

-17
+100
117 = 95%

Name: _____

Multiple Choice: For each question, choose the best answer from among the foils. Each question is worth 2 points.

1. A patient reports that her hearing loss in each ear has gradually worsened. She also reports that she can often hear better under noisy conditions than under quiet conditions. The hearing loss is most likely to be

- a. conductive
- b. sensorineural
- c. caused by a lesion of the auditory nerve
- d. caused by a cortical lesion

2. Which of the following is an important cause of profound, postnatally acquired sensorineural hearing impairment in children?

- a. Chronic otitis media
- b. Otosclerosis
- c. Cytomegalovirus
- d. Bacterial meningitis

stim left VIII
VII VIII ✓
probe P.X

3. With the probe in the right ear, the acoustic reflex is present on both contralateral and ipsilateral stimulation. With the probe in the left ear, the acoustic reflex is absent on both contralateral and ipsilateral stimulation. The most likely cause of these findings is

- a. VIIIth nerve pathology on the left side
- b. VIIIth nerve pathology on the right side
- c. VIIth nerve pathology on the left side
- d. VIIth nerve pathology on the right side

MR
stim R

4. In the early stages of Meniere's disease, when there is an increase in the amount of endolymph in the inner ear, there is also a characteristic sensorineural hearing loss that primarily affects which of the following?

- a. 250-2000 Hz
- b. 4000-8000 Hz
- c. 8000-10,000 Hz
- d. All frequencies equally

5. In clients with lesions confined to the brainstem or cortex, speech recognition ability typically tends to AN, NFII, MS
neuroma

- a. remain normal in quiet settings but not with background noise
- b. remain normal in background noise as well as in quiet setting
- c. be better in background noise than in quiet settings
- d. be abnormal in both ears in all settings

-2

-2

6. A 45-year-old computer sales representative complains of trouble understanding speech, especially in noisy situations. He also complains of tinnitus in both ears. He contracted malaria some years ago and was treated with high doses of medication that he suspects was quinine based. The problem has existed for years, but it seems to be getting worse with passing time. Which of the following is the most likely cause of the problem?
- Bilateral otosclerosis
 - Meniere's disease
 - Ototoxicity
 - Multiple sclerosis
7. A 35-year-old female engineer complains of difficulty hearing on the phone and when listening in background noise. She reports difficulty seeing out of her right eye, weakness in her right leg, and some tremors in her right hand. She also reports frequently feeling off-balance. Pure-tone audiometry indicates normal hearing, bilaterally, with normal word recognition scores for W-22 word lists presented in quiet. Tympanograms are normal, bilaterally, and contralateral acoustic reflexes are absent when stimulating both ears. Which of the following is the most likely cause of the problem?
- Meniere's Disease
 - Multiple Sclerosis
 - Acoustic Neuroma
 - Bilateral Otosclerosis
8. Changes in the external ear due to the aging process often result in an erroneous diagnosis of conductive hearing loss. This misdiagnosis general occurs because of which of the following?
- Abnormal stiffness of the tympanic membrane
 - Excessive secretion of cerumen
 - Overabundance of protective hair follicles
 - Collapsed ear canals under headphones
9. In cases of Meniere's disease, sectioning the vestibular portion of the VIIIth nerve is done to
- improve hearing
 - relieve facial paralysis
 - relieve severe vertigo
 - relieve tinnitus
10. Which tuning fork test is administered by placing the tuning fork on the patient's forehead, alternately occluding and then unoccluding the ear canal, and asking the patient to report if the sound is louder with an occluded or an unoccluded ear canal?
- Bing
 - Weber
 - Rinne
 - None of the above.

Short Answer: For each of the questions below, list your answer in the space provided.

11. In class we discussed the ototoxic properties of several classes of drugs:

a. Provide the name of a common drug for each of the four classes listed below: (2 points each)

-Aminoglycoside antibiotics gentamycin

-Chemotherapeutic agents cisplatin

-Loop diuretics furosemide

-Salicylates aspirin

b. List two risk factors that would increase the likelihood of a person developing an ototoxic hearing loss. (4 points)

renal dysfunction
noise exposure

12. Several of the middle ear disorders have distinctive patterns on acoustic immittance testing.

For each of the following disorders, describe or draw the characteristic finding. (2 points each)

a. Tympanic membrane perforation

normal, type A tymp with large ear canal volume (normal reflexes)
no, can't measure reflexes w/ perf.

b. Ossicular discontinuity

the discontinuity occurs before the incudo-stapedial joint, absent reflexes if reflexes if the discontinuity is between the stapes footplate and prominiatory

c. Glomus tumor

flat, type B tymp, absent reflexes if the

tumor is behind the TM. Normal tymps and present reflexes if the tumor is on the jugular bulb.

pulsatile pattern

Contra



Ipsi

13. Describe the characteristic findings for acoustic reflex thresholds *and* acoustic reflex decay that would help in the differential diagnosis of a unilateral sensorineural hearing loss due to sudden idiopathic sensorineural hearing loss versus acoustic neuroma. (4 points)

For sudden idiopathic SNHL, the reflexes will be normal with reduced sensation level. Decay will be negative.

For an acoustic neuroma, an ipsi reflex will be present in the unaffected ear. All other reflexes will be absent. Decay will be negative on the unaffected side and positive on the side with the acoustic neuroma. Contra decay will be absent bilaterally.

