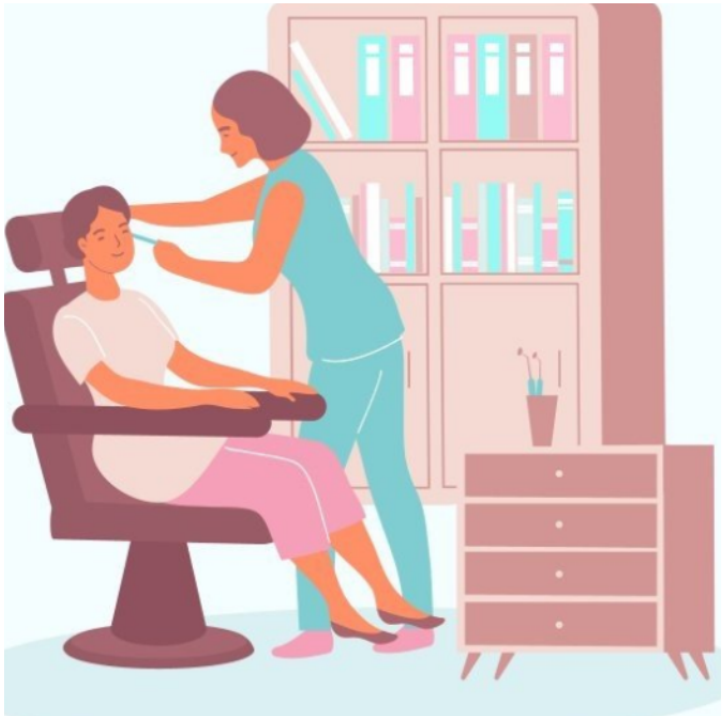
Tinnitus



WILL BE DISCUSSED :

- DEFENTION
- PATHOPHYSIOLOGY
- TYPES AND CAUSES
- ANAYLSIS AND DIAGNOSIS
- ASSOCCIATIONS
- MANAGEMENT AND MODIFICATION
- QUICK RECAP

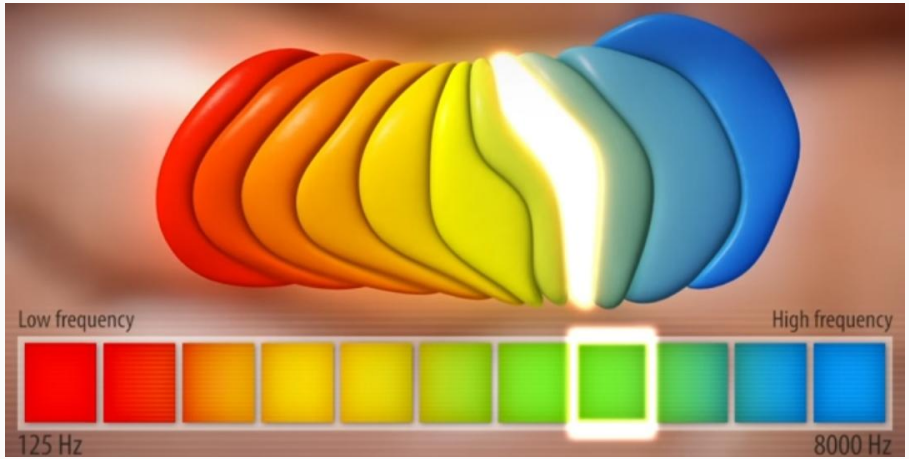
What is the tinnitus?

Tinnitus is Greek word meaning ring so it is the perception of sound when **no** corresponding external sound is present (auditory stimulus)and its usually described as ringing , clicking and buzzing.

These sounds may be in one ear or in both of them and can low or high pitched.

Pathophysiology of Tinnitus

- It may caused by increased activity of the auditory cortex (where the brain process the sound) this may cause over excitation of some auditory nerve cells this may explain why most tinnitus cases are associated with a degree of hearing loss.



Types of Tinnitus

Subjective

It’s the **most frequent** type of tinnitus

Objective

This type can be detected by other people

Pulsatile

It is called vascular Tinnitus

Subjective type

- It's the most frequent type of tinnitus .
- It is mostly due to hearing loss but it can have other causes like otological (inner ear) or neurological (auditory nerve).
- Causes: infection , drugs and trauma.
- Traumatic noise exposure recurrently can cause injury to the hair cells in the inner ear causing a degree of hearing loss and tinnitus.
- Some cases the tinnitus is not related to the inner ear or auditory nerve so they are called non_otic tinnitus and they are affected by the somatosensory system to that the only factor that is affecting the tinnitus is movement of the head or neck or face.

