

# The psychopathology of musical hallucinations

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## ABSTRACT

**Musical hallucinations are a rare phenomenon in neurological and psychiatric patients. There are clinical case reports and a few studies which describe the condition. Musical hallucinations have a heterogeneous clinical and pathophysiological aetiology, and have been reported in the elderly and in those with hearing impairment, central nervous system disorders and psychiatric disorders. The psychopathology is reviewed and three cases seen in a psychiatric setting are reported.**

**Keywords:** hearing impairment, musical hallucinations, psychiatric disorders

*Singapore Med J 2007; 48(2):e68–e70*

## INTRODUCTION

The term hallucination was introduced to psychiatric literature by Esquirol in 1837. It is a perceptual disturbance defined as an apparent perception of an external object when no such object is present.<sup>(1)</sup> Hallucinations occur in all the different sensory modalities: visual, auditory, gustatory, olfactory and touch, and are frequently recognised as psychopathology associated with psychiatric disorders such as schizophrenia, major depression, substance abuse and stress, and neurological conditions such as seizure, stroke and neoplasm. Less common aetiologies include metabolic, endocrine and infectious diseases as well as sensory deprivation, acquired deafness and phantom limbs. It may even occur in normal populations who may experience hypnogogic (just before falling asleep) or hypnopompic (upon waking up) hallucinations. Given their ubiquitous occurrence, hallucinations are rarely of pathognomonic significance and the presence of other signs and symptoms must be elicited to establish the diagnosis.

However, among auditory hallucinations in psychiatric patients, musical hallucinations were thought to be a rare<sup>(2)</sup> and also an under-diagnosed phenomenon.<sup>(3)</sup> When they occur in schizophrenic patients, they are less distressing than verbal hallucinations and so may not be reported by patients or actively elicited by psychiatrists. There were reports suggesting that they occurred solely or mostly in

neurological, otorhinolaryngological or gerontological cases.<sup>(4)</sup> The commonest association has been with long-standing deafness of sensorineural origin.<sup>(5)</sup> A study in an audiological clinic reported a 2.5% prevalence of musical hallucinations among nonpsychiatric patients.<sup>(6)</sup> However, a more recent survey by Hermesh et al substantiates the significant role of functional psychopathology in the occurrence of musical hallucinations.<sup>(7)</sup> Using an obsessive-compulsive disorder (OCD) assessment tool, their preliminary findings showed that about a third of OCD patients experienced musical hallucinations, leading them to suggest that musical hallucinations are more suggestive of OCD than of other psychiatric disorders. Lishman describes musical hallucinations as having an abrupt onset with “patients hearing songs or instrumental music for varying periods of time, ranging from repetitive short musical phrases to virtually constant elaborate musical hallucinations”.<sup>(5)</sup> He noted that many heard songs or music that they had heard in their childhood. Although patients had no voluntary control over the hallucinations, “many could alter the tempo or change the tune at will”.<sup>(5)</sup> The case histories of three patients (de-identified) are presented to highlight the clinical presentations of this rarely-described and under-recognised phenomenon.

## CASE REPORTS

### Case 1

A 61-year-old widow was referred to the psychiatric outpatient clinic for depression. This was a first episode which had begun three months previously and had been precipitated by a significant life event. She had all along been a rather anxious person, with obsessive and compulsive traits characterised by rigidity, perfectionism and was somewhat intolerant of others. She also experienced hearing loss which had been assessed by an otorhinolaryngological surgeon who diagnosed presbycusis, and recommended the use of a hearing aid for her left ear. Otoscopy was normal.

Soon after the onset of the depressive symptoms, the patient experienced musical hallucinations in the form of “sad songs and love songs” in her own language and which she had heard many years ago. The music occurred spontaneously and came from around her and she could not control it in any way. They were almost

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constant and initially proved distressing. Despite treatment with an antidepressant (fluvoxamine) and gradual increase of the dose (up to 150 mg at night), she continued to experience musical hallucinations. She learnt to mask the disturbance by singing and/or playing different music. Despite achieving remission and the resolution of her depressive symptoms, she continues to experience the musical hallucinations which are now of a waxing and waning nature and no longer distressed her. She did not experience any obsessive or compulsive symptoms or any other psychotic symptoms.

### Case 2

A 78-year-old man had a history of dysthymia for many years, hypertension and presbycusis in both ears with recommended use of hearing aids. About three years ago, he presented with anxiety symptoms relating to his social and family circumstances. He was treated with citalopram, a selective serotonin reuptake inhibitor antidepressant, with reduction in the anxiety and mood symptoms. About a year after having started the antidepressant, the patient reported hearing "hymns and carols almost around the clock". The music came from his surroundings and was not within his control and he described the experience as real to him. These musical hallucinations continued for ten months and then spontaneously disappeared after hospitalisation and major surgery for colon cancer. It has been one and a half years since then and he has had no recurrence of the musical hallucinations.

