Abstract 1

Preferred type of presentation: Oral

Topic: Objective measurements for hidden hearing loss

Title: Lifetime noise exposure affects human auditory brainstem responses

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Abstract

Objectives: Whether noise-induced cochlear synaptopathy occurs in humans has not yet been definitively demonstrated. We aimed to evaluate the effects of lifetime noise exposure (LNE) on auditory brainstem responses (ABRs) recorded at supra-threshold level.

Methods: ABR waves I and V amplitudes were measured at 108 dB ppeSPL rarefaction clicks in 68 normal hearing subjects. A linear regression model was fitted with age, gender, lifetime noise exposure, and audiometric pure-tone thresholds as predictor variables.

Results: Despite large inter-subject variability in noise exposure and ABR amplitudes, we found a statistically significant effect of LNE on the amplitudes of waves I [-0.06 $\mu V/\log_{10}(Pa^2/h)$, p-value 0.009] and V [-0.09 $\mu V/\log_{10}(Pa^2/h)$, p-value 0.001].

Conclusion: The statistically significant trends observed in our results are consistent with the presence of noise-induced cochlear synaptopathy in humans. They also suggest that this pathology is present in most adults, except for those with very minimal LNE.