

Tinnitus and musical hallucinations are positive not negative symptoms

Dear Sirs,

Bhatt and de Carpentier¹ report a case of musical hallucinations after whiplash, attributed to dysfunction in higher-order cognitive processing. A more complete review of the literature, however, shows that cochlear (over)activity is the key factor.

These authors begin by noting that auditory hallucinations ‘...are auditory perceptions which occur in the absence of external stimuli. They may be elementary (e.g. buzzing or ringing) or complex (e.g. voices or music).’ In other words, there is a continuum. This agrees with the *Diagnostic and Statistical Manual IV* definition:² ‘[a] hallucination involving the perception of sound, most commonly of voices’. The fact that otological and psychiatric working definitions are the same again supports the idea that tinnitus and auditory hallucinations are similar phenomena, often not readily distinguishable. The main difference seems to be that noise-hearers consult otologists, voice-hearers psychiatrists.

Bhatt and de Carpentier state that many authors have suggested a primary role for sensory deprivation in the many cases in which those with musical hallucinations have a pure tone hearing loss, but they give only one reference for this.³ This completely misrepresents my theory, as summarised in this journal;⁴ my ‘...review of musical hallucinations (Gordon, 1997) shows that, irrespective of any concurrent psychiatric, psychological, otological, pharmacological, religious or mystical states, there is always an associated hyperirritable inner ear or incipient hydrops. The pathological basis is perilymphatic hypotension from dehydration, weight loss, hypotension or loss of CSF.’ In other words, musical hallucinations are positive symptoms from an overactive ear, not negative ones from an underactive one, analogous to tinnitus and not to deafness. In schizophrenia, hallucinations are classed as positive symptoms, avolition and alogia as negative symptoms. In neurology, paraesthesia is a positive symptom, anaesthesia a negative one. Cope and Baguley⁵ also cited my detailed literature review³ but evidently believed it to be merely a letter and did not address its main thesis, since nowhere did they consider the possibility that inner ears can often be in a hyperactive state, as suggested by common symptoms such as tinnitus, audiosensitivity and vertigo.

If a normal brain is presented with strange, frightening or puzzling noises, as occurs in many cases of

tinnitus, it has to ‘make the best of a bad job’ and extract some meaning and construct some narrative from this confusion, such as hearing one’s name when the only stimulus is white noise. A good analogy occurs naturally in deep underground caves⁶ where unusual and threatening natural sounds transform into musical hallucinations and voices, often attributed to the gods. In some societies, the resulting mythical stories form a complex belief system.

Bhatt and de Carpentier state that 10 per cent of whiplash cases develop otological symptoms but do not cite the definitive study in this area,⁷ on 227 whiplash cases occurring after road traffic accidents and referred to Grimm’s neurological practice. Otologists should note that 98 per cent of those who had lost consciousness had cochlear or vestibular abnormalities. Bhatt and de Carpentier also state that the underlying mechanisms linking injury and symptoms have been speculated to be: transient labyrinthine ischaemia following vertebral artery compression; direct labyrinthine or brainstem concussion; or even the unmasking of a pre-existing hearing difficulty by the psychological impact of the injury. They make no mention of simpler and more plausible cochlear disorders that should be at the forefront of otological inquiry, such as endolymphatic hydrops and perilymph fistula, to name but two. In fact, Grimm diagnosed hydrops in 64 per cent and fistula in 21 per cent of his cases. There is a remarkable similarity between the perilymph fistula and post-concussional syndrome,⁸ consistent with concussion being an overload disorder of the vestibular labyrinth and nothing to do with the brain. Grimm found vestibular abnormalities were particularly frequent if consciousness had been lost.

Bhatt and de Carpentier state that several cases of musical hallucination have been reported in patients with acute central nervous system pathology, after excluding cases of delirium, intoxication and psychosis. Although many cases have indeed been published without excluding ear disease, it is surprising to see this pass without comment in an ENT journal. It is like leaving cases of dizziness to the mercies of neurologists, psychiatrists, general practitioners and junior house officers, without expecting any otological examination. Fortunately, at least one neurologist, Grimm, realised that neither psychology nor neurology was going to solve the whiplash conundrum, so he delved further into its otological components.

If anyone doubts that cochlear disorder (Ménière spectrum disorder in particular) is a necessary and probably sufficient cause of musical hallucinations, all they need do is present or cite otologically normal

cases. I have appealed for these without success on many previous occasions, including in this journal.⁴ Whilst Cope and Baguley⁵ list cases with central pathology, none were noted to have had normal otological examinations. Meanwhile, it is no longer necessary for musical hallucinations to be ‘...described from three broad perspectives: audiological, neurological and psychiatric’;¹ the otological one alone will do.

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