



The Audiology Project

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MEDICAL CONDITIONS WITH SECONDARY HEARING LOSS

1. Diabetes Mellitus

- a. The disorder can cause both vascular and nerve disease
- b. Hearing loss associated with diabetes is bilateral, sensorineural and progressive
- c. It tends to begin in the high frequency range and then extend into the mid-range
- d. Initially, individuals may experience unilateral hearing loss or low-frequency fluctuating hearing loss of a sudden onset
- e. Dizziness is a complaint by some patients

2. Hypothyroidism

- a. Hearing loss may be conductive, sensorineural or mixed in nature, although primarily sensorineural
- b. Most losses are flat, bilateral, symmetrical with no vestibular involvement
- c. Hearing loss may increase with severity of hypothyroidism

3. Multiple Sclerosis

- a. Dysequilibrium is often a major complaint
- b. Hearing loss and tinnitus occur, but less frequently
- c. If auditory tracts are involved in the deterioration process, then auditory and vestibular symptoms appear.

4. Chronic Renal Disease

- a. Hearing loss is primarily associated with chronic renal disease due to the use of diuretics, antibiotics and other ototoxic drugs
- b. Hearing loss results can vary between patients in term of degree of loss, but will be primarily sensorineural in nature

5. Other Medical Conditions

- a. Tuberculosis
- b. Vascular disease
- c. Head trauma
- d. Paget's disease
- e. Cogan's syndrome
- f. Tinnitus symptoms



- g. Dizziness symptoms
- h. Complaint of not hearing well (quiet or noisy situations)

OTOTOXIC DRUGS AFFECTING HEARING AND BALANCE SYSTEMS

A. Aminoglycoside Antibiotics

- a. These drugs are administered when severe infections are potentially life threatening
- b. Drugs include”
 - i. Streptomycin
 - ii. Dihydrostreptomycin
 - iii. Nentilmicin
 - iv. Neomycin
 - v. Tobramycin
 - vi. Amikacin
 - vii. Erythromycin
 - viii. Vancomycin
- c. produces damage to sensory hair cells of the inner ear and the stria vascularis
- d. hearing loss generally begins about 4 days after onset of administration and may be preceded by a high pitched ringing tinnitus. Decline in hearing can persist up to 6 months after treatment ends
- e. the hearing loss is permanent
- f. certain people are genetically disposed to hearing loss following treatment

B. Loop inhibiting diuretics

- a. These drugs are used to treat edematous conditions such as congestive heart failure, acute pulmonary edema and renal edema
- b. Drugs include:
 - i. Furosemide (Lasix)
 - ii. Ethacrynic Acid (Edecrin)
 - iii. Bumetanide (Bumex)
- c. hearing loss is more acute when drugs are administered intravenously and onset of hearing loss is within seconds of the intravenous injection
- d. damage is to the marginal cells of the stria vascularies
- e. synergistic effect on hearing when administered with other ototoxic drugs

C. Salicylates (Analgesics)

- a. Drugs include:
 - i. Aspirin
 - ii. Darvon
 - iii. Sodium salicylate
 - iv. Methyl salicylate (heat rubs)



- b. ototoxic effects include hearing loss and tinnitus when taken in dosages of more than 2.5 grams a day
- c. the onset of hearing loss may be within 3 days from the onset of ingestion, and the hearing loss is temporary with recovery occurring following withdrawal of the drug

D. Cisplatinum

- a. Chemotherapy drug used to treat cancer patients
- b. Ototoxic effects are of secondary concern. The hearing loss is bilateral and symmetrical, involving the high frequencies first and then the low frequencies. Severity of hearing loss depends on the type of tumor, pre-chemotherapy loss, mode of drug administration, renal function and age
- c. Hearing loss is cumulative

E. Miscellaneous

- a. Quinine and quinine derivatives, and anti-malaria drugs
- b. Tinnitus is early symptom
- c. Congenital permanent hearing loss has been linked to the use of these drugs during pregnancy

Patients may notice ototoxicity as dizziness, ringing in the ears or difficulty understanding speech in noise.

Ototoxic dizziness can be experienced as unsteadiness or spinning, or difficulty keeping a steady visual field.

Ototoxic hearing loss affects high pitched sounds before the lower pitches.

Ototoxicity Plan of Action

- + Family history of ototoxicity should be reported to the audiologist and treating physician
- + Balance and hearing should be evaluated before treatment and should be monitored during treatment
- + Patients should be followed by an audiologist at least 6 months after treatment has ended
- + Noise exposure should be avoided during and after treatment. If noise cannot be avoided, careful use of hearing protection devices is warranted.