

Specificity of Quantitative EEG Analysis in Adults with Attention Deficit Hyperactivity Disorder.

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Attention deficit hyperactivity disorder (ADHD) in children and adolescents is characterised by excessive restlessness and an extremely poor concentration span, resulting in impulsive and disruptive behaviour. Clinical observation of ADHD in adults suggests that the early hyperactivity is diminished in terms of its impact on social and academic function, while impulsive-type behaviours remain unchanged.

EEG studies in children and adolescents with ADHD have reported significantly more low-frequency power (predominantly theta) and less high-frequency power (predominantly beta) than in normal subjects.

In normal children and adolescents, a decrease in theta power and an increase in beta power are found with increasing age, leading some researchers to interpret the EEG anomalies in ADHD as evidence of developmental delay.

Studies of adults with ADHD compared with normal adult control subjects have found a reduction in the difference between the two groups, suggesting that the reduced beta activity apparent in ADHD children and adolescents changes with age. Adults with ADHD thus appear to have elevated low-frequency power as their predominant EEG difference from normal control subjects.

The present study examined whether this EEG profile was specific to adult ADHD patients. Quantitative EEGs were recorded at rest in an eyes-open condition and used to compare 50 adult patients diagnosed with ADHD with 50 non-ADHD subjects (who presented for ADHD assessment but failed to meet the diagnostic criteria) and 50 control subjects.

The ADHD group differed from both the non-ADHD and the control groups on the basis of elevated theta activity. The ADHD and control groups did not differ in beta activity, but relative theta was reduced and relative beta power was elevated in the non-ADHD group compared with both the ADHD and control groups.

These results suggest that quantitative EEG may be used to differentiate ADHD adults from both normal adults and adults who display some of the symptoms of ADHD.