Objective type

- This type can be detected by other people
- It's caused by involuntary twitching of muscle or group of muscles (myoclonus) around the middle ear or can be caused by vascular conditions .
- Spontaneous otoacoustic emissions (SOAEs) are faint high-frequency tones that are produced in the inner ear and can be measured in the ear canal with a sensitive microphone, may also cause tinnitus.

Pulsatile type

- It's a sound which beats in the same time of the pulse which is also known as (vascular tinnitus) .
- Objectively :It result from altered blood flow which increase the blood turbulence near the ear ex: (atherosclerosis).
- Subjectively: it can happen due increase the awareness of the blood flow in the ear .
- Pulsatile tinnitus can indicate a serious medical conditions such as : carotid artery aneurysm , carotid artery dissection , vasculitis and giant cell arteritis or idiopathic intracranial hypertension.
- Pulsatile tinnitus can be a symptom of vascular intracranial abnormality so it should be evaluated.

Causes

- **Hearing loss:** It's the **most common** cause of the tinnitus and its part of the subjective causes & the most common cause of hearing loss is **cochlear injury** .
  If the hairs inside your inner ear are bent or broken -this happens as you age or when you are regularly exposed to loud sounds- they can "leak" random electrical impulses to your brain, causing tinnitus.

- Ear infection or ear canal blockage. Your ear canals can become blocked with a buildup of fluid (ear infection), earwax, dirt or other foreign materials. A blockage can change the **pressure** in your ear, causing tinnitus.

- Blood vessel disorders. Conditions that affect your blood vessels — such as **atherosclerosis**, **high blood pressure**, or kinked or **malformed blood vessels** — can cause blood to move through your veins and arteries with more force. These blood flow changes can cause tinnitus or make tinnitus more noticeable.

Causes

- **Medications:** Ototoxic Drugs can also cause hearing loss and tinnitus or they can increase the damage that be induced by exposure to loud noises and this damage can be done even if the dose is not considered ototoxic.
- **Muscle spasms in the inner ear.**
- **Ear bone changes.** Stiffening of the bones in your middle ear (otosclerosis)
- **Meniere's disease.**
- **Other chronic conditions.** Conditions including autoimmune disorders such as rheumatoid arthritis and lupus have all been associated with tinnitus.

Drugs Causing Ototoxicity

Drug Class	Example(s)
Loop Diuretics	Furosemide, Bumetanide, Ethacrynic Acid
Antibiotics	Aminoglycosides, Macrolides, Vancomycin, Minocycline
NSAIDs	Aspirin, Indomethacin, Ibuprofen, Phenylbutazone
PDE5 Inhibitors	Sildenafil, Tadalafil, Vardenafil
Platinum Agents	Cisplatin, Carboplatin
Other	Quinine

Analysis of the Tinnitus

1) **Description or determination of the heard voice .** ***LATER ON**

2) **Noise heard in <u>one or both</u> ears of the patient or in the center of his head.**

3) **The <u>intensity of the noise change with</u> : head, neck, eye, shoulder and jaw movement .**

4) **The noise can be <u>continues or intermittent</u> which cause stress .**

5) ***<u>Prolonged vertigo with ataxia</u>* , dysphagia (if these are associated with tinnitus it requires EMERGENT EVALUATION !**

Severity:

- The condition is often rated on a scale from "slight" to "severe" according to the effects it has, such as interference with sleep and normal daily activities .
- Assessment of psychological processes related to tinnitus involves measurement of tinnitus severity and distress and its measured subjectively by validated self-report tinnitus questionnaires These questionnaires measure the degree of psychological distress and handicap associated with tinnitus, including effects on hearing, lifestyle, health and emotional functioning.
- These assessment measures are aimed to identify individual levels of distress and interference with normal life , coping responses and perceptions of tinnitus in order to inform treatment and monitor progress.

