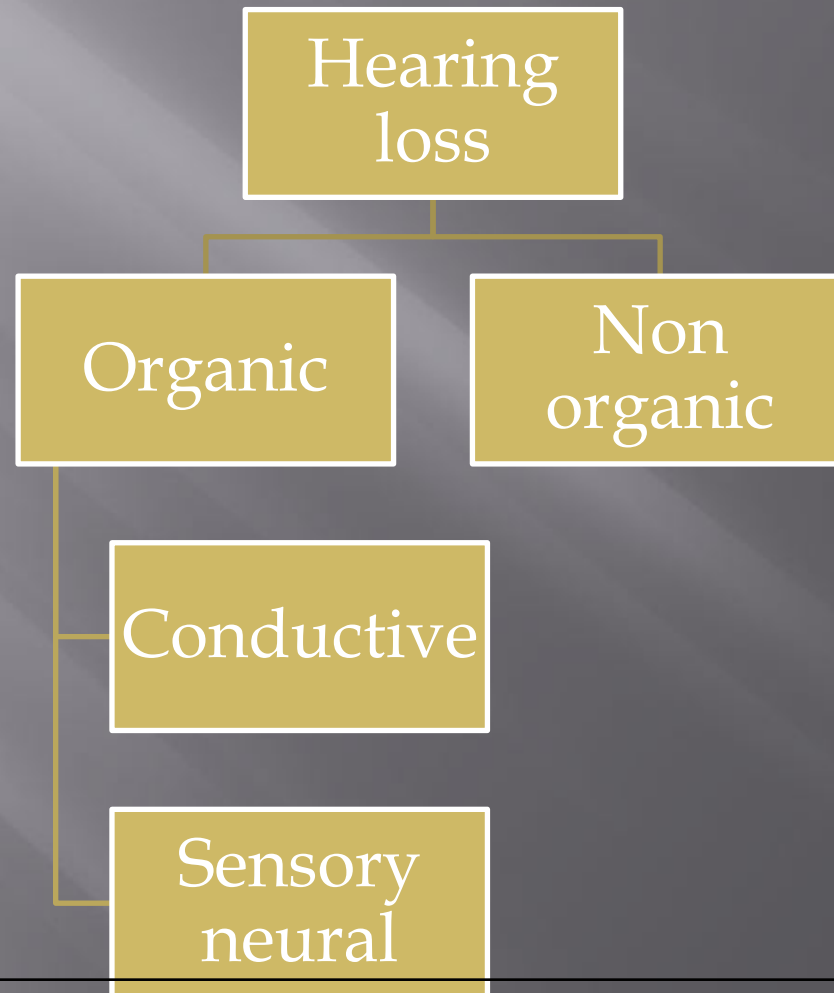
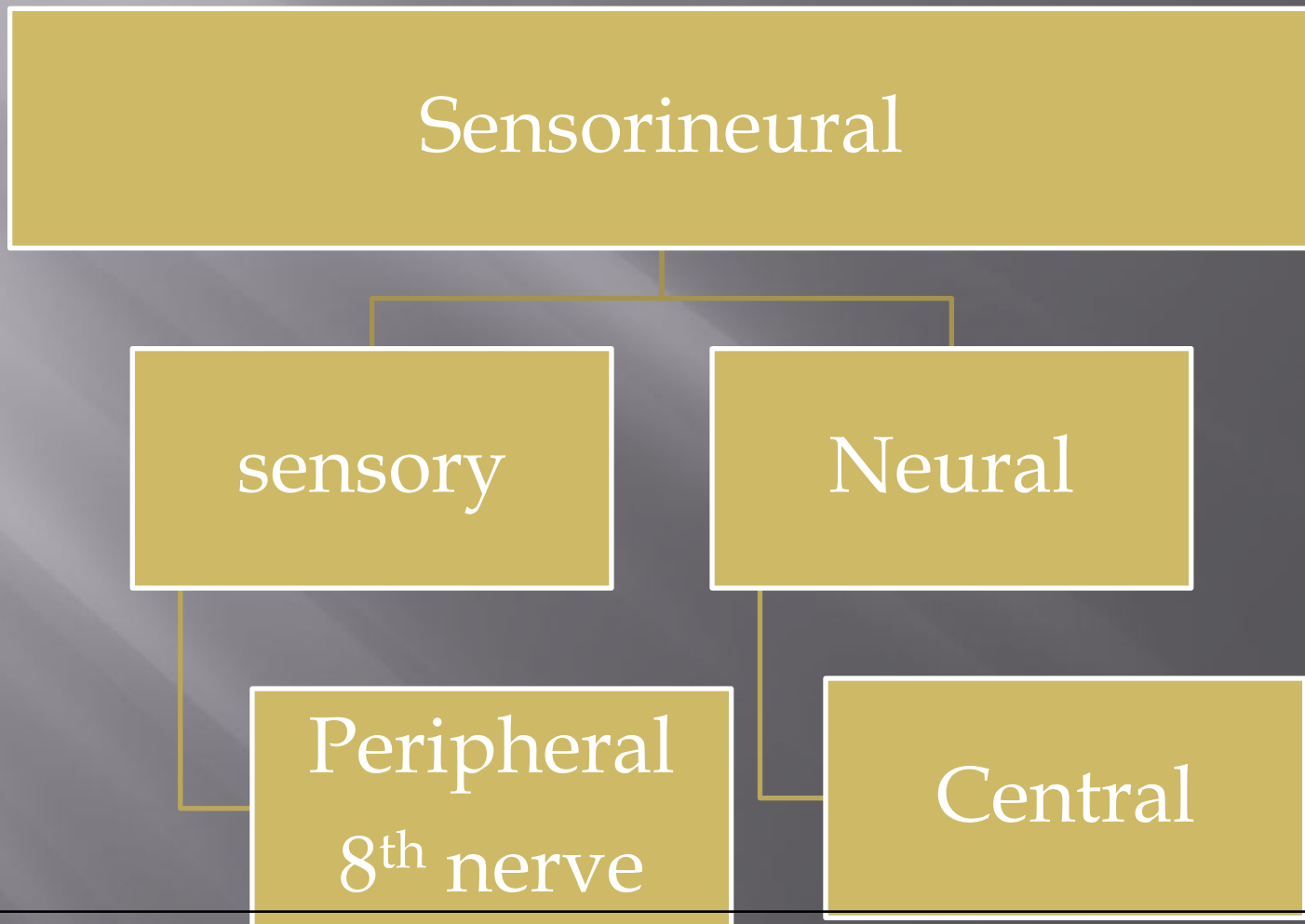


