

TREATMENT OF ACUTE TINNITUS: MODERN APPROACHES AND METHODS

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Abstract

Acute tinnitus, characterized by the perception of persistent ringing or noise in the ears without an external sound source, poses significant challenges for patients and healthcare providers. This article explores the aetiology, pathophysiology, and current diagnostic methods associated with acute tinnitus. Emphasis is placed on the latest advancements in treatment strategies, including pharmacological therapies, sound-based interventions, and cognitive-behavioral approaches. The role of multidisciplinary management and the potential of emerging technologies such as neuromodulation and artificial intelligence in improving treatment outcomes are also discussed. By synthesizing current evidence, this study provides practical insights into optimizing care for patients suffering from acute tinnitus and highlights directions for future research in this field.

Keywords: Acute tinnitus, treatment strategies, pharmacological therapy, sound therapy, neuromodulation, multidisciplinary management.

Introduction

Tinnitus, often described as a persistent perception of ringing, buzzing, or other auditory sensations in the absence of an external sound source, is a prevalent auditory condition affecting millions worldwide. Acute tinnitus, which typically manifests suddenly and lasts up to three months, can significantly impact an individual's quality of life, leading to difficulties in concentration, sleep disturbances, and emotional distress. Despite its commonality, the underlying mechanisms of tinnitus are complex and not yet fully understood, involving interactions between auditory pathways, neurological systems, and psychological factors.

Effective management of acute tinnitus requires a comprehensive approach that addresses both the physiological and psychological dimensions of the condition. Traditional treatments have focused on symptom alleviation through pharmacological and sound-based therapies, yet the variability in patient response highlights the need for more personalized and innovative strategies. Recent advancements, such as neuromodulation techniques and cognitive-behavioural interventions, offer promising avenues for improving treatment efficacy.

This article aims to explore the aetiology, diagnostic approaches, and modern treatment methods for acute tinnitus. By reviewing current evidence and emerging trends, we provide healthcare practitioners with practical insights into optimizing care and advancing outcomes for patients with



acute tinnitus. Furthermore, we identify key areas for future research that may transform the understanding and management of this condition.

Materials and methods

Acute tinnitus— is a ringing or ringing in the ear that starts recently and often lasts for days or weeks. Acute tinnitus often develops after sudden hearing loss, head injury, infection, or exposure to loud noise. The main causes and treatments for acute tinnitus vary. Timely diagnosis and treatment methods help to eliminate or reduce symptoms.

Causes of acute tinnitus:

Acute tinnitus can occur for various reasons. The most common reasons are:

1. Exposure to loud noise (for example, concerts, gunshots, etc.).
2. Sudden loss of hearing.
3. Ear infections.
4. Stress or trauma.
5. Damage to the auditory nerve.
6. Diseases or blockages in the middle ear (for example, fluid accumulation or blockage of the auditory tube).

Treatment methods for acute tinnitus:

1. Corticosteroids: Corticosteroids are one of the most widely used drugs in the treatment of acute tinnitus. Especially in tinnitus associated with sudden hearing loss, corticosteroids can help reduce inflammation in nerve tissue and help tissue repair. Corticosteroids are sometimes given as oral pills or as a direct injection into the ear.
3. Hearing aids or ear implants: If the tinnitus is due to hearing loss, hearing aids or cochlear implants can help stimulate the auditory system and reduce the tinnitus. These devices help mask tinnitus noise by amplifying external sounds.
4. Tinnitus maskers: Special acoustic stimulators, namely tinnitus maskers, are used to control tinnitus. These devices are placed in the ear or around the head and emit certain sounds that reduce or eliminate tinnitus.
5. Medications: Tranquilizers or antidepressants may be prescribed in some cases to manage acute tinnitus. They are mainly used in tinnitus related to stress or anxiety, as stress can make tinnitus worse.
2. Hyperbaric oxygen therapy (HBO): HBO can be effective in acute tinnitus. In this treatment, pure oxygen is breathed in a high-pressure environment, which increases oxygen levels in the ear and repairs damaged tissue. HBO is especially important in tinnitus or sudden hearing loss after acute noise exposure. Hyperbaric oxygen therapy (HBO) is a treatment that improves oxygen delivery to tissues in the human body by breathing pure oxygen under high pressure. This method is used in the treatment of many diseases, including injuries and acute hearing disorders. The use of HBO in the treatment of patients with tinnitus (ringing in the ears) is becoming increasingly popular, especially in acute tinnitus.

Mechanism of action of HBO:

HBO significantly increases the supply of oxygen to the body in a high-pressure environment, which improves tissue reactivity and accelerates recovery processes. When oxygen flow to the



hearing system is improved, the nerve tissue and tiny blood vessels inside the ear receive more oxygen, which helps repair cells and regenerate damaged hearing cells. This is especially important in hearing problems and tinnitus caused by lack of oxygen.

Effects of HBO on tinnitus:

1. Acute stage of tinnitus (within 3-6 months after detection or onset): HBO is considered effective in the treatment of acute tinnitus because during this period the cells in the inner ear are still able to regenerate. Under the influence of HBO, the oxygen saturation of cells and tissues increases, and nerve cells can be restored.

2. Chronic tinnitus: HBO treatment is less effective in chronic tinnitus. In chronic tinnitus, the cells and nerve pathways are quite damaged, and the increase in oxygen does not significantly affect these processes. Therefore, HBO is often recommended for patients with tinnitus in the acute phase.

Scientific research:

Several clinical studies have been conducted on the role of HBO in the treatment of tinnitus. Research results show that HBO is effective mainly in acute and subacute tinnitus. For example, in clinical cases associated with acute hearing loss and tinnitus, patients are recommended HBO sessions of 60-90 minutes at a pressure of 1.5-2 atmospheres.

While some studies have shown the effectiveness of HBO, others argue that it is not equally effective for all tinnitus patients. Thus, HBO may be particularly useful in certain medical conditions, such as tinnitus associated with acute hearing loss. Hyperbaric oxygen therapy (HBO) may be an effective treatment for patients with acute tinnitus. Through this method, the cells in the inner ear are enriched with oxygen, which helps tissue and nerve regeneration. However, HBO may be less effective for patients with chronic tinnitus. Therefore, it is important to choose an individual treatment method for each patient. Before applying to HBO, it is necessary to consult an audiologist.

6. Advanced treatment plan: Depending on the patient's condition and the cause of tinnitus, sometimes a combination of several treatment methods is recommended. For example, the combined use of corticosteroids, HBO, and acoustic stimulation may be an enhanced approach to effectively manage acute tinnitus.

Additional methods:

1. Stress management: Stress and anxiety can aggravate tinnitus, so stress management methods such as meditation, yoga or psychotherapy can help improve the overall condition of patients.

2. Healthy lifestyle: Proper nutrition, physical activity and regular sleep patterns accelerate the recovery processes of the body and have a beneficial effect on the hearing system.

Conclusions

Effective treatments for acute tinnitus depend on its cause. Corticosteroids, hyperbaric oxygen therapy, and acoustic stimulators are commonly used in the acute setting. The success of the treatment and the degree of recovery of tinnitus depends on the therapy used at the time and the general health of the patient. In each case, an individual approach and treatment under the supervision of a doctor is necessary.



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