

REDUCED CORTICAL INHIBITION AND EEG RESPONSE TO TRANSCRANIAL MAGNETIC STIMULATION IN ADHD

Investigators at University of Heidelberg and other centers in Germany employed the N100 component of the EEG response to transcranial magnetic stimulation (TMS) as a novel marker for direct assessment of cortical inhibition in children with ADHD. Amplitude and latency of the N100 component were compared at rest, during response preparation in a motor reaction time task and during movement execution. In 20 children with ADHD compared to 19 healthy controls (8-14 years), the amplitude of N100 at rest was significantly lower and its latency tended to be shorter. During movement, N100 amplitude decreased while motor evoked potential amplitudes showed facilitation. Children with ADHD showed a smaller N100 amplitude reduction during movement execution compared with control children. The N100 amplitude evoked by TMS decreased with increasing age in both groups. The findings suggest that top-down control of motor cortical inhibition is reduced in ADHD, and the deficit in cortical control is an intrinsic qualitative deficit and not due to delayed development. (Bruckmann S, Hauk D, Roessner V, et al. Cortical inhibition in attention deficit hyperactivity disorder: new insights from the electroencephalographic response to transcranial magnetic stimulation. *Brain* 2012 Jul;135(Pt 7):2215-30). (Respond: Dr Stephan Bender, Child and Adolescent Psychiatric Hospital, University of Technology, Dresden, Fetscherstr. 74, D-01307 Dresden, Germany. E-mail: Stephan.bender@uniklinikum-dresden.de).

COMMENT. The authors conclude that reduced cognitive control of the motor system may contribute to diminished motor cortex inhibition and is responsible for the deficient TMS-evoked N100 amplitude reduction during motor response preparation and motor execution in ADHD. Effects of age on TMS-evoked N100 are not compatible with a delayed development of cortical inhibition but point to intrinsic inhibition deficits in the motor system of ADHD. The TMS-evoked EEG potentials are a promising new marker of cortical inhibition in children with ADHD. (Bender S et al. Electroencephalographic response to TMS in children: evidence for giant inhibitory potentials. *Ann Neurol* 2005 Jul;58(1):58-67). The TMS-evoked N100 is considered to be a marker of motor cortex inhibition influenced by cortico-striato-thalamo-cortical loops.

MOVEMENT DISORDERS

PREVALENCE OF TIC DISORDERS: A META-ANALYSIS

Researchers at the University of Calgary, Alberta, Canada; University of Toronto, Ontario, Canada; and Dublin, Ireland evaluated the prevalence of tic disorders by using MEDLINE and Embase databases to perform a meta-analysis of reports published 1985-2011. In 13 studies of children with Tourette syndrome, the prevalence was 0.77%. Boys were affected more often than girls, 1.06% vs. 0.25%. Transient tic disorder, the most common tic disorder, affected 3% children. In adults, the prevalence of Tourette syndrome based on a meta-analysis of 2 studies was 0.05%. The prevalence of tic disorders was higher in all studies performed in special education populations. The