HEARING LOSS TYPES AND CAUSES





Conductive Hearing loss

- Any disease process which interferes with the conduction of sound to reach cochlea causes conductive hearing loss
 - Negative Rinne test, i.e. $BC > AC$.
 - Weber lateralized to poorer ear
 - Normal absolute bone conduction
 - Low frequencies affected more
 - Audiometry shows bone conduction better than air conduction with air-bone gap
 - Loss is not more than 60 dB.
-
- Speech discrimination is good

AETIOLOGY

- ▣ **Congenital**
- ▣ Meatal atresia
- ▣ Fixation of stapes footplate
- ▣ Fixation of malleus head
- ▣ Ossicular discontinuity
- ▣ Congenital cholesteatoma

Acquired

- ❑ Any obstruction in the ear canal, e.g. wax, foreign body, furuncle, acute inflammatory swelling, benign or malignant tumour or atresia of canal
- ❑ Perforation of tympanic membrane, traumatic or infective
- ❑ Fluid in the middle ear, e.g. acute otitis media, serous otitis media or haemotympanum
- ❑ Mass in middle ear, e.g. benign or malignant tumour
- ❑ Disruption of ossicles, e.g. trauma to ossicular chain, chronic suppurative otitis media, cholesteatoma
- ❑ Fixation of ossicles, e.g. otosclerosis, tympanosclerosis, adhesive otitis media
- ❑ Eustachian tube blockage, e.g. retracted tympanic membrane, serous otitis media

SENSORINEURAL HEARING LOSS

- ❑ Sensorineural hearing loss (SNHL) results from lesions of the cochlea, VIIIth nerve or central auditory pathways
- ❑ A positive Rinne test, i.e. $AC > BC$
- ❑ Weber lateralized to better ear.
- ❑ Bone conduction reduced on Schwabach and absolute bone conduction tests.
- ❑ More often involving high frequencies.
- ❑ No gap between air and bone conduction curve on audiometry
- ❑ Loss may exceed 60 dB.
- ❑ Speech discrimination is poor. 8. There is difficulty in hearing in the presence of noise

CONGENITAL

- ▣ PRENATAL CAUSES
- ▣ Infant factors
- ▣ Scheibe dysplasia-Dysplasia is seen in the cochlea and saccule
- ▣ Alexander dysplasia-It affects only the basal turn of membranous cochlea
- ▣ Bing-Siebenmann dysplasia. There is complete absence of membranous labyrinth.
- ▣ Michel aplasia. There is complete absence of bony and membranous labyrinth.
- ▣ Mondini dysplasia. Only basal coil is present or cochlea is 1.5 turns
- ▣ Enlarged vestibular aqueduct.
- ▣ Semicircular canal malformations

Syndromes associated with hearing loss

- ❑ Waardenburg syndrome-White forelock
Heterochromia iridis ,Vitiligo ,Dystopia canthorum
- ❑ Usher syndrome-Retinitis pigmentosa ,Night blindness
- ❑ Pendred syndrome-Goitre ,Perchlorate discharge test shows defect in organic binding of iodine
- ❑ Alport syndrome-Hereditary progressive glomerulonephritis ,Corneal dystrophy

