EEG Dynamics of a Go/Nogo Task in Children with ADHD.


Abstract

BACKGROUND:
Studies investigating event-related potential (ERP) evoked in a Cue-Go/NoGo paradigm have shown lower frontal N1, N2 and central P3 in children with attention-deficit/hyperactivity disorder (ADHD) compared to typically developing children (TDC). However, the electroencephalographic (EEG) dynamics underlying these ERPs remain largely unexplored in ADHD.

METHODS:
We investigate the event-related spectral perturbation and inter-trial coherence linked to the ERP triggered by visual Cue-Go/NoGo stimuli, in 14 children (7 ADHD and 7 TDC) aged 8 to 12 years.

RESULTS:
Compared to TDC, the EEG dynamics of children with ADHD showed a lower theta-alpha ITC concomitant to lower occipito-parietal P1-N2 and frontal N1-P2 potentials in response to Cue, Go and Nogo stimuli; an upper alpha power preceding lower central Go-P3; a lower theta-alpha power and ITC were coupled to a lower frontal Nogo-N3; a lower low-gamma power overall scalp at 300 ms after Go and Nogo stimuli.

CONCLUSION:
These findings suggest impaired ability in children with ADHD to conserve the brain oscillations phase associated with stimulus processing. This physiological trait might serve as a target for therapeutic intervention or be used as monitoring of their effects.