Professorial lecture: Utilising Auditory Evoked Potentials for Interventions in Children with Autism

Auditory evoked potential (AEP) is a vital tool for audiologists worldwide. It is an objective measure of auditory function, capable of estimating an individual's hearing status and diagnosing disorders within the central auditory nervous system. The most common applications of AEP include estimating hearing thresholds, hearing screenings, and neuro-diagnostic evaluations. Less commonly, AEP is used to assess the effectiveness of interventions, predict outcomes of audiological treatments, or forecast the likelihood of certain disorders.

This lecture emphasized the use of AEP to evaluate the effectiveness of sound therapy and working memory interventions among children with autism spectrum disorder (ASD). Individuals with ASD often face sensory processing challenges, including auditory sensory gating deficits. These deficits can contribute to mental health issues such as anxiety, which in turn may affect emotional regulation (Jamal et al., 2025). The inaugural professorial lecture discussed strategies to address poor emotional regulation, highlighting the use of sound therapy combined with working memory training. Sound therapy is hypothesized to regulate brain function and address auditory sensory gating deficits, while working memory therapy aims to enhance inhibitory control, leading to improved emotional regulation and overall well-being in children with ASD.

The study's results were promising, demonstrating that AEP—specifically suppression otoacoustic emissions—showed significant positive changes following the sound and working memory therapy intervention. These changes indicate improvements in the neural inhibition system at the brainstem level. This suggests that the combined sound-working memory therapy has the potential to improve auditory sensory gating deficits and emotional regulation.

The optimal combination identified in the study involved white noise paired with working memory training, aligning with the principle of stochastic resonance (Söderlund, Sikström, & Smart, 2007).

The lecture also explored the future applications of AEP, particularly the auditory brainstem response (ABR) test, in predicting the likelihood of newborns developing ASD. This could potentially be achieved using existing ABR data collected through universal newborn hearing screening programs. Given the role of the auditory system in various disorders, it is hoped that audiologists will continue to provide expertise in sound therapy and AEP to support patient care and facilitate improved outcomes.

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