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Tuning Fork Tests and Audiogram Interpretation

Practical 03 / Supervised clinical examination

Aim

Demonstrate Rinne and Weber on a suitable volunteer and interpret air and bone thresholds and tympanometry.

Principle

Air conduction uses external, middle and inner ear pathways. Bone conduction bypasses much of the outer and middle ear. The pattern, method and masking determine the supported interpretation.

Materials and Requirements

- 512 Hz tuning fork and quiet room
- Supplied labelled audiograms and tympanograms

Procedure

1. Check symptoms and side. Compare bone and air perception on each side using the taught Rinne method.
2. Check which ear is affected and explain the comparison in a quiet room. Use the course's tuning fork, commonly 512 Hz, and verify that the person understands the response task.
3. For each Rinne test compare perception at the mastoid and by the canal using the taught sequence while the fork is vibrating. Record air louder than bone, bone louder than air or unclear.
4. Place the vibrating fork at an appropriate midline point for Weber and ask whether sound is heard centrally or on one side.

Continue with step 5 on the next page.

Procedure Continued

Tuning Fork Tests and Audiogram Interpretation

5. Centre the base over the reference midline point and ask an open question about where the sound seems louder. Check answer consistency and interpret Weber with both Rinne findings.
6. Confirm audiogram symbols, units, masking and applicable air and bone thresholds. Identify a supported gap and review the accompanying tympanogram.
7. Read the audiogram frequency and dB HL axes, separating the two ears and air from bone symbols. Check masking and compare air and bone thresholds at the same frequencies.
8. Review the tympanogram shape and accompanying ear-canal volume before making an inference. Describe whether the available results support conductive, sensorineural or a mixed pattern.
9. Reconcile the findings with history and document limitations, particularly severe unilateral loss or an unclear response.
10. State the side, evidence and unresolved questions. Refer sudden hearing loss or inconsistent tests for senior assessment and formal audiological review.

Precautions

- Use calibrated reported results to grade loss.
- Sudden hearing loss or other red flags need timely assessment through the clinical pathway.

Observations and Interpretation

Tuning Fork Tests and Audiogram Interpretation

Observations and Record

Item	What to record	What it tells you
Rinne and Weber	Side, relative air and bone response and lateralisation	Provides screening clues
Audiogram	Thresholds and air-bone gap at defined frequencies	Describes hearing type and extent
Tympanometry	Pattern and ear canal volume where appropriate	Adds middle-ear evidence

Worked Example

In an illustrative right ear, air threshold is 40 dB HL and bone threshold is 10 dB HL at one frequency. The 30 dB gap supports a conductive component if other audiometric and masking evidence agree.

Result and Interpretation

State the supported hearing pattern and what the full audiology assessment should clarify.

Viva Questions and Answers

What does air louder than bone suggest on Rinne?

It can occur with normal hearing or sensorineural loss. Interpret alongside the other findings.

Why review masking?

The opposite ear can detect the signal and distort side-specific thresholds.

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