Subcortical Encoding of Speech Cues in Children with Attention Deficit Hyperactivity Disorder

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Abstract

Objective

There is little information about processing of nonspeech and speech stimuli at the subcortical level in individuals with attention deficit hyperactivity disorder (ADHD). The auditory brainstem response (ABR) provides information about the function of the auditory brainstem pathways. We aim to investigate the subcortical function in neural encoding of click and speech stimuli in children with ADHD.

Methods

The subjects include 50 children with ADHD and 34 typically developing (TD) children between the ages of 8 and 12 years. Click ABR (cABR) and speech ABR (sABR) with 40 ms synthetic /da/ syllable stimulus were recorded.

Results

Latencies of cABR in waves of III and V and duration of V-Vn (P<0.027), and latencies of sABR in waves A, D, E, F and O and duration of V-A (P<0.034) were significantly longer in children with ADHD than in TD children. There were no apparent differences in components the sustained frequency following response (FFR).

Conclusions

We conclude that children with ADHD have deficits in temporal neural encoding of both nonspeech and speech stimuli.

Significance

There is a common dysfunction in the processing of click and speech stimuli at the brainstem level in children with suspected ADHD.