### Case 3

A 56-year-old woman became depressed because of work-related stress. There was a past history of an episode of depression which resolved spontaneously, and history of a mild OCD which surfaced over the years whenever she was stressed. She had never sought treatment for this as it usually resolved when the stressful situation was over. The patient was diagnosed as having an OCD with major depression. She also had an underlying obsessive-compulsive personality disorder characterised by preoccupation with details, perfectionism, inflexibility and stubbornness. There was no past history of hearing problems but she had type II diabetes mellitus and hypertension for which she had been on treatment since 1984.

The patient was treated with citalopram which was gradually increased from 20 mg a day to 40 mg a day. Five months after starting treatment, she experienced musical hallucinations and became very distressed. The symptom occurred spontaneously and the sounds were reported to come from the surroundings and experienced as real and beyond control. But it was

short-lived, lasting only two weeks. With increasing antidepressant doses, her mood improved, she was no longer depressed and the obsessive-compulsive symptoms abated. She has not re-experienced the musical hallucinations since then.

## DISCUSSION

Musical hallucinations are well described in the elderly, with a preponderance among women and in those with OCD, depression or hearing impairment whether hearing loss or deafness.<sup>(7,8)</sup>

There is no accepted classification of musical hallucinations and their pathophysiology is not definitively known.<sup>(9)</sup> It has been suggested that the otological basis could be a hyperactive state of the peripheral auditory system, a slight endolymphatic hydrops or pre-Meniere's disease with the musical hallucinations probably arising out of rhythmic tinnitus.<sup>(4)</sup> Functional magnetic resonance imaging to map cerebral activation associated with auditory hallucinations however suggests that auditory hallucinations reflect abnormal activation of normal auditory pathways, which may account for patients' inability to distinguish self-generated thoughts from external stimulation.<sup>(10)</sup> Similarly, the correlation of the musical hallucinations to a central nervous system disorder has been shown by pathological sphenoidal electroencephalogram and positron emission tomography in a case report.<sup>(11)</sup> The association with advanced age seems to suggest impaired central nervous system function as well. When organic brain diseases have been associated with musical hallucinations, the aetiologies have included functional abnormality in the right auditory cortex,<sup>(12)</sup> an occipital meningioma,<sup>(13)</sup> lesions in the dorsal pons,<sup>(14)</sup> and rarely, as part of an epileptic aura,<sup>(15)</sup> among others. In the presence of brain disease, there seems to be an over-representation of pathology in the right or non-dominant cerebral hemisphere.<sup>(16)</sup>

There are very many more reports of functional psychopathology and musical hallucinations. A study of 100 schizophrenic patients found the lifetime occurrence of musical hallucinations to be 16%.<sup>(17)</sup> OCDs have also been linked to musical hallucinations. A survey by Hermesh et al in 52 OCD patients revealed a prevalence of 30% with musical hallucinations compared with 3% with schizophrenia.<sup>(7)</sup> The Hermesh et al study was also significant in that there was a preponderance of male rather than female patients with musical hallucinations.

Two of the cases reported here are significant in that there are a combination of factors associated with musical hallucinations, i.e. psychopathology, hearing loss and advanced age. There are few such cases

reported in the literature. All three patients had depression, but one patient had a comorbid mild OCD and two patients had anxious and/or obsessive-compulsive personality traits. The presence of OCD has led to suggestions that musical hallucinations may be intrusive pseudo-hallucinations rather than true hallucinations.<sup>(18)</sup> However, according to Jaspers, two features clearly distinguish pseudo-hallucinations from hallucinations. In pseudo-hallucinations, patients describe the experience as located in subjective space, not objective space, and patients recognise them as not “real”.<sup>(19)</sup> Researchers have also questioned whether the symptom is a musical obsession.<sup>(20)</sup> Again, there is no clear classification although in the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) symptom checklist, there is a listing for “intrusive nonsense sounds, words or music” under Miscellaneous Obsessions.<sup>(21)</sup> While obsessions are also experienced as from the subjective space, Lewis has described three essential features for diagnosing obsessions: subjective compulsion, a resistance to it, and preservation of insight.<sup>(19)</sup>

In the cases reported here, the symptom presentation does not fit that of pseudo-hallucinations or musical obsessions. The features of the symptom however meet all the criteria listed by Slade for hallucinations. The patients experienced the music in the absence of an external stimulus and with “the full force and impact of a real perception” and the symptom was unwilling, spontaneous and could not be readily controlled by them.<sup>(19)</sup>

In the third case reported, the musical hallucinations disappeared spontaneously with treatment of the depressive and obsessive-compulsive symptoms. Significantly, this patient was middle-aged and did not have associated hearing impairment. In the first two cases, the musical hallucinations had persisted for a longer period (with one patient still experiencing the symptom) despite adequate treatment and resolution of the psychiatric condition. Both these two patients are much older and have a hearing impairment which could account for the “persistence” of the symptom. This also challenges the psychopathological nature of the symptoms. Where there may be certain association with psychiatric disorders, central nervous system pathology and peripheral ear disorders must also be considered. There are no systematic studies and very little information in the literature on treatment of musical hallucinations, apart from a report of successful carbamazepine therapy of two cases,<sup>(22)</sup> and another two cases who showed significant response

to clomipramine.<sup>(23)</sup> However, the possibility of a spontaneous disappearance of the symptoms is of significance for the patient.

