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Evaluation of auditory steady state response (assr) in accurate quantification of deafness in children in comparison to auditory brainstem response (abr)

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Objectives

Any infant if identified as having a hearing loss, there is an immediate need to characterize the degree, configuration, and that type of loss, since appropriate recommendations regarding the selection and fitting of devices, can only be made with an understanding of both the degree and configuration of a child's hearing loss. Aim of the study is to evaluate the effectiveness of Auditory Steady State Response (ASSR) as a superior diagnostic modality of early childhood deafness as compared to Auditory Brain Response (ABR).

Method

60 children < 5 years of age, with and without hearing loss (30 each), were included based on ABR examination. Subjects were those who were referred for electrophysiological assessment as high risk for hearing loss but had passed the OAE screen and those who had a "Refer" result on the OAE screen. They were then selected to click ABR & ASSR. Subjects with any middle ear pathology and those with any Auditory Dys-synchrony were excluded.

Results

(31/60) subjects belong to < 1 year age group. 30(50%) had normal hearing by ABR. 09(15%) had hearing thresholds by ABR better than 95dBHL and 21(35%) had no discernible Wave V on ABR at an equipment maximum of 95dBHL. ASSR was able to ascertain thresholds for all 21 subjects at 500 Hz & 1 KHz frequencies. At 2 KHz, it was able to ascertain thresholds for all except 3 of 42 ears and at 4 KHz, for all except 14 of 42 ears examined. Therefore ASSR was superior to ABR in quantifying the degree of hearing loss in excess of 95dBHL.

Recommendations

Every child with a suspected hearing loss should be tested with a complete battery of tests including OAE, ABR & ASSR prior to decision on intervention. ASSR should be a part of the evaluation as detection of residual hearing may alter the management strategy towards hearing aids or a bi-modal stimulation with hearing aids and Cochlear Implants.