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
[3]Department of Otorhinolaryngology and Head and Neck Surgery, School of Medicine, Shahrekord University of Medical Sciences, Shahrekord, Iran
[4]Department of Psychiatry, Shahrekord University of Medical Sciences, Shahrekord, Iran

Corresponding author:
Mohanna Javanbakht
✉ m.javanbakht@yahoo.com

Received: September 1, 2025
Revision Requested: December 24, 2025
Last Revision Received: December 29, 2025
Accepted: January 20, 2026
Publication Date: April 13, 2026

Cite this article as: Dehkordi NM, Javanbakht M, Poursabbagh P, Dehkordi SSF. Acute vertigo and unilateral tinnitus with headache induced by psychological stress: A case report. *Balkan ORL-HNS*. 2026, 3, 0109. doi: 10.5152/bohns.2026.25109.

DOI: 10.5152/bohns.2026.25109

ABSTRACT

Psychological stress is a well-established factor in various somatic disorders, yet its role in acute auditory and vestibular symptoms is often overlooked. A 25-year-old woman who developed sudden vertigo was reported with nausea lasting approximately 20 minutes, followed by unilateral headaches. Two days later, she experienced transient right-sided pulsatile tinnitus that lasted about 2 hours. Comprehensive audiological, vestibular, and neurological evaluations, including pure tone audiometry, tympanometry, vestibular tests, and brain magnetic resonance imaging, were normal. Symptoms occurred during a period of significant psychological stress related to upcoming job interviews. Given the absence of structural pathology, the symptoms were attributed to stress-induced autonomic and neuroendocrine dysregulation. Conservative management, including rest, reassurance, and psychological support, led to complete resolution within 1 week.

This case emphasizes the importance of considering psychological stress in patients with unexplained auditory and vestibular symptoms. Early recognition can prevent unnecessary investigations, reduce anxiety, and facilitate timely and effective management.

Keywords: Acute vertigo, autonomic dysfunction, psychological stress, psychosomatic disorders, pulsatile tinnitus, unilateral headache

Introduction

Psychological stress is a known contributor to various somatic and neurological conditions. While its effects on cardiovascular, endocrine, and mental health are well-documented, its role in transient auditory and vestibular symptoms is often overlooked.

Symptoms such as vertigo, tinnitus, and headache are typically assessed through audiological and neurological tests, yet when results are normal, stress as an etiological factor may be missed. Previous studies have linked stress to tinnitus, psychogenic vertigo, and tension-type headaches.

But reports of all 3 symptoms occurring together in a healthy adult without pathology are scarce.

This case describes a 25-year-old woman who experienced sudden-onset vertigo, unilateral pulsatile tinnitus, and headache during acute psychological distress, with no audiological or neurological abnormalities. It emphasizes the importance of considering psychological factors in differential diagnosis when common auditory and vestibular symptoms appear without organic findings.

Case Presentation

A 25-year-old Persian woman presented with a sudden onset of vertigo followed by unilateral pulsatile tinnitus in the right ear. Both symptoms occurred shortly after significant psychological stress related to upcoming job interviews. Two days later, she reported transient

Copyright @ Author(s) - Available online at https://balkanorl-hns.org/EN.
Content of this journal is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.

tinnitus in the same ear, described as a low-frequency (~250 Hz) pulsatile sound (~10 dB SL). The tinnitus lasted 2 hours, with a brief recurrence later that night.

She also reported episodic, stress-induced unilateral headaches on the right side for several days before the vertigo, with similar episodes occurring intermittently in previous years during emotional strain. The patient denied any history of hearing loss, chronic tinnitus, or vestibular disorders. Past medical history was unremarkable, except for her father's cardiovascular disease.

Assessments and Diagnostic Findings

Diagnostic evaluations included:

- Pure-tone audiometry: Normal bilateral thresholds (Figure 1).
- Tympanometry: Normal middle ear function bilaterally (Figure 1).
- Acoustic reflex testing: Present bilaterally (Figure 1).
- Vestibular testing: Bedside vestibular assessment showed no spontaneous or gaze-evoked nystagmus. Romberg and Fukuda stepping tests were normal, with no postural instability or pathological deviation. Dix–Hallpike and supine roll tests were negative bilaterally, with no provocation of vertigo or observable positional nystagmus.
- Tinnitus assessment: Not formally conducted due to symptom transience, characteristics documented during interview.
- Brain magnetic resonance imaging (non-contrast): Normal findings (Figure 2).
- Laboratory tests: Thyroid function, glucose, lipid profile, and blood pressure all normal.

Given the normal audiological, vestibular, imaging, and laboratory results, she was referred to a psychiatrist. A diagnosis of stress-related autonomic dysfunction was made. Conservative management included psychological support, lifestyle modification, and stress-reduction techniques. Following treatment, symptoms gradually resolved. At the 6-month follow-up, she remained symptom-free.