-1.5

or elevated -0.5 (normal)

Ipsi

don't measure decay ipsi laterally in present but elevated reflexes may see decay when stimulus affected side

14 a. What dB SPL value corresponds to the maximum "dose" of noise allowed by OSHA? (2 points)

90 dB A

b. Across a group of factory workers, do you expect anyone to exhibit hearing loss after 10 years of exposure to this noise dose? Why or why not? (3 points)

If the factory workers are exposed to 90 dB A for 8 hours over ten years, then yes, they will likely exhibit a hearing loss of 15dB. A study found 15dB A to be the average amount of loss for that amount of noise exposure.

-1

only the most susceptible ears

15. Schuknect described four distinct types of hearing loss associated with the aging process.

List one key feature (configuration or word recognition) of each type. (1 point each)

a. Sensory presbycusis

normal word recognition

b. Neural presbycusis

poorer than expected word recognition

c. Strial or metabolic presbycusis

normal word recognition

d. Mechanical presbycusis

poorer than expected word recognition

-2.5

16. Why might the audiograms we observe in the clinic for elderly clients not match one of Schuknect's types exactly? (2 points)

Elderly clients have spent their lifetime being exposed to noise, which can exacerbate hearing loss. Also, many older patients take medications, some of which may be ototoxic and may also influence the configuration of an audiogram. (may also have a mix of types.)

17. What is the difference between subjective and objective tinnitus? (2 points)

Subjective tinnitus is tinnitus that is only heard by the patient. Most cases of tinnitus are subjective. Some types though, are objective, meaning that an examiner can also hear the patient's tinnitus.

18. Do you think tinnitus is a symptom or a disease? Justify your answer. (5 points)

I think tinnitus is a symptom because it always accompanies another disorder, disease, or health problem. It never occurs on its own without other symptoms or disorders. The current theories for the mechanics of tinnitus are the decoupling of the OHC from the tectorial membrane and hyper or hypo auditory firing. It's likely that some pathophysiology or trauma causes these things to occur, rather than spontaneously occurring.

OK ~. but what about those ppl for whom tinnitus is their primary complaint?

19. We discussed several treatment options that an audiologist might recommend for a patient suffering from tinnitus. In the space below, list two of these treatments and describe how you would explain their effect to a patient for whom you are recommending them. (6 points)

cannot recommend,
audiologists
prescribe drugs

Drugs are one treatment option for tinnitus. Diuretics, such as furosemide, have been prescribed in the past with mixed results. Although furosemide may help the tinnitus, it can also be ototoxic and has other adverse side effects. Drugs for sleep or depression may help the patient cope with the tinnitus. Another option would be a tinnitus masker, worn at ear level. This would be most effective if the patient's tinnitus can be matched to a tone or narrowband noise, but that is often times a difficult thing to do.

how would
you explain
this?

20 a. For which of the three surgical approaches for acoustic neuroma removal (translabrynthine, retrosigmoid, or mid-cranial fossa) is hearing preservation not possible? (2 points)

Translabrynthine

b. What patient or tumor characteristics would lead the surgeon to attempt hearing presentation? List 2. (4 points)

Speech recognition threshold < 50 dB HL
Word recognition score > 50%

-4

-4

21. For each of the following, what are the expected findings for a patient who has classic auditory neuropathy/auditory dys-synchrony? (2 points each)

- a. Audiogram characteristics *tends to fluctuate but is not progressive configuration can range from flat to jagged*
- b. Speech discrimination/word recognition *poorer than expected for both*
- c. Immittance (tympanogram and reflexes) *tymps normal, type A reflexes absent*
- d. ABR *absent or severely distorted*
- e. OAEs *present*

22. Describe two rehabilitation/treatment options for patients diagnosed with auditory neuropathy. (4 points)

Hearing aids are not the preferred treatment option for auditory neuropathy patients because amplification may damage the normally functioning OHC. However, they do work well for some patients and should be tried before considering a cochlear implant. The electrical stimulation from an implant is thought to improve the synchrony of neural firings. However, if the implant is not successful, then the patient will have lost their hearing in the implanted ear.

23. The ASHA definition of central auditory processing disorder (CAPD) describes that a person with CAPD will have difficulty in one or more of several areas. List two of these areas. (4 points)

*localization & lateralization
sequencing auditory stimuli*

Clinical Cases: These following questions refer to the audiograms labeled CASE A – part 1 and CASE A – part 2.

24. Case A – part 1 has a noise induced hearing loss.

a. In the space below, list key components of the case history that would support a diagnosis of noise induced hearing loss as compared to an acoustic neuroma. (4 points)

NIHL

bilateral
gradual
tinnitus

✓ noisy hobby

✓ difficulty hearing in background noise

Acoustic Neuroma

unilateral

possibly sudden onset

high frequency continuous tinnitus

vertigo or dizziness

the lists don't really answer the question, what would help you to suspect noise HP (w/ asymmetric loss) & not ac. neuroma.

b. On the CASE A – part 1 audiogram, complete the speech audiometry (SRT and Speech Recognition), tympanometry, and acoustic reflex (thresholds and decay) sections of the audiogram so that they are consistent with a diagnosis of noise induced hearing loss. (10 points)

c. On the CASE A – part 2 audiogram, complete the speech audiometry (SRT and Speech Recognition), tympanometry, and acoustic reflex (thresholds and decay) sections of the audiogram so that they are consistent with a diagnosis of a left acoustic neuroma. (10 points)

d. In the space below, describe click ABR findings for CASE A – part 2 that are consistent with a diagnosis of a left acoustic neuroma. (3 points)

The click ABR on the right ear will be within normal limits, with possibly some early components missing due to the SNHL. The ABR for the left ear will have prolonged interwave intervals.

poor morph-
interaural
wave I latency
diff.