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Frontal Lobe Differences in ADHD

Submitted by ADD ADHD Inform... on Wed, 02/15/2012 - 14:52

Atypical Frontal Brain Activation in ADHD: Preschool and Elementary School Boys and Girls.

Attention-deficit/hyperactivity disorder (ADHD) is a common psychiatric disorder that significantly hampers psychosocial adaptation (e.g., Biederman et al., 1996; Tannock, 1998). Several findings point to the involvement of a right-sided frontostriatal dysfunction in ADHD symptoms.

An alerting network for maintaining a vigilant state is assumed to be localized in the right frontal lobe (Posner and Petersen, 1990). This hypothesis is supported by the fact that the development of attention in normal children

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correlated with magnetic resonance imaging (MRI)-derived morphometric measures of the anterior cingulate, particularly the right (Casey et al., 1992).

Adults and children with focal, especially frontal, right-hemispheric lesions display behavior problems comparable with those in children with ADHD, such as inattention, defective response inhibition, and imperistence (Heilman et al., 1991).

Findings of structural neuroimaging studies underscore the assumption of a right frontal deficit in ADHD. Using MRI, abnormal - though markedly diverging - findings in several brain regions (e.g., basal ganglia, corpus callosum) were reported in children with ADHD (Filipek, 1999; Tannock, 1998), but **all studies examining the frontal region found the right anterior frontal cortex to be smaller** than in nonADHD children (Casey et al., 1997; Castellanos et al., 1996; Filipek et al., 1997; Hynd et al., 1990).

Casey et al. (1997) correlated performance of ADHD children and control children in 3 response inhibition tasks with MRI-based anatomical measures of the prefrontal cortex and the basal ganglia. Significant negative correlations between task performance and volume of the prefrontal cortex and caudate nuclei emerged, predominantly in the right hemisphere, suggesting that the right frontostriatal circuitry is intimately involved in response inhibition.

(Statistical Data Included)

Author/s: Lioba Baving

Issue: Nov, 1999

< Adult ADHD Latest National Survey up Nature vs. Nurture in ADHD : the Conflict Continues >

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