

Insomnia and Tinnitus: A Worrisome Cycle

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According to the U.S. Centers for Disease Control and Prevention, 50 million patients report having tinnitus. Within this group, 20 million have burdensome chronic tinnitus and another two million have extreme or debilitating tinnitus. Although the number one cause of tinnitus is aging, other causes include acoustic shock, noise-induced hearing loss, head or neck trauma, ototoxicity, viral and vascular diseases, and a host of other medical and psychiatric conditions. These possible causes indicate that tinnitus cannot be thought of as a single disease specific to the auditory system, but a complex problem that may involve both psychological and neurophysiological mechanisms. The impact of tinnitus on affected individuals seems to be very similar to the impact of insomnia on patients without tinnitus. When experienced together, tinnitus and insomnia share common psychological patterns, with worries about sleep or tinnitus as the universal theme.

UNDERSTANDING TINNITUS

In most cases, awareness of tinnitus does not result in a high degree of annoyance, which allows for habituation. However, when a patient develops an emotional attachment at the onset of tinnitus, habituation and self-management can be difficult to achieve without the benefit of appropriate therapies. Treatments for tinnitus vary but typically fall within three categories: pharmacological, psychological, and audiological. Having a team of specialists often provides the best outcomes.

Some types of chronic tinnitus have two distinct components—sound and suffering or distress (*Int J of Otolaryngology*. 2016; ID 2830157). In fact, in a recent sound-evoked fMRI study, the response magnitude within the amygdala for pleasant or unpleasant sound experiences were found to be lower in tinnitus than non-tinnitus patients, and people with tinnitus had a larger amygdala activation in response to emotionally charged sounds (*Front Aging Neurosci*. 2017;9[31]:1). According to



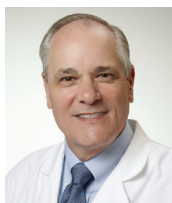
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Minen, et al., symptoms associated with tinnitus include anxiety, personality disorders, stress (health or occupational), insomnia, headaches and pain, PTSD, and processing speed difficulties (*J Neurol Neurosurg Psychiatry*. 2014;85[10]:1138). Insomnia is a common complaint among tinnitus patients.

THE INSOMNIA CONNECTION

The International Classification of Sleep Disorders (ICSD-3) 2014 diagnostic criteria for chronic insomnia include problems with initiating or maintaining sleep for at least three months that occur at least three times per week despite opportunities to sleep, in addition to impairment in daytime functioning. For tinnitus patients with complaints of insomnia, difficulty falling asleep, middle of the night and early morning awakenings, and morning fatigue and chronic fatigue are hallmarks of this condition (*J Neurol Neurosurg Psychiatry*. 2014). According to the *AMA Guides to the Evaluation of Permanent Impairment, Sixth Edition*, whole person impairment ratings can be up to 50 percent, depending on the patient's ability to perform regular daily activities, daytime alertness, and level of self-care. A patient with tinnitus may not only have ringing in the ears but also a critical sleep disorder that can be life-altering when combined with tinnitus.

The greater the tinnitus severity, the more likely the patient will have insomnia or a sleep problem. Sleep-related scores on the Tinnitus Questionnaire (TQ) and the Regensburg Insomnia Scale (RIS) show a distinct correlation within the psychological aspects of insomnia (*Biomed Res Int*. 2015;2015:461090). However, 50 percent of people with tinnitus do not develop sleep problems, suggesting that insomnia, like tinnitus, is not solely a result of physical sensation but of other mechanisms



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such as psychology and cognition (*J Psychosom Res.* 2016; 83:65). The psychological aspects of sleep difficulty are related to worries, rumination, dysfunctional attitudes toward sleep, distorted sleep perception, and hyperarousal (*Health Qual Life Outcomes.* 2013;11:65).

The primary components of distress seem related to cognitive distortions and catastrophic thoughts such as, “My life is going to be worthless,” “I would rather be dead,” “Will I fall asleep tonight?” and “Will this sound ever go away?” Some common experiences of patients with tinnitus and insomnia are having negative thoughts when lying in bed, worrying about sleep, or sensing the tinnitus to be getting worse—and their health failing—when in a quiet bedroom. Others may develop avoidance behaviors such as staying away from sound, which further intensifies negative thoughts and pre-existing emotional disorders. The vicious cycle of negative beliefs that threaten homeostasis is instrumental in maintaining the fear of tinnitus and insomnia. In fact, negative thoughts trigger autonomic arousal and emotional distress, and are best treated when the patient identifies these as distortions and takes behavioral actions to reduce their effects (*Front Neurol.* 2014;5:196).

TREATMENT OPTIONS

In view of the intricate nature of tinnitus, patients with bothersome or debilitating tinnitus frequently present with comorbid

neurophysiological and psychological complaints. A primary complaint is insomnia, which also presents with a similar nexus of psychopathology. For this reason, it has been suggested that treatments for insomnia and tinnitus should take similar paths in therapy (*Biomed Res Int.* 2015). Although pharmacological treatments such as benzodiazepines and low-dose antidepressants are commonly used for insomnia, randomized trials have shown that Cognitive Behavioral Therapy for Insomnia (CBTI) provides more lasting sleep improvement with fewer side effects (*PLoS One.* 2016;11[2]: e0149139). Other studies with similar findings also recommend CBT for chronic tinnitus.

Although the use of hearing aids can be helpful in reducing the impact of tinnitus, it does not represent a complete complement of clinical services for patients with bothersome or debilitating tinnitus. In fact, patients must get a diagnostic assessment of the auditory system and a therapy plan that includes patient education, directive and cognitive behavioral counseling, and sound therapies. Without these, efforts toward self-management and relief are incomplete, and can even be harmful to the patient. Patients must also consult an ENT physician and a neuropsychiatrist to identify any medical complication that may require treatment and to help them manage issues such as anxiety, stress, depression, insomnia, and other neuropsychiatric disorders. Finally, patients can also try alternative options such as online training for insomnia and mindfulness-based stress reduction for tinnitus. 