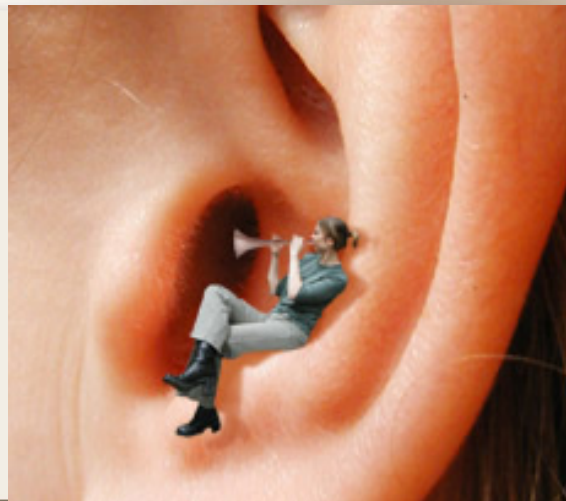


# Tinnitus



# Definition

- hearing nocuous sounds not produced by external stimulus. Hissing, roaring, ringing, clicking or whooshing.



- It can be **Tonal** ranging from high to low pitch, multi tonal, or **noise** like.
- May be Constant, pulsed, or intermittent.
- Starts Suddenly or insidiously.
- More prevalent in males.
- Location. In the ear or in the head.
- Uni or bilateral.

# Classification

- **Objective** tinnitus (there is mistake in the book). Heard by the pt and examiner.
- **Subjective** tinnitus (audible only to the pt).  
is more common.

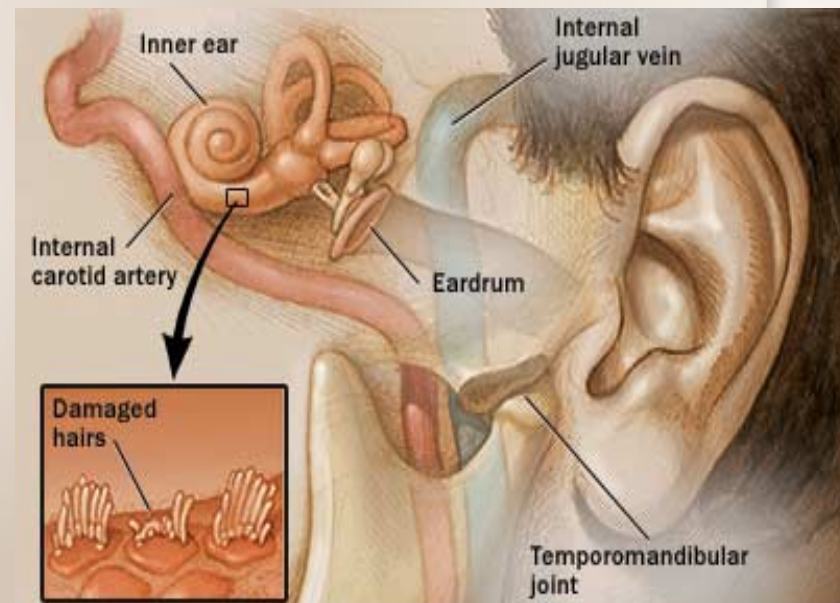
- **Objective** :

- vascular** like aneurysms, glomus jugulare tumors, carotid body tumor. Usually pulsatile.

- muscular** like patulous eustachian tubes, palatal or stapedial or tensor tympani myoclonus or spasms, .

- infestations** of the external canal by worms or larvae.

- TMJ** causing clicking sounds.



© Mayo Foundation for Medical Education and Research. All rights reserved.

- **Subjective** : in 80% of pts with SNHL.

