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
  - presbyacusis
- 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 dysfunstion
- 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, syncopy, 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 (Schwartze'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 tempero-mandibular-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 nad a consistent audiogram no further tests necessary.
- In patients with unilateral tinnitus, assymetrical audiogram, MRI with Gandolinium 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 examiantion.

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

  (70% completely masked)
- 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 t½)

  - Benzodiazepines (especially of use in patients with concurrent depression; Alprazolam)

Cont…

- Here are a few further examples
  - Anesthetics (Lignocaine, Procaine)
  - Antidepressants (Amitriptyline, Fluoxetine)
  - Anticonvulsants (Carbamazapine, 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