❑ Course of Tinnitus:

***** Its incidence increase with age, usually after 50s .**

1. Onset: Tinnitus can start suddenly or gradually.
2. Initial Phase: In the initial weeks to months, tinnitus can be quite bothersome. It may be more noticeable in quiet environments or when trying to sleep.
3. Stabilization: For many individuals, the tinnitus may stabilize. It can become less intense or intrusive over time as the brain adapts to the noise.
4. Chronic Phase: If tinnitus persists for more than six months, it is considered chronic.
5. Long-Term Management
6. Potential Resolution
7. Psychological Adaptation: Over time, this adaptation can be aided by therapies and coping strategies.

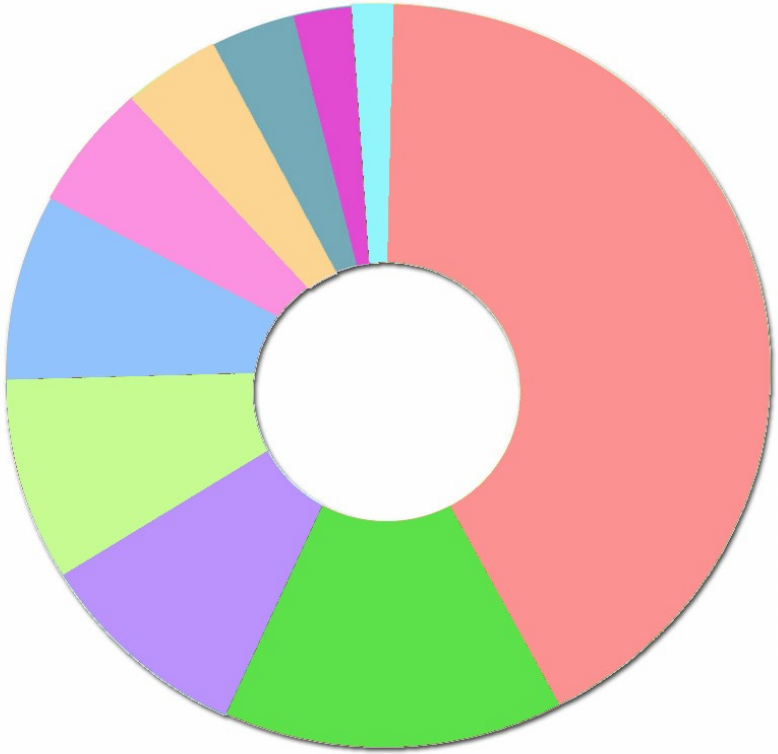
❑ Complications:

- **It cause depression, anxiety and other psychological issues, it affect his sleep , and it cause difficulty in concentration .**

The sounds you hear can identify a possible underlying cause:

1. **Clicking:** Muscle contractions in and around your ear can cause sharp clicking sounds that you hear in bursts.
2. **Rushing or humming :** These sound fluctuations are usually vascular in origin, and you may notice them when you exercise or change positions.
3. **Heartbeat :** Blood vessel problems, such as high blood pressure, an aneurysm or a tumor, and blockage of the ear canal or Eustachian tube can amplify the sound of your heartbeat in your ears.
4. **Low-pitched ringing:** Conditions that can cause low-pitched ringing in one ear include Meniere's disease. Tinnitus may become very loud before an attack of vertigo.
5. **High-pitched ringing:** Exposure to a very loud noise or a blow to the ear can cause a high-pitched ringing or buzzing that usually goes away after a few hours. However if there's hearing loss as well, tinnitus may be permanent.
6. **Other sounds:** Stiff inner ear bones (otosclerosis) can cause low-pitched tinnitus that may be continuous or may come and go. Earwax, foreign bodies or hairs in the ear canal can rub against the eardrum, causing a variety of sounds.

TINNITUS - What sounds do you hear?



