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Editorial

An Overview of Tinnitus

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Tinnitus (To Ring, in Latin), is a very frequent symptom presented in ENT OPD today. The incidence of Tinnitus is rising at a pace more than expected. It can affect people of any age whether young or elderly. The management of tinnitus is still questionable despite all the studies and ongoing research. It affects the life of people adversely to the extent that few of them develop psychosocial disorders. There is still a definite impending need for deep and extensive research along with large scale random controlled trials to understand and treat tinnitus efficiently.

Tinnitus is a 'bugbear of humanity' and occurs 'in the head' of the majority of sufferers. It is dynamic and can be perceived as a ring, tone or a musical sound in one or both ears, left being more commonly involved than right ear. It can be triggered by any external stimulus or sound.

Tinnitus may be associated with a few syndromes, inner ear pathology, or may be idiopathic. Other factors implicated in causing Tinnitus are certain drugs, genetic factors, dietary factors, disorders of temporomandibular joint etc. Depression and anxiety are both causal and resultant factors. Hyperacusis is associated with tinnitus very commonly.

The most common form of Tinnitus, however, is the Subjective, Non Pulsatile, Non Pathogenic Idiopathic Tinnitus.

The biopsychosocial model of health and illness helps to understand and manage Tinnitus and its impact on life. Tinnitus can cause emotional stress, insomnia, disturbed concentration. The severity and duration of Tinnitus is uncertain and depends on the patient's personality trait, emotional state, psychiatric illness, cognitive style.

Several studies are ongoing to determine the exact patho-physiology of Tinnitus. An ignition site and promotion mechanisms have been implicated. The pathological events that create an ignition site do not inevitably generate tinnitus and central promotion must also be present. Based on this, correction of only peripheral auditory pathway is a futile attempt to treat tinnitus.

However, any damage in the auditory pathway is suspected to trigger onset of tinnitus. And many central mechanisms, ranging from role of neurotransmitters, down regulation of inhibitory activity, increased spontaneous activity of cortex, increased neural synchrony, over representation of frequency adjacent to areas of damage in cochlea are implicated in maintaining Tinnitus. Psychological and Neurophysiological disturbances are also implicated. There is evidence of link between the auditory system and other somatosensory pathways as Tinnitus modulation occurs by external stimuli like touching face, clenching teeth, changing gaze etc.

Although Tinnitus may not have an identifiable cause in most cases, yet we need to rule out other associated conditions and identify the characteristic of Tinnitus. Basic tests would include a Pure Tone Audiometry, Tympanometry, Loudness discomfort levels, Tinnitus Matching and Masking levels; Imaging – MRI; Questionnaires to understand the psychosocial effect – Tinnitus Handicap Inventory, Tinnitus functional index, Hospital Anxiety Depression Scale, Insomnia severity index, Visual analogue scale.

Although high frequency hearing loss is a good predictor of tinnitus and signifies cochlear origin, conventional pure tone audiometer may not detect hearing loss till significant number of hair cells have been damaged.

There's paucity of RCTs related to Tinnitus management. Placebo effect has also been seen to play a role in tinnitus management. Several options for management are under evaluation with variable benefits.

The Key Step in Treatment and Control of Tinnitus is, however, Explanation and Reassurance. Negative Counselling to the patient is Damaging.

Use of Hearing Aids in these patients not only amplifies sound but also reduces tinnitus, increases communication, thereby decreases stress and anxiety.

Sound therapy is given as part of Tinnitus Retraining Therapy or individually. It helps in suppression or masking upto 95%. Complete masking is counterproductive as it prevents habituation. It can be given using Hearing Aids, Small devices, Combination device or via Environmental Sound Enrichment. It includes Specific Target Tinnitus therapy with Neuromonics (modified music), Serenade(S tones), with Vagal Stimulation, Mute button; Noise cancellation and Acoustic CR Neuromodulation.

Combination therapy is suggested to benefit patients more and it includes Directive Counselling and Sound therapy ie. Tinnitus Retraining Therapy. Since, Tinnitus also involves altered activity within the Limbic System, Reticular System and Autonomic Nervous System.

Relaxation Therapy is suggested to reduce the autonomic activity and hence reduce tinnitus. Cognitive Behavioural Therapy is offered to increase the quality of life by changing the emotional significance of Tinnitus.

Another psychological therapy suggested is Acceptance and Commitment therapy.

Use of psychoactive drugs like benzodiazepines and local anaesthetic have also been evaluated. Systemic drugs like use of IV Local Anaesthetic has been shown to cause short term reduction in tinnitus by central effect. Use of Melatonin helps in patients with sleep disorders. Role of Hyperbaric oxygen therapy is still questionable.

Use of Regional drugs like Botulinum toxin injected into soft tissues around ear has shown some benefit in few patients.

Intratympanic drug therapy given within the window period between onset of pathological event in the inner ear and development of permanent changes in central auditory system has shown some benefit in patients with Tinnitus and associated inner ear conditions. Drugs like Steroids, Local anaesthetics, anticholinergics, esketamine, gacyclidine are under further research for same. Cochlear implant is beneficial in patients with profound hearing loss.

Other methods with variable and questionable benefits used are Ultrasound via bone conduction transducer, Alternative therapy including Herbal medication, Accupuncture, Meditation, Yoga, Hypnotherapy, Ginkgo biloba extracts, etc; Electromagnetic stimulation using invasive or non invasive techniques, rTMS; Dietary supplements of Vitamin B and Zinc etc; Low power Lasers placed transmeatally or over mastoid process.

Prevention can be the key to decrease the prevalence of Tinnitus and it's associated psychosocial effect in our society. Avoidance of Noise, extremely loud music, excessive use of ear phones, use of ototoxic or cytotoxic agents when avoidable, excessive emotional and mental stress, better ear care can avoid factors that are known to trigger onset of tinnitus. A directive and positive counselling and appropriate Education about Tinnitus is very essential to decrease the negative psychosocial impact regarding Tinnitus.