Maternal factors

- ▣ Infections during pregnancy. -toxoplasmosis, rubella, cytomegaloviruses, herpes type 1 and 2 and syphilis
- ▣ Drugs during pregnancy. Streptomycin, gentamicin, tobramycin, amikacin, quinine or chloroquine
- ▣ Radiation to mother in the first trimester
- ▣ Nutritional deficiency, diabetes, toxemia and thyroid deficiency

PERINATAL CAUSES

- ▣ Anoxia
- ▣ Prematurity and low birth weight
- ▣ Birth injuries
- ▣ Neonatal jaundice
- ▣ Neonatal meningitis
- ▣ Sepsis
- ▣ Time spent in neonatal ICU
- ▣ Ototoxic drugs

POSTNATAL CAUSES

- ▣ Genetic-Deafness may occur alone as in familial progressive sensorineural deafness or in association with certain syndromes, e.g. Alport, Klippel-Feil, Hurler
- ▣ Nongenetic
- ▣ Viral infections (measles, mumps, varicella, influenza), meningitis and encephalitis.
- ▣ Secretory otitis media.
- ▣ Ototoxic drugs.
- ▣ Trauma, e.g. fractures of temporal bone, middle ear surgery or perilymph leak.
- ▣ Noise-induced deafness

ACQUIRED

- ❑ Infections of labyrinth – viral, bacterial or spirochaetal
- ❑ Trauma to labyrinth or VIIIth nerve, e.g. fractures of temporal bone or concussion of the labyrinth or the ear surgery
- ❑ Noise-induced hearing loss
- ❑ Ototoxic drugs
- ❑ Presbycusis
- ❑ Ménière's disease
- ❑ Acoustic neuroma
- ❑ Sudden hearing loss
- ❑ Familial progressive SNHL
- ❑ Systemic disorders, e.g. diabetes, hypothyroidism, kidney disease, autoimmune disorders, multiple sclerosis, blood dyscrasias.

SPECIFIC FORMS OF HEARING LOSS

- ▣ INFLAMMATIONS OF LABYRINTH
 - ▣ Viral labyrinthitis
 - ▣ Measles, mumps and cytomegaloviruses
 - ▣ Viruses usually reach the inner ear by blood stream
 - ▣ Bacterial
 - ▣ Bacterial infections reach labyrinth through the middle ear (tympanogenic) or through CSF (meningogenic)

- ▣ Syphilitic
- ▣ Sensorineural hearing loss is caused both by congenital and acquired syphilis
- ▣ Ménière's syndrome
- ▣ Hennebert's sign. A positive fistula sign in the absence of a fistula. This is due to fibrous adhesions between the stapes footplate and the membranous labyrinth
- ▣ Tullio phenomenon

FAMILIAL PROGRESSIVE SENSORINEURAL HEARING LOSS

- ▣ It is a genetic disorder in which there is progressive degeneration of the cochlea starting in late childhood or early adult life.
- ▣ Hearing loss is bilateral with flat or basin-shaped audiogram but an excellent speech discrimination

OTOTOXICITY

- ▣ Various drugs and chemicals can damage the inner ear and cause sensorineural hearing loss, tinnitus and sometimes vertigo
- ▣ Eg: Aminoglycoside, Diuretics, Salicylates

▣ NOISE TRAUMA

▣ Acoustic trauma

- ▣ Permanent damage to hearing can be caused by a single brief exposure to very intense sound without this being preceded by a temporary threshold shift
- ▣ explosion, gun fire or a powerful cracker and may reach or cross 140 dB

- ▣ Noise-induced hearing loss
- ▣ chronic exposure to less intense sounds
- ▣ Temporary threshold shift (TTS). The hearing is impaired immediately after exposure to noise but recovers after an interval of a few minutes to a few hours even up to 2 week
- ▣ Permanent threshold shift (PTS). The hearing impairment is permanent and does not recover at all.

AUTOIMMUNE (IMMUNE-MEDIATED) INNER EAR DISEASE

- ▣ Immune-mediated inner ear disease causes progressive bilateral sensorineural hearing loss.
- ▣ It occurs between 40 and 50 years with equal incidence in both sexes.
- ▣ Nearly 50% of patients also experience vestibular symptoms like disequilibrium, motion intolerance, positional or episodic vertigo
- ▣ 15% of patients have evidence of other autoimmune disorder such as ulcerative colitis, systemic lupus, rheumatoid arthritis or multiple sclerosis

NON ORGANIC HEARING LOSS

- ▣ No Organic lesion
- ▣ Malingering or Psychogenic
- ▣ Claim compensation

 **THANK YOU**