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Original Contributions

Effects of Rivastigmine on Sustained Attention in Schizophrenia: An fMRI Study

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Abstract

Abstract: This study assessed the neural correlates of the effects of rivastigmine, a CNS-selective cholinesterase inhibitor, given as an add-on therapy to antipsychotics-treated patients with schizophrenia who displayed moderate cognitive impairments, using functional magnetic resonance imaging (fMRI) during a sustained attention task. The study used a placebo-controlled, randomized, double-blind longitudinal design. Twenty patients stable on antipsychotics, 11 assigned to receive rivastigmine and 9 to receive placebo, underwent fMRI and clinical assessments at baseline and after 12 weeks. The fMRI task used a periodic block design and involved 3 conditions: rest, detecting a nonzero number ("nonzero" condition), and detecting a specific number ("specific number" condition) among a series of 6-digit numbers. Online data (via button presses) were acquired on both occasions. Behavioral results showed a trend ($P = 0.075$) for the rivastigmine-treated patients to have more correct responses and the placebo group to have fewer correct responses at 12 weeks compared with baseline in the "nonzero" condition. There was also an increase in regional brain activity in the cerebellum in the rivastigmine group at 12 weeks in both conditions, which was only partially explained by change in behavioral measures; no change was observed in the placebo group. Our results showed that rivastigmine treatment increased cerebellar activity and influenced attentional processes.