## REFERENCES

- Hamilton M, ed. *Fish's Clinical Psychopathology*. Bristol: John Wright & Sons Ltd, 1974.
- Berrios GE. Musical hallucinations. A historical and clinical study. *Br J Psychiatry* 1990; 156:188-94. Comment in: *Br J Psychiatry* 1991;158:715-6.
- Ross ED, Jossman PB, Bell B, Sabin T, Geschwind N. Musical hallucinations in deafness. *JAMA* 1975; 231:620-2.
- Gordon AG. Do musical hallucinations always arise from the inner ear? *Med Hypotheses* 1997; 49:111-22. Comment in: *Med Hypotheses* 1999;53:89-90.
- Lishman WA. Epilepsy. In: Lishman WA, ed. *Organic Psychiatry*. 3rd ed. Oxford: Blackwell Science, 1999: 237-314.
- Cole MG, Dowson L, Dendukuri N, Belzile E. The prevalence and phenomenology of auditory hallucinations among elderly subjects attending an audiology clinic. *Int J Geriatr Psychiatry* 2002; 17:444-52.
- Hermesh H, Konas S, Shiloh R, et al. Musical hallucinations: prevalence in psychotic and nonpsychotic outpatients. *J Clin Psychiatry* 2004; 65:191-7. Comment in: *J Clin Psychiatry* 2005;66:136; author reply 136-7.
- Pasquini F, Cole MG. Idiopathic musical hallucinations in the elderly. *J Geriatr Psychiatry Neurol* 1997; 10:11-4.
- Evers S, Ellger T. The clinical spectrum of musical hallucinations. *J Neurol Sci* 2004; 227:55-65.
- Lennox BR, Park SB, Medley I, Morris PG, Jones PB. The functional anatomy of auditory hallucinations in schizophrenia. *Psychiatry Res* 2000; 100:13-20.
- Erkwoh R, Ebel H, Kachel F, et al. [Musical-verbal hallucinations and their correlation with electroencephalography and PET findings. Case report]. *Nervenarzt* 1992; 63:169-74. German.
- Kasai K, Asada T, Yumoto M, Takeya J, Matsuda H. Evidence for functional abnormality in the right auditory cortex during musical hallucinations. *Lancet* 1999; 354:1703-4.
- Nagaratnam N, Virk S, Brdarevic O. Musical hallucinations associated with recurrence of a right occipital meningioma. *Br J Clin Pract* 1996; 50:56-7.
- Schielke E. Rare hallucinations make music in the mind. In: *ScienceDaily* [online]. Available at: [www.sciencedaily.com/releases/2000/08/000809065249.htm](http://www.sciencedaily.com/releases/2000/08/000809065249.htm). Accessed February 8, 2006.
- Keshavan MS, David AS, Steingard S, Lishman WA. Musical hallucinations: a review and synthesis. *Neuropsychiatry Neuropsychol Behav Neurol* 1992; 5:211-23.
- Berrios GE. Musical hallucinations: a statistical analysis of 46 cases. *Psychopathology* 1991; 24:356-60.
- Saba PR, Keshavan MS. Musical hallucinations and musical imagery: prevalence and phenomenology in schizophrenic inpatients. *Psychopathology* 1997; 30:185-90.
- Gelder MG, Gath D, Mayou R. *Oxford Textbook of Psychiatry*. Oxford: Oxford University Press, 1996: 3-6.
- Sims A. *Symptoms in the Mind. An Introduction to Descriptive Psychopathology*. London: Balliere Tindall, 1991.
- Terao T, Ikemura N, Hugo FJ, et al. Musical obsessions or hallucinations. *J Neuropsychiatry Clin Neurosci* 2000; 12:518-6.
- Goodman WK, Rasmussen SA, Price LH, et al. *Yale-Brown Obsessive Compulsive Scale (Y-BOCS)*. Revision 9/89. Florida: University of Florida, 1989.
- Gertz HJ, Gohringer K, Schimmelpfennig C. [Successful carbamazepine therapy of 2 cases of music hallucinations]. *Nervenarzt* 1996; 67:387-9. German.
- Matsui T, Matsunaga H, Ohya K, et al. Clinical features in two cases with musical obsessions who successfully responded to clomipramine. *Psychiatry Clin Neurosci* 2003; 57:47-51.