P407

AUDITORY EVOKED POTENTIALS

Correlation of Auditory Brainstem Response Thresholds with Speech Perception in Quiet and Pure-Tone Audiometry in Adults

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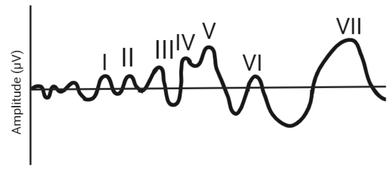
BACKGROUND

- Auditory brainstem responses (ABRs) serve various clinical purposes, including newborn hearing screening, objective estimation of hearing thresholds, and intraoperative neurosurgical monitoring.
- In some countries, ABRs contribute to defining reimbursement criteria for cochlear implantation (CI).



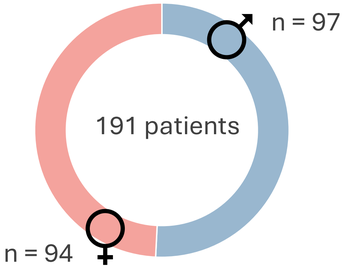
OBJECTIVES

To assess the relevance of ABR thresholds in evaluating CI candidacy by examining their correlation with functional hearing in patients with sensorineural hearing loss (SNHL).

- Correlation ABR – CVC in quiet at 70 dB SPL
- Correlation ABR – pure tone audiometry

METHODS

- Retrospective study.
- All adult patients who underwent pure tone audiometry, speech audiometry and ABR measurements between December 1st 2019 and August 9th 2023 at Antwerp University Hospital were considered for inclusion.



Mean age: 62.1 years

Mean low Fletcher index: 72,21 dB HL

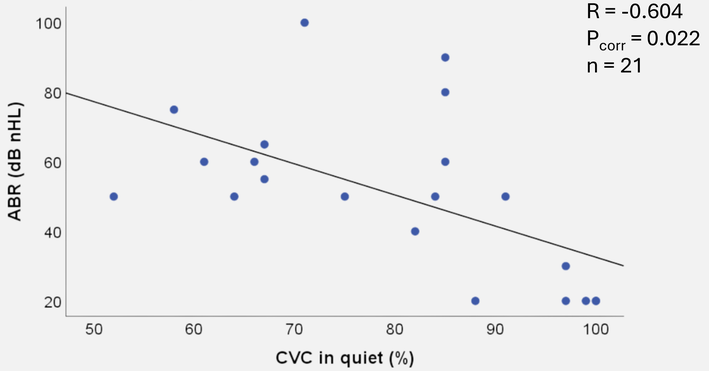
RESULTS

Correlation ABR threshold – CVC in quiet at 70 dB SPL

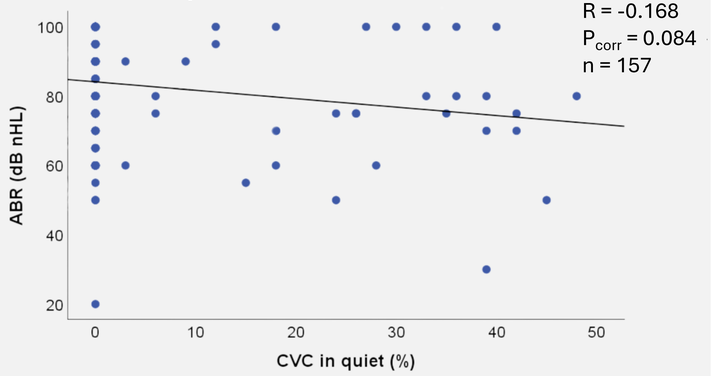
Entire cohort

Significant negative correlation (R = -0.397, P_{corr} < 0,0001, n = 178)

Mild to moderate SNHL:
CVC in quiet ≥ 50% at 70 dB SPL



Severe SNHL:
CVC in quiet < 50% at 70 dB SPL



Mild to moderate SNHL:
ABR threshold < 60 dB nHL

Significant correlation (R = -0.604, P_{corr} = 0.022, n = 21)

Severe SNHL:
ABR threshold ≥ 60 dB nHL

No significant correlation (R = -0.175, P_{corr} = 0.084, n = 157)

Correlation ABR threshold – PTA

Across all subgroups, ABR thresholds showed a stronger correlation with the high Fletcher index compared to the low Fletcher index.

CONCLUSIONS

In patients with **more severe SNHL** (speech perception < 50 % at 70 dB SPL, ABR threshold of 60 dB nHL or worse), the **ABR threshold is not correlated with speech perception** anymore.
This **limits the clinical validity** of using this test for auditory threshold estimation or CI candidacy evaluation.

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Questions? Get in touch!
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