Case Report

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The musical ear: A case of auditory Charles Bonnet syndrome in a middle-aged female with deafness

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Abstract

Auditory Charles Bonnet syndrome is a phenomenon where auditory hallucinations occur in individuals with hearing impairment due to either degenerative or structural lesions in the auditory pathway. We report a case of a middle-aged female with sensorineural hearing loss, who presented with auditory hallucinations.

Key words: Charles Bonnet syndrome, auditory hallucinations, hearing impairment

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Introduction

Charles Bonnet, a Swiss naturalist and philosophical writer, in 1760 described visual hallucinations experienced by his grandfather, who was blind secondary to cataract (1, 2). The Swiss neurologist, George de Morsier, named the condition after Charles Bonnet in 1936 (1,2). Although Charles Bonnet syndrome (CBS) was originally described as the occurrence of visual hallucinations in persons with impaired visual pathway or visual cortex, an auditory variant occurring following hearing impairment has also been reported (3). Auditory hallucinations occurring in CBS are usually elementary or musical in nature, but there are also reported cases of fully formed auditory hallucinations (3,4). Patients who experience CBS are generally elderly, but the condition may present at any age in the absence of any other psychopathology (4). The patient usually has a good insight into the condition (4). The reported risk factors for CBS include advanced age, social isolation, and female gender (5).

We report a middle-aged female who presented with second person and musical auditory hallucinations, which improved completely following adjustment of her hearing aids.

Case Report

A 49-year-old female with no previous psychiatric history was brought to the out patents' clinic in the context of her hearing unusual sounds, and poor sleep, which had started when she stopped wearing her hearing aid two years ago. She had stopped wearing the hearing aid as she found it cumbersome.

She had initially experienced a high-pitched ringing like sound. However, during the course of the next few months, this sound had progressed to that of different types of musical sounds, as well as voices. Gradually, the intensity of the voices and the volume of the musical sounds had increased to a point where she had sometimes mistakenly picked up her mobile phone, attributing the music to the ringing tone of the phone. The voices and musical sounds had been so intense that they had impaired her quality of sleep significantly, and she found it difficult to concentrate. She became worried whether she was developing a psychiatric illness. She and her family members had not attributed the voices and sounds to her hearing impairment.

Due to her poor quality of sleep she had seen a general practitioner who had prescribed clonazepam 1mg at night, which had improved her sleep. However since the voices and music didn't subside, she had sought help as an outpatient at the psychiatry clinic at Teaching Hospital, Peradeniya.

She did not have a history of psychiatric illness, head trauma, malignancy or drug or alcohol use, nor a family history of mental illness. At the time of assessment, she was very distressed about her symptoms, but did not have any significant, persistent alteration of mood, or abnormalities of thought content.

She experienced second person auditory hallucinations, where she heard the voices as those belonging to two or three unknown males and females, speaking directly to her. In addition she also heard musical sounds, which

she described as being similar to a ringing tone of a mobile phone. She had no other perceptual abnormalities.

Her cognitive functions were normal. She had good insight and judgement and knew that the voices and music were not 'real', but was unable to explain how they may have originated. A detailed neurological examination revealed only a sensory type of hearing loss of her right ear. Her verbal fluency, motor skills, and gait were within normal range. Laboratory tests including a full blood count, comprehensive metabolic profile and thyroid-stimulating hormone level were within normal limits.

In view of her symptoms and the features suggestive of a hearing impairment, she was diagnosed to be suffering from the auditory form of Charles Bonnet Syndrome (CBS). She was commenced on risperidone 2mg until investigations and relevant referrals were made. Her hearing was assessed at the audiology clinic and the sensorineural hearing loss was confirmed. She was prescribed a new hearing aid, which was easier to use compared to her previous one. Her auditory hallucinations disappeared completely after she started to use the hearing aid. The medication was stopped, and she was advised regarding regular follow up at the ENT clinic.

Discussion

Auditory hallucinations in CBS usually consist of musical noises that is familiar to the patient, such as pop music or religious songs (6). However, there are some reports of patients hearing sounds unfamiliar to them (5,7). The majority of patients who experience auditory CBS are reported not to experience either cognitive or any form of psychological impairment (7, 8). However, considering the later onset of the condition, it is important to rule out any other psychiatric or neurological causes.

International studies have reported that the cause of the hearing loss leading to the musical hallucinations, have an impact on the type of music heard, in auditory CBS (5). In patients with auricular or neurodegenerative causes, the songs which patients hear often relate back to their childhood (9). Patients with structural lesions in the auditory pathway have been reported to hear country or rock music (6). Our patient was middle aged, in contrast to the higher number of elderly patients in whom the condition is usually reported. Even though our patient had been experiencing hearing loss for a considerable time due to a structural lesion on her inner ear, and she had not been using her hearing aids for a long time prior to the presentation.

For patients with musical hallucinations, the treatment of the underlying cause – for example, hearing aids, treating underlying psychiatric disorders, stopping suspected causative medication, or treating epileptic seizures – normally leads to resolution of the symptoms (7). Although hearing aids and similar devices have alleviated musical hallucinations, there are no curative or evidence-based treatment methods reported for auditory Charles Bonnet syndrome at this time (7,8).

Much of the current literature attributes the biologic basis for development of musical hallucinations to sensory impairment (10). The widely accepted theory is that the cortical regions responsible for storing auditory memory become disinhibited (11). Therefore it is proposed that the musical hallucinations patients perceive are likely to be manifestations of pre-formed auditory memory neurons synapsing with one another (11,12).

Conclusions

Auditory hallucinations of CBS can occur in patients with hearing impairment. Although the hallucinations tend to respond poorly to medications, they appear to show a good response to restoration of hearing.

Statement of contributions

Both authors contributed to the literature survey and manuscript writing. Both approved the final manuscript.

Conflicts of interest

None declared.

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