

Recitation 10 Worksheet

1. Laurel has been receiving medical treatment for a particular condition. He was warned that there may be certain auditory side effects, and they began with a ringing in his ear (tinnitus) and now he has developed a hearing impairment.
 - a) What type of treatment might he have been receiving?
 - b) What is the name of the side effect he is experiencing and what parts of the ear/auditory system are damaged?
 - c) What type of treatment would you recommend for Laurel?

Fill in the blanks:

2. The brain determines pitch (frequency of sound) by what group of hair cells gets activated on the basilar membrane – this is known as the _____ code.
3. _____ deafness is due to problems with sound wave propagation through the outer or middle ear.
4. A condition that presents with tinnitus, vertigo, and is thought to be due to overproduction of endolymph is known as _____.
5. The muscles in the middle ear that attach to the ossicles and are involved in adaptation are the _____ and _____.
6. Fill in the pathway:
Sound waves hit the tympanic membrane, which causes the movement of the malleus → _____ → stapes, which pushes on the _____ → generates movement of _____ fluid in the inner ear → goes around the _____ and hits the _____.
7. The disease _____ is associated with rods dying due to protein aggregation, while _____ is due to cones dying in the fovea.
8. M cells, which have _____ dendritic fields, project to the _____ LGN, while P cells, which have _____ dendritic fields, project to the _____ LGN.

Answers:

1. a) Laurel was either receiving aminoglycoside antibiotics for an infection, a chemotherapeutic agent such as cisplatin for cancer treatment, salicylic acid compounds such as aspirin, or diuretics.
b) He is experiencing ototoxicity, which can manifest as damage to the cochlea or the vestibular organs. Since his symptoms are auditory, there is most likely damage to the inner ear, probably the hair cells.
c) The treatment depends on the severity of the symptoms. In some cases, the ototoxicity may only be temporary and may resolve on its own. If the damage is permanent but not severe and not all frequencies are affected, Laurel might benefit from a hearing aid. However, if his hearing loss is severe, a cochlear implant would be suitable.
2. Place
3. Conductive
4. Meniere's disease
5. Stapedius, tensor tympani
6. Incus, oval window, perilymph, helicotrema, round window
7. Retinitis pigmentosa, macular degeneration
8. Large, Magno, small, Parvo

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