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 nHL), 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 averages at 4,000 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 not 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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