

Deafferentation Hallucinations: A Less Explored Entity

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Auditory hallucinations are thought to be synonymous with a psychotic disorder, but this may not always be true.¹ Auditory hallucinations may be seen in many cases, like borderline personality disorder, posttraumatic stress disorder, sleep disorders, brain lesions, or hearing impairment. They may even occur without any demonstrable pathology, like a hypnogogic and hypnopompic hallucination.¹

Certain hallucinations arise from partial or complete sensory loss, typically without any thought disorder. These are known as deafferentation hallucinations (DH).^{2,3} As the name suggests, deafferentation means cutting off the afferent nerve supply.⁴

DH are secondary to an increased cortical firing because of sensory deafferentation of the corresponding association cortex or disinhibition of the association area secondary to a lack of input from the primary area, leading to a release phenomenon.^{5,6}

Various cases of visual hallucinations secondary to visual impairment (e.g., Charles Bonnet syndrome) have been reported in the literature, but there are very few cases of deafferentation auditory hallucinations.^{5,7-9}

Here, we describe a case of an elderly male with auditory DH to emphasize the importance of screening for sensory impairments, especially in elderly patients.

Mr R, a 72-year-old male, a retired clerk, was referred to psychiatry outpatient department (OPD) for hearing sounds not audible to others on and off for the last year, the frequency of which increased over the last month. He had visited a local practitioner 4 weeks ago and was started on Tab Risperidone 4 mg/day. As there was no improvement even after 3 weeks of treatment, Tab Olanzapine 5 mg/day was added by the local practitioner 1 week ago.

He was referred to psychiatry OPD as there was no improvement on drugs. He presented to us with the same complaints of hearing sounds. This time, he also complained of excessive sedation. We admitted him for a detailed evaluation.

The history and evaluation revealed that the patient had both hearing and visual impairments. The sounds he used to hear were unstructured and were elementary hallucinations heard in both ears. His attendant also reported that he would confuse leaves for worms. He would also report seeing few people at distant sites whose faces were not clear to him, with no one being there at that time.

There were no signs of confusion or disorientation. There was no history suggestive of hearing structured voices. His complete blood count, random blood sugar, serum electrolytes, thyroid-stimulating hormone levels, vitamin B₁₂, and vitamin D3 levels were within normal range. There was no history of depressive disorder or any substance abuse. Also, there was no behavioral abnormality or any other feature suggestive of psychosis. Electroencephalogram showed no epileptiform activity, and

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magnetic resonance imaging of the brain revealed age-related cortical atrophy.

The patient had disturbances in recent memory with the preservation of remote memory. On inquiry, relatives confirmed that they had noticed this for the last few months. Some impairment in activities of daily living was also noted, mainly attributable to his sensory deficits and excessive sedation. Otherwise, there was no evidence of aphasia, apraxia, agnosia, or other disturbances in executive functioning. His score on the mini-mental status examination was 25 on 30. He lost 3 points on recall and 2 points on serial subtractions.

Ophthalmology and ear, nose, and throat (ENT) opinions were taken. The ophthalmologist's opinion revealed cataracts in both eyes, for which surgery and intraocular lens implantation were advised. ENT opinion revealed that the patient had mixed hearing loss in both ears and was advised hearing aids for the same.

Antipsychotics were stopped, and the patient reported improvement in oversedation. He was diagnosed with amnesic mild neurocognitive impairment (MCI) with bilateral cataracts and bilateral mixed hearing loss.¹⁰ We started him on tab donepezil 5 mg HS. He was discharged in a week and asked to follow up in psychiatry, ophthalmology, and ENT OPDs for further management.

On follow-up after 6 weeks, we found that the patient had been operated for bilateral cataracts, was advised hearing aids for mixed hearing loss, and reported >70% improvement in hallucinations.

DISCUSSION

Hallucinations, in this case, could be due to sensory impairment or MCI. DH have been reported in around 25% of patients having a visual or auditory impairment.² In MCI, the prevalence of psychotic symptoms (delusions and hallucinations) is very low (<5%).¹⁰

Furthermore, acetylcholinesterase inhibitors are beneficial in DH in comparison to antipsychotics.²

With a rapid increase in the aging population having sensory deficits, clinicians might frequently encounter DH.

The detailed evaluation made the diagnosis noticeably clear in this case. This report suggests the need for awareness among clinicians about DH, especially in elderly patients having sensory deficits and presenting with hallucinations for the first time.

CLINICAL IMPLICATION

Misdiagnosis or a delay in diagnosis might lead to unnecessary medications and patient morbidity. Detailed history and evaluation are important despite a busy OPD schedule to arrive at the correct diagnosis and planning proper management.

REFERENCES

1. Waters F, Blom JD, Jardri R, et al. Auditory hallucinations, not necessarily a hallmark of psychotic disorder. *Psychol Med* 2018;48(4):529–536. DOI: 10.1017/S0033291717002203
2. Marschall TM, Brederoo SG, Ćurčić-Blake B, et al. Deafferentation as a cause of hallucinations. *Curr Opin Psychiatry* 2020;33(3):206–211. DOI: 10.1097/YCO.0000000000000586
3. Mohan A, Vanneste S. Adaptive and maladaptive neural compensatory consequences of sensory deprivation-from a phantom percept perspective. *Prog Neurobiol* 2017;153:1–17. DOI: 10.1016/j.pneurobio.2017.03.010
4. Venes D. *Taber's Cyclopedic Medical Dictionary*. FA Davis; 2017.
5. Duggal HS, Pierri JN. Charles Bonnet syndrome: neurobiological insights. *Indian J Psychiatry* 2002;44(3):289.
6. Ffytche DH. Visual hallucinatory syndromes: past, present, and future. *Dialogues Clin Neurosci* 2007;9(2):173–189. DOI: 10.31887/DCNS.2007.9.2/dfytche
7. Chatterjee SS, Khonglah D, Mitra S, et al. Gulliver's world: Persistent lilliputian hallucinations as manifestation of Charles Bonnet syndrome in a case of cataract and normal pressure hydrocephalus. *Indian J Psychiatry* 2018;60(3):358–360. DOI: 10.4103/psychiatry.IndianJPsychiatry_236_18
8. Sarkar S, Subramaniam E, Jha KN. Multimodal hallucinations in a visually impaired elderly female: is it a variant of Charles Bonnet syndrome? *Indian J Psychol Med* 2017;39(3):366–368. DOI: 10.4103/0253-7176.207331
9. Shah NT, Angane AY. The brain sees what the eyes don't! Visual hallucinations in a blind female suffering from schizophrenia. *Ann Indian Psychiatr* 2020;4(1):87. DOI: 10.4103/aip.aip_48_19
10. Subramanyam AA, Singh S. Mild cognitive decline: concept, types, presentation, and management. *J Geriatr Ment Health* 2016;3(1):10. DOI: 10.4103/2348-9995.181910