Effects of Different Electrode Configurations on the Narrow Band Level-Specific CE-Chirp and Tone-Burst Auditory Brainstem Response at Multiple Intensity Levels and Frequencies in Subjects With Normal Hearing

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Abstract

Purpose: The purpose of this study was to investigate the influence of 2 different electrode montages (ipsilateral and vertical) on the auditory brainstem response (ABR) findings elicited from narrow band (NB) level-specific (LS) CE-Chirp and tone-burst in subjects with normal hearing at several intensity levels and frequency combinations.

Method: Quasi-experimental and repeated-measures study designs were used in this study. Twenty-six adults with normal hearing (17 females, 9 males) participated. ABRs were acquired from the study participants at 3 intensity levels (80, 60, and 40 dB HL), 3 frequencies (500, 1000, and 2000 Hz), 2 electrode montages (ipsilateral and vertical), and 2 stimuli (NB LS CE-Chirp and tone-burst) using 2 stopping criteria (fixed average of 4000 sweeps and F-test at multiple points = 3.1).

Results: Wave V amplitudes were only 19%-26% larger for the vertical recordings than the ipsilateral recordings in both the ABRs obtained from the NB LS CE-Chirp and tone-burst stimuli. The mean differences in the F-test at multiple points values and the residual noise levels between the ABRs obtained from the vertical and ipsilateral montages were statistically non-significant. In addition, the ABR elicited from the NB LS CE-Chirp was significantly larger (up to 69%) than those from the tone-burst, except at the lower intensity level.

Conclusion: Both the ipsilateral and vertical montages can be used to record ABR to the NB LS CE-Chirp because of the small enhancement in the wave V amplitude provided by the vertical montage.

Keywords

KeyWords Plus: EVOKED-RESPONSE, STIMULI, ABR, AMPLITUDE, THRESHOLD, CLICK, CE-CHIRP(R), NEWBORNS, ADULTS, POTENTIALS

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