43% MORE THAN ONE SOUND
15% RING
11% WHITE NOISE
11% BUZZ
10% SHRILL
4% DRILL
3% HUM
3% OTHER
0.5% PULSATE
0.5% BOOM

Latest / Since 3 years

Factors associated with Tinnitus

Ear problem and hearing loss

- **Conductive :otitis ,otosclerosis ,middle ear effusion, Eustachian tube dysfunction and acoustic shock.**
- **Neurosensory :excessive noise or loud exposure (acoustic trauma), presbycusis, Meniere disease, endolymphatic hydrops, acoustic neuroma.**

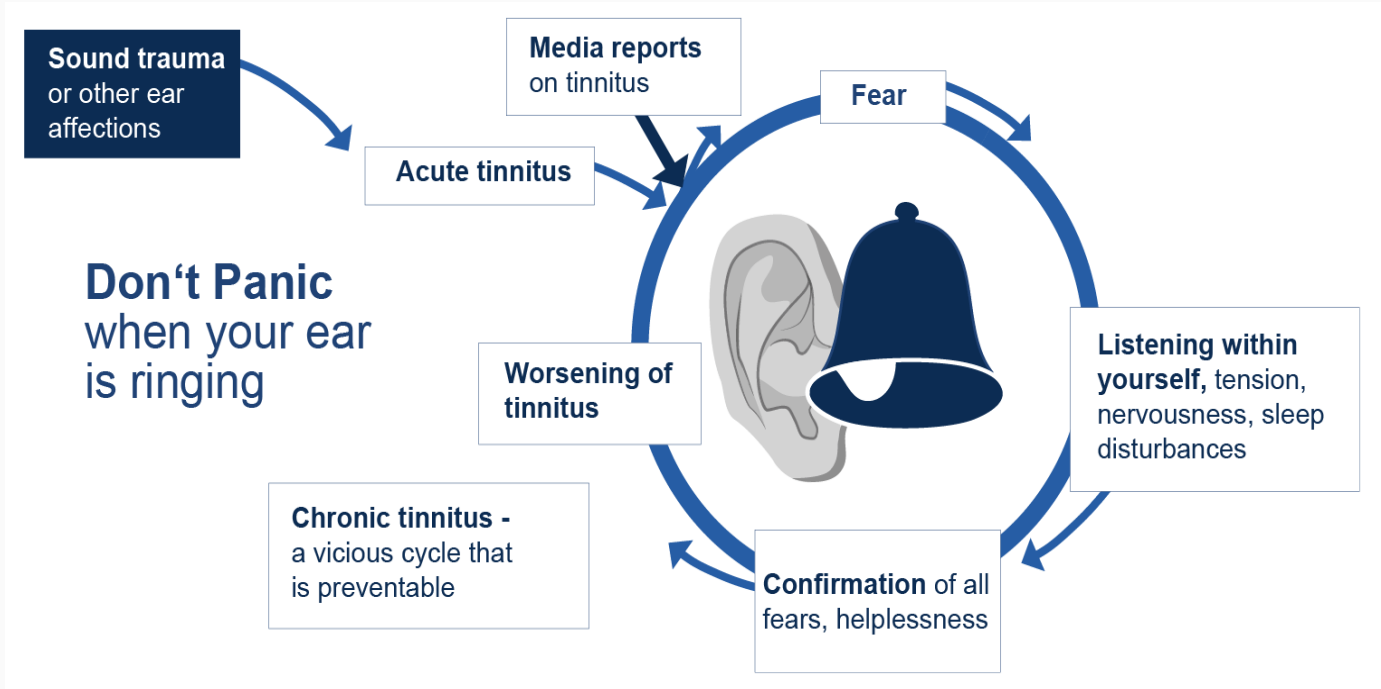
Temporomandibular joint dysfunction

Neurological disorders → **multiple sclerosis, head injury, vascular arteritis**

Psychiatric disorders → **Depression and anxiety**

Note:

Tinnitus with negative emotions, such as fear and anxiety from unpleasant stimuli at the time it will enhances activity in the limbic system and autonomic nervous system resulting in increasing tinnitus awareness and annoyance.



Diagnosis

- Is done clinically also with Audiometry .
- Since most persons with tinnitus also have hearing loss, a pure tone hearing test resulting in an audiogram may help diagnose a cause, though some persons with tinnitus do not have hearing loss. An audiogram may also facilitate fitting of a hearing aid in those cases where hearing loss is significant. ***The pitch of tinnitus is often in the range of the hearing loss.

*Note: pure-tone audiometry is the main hearing test used to identify hearing threshold levels of an individual, enabling determination of the degree, type and configuration of a hearing loss and thus providing a basis for diagnosis and management.

