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Applying data from quantitative EEG (QEEG) and Event Related Potentials (ERPs) to predict the clinical outcome of stimulant medication in pediatric ADHD

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Millions of children and adolescents worldwide are diagnosed with ADHD and treated with stimulants. About 25% are non-responders (non-REs), and acute side effects are reported in about 30%. In search for EEG based predictors of response we applied WinEEG test procedure (www.mitsar-medical.com) making EEG registrations of 3 minutes eyes closed, 3 minutes eyes opened and a 20 minutes task condition – a cued visual go/no-go task for computing ERPs. In one study 98 ADHD patients completed a 4 weeks medication trial, and were classified as REs or non-REs based on interviews and rating scales from parents and teachers. The study reports QEEG/ERP data that predict clinical response. In another study, a similar procedure was applied to predict acute side effects. In a third study, 87 patients completed a second test on a single dose of stimulants before onset of the 4 weeks trial. The predictive power of single dose changes in ADHD related ERPs and behavioral test variables were studied. Changes in ERP component P3no-go predicted the outcome of the 4 weeks trial with a large effect size ($d=1.76$). A study combining all data to compute a global prediction index is in progress.

Biography

Geir Ogrim is a Senior Clinical Neuropsychologist working in a Neuropsychiatric team in Child- and Adolescent Psychiatry at Østfold Hospital Trust, Fredrikstad, Norway, combining research and clinic. His university affiliations are NTNU, Trondheim Norway and Gillberg Neuropsychiatry Centre (GNC), Gothenburg, Sweden. His PhD thesis was on, "Electrophysiology in ADHD: Diagnosis, Predictions and Treatment". His research focuses on quantitative EEG (QEEG) and event related potentials (ERPs) in combination with neuropsychological tests as methods to be used as supplementary biomarkers in diagnosing developmental disorders and predictions of treatment outcome. He is the Head of the professional board in patient organization ADHD Norge, and a consultant at NevSom – National Resource Centre for Neurodevelopmental Disorders and Hypersomnias.

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