### **1-Auditory.**

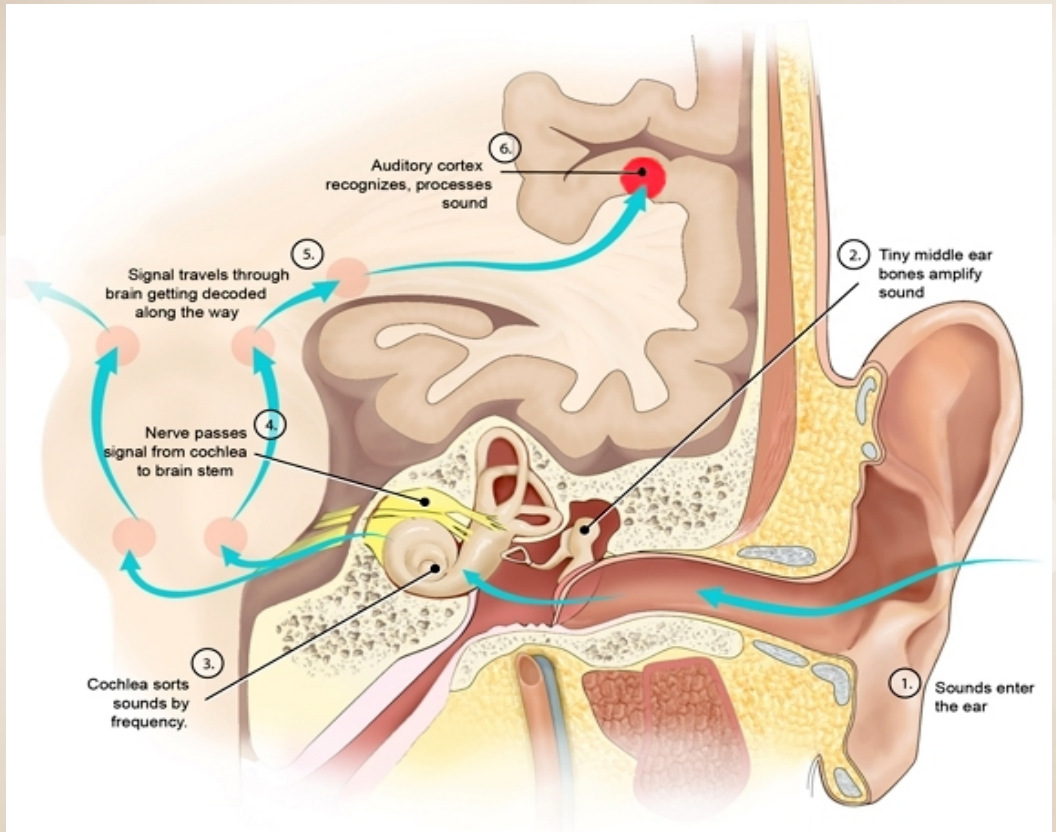
- Conductive. Any conductive elements disorders.
- Sensory neural like Meniere`s D and many diseases up to auditory cortex .

### **2-Non-auditory**

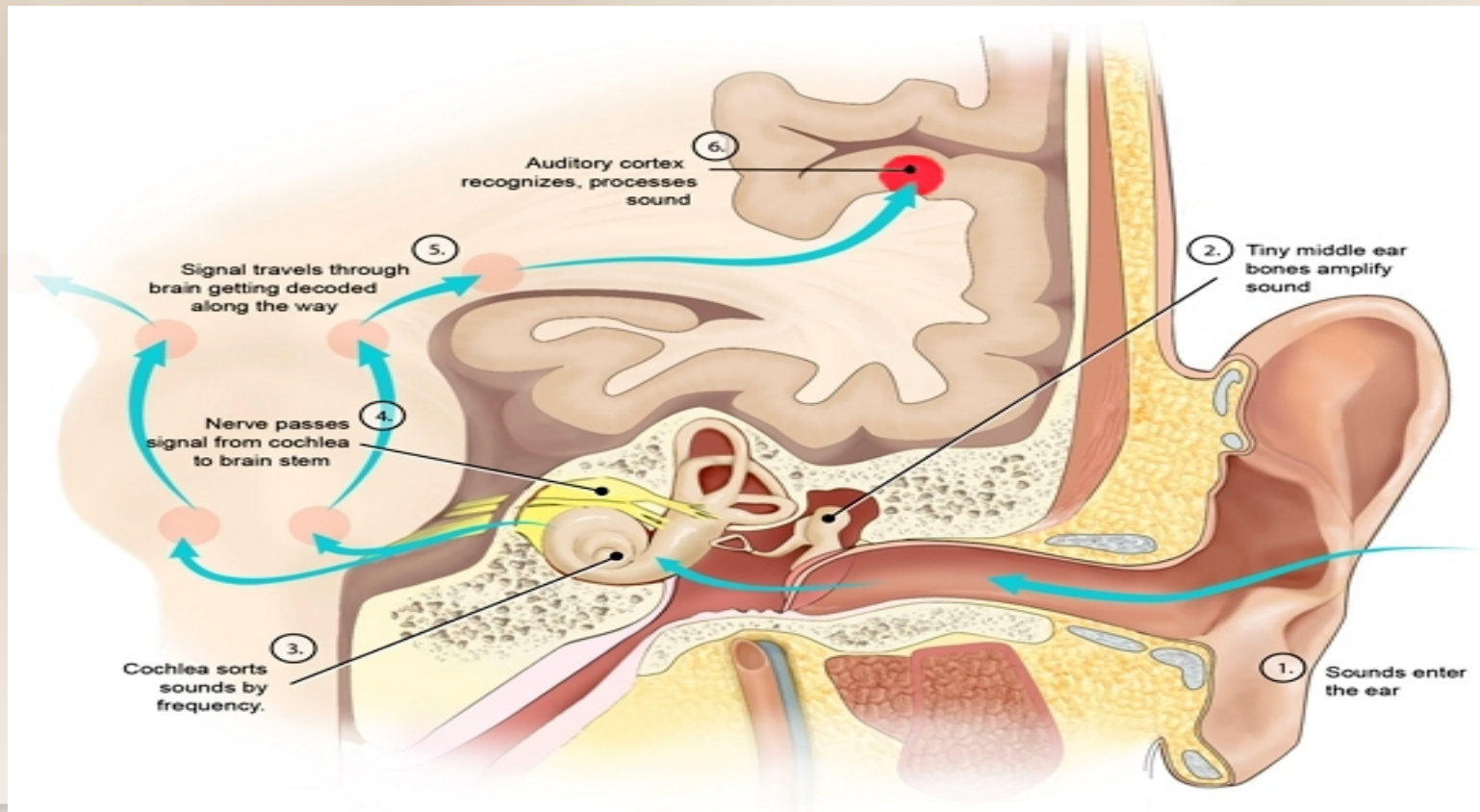
- systemic diseases like HTN, DM, cervical, allergies, stress, anemia, obesity, drugs, ....

