Event-related potentials reflect the efficacy of pharmaceutical treatments in children and adolescents with attention deficit/hyperactivity disorder.


Abstract

Few objective biological measures of pharmacological treatment efficacy exist for attention deficit/hyperactivity disorder (ADHD). Although we have previously demonstrated that event-related potentials (ERPs) reflect the effects of osmotic-release methylphenidate in treatment of naïve pediatric patients with ADHD, whether this is true for the therapeutic effects of atomoxetine (ATX) is unknown. Here, we used the Japanese version of the ADHD rating-scale IV to evaluate 14 patients with ADHD, and compared their ERP data with 14 age- and sex-matched controls. We measured P300 and mismatch negativity (MMN) components during an auditory oddball task before treatment (treatment naïve) and after 2 months of ATX treatment. Compared with controls, P300 components at baseline were attenuated and prolonged in the ADHD group at Fz (fronto-central), Cz (centro-parietal), Pz (parietal regions), C3 and C4 electrodes. ATX treatment reduced ADHD symptomology, and after 2 months of treatment, P300 latencies at Fz, Cz, Pz, C3, and C4 electrodes were significantly shorter than those at baseline. Moreover, MMN amplitudes at Cz and C3 electrodes were significantly greater than those at baseline. Thus, ERPs may be useful for evaluating the pharmacological effects of ATX in pediatric and adolescent patients with ADHD.