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Review Article

Chronic tinnitus- a challenge for both the patient and the clinician

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ABSTRACT

Background : Tinnitus is defined as the perception of sound in the absence of a corresponding external acoustic stimulus. It is a common problem that markedly impairs the quality of life of about 1% of the general population.

Materials and Methods : We selectively reviewed the pertinent literature to provide an overview of the current treatment options for chronic tinnitus.

Tinnitus is the perception of sound without external stimulation. It can greatly affect a patient's physical and psychological quality of life. Clinical history taking is directed at eliciting whether symptoms have a pulsatile or nonpulsatile quality, whether symptoms are unilateral or bilateral, and whether there is associated hearing loss. For tinnitus that is pulsatile or unilateral, referral to an otolaryngologist is recommended, as these qualities might be associated with more serious underlying conditions. Most patients with tinnitus can be managed with reassurance, conservative measures, and hearing aids if substantial hearing loss exists.

Conclusion: Family physicians play the primary role in managing patients with tinnitus and are well situated to address both the physiologic and the psychological manifestations. As tinnitus is very common, helping patients cope with the symptoms through conservative measures and reassurance can prove to have the best outcomes.

1. Introduction

The term "tinnitus" (from the Latin tinnire, to ring) describes a disorder in which noises are heard in the absence of corresponding external acoustic stimuli. Most experts distinguish between subjective and objective tinnitus.[1] Objective tinnitus is a condition in which noises are generated within the body and transmitted to the ear, e.g., via spasms of the tensor muscle of the tympanic membrane. Objective tinnitus is rare and generally amenable to causally oriented treatment.[1] Subjective nonpulsatile tinnitus is the most common and is only heard by the patient, whereas objective pulsatile tinnitus can sometimes be heard by an observer and is caused by an internal bodily vibration or noise[2] Potential mechanisms of benefit include making tinnitus less noticeable, promoting habituation, distracting attention from tinnitus, relaxation, and promoting neuroplastic changes within the auditory system. Sound therapy can be provided by a range of media, including hearing aids, wearable sound generators, combination hearing aids, or bedside or tabletop sound generators.[3]

1.1. Epidemiology

Between 5% and 15% of the general population report tinnitus,[4] and around 1% state that their quality of life is considerably impaired by their ear noises.[5] accompanying diseases such as sleep disorders, depression, or anxiety disorders can have negative effects on almost all aspects of daily life.[6,7]

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Many physicians feel helpless when dealing with tinnitus,[8] and this frequently leads to therapeutic nihilism.[9] Some tinnitus patients report that the worst moment was not the onset of the ear noises, but rather when the treating physician informed them that there was “nothing more to be done” and that they would “just have to live with it.”

In actual fact there are many different treatment approaches available but lack of confidence in treating such patients is a big setback. Our intention with this article is to provide a practice-related treatment guideline for dealing with tinnitus patients.

1.2. Symptomatology

Clifford et al reported on the progression of tinnitus in a US Marine cohort, indicating that worsening tinnitus was associated with the presence of post-traumatic stress disorder and moderate/severe traumatic brain injury.[10] Another study reported that severity of symptoms tended to be more severe, with tinnitus of longer duration among patients presenting for tinnitus therapy.[11] Reduced bothersomeness of tinnitus immediately was noticed in Placebo groups in controlled clinical trials of tinnitus and up to 14-week postplacebo treatment.[12]

The sounds associated with most cases of tinnitus have been described as being analogous to cicadas, crickets, winds, falling tap water, grinding steel, escaping steam, fluorescent lights, running engines, and so on.[13]

Most tinnitus patients match their tinnitus to a pitch above 3 kHz.[14] Most patients with both tinnitus and hearing loss report that the frequency of the tinnitus correlates with the severity and frequency characteristics of their hearing loss, and that the intensity of the tinnitus is usually less than 10 dB above the patient’s hearing threshold at that frequency.[13]

There are cases reported where tinnitus vanishes during sleep but returns within a few hours further suggest that psychosomatic factors, such as neck muscle contractions occurring in an upright position or jaw clenching, play etiological roles.[15]

Because objective tinnitus (which is audible to another person) represents the semantic opposite of subjective tinnitus, a better nosological approach might be to use the term somatosound instead of objective tinnitus irrespective of whether the sounds are audible to others, reserving the term tinnitus for the perception of sound in the absence of any acoustic source. Thus, "tinnitus" would describe cases previously diagnosed as subjective tinnitus. Because objective tinnitus (which is audible to another person) represents the semantic opposite of subjective tinnitus, a better nosological approach might be to use the term somatosound instead of objective tinnitus irrespective of whether the sounds are audible to others, reserving the term tinnitus for the perception of sound in the absence of any acoustic source. Thus, "tinnitus" would describe cases previously diagnosed as subjective tinnitus.[13]

