Hemispheric Coherence in ASD with and without Comorbid ADHD and Anxiety.

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Abstract

There is a growing body of evidence suggesting that altered brain connectivity may be a defining feature of disorders such as autism spectrum disorder (ASD), anxiety, and ADHD. This study investigated whether resting state functional connectivity, measured by 128-channel EEG oscillation coherence, differs between developmental disorders. Analyses were conducted separately on groups with and without comorbid conditions. Analyses revealed increased coherence across central electrodes over the primary motor cortex and decreased coherence in the frontal lobe networks in those with ASD compared to neurotypical controls. There was increased coherence in occipital lobe networks in the ADHD group compared to other groups. Symptoms of generalised anxiety were positively correlated with both frontal-occipital intrahemispheric (alpha only) coherence and occipital interhemispheric coherence (alpha, approaching theta band). The patterns of coherence in the ASD pure group were different when comorbid conditions were included in the analyses, suggesting that aberrant coherence in the frontal and central areas of the brain is specifically associated with ASD. Our findings support the idea that comorbid conditions are additive, rather than being symptoms of the same disorder.