Management

- **Treating the under lying cause :**
  - Wax removal can decrease the severity of the tinnitus.
  - Treating the blood vessel condition if found and if possible.
  - Changing medication.
  - Noise suppression

- **White noises machines :** These devices, which produce simulated environmental sounds such as falling rain or ocean waves, are often an effective treatment for tinnitus
- **Hearing aid** can be helpful if there is some hearing loss.
- **Masking device :** Worn in the ear and similar to hearing aids, these devices produce a continuous, low-level white noise that suppresses tinnitus symptoms

Life Style Modification

Avoid possible irritants. Reduce your exposure to things that may make your tinnitus worse. Common examples include loud noises, caffeine and nicotine.

Cover up the noise. In a quiet setting, a fan, soft music or low-volume radio static may help mask the noise from tinnitus.

Manage stress. Stress can make tinnitus worse. Stress management, whether through relaxation therapy may provide some relief.

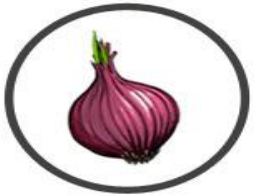
Reduce your alcohol consumption. Alcohol increases the force of your blood by dilating your blood vessels, causing greater blood flow, especially in the inner ear area

There **is** **NO CURE**, most people with tinnitus get used to it over time but for a minority it remains a significant problem.

HOME REMEDIES FOR TINNITUS

GINKGO BILOBA

APPLE CIDER VINEGAR



ONIONS

GARLIC

GINGER

SALINE SOLUTION

Top 10 Home Remedies

To explore more, visit www.Top10HomeRemedies.com

TINNITUS FACTS

Tinnitus is the sound heard in your head when there is no external source. It is best described as the way the brain interprets silence

There are 2 types of tinnitus. Subjective and objective tinnitus

Tinnitus sounds include ringing, buzzing, whining, pulsing or rushing sounds in the ear

Men and Women over 50 are more prone to tinnitus

Subjective tinnitus (most common) is heard only by the patient. Objective tinnitus can be heard by a medical examiner

Over 500 million people worldwide suffer from tinnitus – including 40 million Americans

Tinnitus is often – but not always - linked to hearing loss

Patient Name: John
Age: 52
Gender: Male
Occupation: Construction Worker
Date of Consultation: 23/12/2024

Chief Complaint

John presents with a 6-month history of ringing in both ears, which he describes as a high-pitched sound. The tinnitus is constant, more noticeable in quiet environments, and is affecting his ability to sleep and concentrate at work. He reports a gradual onset but no specific event or trauma that he can recall that may have triggered the tinnitus.

History of Present Illness

- **Onset**: The tinnitus began gradually, with an occasional ringing sound that became constant over a few weeks.
- **Character of Sound**: Described as a high-pitched ringing, more pronounced in the evening or in quiet spaces.
- **Associated Symptoms**: Mild hearing loss in the higher frequencies, but no vertigo or dizziness.
- **Impact on Daily Life**: Disturbing sleep, causing difficulty concentrating at work, and occasional irritability due to the persistent noise.
- **Exacerbating Factors**: Exposure to loud machinery at work, stress, and fatigue.
- **Alleviating Factors**: Sounds such as white noise or background music slightly reduce the perception of the ringing.

Past Medical History

- **Hearing Loss**: Mild sensorineural hearing loss in both ears, suspected to be noise-induced.
- **Hypertension**: Well-controlled with medication.
- **No history of ear infections, head trauma, or significant systemic illnesses.**

Social History

- Works in construction, frequently exposed to loud noises without adequate hearing protection.
- Non-smoker, occasional alcohol use.

Family History

- Father has a history of age-related hearing loss.
- No known family history of tinnitus or other otologic conditions.

Physical Examination

- **Ear Examination**: Normal otoscopic findings (no earwax or inflammation).
- **Audiometry**: Mild sensorineural hearing loss at higher frequencies (frequent exposure to loud noise).
- **Tuning Fork Tests**: Rinne and Weber tests are normal.
- **Neurological Examination**: Normal.

Management Plan

1. Education and Reassurance
2. Sound Therapy
   - White Noise or Background Noise
   - Masking device
   - Hearing Aids
3. Cognitive Behavioral Therapy (CBT)
4. Tinnitus Retraining Therapy (TRT)
5. Lifestyle Modifications
   - Stress Management
   - Sleep Hygiene
6. Avoidance of Loud Noises
7. Medications
8. Follow-up

THANKS