The individual degree of bother is crucial in deciding whether symptomatic treatment is indicated, to avoid pathologizing the ear noise in patients whose quality of life is not impaired to any great extent. It often seems helpful to mention the trials that have shown that even people without tinnitus tend to experience phantom noises in particular situations (e.g., complete auditory deprivation in a soundproof booth).[16]

1.3. Basis of knowledge

Till date, there is no valid objective measure to specify the presence of tinnitus or the effects of potential treatments. The trials that comment upon the quality of treatment are heterogeneous in the extreme, as indicated by all the available Cochrane meta-analyses on tinnitus.[17–23] Accordingly, the efforts to improve quality standards in clinical trials of the treatment of tinnitus are a continous phenomenon.[23–26]

1.4. Management Options

The treatment options for Tinnitus can be divided into two categories:

1. Those aimed at directly reducing the intensity of tinnitus which include pharmacotherapy and electrical suppression[27]
2. Those aimed at relieving the annoyance associated with tinnitus. These include pharmacotherapy, cognitive and behavioral therapy, sound therapy, habituation therapy,massage and stretching, and hearing aids.[28]

1.5. Pharmacotherapy

There was a temporary suppression of tinnitus in a majority of patients with intravenous administration of the tension-dependent sodium-channel blocker lidocaine.[29,30] There has been no single medicinal approach till date despite the researches and experimentation with large number of pharmaceutical agents. The indication for pharmacotherapy is therefore restricted to the treatment of comorbidities such as anxiety disorders, sleep disorders, and depression.

Several randomized clinical trials have revealed that only nortriptyline, amitriptyline, alprazolam, clonazepam, and oxazepam are more beneficial than placebo.Diazepam and flurazepam significantly change the tinnitus intensity.[31] Tinnitus due to SOAEs can be diminished by aspirin.[32] Flecainide, mexiletine, betahistine, carbamazepine, ginko extract, amylobarbiturate, baclofen, lamotrigine, misoprostol, zinc, cinnarizine, flunarizine, caroverine, eperisone, and melatonin are no more beneficial than placebo.[27]

1.6. Cognitive and behavioral therapy

Cognitive therapy deals with the ideation related to tinnitus and how to avoid the negative ideation, whereas behavioral therapy uses the systematic desensitization approach applied to many phobias.[33] CBT helps to improve awareness and facilitate the modification of maladaptive patterns on the cognitive, emotional, and behavioral level.Behavioral therapy focuses on positive imagery, attention control, and relaxation training.[33]

1.7. Psychoeducation/counseling

Psychoeducative counseling is recommended as a basic component of management of tinnitus.[34,35] Fundamentally benign nature of idiopathic tinnitus if explained in an understandable and sympathetic is one of the best tools. Such a conversation between physician and patient represents the basis for establishment of constructive compensation and habituation mechanisms.

1.8. Individualized auditory stimulation

Tinnitus maskers—Tinnitus maskers generate either sounds from the natural environment or individually tailored noises. According to a Cochrane meta-analysis, the efficacy of tinnitus masking has been neither clearly proved nor disproved.[17]

Hearing Aids-Hearing aids represent another form of sound therapy that is usually beneficial to tinnitus patients with significant hearing loss. These compensate for hearing loss by improving the peripheral auditory input in the affected range of frequencies. The use of hearing aids can permanently reduce the neural activity responsible for tinnitus generation and perception,[36] and usually represents the first intervention for patients with hearing impairment.[37]

1.9. Music therapy

Music therapy is a desensitization method that utilizes spectrally modified music based on hearing characteristics of each patient to allow the masking of tinnitus and to facilitate relaxation at a comfortable listening level. Hearing thresholds decline substantially above 3 kHz among many tinnitus patients, and hence the spectral modification should involve reducing the energy of lower frequency components of the music.[38]

1.10. Tinnitus retraining therapy

Tinnitus retraining therapy (TRT) comprises a combination of counseling and auditory stimulation by maskers or hearing aids. TRT consists of two components: retraining counseling and sound therapy. Retraining counseling aims to help patients to think of their tinnitus as a type of neutral sound.(39)However, TRT requires about 18 months to achieve observable stable effects, and this time-consuming treatment does not achieve satisfactory results in some patients. TRT requires patience and discipline from both the patient and a knowledgeable and experienced professional.[39]

1.11. Electrical suppression

Transcutaneous electrical nerve stimulation of areas of skin close to the ear increases the activation of the DCN via the somatosensory pathway and could augment the inhibitory role played by this nucleus on the CNS, thereby ameliorating tinnitus.[40]

2. Summary

The management of chronic tinnitus remains a challenge despite the availability of various forms of treatment, but there is no justification for therapeutic nihilism. No doctor today should say “there’s nothing we can do.” Cooperation among various disciplines is vital in the diagnosis and treatment of tinnitus.

Nevertheless, counseling represents an essential part of treatment, regardless of the management approach adopted for a particular patient. Most importantly, a strong doctor-patient relationship warrants successful management and high levels of satisfaction among patients.

3. Conflicts of Interest

All contributing authors declare no conflicts of interest.

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