Effects of Ambient Acoustic Noise on Auditory Brainstem Response to Level-Specific Chirp and Click Stimuli in Normal-Hearing Adults

Journal of Audiology and Otology • Article • *Open Access* • 2022 •
DOI: 10.7874/jao.2021.00689

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Abstract

Background and Objectives: Despite few reports on the influence of ambient acoustic noise on auditory brainstem response (ABR) to click stimuli, its effects on ABR to level-specific (LS) stimuli have not been systematically investigated. This study aimed to investigate the influence of ambient acoustic noise on ABR findings using both LS chirp and click stimuli. Subjects and Methods: Twelve normal-hearing adults participated in this repeated measure design study. The ABRs were acquired at 80, 50, and 30 dBnHL using two stimuli (LS chirp and click) under two conditions (quiet and

noise). The ABRs under noise conditions were acquired using babble noise and white noise. The noise level was set at 55 dBA. Two-way repeated measure analysis was used to identify the main effects of the test conditions, stimulus types, and their interactions at a 95% confidence level. Results: No significant influence of ambient acoustic noise on ABR findings was identified at all intensity levels. No significant difference was found in the number of signal averages to reach the 0.04 μV residual noise as stopping criteria among the ABRs recorded with different types of stimuli and test conditions. The ABR waves I and V amplitudes were larger with LS chirp than with click stimulus. Conclusions: Ambient acoustic noise has no significant influence on ABR findings and the ABR test time based on the 55 dBA noise level used in this study. © 2022 The Korean Audiological Society and Korean Otological Society

Author keywords

Acoustics; Auditory; Brain stem; Evoked potentials; Noise

Funding details

Details about financial support for research, including funding sources and grant numbers as provided in academic publications.

Funding sponsor	Funding number	Acronym
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Funding text

The authors wish to acknowledge the Transdisciplinary Research Grant Scheme (TRGS/1/2019/UIAM/02/4/2) from Ministry of Higher Education of Malaysia, for their financial support in conducting this study.

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