Treatment Pharmacological Treatment

A low dose of escitalopram (5 mg daily) was recommended. Selective serotonin reuptake inhibitors can alleviate anxiety and improve emotional regulation, reducing the risk of stress-induced tinnitus.[1]

Physical Activity

Regular aerobic exercise was advised, as studies show it reduces stress and promotes relaxation.[2]

MAIN POINTS

- *Acute vertigo and pulsatile tinnitus can occur in the absence of structural pathology.*
- *Psychological stress may trigger transient auditory and vestibular symptoms.*
- *Unilateral headaches intensified by stress can be part of a psychosomatic pattern.*
- *Early recognition of stress-related symptoms may prevent unnecessary medical interventions.*
- *A comprehensive patient history including psychological status is essential for accurate diagnosis.*

Relaxation Techniques

Mindfulness and deep breathing exercises were recommended to activate the parasympathetic nervous system and counteract sympathetic overactivity.[3]

By combining pharmacological support, exercise, and stress management, psychological and physiological improvements were expected, lowering recurrence risk.

Informed Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying clinical details. The patient was informed that all identifying information would be anonymized.

Discussion

Anxiety and Tinnitus

The relationship between stress, emotional states, and tinnitus is well recognized. While tinnitus often results from auditory system disturbances, emotional factors, particularly stress, play a pivotal role in symptom onset and exacerbation. The case highlights the interplay between acute stress, tinnitus, vertigo, and headaches.

Stress as a Contributing Factor of Tinnitus

The patient developed transient vestibular and auditory symptoms—vertigo and unilateral pulsatile tinnitus—after acute psychological stress. No structural, audiological, or neurological pathology was identified, supporting a stress-induced cause.

Stress-related hyperactivity of the autonomic nervous system and hypothalamic-pituitary-adrenal axis dysregulation may explain these symptoms.[4] Chronic tinnitus can also induce abnormal stress responses, persisting even after stressors cease.[5]

Emotional states and tinnitus severity emotional distress, including anxiety and depression, can amplify tinnitus perception.[6,7]

In the case, symptoms coincided with a stressful emotional event, suggesting emotional states influenced perceived tinnitus severity. Maladaptive activity in auditory cortex and limbic structures contributes to symptom amplification.[5,8]

Anxiety and depression frequently coexist with tinnitus, creating a cycle of heightened perception and emotional distress.[9]

Anxiety and Headache

Acute stress can activate the hypothalamic-pituitary-adrenal axis and sympathetic systems, altering pain sensitivity and vascular function leading to unilateral tension-type headaches.[10]

In this patient, severe stress caused recurrent unilateral headaches, consistent with prior studies.[11]

Moreover, some studies suggest a link between headaches and tinnitus through similar vascular and neurophysiological mechanisms. Stress may also cause both headache and tinnitus via shared physiological pathways.[12]

Anxiety and Vertigo

Anxiety can influence vestibular function through both physiological and psychological mechanisms. Stress increases sympathetic activity, altering vestibular processing and balance.[13,14] The patient experienced severe vertigo after acute stress, which resolved with stress

Figure 1. Audiological test results including audiogram, tympanometry, and acoustic reflex testing. The audiogram shows normal hearing thresholds, tympanometry results indicate normal middle ear function, and acoustic reflexes are within normal limits.

reduction, highlighting the link between emotional states and vestibular function.

Conclusion

This case highlights the impact of acute psychological stress on auditory, vestibular, and pain-related symptoms, including unilateral pulsatile tinnitus, vertigo, and headaches. The absence of identifiable audiological, neurological, or vestibular pathology, along with the temporal association with a high-stress period, suggests a stress-induced mechanism.

The findings support evidence that anxiety and emotional stress can alter sensory perception and physiological responses, contributing to transient or exacerbated symptoms. Clinicians should consider psychological factors when evaluating patients with unexplained tinnitus, dizziness, or headaches.

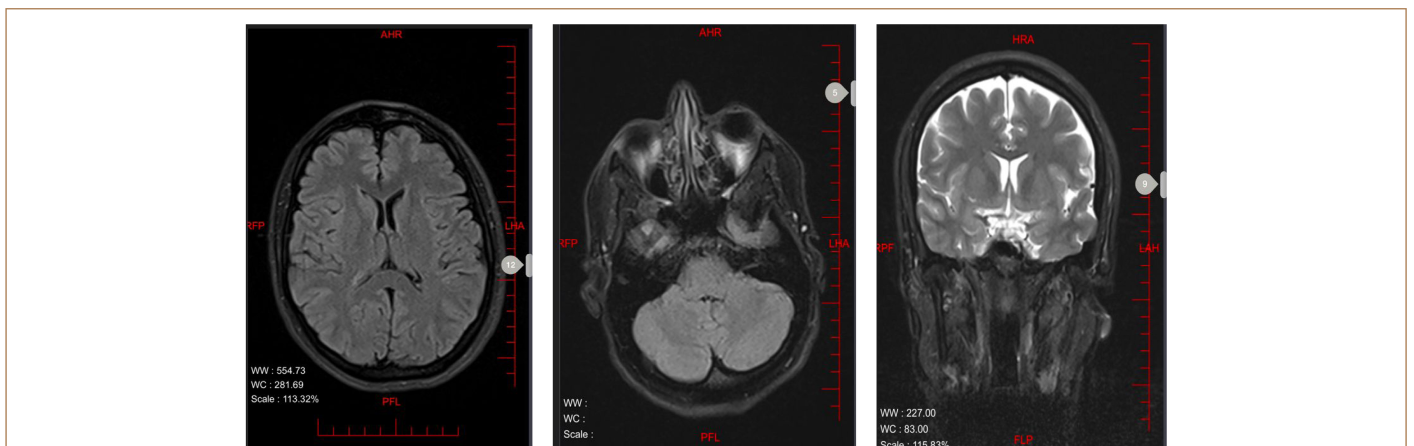

Figure 2. Normal brain magnetic resonance imaging images showing no structural abnormalities.

