Weber Test

Purpose

- To assess the function of the vestibulocochlear nerve (cranial nerve # 8), aids in determining if hearing loss is conductive or neurosensory in origin, and tests for lateralization

Indications

- Hearing screening on patients with unilateral hearing loss

Equipment

- 256 Hz or 512 Hz tuning fork

Technique

1. Ensure the room is quite
2. Lightly vibrate the fork by stroking it between the thumb and index finger or tapping it on your knuckles
3. Place the base of the vibrating fork firmly on top of the patient's head (vertex) or on the mid forehead
    a. Notes: ensure the fork is equidistant from both ears
4. Ask the patient:
    a. What do you feel? (i.e. buzzing, tingling)
    b. Do you hear anything?
        i. If the patients answers no then have the patient close their eyes and ask the question again
    c. Which ear?

Results

- **Normal**: vibration is heard equally in both ears or the midline
- **Unilateral conductive hearing loss**: sound is heard in (lateralized to) the impaired ear (denser objects are better conductors than air)
    - Conditions include: osteosclerosis otitis media, perforation of the eardrum, middle ear disease, or occlusion of the external ear canal by cerumen
- **Unilateral sensorineural hearing loss**: sound is heard in "good" ear (inner ear or cochlear nerve damage impairs transmission to affected ear)

Diagnostic Accuracy

- Sensitivity: 55%-78%
- Specificity
    - Neurosensory loss: 79%
    - Conductive loss: 92%
- Agreement coefficient of weber test to audiometry
    - Overall: 0.82
    - Subset (patients in which the test lateralized): 0.98

Pearls

- The frequency range of conversation speech is between 500-3000 Hz and between 45-60 decibels

- This test does not distinguish normal hearing from bilateral neurosensory loss or from mixed conductive/neurosensory hearing loss
- Use this test only in patients with unilateral hearing loss since patients with normal hearing may lateralize, and patients with bilateral conductive/sensorineural deficits may not lateralize

References

1. Bickley LS et al. Bates' Guide to Physical Examination and History Taking. 11th ed. Philadelphia, PA: Lippincott Williams & Wilkins. 2013;237-238, 281.
2. McGee S. Evidence Based Physical Diagnosis. St. Louis: Elsevier, 2007.
3. Orient, JM. Sapira's Art and Science of Bedside Diagnosis. 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins. 2010;230.
4. Shuman AG et al. Tuning Fork Testing in Sudden Sensorineural Hearing Loss. JAMA Intern Med. 2013;173(8):706-707.