

TINNITUS



DEFINITION

- Sound sensation that originates in the head and is not attributable to any perceivable external sound. (popping, clicking, pulsing & pure or multiple tones)
- Sounds of differing quality
- Mild irritation – inability to lead normal life (insomnia, inability to concentrate, depression, suicide)

EPIDEMIOLOGY



- Studies in the U.S.A :
 - ❖ 32% of adults experience tinnitus
 - ❖ 18 mil seek medical advice
 - ❖ 9 mil report being seriously affected
 - ❖ 2 mil report being disabled by the sound
 - ❖ Pts with chronic sympt - ↓ Q.O.L

CLASSIFICATION

- 2 main systems:
 - Objective/subjective: objective tinnitus occurs in rare conditions where the tinnitus is audible to an observer. Subjective includes all other forms
 - Aetiological:
 - » Vascular
 - » External & Middle Ear
 - » Myogenic
 - » Peripheral/Central Sensorineural

QUANTIFICATION

- Attempts have been made to try and quantify tinnitus but failed.
- Neither loudness nor other acoustic measures of tinnitus are related to severity or perceived loudness of tinnitus.

Aetiology

- Non-pulsatile : sensorineural tinnitus
- Most common - noise induced trauma
 - presbycusis
- Others : traumatic
 - idiopathic
 - neoplastic - acoustic neuroma
 - metabolic - drugs
 - hypo/hyperthyroidism
 - meniere's disease
 - infection - viral cochleitis
 - bacterial otitis media
 - labyrinthitis
 - degenerative - otosclerosis
 - paget's disease

Aetiology contd:

- Vascular/pulsatile tinnitus
- Common causes: arterial - carotid aneurysms/stenoses
venous - hum
vascular tumours
AV malformations
CV conditions - hypertension
- hyperdynamic blood flow

Aggravators

- TMJ disorder
- arthritis
- ET dysfunction
- stress
- depression
- allergic rhinitis and sinusitis



Medical and surgical evaluation and management of tinnitus

History (key features of importance)

- **Chief complaint:** - Unilateral or bilateral, symmetrical or assymetrical
- **History of present illness:** - Duration, character, pulsatile or tonal, constant or intermittent, associated vertigo and/or hearing loss
- **Past medical history:** - Head trauma, medications, medical illnesses and treatments
- **Past surgical history:** - Prior otologic surgery
- **Social history:** - Tobacco and alcohol usage, noise exposure(occupational/recreational)
- **Family history:** - Tinnitus, hearing loss, tumours
- **Review of systems:** - Visual changes, headaches (AV fistula); TIA's, syncope, paraesthesias (carotid atherosclerotic disease); polyurea, polydipsia (diabetes mellitus); temperature intolerance (thyroid dysfunction); diarrhoea, anxiety, palpitations (glomus tumour)

Examination

- Complete head, neck and neuro-otologic examination
- Visualisation of tympanic membranes via otomicroscopy: - movements with respiration (patulous eustachian tube) & myoclonic activity (palatal myoclonus)
 - vascular tumours and an aberrant carotid artery or jugular vein in the middle ear
 - Glomus tumours (Brown's sign)
 - Otosclerosis (Schwartz's sign)
- Tuning fork examinations
- Cranial nerves : neuromas in CN's IX, X, XI can cause pulsatile tinnitus by disrupting flow in jugular foramen

Examination continued

- Fundoscopy for papilloedema: benign intracranial hypertension
- Inspection of oral cavity and palpation of temporomandibular-joint
- Palatal myoclonus
- Auscultation: - ear canal, pre- and postauricular regions, the orbit and neck
 - carotid bruits, venous hum, AV fistula.
 - occlusion of ipsilateral IJV in benign intracranial hypertension

Radiological evaluation

- In patients with history of noise exposure, bilateral non-pulsatile tinnitus had a consistent audiogram no further tests necessary.
- In patients with unilateral tinnitus, asymmetrical audiogram, MRI with Gadolinium contrast is the study of choice to evaluate for possibility of retrocochlear lesion.
- In patients with pulsatile tinnitus, without
- evidence of myoclonus or eustachian dysfunction on exam or audiogram, an imaging study is necessary. Both CT and MRI if a retrotympanic mass is identified on otoscopic examination.

Laboratory evaluation

- Full blood count
- Chemistry
- Blood glucose
- Thyroid functions
- Screening for ototoxic drugs
- Heavy metal screening
- Syphilis serology
- ANF, Rheumatoid factor, CRP

Tinnitus

Management

General information

- If an identifiable cause is found, treat it
- Refer to a specialist when appropriate (serious ENT or vascular or neurological cause)
- A vast majority are sensorineural tinnitus of unknown cause

Non-Pharmacological Management

- Tinnitus retraining treatment:
 - initial interview and audiological evaluation
 - Counselling
 - Sound therapy

(improvement starts at 3 months with definite improvement after 6 months; significant improvement in 80% of cases)

Cont...

- Masking devices
 - wearable masking devices
 - hearing aids
 - tinnitus maskers
 - combination devices
- Avoid caffeine, smoking, alcohol, aspirin, ototoxics, noise exposure

Pharmacological Management

- Only a few have been shown to be significantly beneficial in adequately designed studies, e.g.
 - lidocaine (but has to be given IV, has a lot of side-effects and has a short $t_{1/2}$)
 - Benzodiazepines (especially of use in patients with concurrent depression; Alprazolam)

Cont...

- Here are a few further examples
 - Anesthetics (Lignocaine, Procaine)
 - Antidepressants (Amitriptyline, Fluoxetine)
 - Anticonvulsants (Carbamazepine, Phenytoin)
 - Anti-Anxiety Agents (Alprazolam, Diazepam)
 - Antispastic (Baclofen)
 - Antihistamine (Chlorpheniramine)
 - Diuretics (Furosemide)
 - Vasoactive medications (Histamine, Pentoxifyline)
 - Herbs (Ginkgo biloba, Black cohosh, St. John Wart)
 - Vitamins and minerals (Magnesium, Calcium, Potassium, Zinc, Manganese, Copper, Vit B)

Surgical Management

- Only if desperate
- Cochlear implantation
- Transcutaneous electrical stimulation

