

## Diagnosis and Treatment of Tinnitus: A Commentary

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### DESCRIPTION

Tinnitus is defined as the perception of sound in one or both ears though there is no accompanying external sound. Tinnitus is a common condition. It affects 15% to 20% of the population in geriatrics. Tinnitus is typically brought on by an underlying condition, such as aging-related hearing loss, ear injuries, or circulatory system issues. The other symptoms of tinnitus include buzzing, hissing, chirping, whistling, etc. Some people with tinnitus have no difficulty in hearing whereas some people experience hyperacusis (sensitive to sound). In severe cases, people will lack the concentration and sleep. Psychological disturbances such as stress, anxiety, depression also can be seen in people with tinnitus. It may cause due to aging or due to infections in ear.

### Types of tinnitus

There are 3 types of tinnitus namely subjective tinnitus, objective tinnitus and pulsatile tinnitus.

**Subjective tinnitus:** It is the most common type. Although there are several causes, hearing loss is the most frequent one. Otic tinnitus refers to tinnitus that is brought on by abnormalities of the inner ear or auditory nerve. These neurological or otological problems can be due to medicines, or infections. Traumatic noise exposure harms the inner ear hair cells. Tinnitus is influenced by the somatosensory system in about 30% of cases. People can change their tinnitus by moving their face, head, or neck. Hence, it is also known as somatic or craniocervical tinnitus.

**Objective tinnitus:** It can sometimes be caused due to vascular disease or an involuntary twitching of a muscle or group of muscles (myoclonus). Tinnitus can occasionally be caused by muscle spasms in the middle ear. It can also be caused due to Spontaneous Oto-Acoustic Emissions (SOAEs) which are high frequency tones observed in inner ear.

**Pulsatile tinnitus:** It is a condition in which people experience sound that beats in time with pulse. It may be due to altered blood flow in ear. It is the symptom of conditions such as

intracranial vascular abnormalities, giant cell arteritis, vasculitis, etc.

### Diagnosis

Diagnosis can be done by using various methods. Audiogram is recorded when tone hearing test is performed. Medical imaging, electronystagmography are also performed. Psychoacoustic test is performed in order to check the frequency range and bandwidth. Loudness discomfort level is the parameter which needs to be checked in case of hyperacusis. The misdiagnosed condition that mimics tinnitus is radio frequency hearing.

### Treatment

Botulinum toxin injection and caroverine are used to treat tinnitus. Comparatively, botulinum toxin injection is showing high success rate. The treatment of tinnitus depends on the condition of the patient. Commonly used treatment methods are as follows:

**Earwax removal:** Eliminating an earwax blockage can diminish tinnitus side effects.

**Hearing aids:** Hearing devices are used if the tinnitus may be caused due to noise-induced or age-related hearing loss.

**Masking devices:** These are the devices which produce continuous low-level white noise that suppresses tinnitus symptoms.

**Counselling:** It includes Tinnitus Retraining Therapy (TRT) and Cognitive Behavioral Therapy (CBT) in which healthcare professional will give counselling for the patients. Hence, the patients may feel less distressed by the symptoms.

### Prevention

Prolonged exposure to loud noises can lead to tinnitus. Usage of custom-made ear plugs by the people can reduce the condition of tinnitus. Awareness regarding hearing loss should be performed. Several medicines have ototoxic effects. Usage of those medications should be done under the surveillance of healthcare professional.

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