Gender Specific Differences in Auditory Brain Stem Response in Young Patients with ADHD

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Abstract

Objective:
The auditory brainstem response (ABR) is often affected in neurodevelopmental disorders. The aim of this study was to investigate gender differences in ABR between young females and young males with ADHD, compared to control subjects.

Method:
We studied 63 females with ADHD (mean 13.8 years), 26 female controls (mean 13.8 years), 48 males with ADHD (mean 13.1 years), and 20 male controls (mean 12.8 years). All patients were diagnosed according to the DSM-IV. An ABR consists of seven positive peaks (wave I–VII) 10 ms following a stimulus, recorded by electrodes on the mastoid processes of each ear and on the forehead.

Results:
When analysing the ABRs of the female ADHD patients 3 traits were identified; TR6, TR14 and TR15. The higher value in TR6 (p=0.000064) is explained as an aberrant thalamus profile. In TR14 (p=0.00059) presence of 3500 Hz frequencies in the region from superior olivary complex to thalamus. TR15 (p=0.00035) represents more aberrant curve profiles in the region of the lateral leminiscus. In the ABR of the male patients we found we 3 traits; TR4, TR5 and TR14. TR 4 (p=0.00105) is a lower correlation to a norm curve in inferior colliculus and thalamic area. TR5 (p=0.00027) identifies irregular curve profiles representing the nucleus cochlea. TR14 (p=0.00013) presence of 3500 Hz-frequencies in the region from superior olivary complex to thalamus.

Conclusion:
Young females with ADHD exhibited a significantly different ABR in a region between cochlear nucleus and superior olivary complex and in the thalamic region. In the male ADHD group ABR aberrancies were found in the midbrain region and in the more peripheral part; nucleus cochlea. The only trait that was significantly different between the ADHD group and the control subjects, for both male and females, was TR14. These data indicate both gender specific aberrations in the ABR in ADHD subjects as well as specific differences between ADHD subjects and normal controls.