

TINNITUS

Tinnitus is defined as sound heard in the ears without external sound stimulus. There are no known methods of accurate measurement or assessment. The sounds may be irregular, staccato or coarse, electronic, harmonious, or pulsatile, according to the origins



Tinnitus: The sound but not the cricket

Characteristics

Tinnitus ([Inner Ear Symptoms](#)) may be innate, acquired, or of psychological origins. **Innate** tinnitus is evidently heard by many otherwise normal individuals, taking the sensation of a steely monotone, mosquitoes, or cicada sound, and is usually faint and non-irritant. It is noticed mainly in silent conditions such as the evening, or when listened for in noisier surrounds.

This common monotonal physiological/innate pattern is of uncertain cause. Neuronal cells maintain low levels of ambient activity, evidently to maintain function, and this is a likely cause. Other speculations include vibration of the cochlear hair cells and the resultant otoacoustic emissions. Innate patterns are commonly enhanced by incidents that cause conductive deafness and hence exclusion of everyday sound from the cochlea that otherwise mask this innate sound. This pattern is not accompanied by other audible or otological symptoms and is usually steady in nature.

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Another evident pattern presents as bursts of sound in one or the other ear, variable in frequency or perceived volume, and lasting 10-20 seconds before fading. This may be accompanied by a sensation of fullness or pressure that rapidly abates.

Many people also note occasional muffled and irregular rustling/flutter/soft vibration in one ear, also without other symptomatology. This is thought to be minor muscular twitching/spasm of the stapedius or tensor tympani muscles that are attached to the ossicular chain, a phenomenon similar to the legendary “Messerschmitt twitch” of Hollywood fame. Specific volumes or frequency, perhaps associated with fatigue, may trigger this phenomenon.

Other normal bodily sounds from nearby structures, the airway or alimentary tract are not normally classified as tinnitus.

Acquired tinnitus is derived from pathological events and is accompanied by hearing loss, being derived from origins that cause loss or malfunction of normal hearing. Few authorities accept the presence of tinnitus without objective evidence of hearing loss.

Acquired patterns may be unilateral or bilateral according to the cause. They result from a wealth of factors that may damage the inner ear or its neural connections. These include noise, age, viruses, and tumours of the acoustic nerve. Listing all of these is not feasible in this context, but the results will be unilateral or bilateral according to the nature of the agent.

For example, chronic noise trauma generally causes bilateral tinnitus due to relatively even exposure by both ears over time. Conversely, blast injury may result in severe unilateral tinnitus in the ear closest to the origin of the trauma.

Two variants of acquired tinnitus may present. **Objective** tinnitus may be heard by a nearby observer, being often clicking in nature, and due to palatal muscular twitching causing either palatal or Eustachian related clicks. **Pulsatile** tinnitus arises from a variety of local vascular pathological phenomena. Some of these may also be audible, e.g. an arterio-venous fistula.

Psychological tinnitus is more problematic. General stress, depression, inadequacy or similar chronic psychological states are commonly associated with perceived greater tinnitus problems, but the latter is difficult to discern from the accompanying problems.

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Aggravants

Whilst many pharmacological products warn of possible tinnitus side effects, in the absence of demonstrable hearing loss, this aspect remains uncertain. However, some factors seem likely stimulants, including nicotine, caffeine, alcohol, higher dose salicylates, plus hypertension, straining/exertion, bending and other posture, and possibly physical fatigue. Psychological stress appears to reduce tolerance.

Associated Cardinal Ear Symptoms

True tinnitus is frequently attended by the primary ear symptoms: pain, discharge, deafness/blockage or dizziness. These, or their absence, generally indicate the nature of the problem. Other symptoms include those of the central nervous system (CNS) (e.g. headache, unsteadiness) or general health.

Assessment

In the absence of other compelling symptoms and signs, investigations centre on the ear and the CNS. Audiology generally indicates the origin, but CT or MRI scans are often required for evaluation of the ear and related structures.

The absence of concrete findings strongly indicates an innate or psychological possibility. Whilst objective or pulsatile tinnitus frequently occur without related audiological depression, pathological tinnitus, being due to inner ear damage, is invariably accompanied by hearing loss, unless the process is in its earliest phase, e.g. developing hydrops.

Treatment

At this time there are no known medical or surgical treatments that abolish inner ear origin tinnitus. Some objective or pulsatile varieties may respond to elimination of their original pathology. Research into inner ear remedies is hindered by the difficulty assessing the true effect of a medication, as the symptom cannot be measured. Alternative treatments are therefore needed.

Distraction methods using radio, music or other pleasant sound is often used. A radio alarm clock with a "sleep" feature, activated after a given time, is helpful in the quiet of the night.

Medications for sleep, or to reduce irritation may be beneficial.

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Professional audiological services offer a range of managements including tinnitus retraining, masking, Neuromonics (complex stimulation at above-audible frequencies) and other measures. Enquire re costs before engaging.

For practical measures, Tinnitus Society websites (preferably UK, Australian) offer a range of helpful hints.

Lastly, tinnitus can cause severe ongoing stress, particularly unilateral trauma or infection related types. Seeking professional psychological management is advisable when chronically distressed.

Prognosis

Fortunately, in a great number of cases the problem appears to regress with time, albeit with concurrent adjustment by the sufferer.

More information

- [Inner Ear Symptoms](#)
- [Dizziness](#)

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