A multidisciplinary approach—incorporating audiological evaluation, psychological assessment, and stress management—may be essential for effective diagnosis and treatment. Future research is needed to elucidate underlying mechanisms and evaluate integrated therapeutic strategies for stress-related auditory and vestibular symptoms.

A limitation of this case report is the lack of advanced vestibular laboratory investigations, including oculomotor testing, caloric testing, videonystagmography, and video head impulse testing, due to limited access to specialized vestibular equipment at the clinical center. Such comprehensive vestibular testing may provide additional diagnostic value in similar future cases.

Data Availability Statement: *The data that support the findings of this case report are available on request from the corresponding author.*

Informed Consent: *Written informed consent was obtained from the patient who agreed to take part in the case report.*

Peer-review: *Externally peer-reviewed.*

Author Contributions: *Concept – N.M.D.; Design – N.M.D.; Supervision – M.J.; Data Collection and/or Processing – N.M.D.; Analysis and/or Interpretation – N.M.D.; Literature Search – N.M.D.; Writing – N.M.D.; Critical Review – M.J., P.P., S.S.F.D.*

Declaration of Interests: *The authors have no conflict of interest to declare.*

Funding: *The authors declared that this study has received no financial support.*

Declaration of Generative AI: *The authors declare that they did not use generative AI or AI-assisted technologies in the preparation of this manuscript*

References

1. Waugh J, Goa KL. Escitalopram: a review of its use in the management of major depressive and anxiety disorders. *CNS Drugs*. 2003;17(5):343-362. [CrossRef]
2. Long BC. Aerobic conditioning and stress inoculation: a comparison of stress-management interventions. *Cogn Ther Res*. 1984;8(5):517-541. [CrossRef]
3. Toussaint L, Nguyen QA, Roettger C, et al. Effectiveness of progressive muscle relaxation, deep breathing, and guided imagery in promoting psychological and physiological states of relaxation. *Evid Based Complement Alternat Med*. 2021;2021(1):5924040. [CrossRef]
4. Baigi A, Oden A, Almlid-Larsen V, Barrenäs M-L, Holgers K-M. Tinnitus in the general population with a focus on noise and stress: a public health study. *Ear Hear*. 2011;32(6):787-789. [CrossRef]
5. Kaltenbach JA. Tinnitus: models and mechanisms. *Hear Res*. 2011;276(1-2):52-60. [CrossRef]
6. Andersson G. Psychological aspects of tinnitus and the application of cognitive–behavioral therapy. *Clin Psychol Rev*. 2002;22(7):977-990. [CrossRef]
7. Reynolds P, Gardner D, Lee R. Tinnitus and psychological morbidity: a cross-sectional study to investigate psychological morbidity in tinnitus patients and its relationship with severity of symptoms and illness perceptions. *Clin Otolaryngol Allied Sci*. 2004;29(6):628-634. [CrossRef]
8. Sotres-Bayon F, Bush DEA, LeDoux JE. Emotional perseveration: an update on prefrontal-amygdala interactions in fear extinction. *Learn Mem*. 2004;11(5):525-535. [CrossRef]
9. Tegg-Quinn S, Bennett RJ, Eikelboom RH, Baguley DM. The impact of tinnitus upon cognition in adults: a systematic review. *Int J Audiol*. 2016;55(10):533-540. [CrossRef]
10. Cathcart S, Winefield AH, Lushington K, Rolan P. Stress and tension-type headache mechanisms. *Cephalalgia*. 2010;30(10):1250-1267. [CrossRef]
11. Borsook D, Maleki N, Becerra L, McEwen B. Understanding migraine through the lens of maladaptive stress responses: a model disease of allostatic load. *Neuron*. 2012;73(2):219-234. [CrossRef]
12. Schlee W, Hartmann T, Langguth B, Weisz N. Abnormal resting-state cortical coupling in chronic tinnitus. *BMC Neurosci*. 2009;10(1):11. [CrossRef]
13. Omara A, Basiouny EM, Shabrawy ME, Shafei RRE. The correlation between anxiety, depression, and vertigo: a cross-sectional study. *Egypt J Otolaryngol*. 2022;38(1):143. [CrossRef]
14. Bigelow RT, Semenov YR, Du Lac S, Hoffman HJ, Agrawal Y. Vestibular vertigo and comorbid cognitive and psychiatric impairment: the 2008 National Health Interview Survey. *J Neurol Neurosurg Psychiatry*. 2016;87(4):367-372. [CrossRef]