# Pathophysiology

- Unknown exact mechanism.
- It is **central** rather than peripheral origin. ????
- It remains after severing the 8<sup>th</sup> nerve. Like in phantom limb after amputation.



- Acute peripheral insult leads to **chronic signal**, which leads to **central modification**, which leads to **psychological enhancement**, which leads to **intractable tinnitus**.





# Clinical examination


- Includes **history, medical, audiologic, and/or neurologic and psycho logic** evaluation.
- **History.**
  - Onset and duration,
  - course,
  - description,
  - site,
  - exacerbating factors (food, stress, lack of sleep,..),
  - drugs,
  - noise exposure,
  - familial hx,
  - effects on (sleep, social, occupation).

# Clinical examination

- **Full Medical exam: ENT, cardiovascular like carotid body tumour, cervical, TMJ, metabolic ,drugs.**
- **Audiologic evaluation.**
  - Basically PTs, tympanometry, speech tests, tinnitus matching tests. residual inhibition after masking.
  - OAE, BERA, site of lesion.
- **Neurologic/ psycho logic evaluation**
- **Severity scaling :**
  - Severity of tinnitus is a function of the individual's reaction to tinnitus.
  - There is no objective way to measure subjective tinnitus.



# Treatment and management

- It is a **symptom**, not a disease. the aim of management is to eliminate the disease, & the symptom.
- **Surgery**. if indicated  50% improvement in 8<sup>th</sup> n section (in Meniere`s) ----->phantom limb.
- **Drugs**. Either to alleviate tinnitus or to alleviate problems associated with tinnitus. Vasodilators help in some pts.

- **Diet.**- avoid some substances (caffeine, salt, ..). – vitamin or mineral supplements in deficiencies.
- **Masking.**- tinnitus maskers after matching tests , bedside noise generators.
- **Electrical stimulation and cochlear implants.**  
Controversies.
- **Psychological** interventions or techniques aimed at successfully reducing the stress, distress, and distraction can be very productive.

# Psychological interventions

- 1- **stress and maladaptive coping strategies** (either physical or psychological):
  - stress management **courses** through
    - a- community health organization, &
    - b- professionals.
  - mental control.
  - relaxation.
  - self-hypnosis.

- 2- **myogenic biofeedback** with **counseling** to minimize tinnitus and facilitate relaxation.
- 3- **desensitization**. A broad band noise presented can successfully produce a habituation to the tinnitus.
- 4- **cognitive-behavioral therapy** as an adjunctive approach to managing tinnitus to modify maladaptive thoughts and behaviors.

- 5- self-education** about the symptom.
- 6- other alternative approaches** as acupuncture and chiropractry

