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Musical Hallucinations in a Patient with Presbycusis: A Case Report

Jacob P. Brunner, BS,[1] Ronald G. Amedee, MD, FACS[2,3]

[1]Tulane University School of Medicine, New Orleans, LA
[2]Department of Otolaryngology, Ochsner Clinic Foundation, New Orleans, LA
[3]The University of Queensland School of Medicine, Ochsner Clinical School, New Orleans, LA

ABSTRACT

Background: Musical hallucinations are a rare subtype of auditory hallucination characterized by the perception of musical sounds, instrumental music, or songs. They are most commonly seen in older women with age-related hearing loss but are also associated with neurologic and psychiatric conditions. The underlying pathophysiology is poorly understood and likely multifactorial.

Case Report: A 74-year-old woman presented with subjective hearing loss 2-3 years in duration with a recent development of hearing continuous patriotic and children's songs playing in her head. After extensive interviewing and the documentation of a normal otologic/comprehensive head and neck examination, audiologic evaluation revealed evidence of a symmetric high-frequency sensorineural hearing loss consistent with presbycusis. She was counseled on the use of ambient noise and offered a trial of binaural hearing amplification.

Conclusion: The diagnosis of musical hallucinations requires the consideration of numerous possible etiologies. Treatment varies widely, but many patients improve with the use of ambient noise and hearing amplification. Lack of response requires the consideration of pharmacologic treatments such as anticonvulsants, antipsychotics, and anticholinesterases. It is important to reassure patients with a nonpsychiatric etiology that use of these drugs does not imply psychiatric illness.

Address correspondence to
Ronald G. Amedee, MD, FACS
Department of Otolaryngology
Ochsner Clinic Foundation
1514 Jefferson Hwy.
New Orleans, LA 70121
Tel: (504) 842-4080
Email: ramedee@ochsner.org

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INTRODUCTION

Musical hallucinations are a rare phenomenon associated with a variety of underlying pathologies. They are a subtype of auditory hallucination observed in otorhinolaryngologic, psychiatric, and neurologic conditions. The hallucinations are a disorder of complex sound processing in which patients complain of hearing songs and instrumental music—often in a repetitious fashion—and they generally cause distress and significant functional impairment. The most common associated condition is age-related hearing loss in elderly women.[1,2] Psychiatric disorders such as depression, schizophrenia, and obsessive compulsive disorder have also been implicated, as well as neurologic conditions such as epilepsy, focal brain lesions, and intoxication.[3] In many patients, these conditions are not mutually exclusive, further complicating diagnosis and treatment.

We report the case of a patient with age-related hearing loss who developed musical hallucinations. The patient was concerned for her mental well-being, and we reassured her that her condition was most likely secondary to hearing loss. This case highlights the importance of thorough interviewing and explanation of treatment options in patients with potentially complicated and rare symptoms such as musical hallucinations.

CASE REPORT

A 74-year-old woman with a medical history of hypertension, hyperlipidemia, and atrial fibrillation presented to the ear, nose, and throat (ENT) clinic with bilateral subjective hearing loss. Her hearing loss had gradually progressed during the previous 2-3 years, and for the 4-6 weeks prior to her ENT visit, she began to perceive music playing in her head. The music consisted of constant/repetitive short verses of patriotic and children's songs, many of which she remembered from her childhood. She noticed the music less frequently when talking with others or watching television but much more frequently when alone, particularly when driving. The songs looped

over and over, and the patient expressed concern stating, "I think that I am going crazy."

The patient denied any antecedent head or neck trauma, prior otologic surgery or acoustic trauma, frequent middle ear infections, prior use of ototoxic drugs, or symptoms of vertigo. She denied experiencing any headaches, dizziness, or visual disturbances and any history of stroke, seizure, or psychiatric disorder. The patient had no history of metabolic or endocrine disease. She denied any drug, alcohol, or tobacco use. The patient had no significant surgical or family history. She lived at home with her husband and had an active social life. Her medications consisted of antihypertensives and antiplatelet agents. A review of systems was positive for hearing loss, tinnitus, and seasonal postnasal drip.

During physical examination, the patient had a pleasant affect and normal mood. Her speech and behavior were normal. Decreased hearing was noted bilaterally, and the patient had to be spoken to in a raised voice. She had no abnormal otoscopic findings, and the remainder of the head and neck examination was normal. The patient was neurologically intact with no focal deficits. The rest of the physical examination showed no abnormalities.

Pure tone audiometry was performed to assess the patient's hearing threshold. She displayed symmetric high-frequency sensorineural hearing loss consistent with presbycusis. The patient had a 96% speech discrimination score and type A tympanograms.

Based on the results of the audiogram, the patient was diagnosed with age-related hearing loss. The patient was informed of the association between presbycusis, female sex, and musical hallucinations. She was reassured that she likely did not have a psychiatric illness and that her presentation was not consistent with a focal neurologic or metabolic pathology. Various treatment options were discussed, and she agreed to use ambient noise (background music, headphones for listening to music and television, and other forms of white noise) and possible binaural hearing amplification (hearing aids) as treatment, with medications such as antipsychotics, anticonvulsants, and anticholinesterases as further possible treatment modalities, if indicated.

DISCUSSION

A patient complaining of musical hallucinations requires the consideration of neurologic, psychiatric, and otorhinolaryngologic etiologies. The association between hearing loss and musical hallucinations warrants a full audiologic and otologic workup in symptomatic patients. Signs of intracranial pathology such as headaches, dizziness, vision changes, or abnormal neurologic examinations indicate the need for a neurologic consultation. Social isolation is also a risk factor;[4] thus a complete social history should be obtained along with screening for psychiatric disorders.

No definitive evidence points to a single underlying cause of musical hallucinations. Hearing loss is a frequent finding but is not necessary for the development of musical hallucinations. In some instances, musical hallucinations are believed to result from a deafferentation phenomenon characterized by decreased input to the auditory cortex, resulting in neuronal excitability.[5] Brain imaging studies have shown temporal lobe dysfunction, suggesting that some cases of musical hallucinations are associated with epilepsy or focal brain lesions.[3,5] Our patient had no evidence of focal deficits or epileptiform disorder, and thus brain imaging was not performed. The concept of parasitic memory attempts to explain musical hallucinations from a neuropsychologic perspective, hypothesizing that sensory deprivation and cerebral dysfunction play a role in causing a memory disturbance that results in the perception of learned tunes.[6]

Treatment should address the underlying cause and often depends on the specialization of the referral service. For patients like ours presenting with hearing loss, hearing amplification is often considered first-line therapy. The use of ambient noise such as a ceiling fan can help alleviate symptoms. Pharmacologic therapy can also be considered and should be tailored to the diagnosis. For example, antiepileptics seem to help patients with epileptic foci, and antidepressants alleviate symptoms in those with depression. In patients unresponsive to hearing amplification, antipsychotics have been reported to be successful in a number of cases.[4] It is important to explain to such patients that the use of psychoactive drugs does not indicate that they suffer from a psychiatric illness, a worry commonly expressed as in this case.

CONCLUSION

Practitioners should obtain a full otologic and audiologic workup in patients presenting with musical hallucinations. Multiple pathologies should be considered, and a thorough evaluation should be performed. Physicians should attempt hearing amplification as first-line therapy for patients with musical hallucinations and hearing loss, and efforts should be made to alleviate patient concerns about the use of psychoactive medications as second-line therapy.

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