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Phonophobia and Hyperacusis: Practical Points from a Case Report

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Abstract

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Phonophobia and hyperacusis are two separate but closely related symptoms that are often mistakenly used in clinical practice as the same entity. Here we present a case report to highlight the distinguishing features of both and discuss the steps of management in these conditions. It is vital for the attending doctors to recognise hyperacusis and phonophobia as different entities to manage them successfully.

Keywords: hyperacusis, phonophobia, medical sciences

Introduction

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Phonophobia is defined as a persistent, abnormal, and unwarranted fear of sound. Often, these are normal environmental sounds (e.g., traffic, kitchen sounds, doors closing, or even loud speech) that cannot under any circumstances be damaging. Phonophobia may also be related to, caused by, or confused with hyperacusis, which is an abnormally strong reaction to sound, occurring within the auditory pathways, in levels that would not trouble a normal individual (1).

Case Report

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A 12-year-old girl was referred to the Ear, Nose and Throat (ENT) clinic with reported acute, electrifying, intensified noise sensations in both ears when hearing sudden loud sounds. The symptom started after a history of exposure to the sudden loud sound of fire-crackers at a Chinese New Year celebration a few months earlier. Since then, she began experiencing abnormally intensified sounds followed by unpleasant buzzing noises every time she was exposed to normal intensity sounds. For example, the sound of balloon popping or the rustle of a plastic bag were almost unbearable to her, to a point where she developed palpitations, shivering, excessive sweating and crying. She denied other otological symptoms and has never been operated on in the ear before. Her condition gradually worsened such that she only wanted to spend her time in a quiet room and was no longer attending social functions in school.

Her parents denied that she experienced any psychiatric comorbidities, and she was developmentally normal until this event. It was very difficult to get a thorough history from the distressed girl, so we proceeded with the investigations to rule out causes of hyperacusis. A thorough ENT clinical examination, including otological and neurological assessments, showed normal findings. She subsequently underwent audiological tests that included pure tone audiometry, the stapedius reflex and the auditory evoked potential, which also showed no abnormality. Magnetic resonance imaging (MRI) of her skull revealed no lesions in the brain, pons or the auditory pathway.

She was then referred to a psychiatrist whom later, after a thorough psychiatric evaluation, diagnosed the girl with phonophobia based on the DSM-IV criteria for specific phobia (2). She had two weekly therapy sessions which included psycho-education for both parents and patient, relaxation exercises and graded exposure behavioural therapy. Psycho-education allows the patient to ventilate her problems, and the parents to cope with anger and frustration and subsequently participate in the child's behaviour intervention. Relaxation techniques involved breathing exercises and progressive muscle relaxations. Graded exposure desensitisation started with the least provoking stimulus at first, for example drawing a smiling balloon and then drawing a bursting balloon. After the child was comfortable with this, the stimulus was then increased to bursting inflated balloons in the clinic and at home with parents acting as a co-therapist. Each successful session was rewarded accordingly. The child showed tremendous improvement in her symptoms after 3 months of therapy. Gradually, the child was brought to public places (e.g., a restaurant) and finally was brought again to watch a fireworks show, with no resulting complications after 6 months of therapy.

Discussion

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Hyperacusis and phonophobia are two subjective phenomena that sometimes are indistinguishable, as their descriptions very much rely on information from the patient. The definition of both can also be confusing, and in many medical publications, the terms hyperacusis and phonophobia have been used in the same context. The definition of hyperacusis put forth by Jastreboff and Hazell has been widely accepted (1). They stated that hyperacusis is an abnormal sound sensitivity arising from within the auditory system, either peripheral or central. This may explain why there should be some abnormality in the audiological examinations or investigations noted with true hyperacusis (3). However, they went on to suggest that decreased sound tolerance consists not only of hyperacusis; it also consists of a fear of sound known as phonophobia or a strong dislike of sound called misophonia. Jastreboff and Hazell describe a patient with misophonia or phonophobia as having abnormally strong reactions of the limbic and autonomic nervous systems but do not involve a significant activation of the auditory system, as hyperacusis does. Phonophobia, to them, is an extreme form of misophonia. Based on this description, misophonia and phonophobia can therefore arise from hyperacusis and may not be totally different entities after all.

True phonophobia, or sometimes termed 'ligyrophobia' is a psychiatric disorder where there is usually no or minimal abnormality in the peripheral or central neuro-audiological pathways. Here certain learning or conditioning processes lead to the development of specific reactions and avoidance patterns to certain acoustic stimuli (1). Phonophobia is also used within the neurological literature to describe sound intolerance in migraine headaches, and this can add to further confusion in its own real definition.

A study to estimate the prevalence of hyperacusis and phonophobia among school-aged children concluded that their prevalence was around 10 percent of the population (4). Clinically, hyperacusis can be caused by lesions in the peripheral or central auditory system (3,5). Myasthenia gravis, Bell's palsy, Ramsey Hunt Syndrome, Meniere syndrome, noise-induced hearing loss and other sensorineural auditory disorders are known peripheral causes of hyperacusis. Central causes can be from migraine

headaches, depression, head injury, William's syndrome, multiple sclerosis, transient ischaemic attack, Lyme disease, Addison's disease and stimulant drug dependency.

Patients with hyperacusis or phonophobia may first seek treatment in the general practitioner's clinic or general outpatient clinics, and these doctors usually then refer the patient to specialty clinics (e.g., the ENT, psychiatry or neurology) or the general physician's clinic according to the suspected diagnosis. Thus, taking the medical history is vital at the first consultation for correct referral to the specialty clinic. However, the distinction between hyperacusis or true phonophobia often cannot be made simply from the history, especially in children. Thus, the patient should be investigated at least to rule out causes of hyperacusis. Objective audiological assessments are among the tests that can be performed, including the acoustic reflexes and the auditory evoked potentials, together with MRIs to rule out peripheral and central causes within the auditory system (4,5,6). However, there should be some caution when it comes to testing hyperacusis patients with any procedures that involve loud sounds (i.e., the acoustic reflexes and the auditory evoke potential) because these tests may aggravate the sound intolerance, especially in children (5). In our case, we ordered these tests only after careful consideration and explanation to the patient and the parents of its potential drawbacks. When all the otological and audiological signs and investigations are negative, we must always remember to look for other related components of hyperacusis (i.e., the neurologic, endocrinologic and psychiatric causes). Blood investigations may be ordered to rule out underlying endocrinological causes, but only upon clinical suspicion from the history and physical examination, and they should not be routinely performed. MRI is expensive and not widely available, but it is useful to rule out certain central causes of hyperacusis. However, it again should not be a routinely performed test here.

Like all fears and phobias, phonophobia is created by the unconscious mind as a protective mechanism. According to DSM-IV classification, specific phobias like phonophobia are characterised by clinically significant anxiety provoked by exposure to a specific feared object or situation, leading to avoidance behaviour (2). At some point in the past, there was likely an event linking loud noises and emotional trauma, and a detailed history of the event is often required. As with all other phobias, treatment of phonophobia may involve behavioural, cognitive and drug therapies. Phonophobia is a treatable psychiatric condition, often with a good prognosis. Despite successful treatment in our case, we would like to reiterate that it was not a proof that phonophobia and hyperacusis are distinct entities at all times. In practice, most people with hypersensitivity to environmental sound have both hyperacusis and phonophobia together in varying proportions. In treating these conditions, it is important to diagnose which condition is present and which is dominant. Baguley and Andersson, in their latest book on hyperacusis, suggest that "addressing hyperacusis must always involve the classical auditory system and also systems of emotion and behaviour—and as such is both physiological and psychological at the same time" (7). In many cases, their statement is valid.

In conclusion, phonophobia and hyperacusis are parts of sound intolerance phenomena with different involvements of audiological, emotional and behavioural components. Phonophobia is a treatable psychiatric disorder, and the majority of patients may first present to out-patient clinics or general practitioners. Thus, the attending doctors should be able to recognise the features of phonophobia and hyperacusis to successfully manage both conditions.

Acknowledgments

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Footnotes

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Author's contributions

Conception and design, drafting and critical revision of the article: ZAA Data collection and assembly, provision of study materials or patients, final approval of the article : ZAA, NMZ, AR

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