

Measuring the Effect of Continuous Performance Test-3 Administration on Regional Cerebral Blood Flow with Single-Photon Emission Computed Tomography in Adult ADHD

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Abstract : The aim of this study is to investigate the effect of the administration of the Conners Continuous Performance Test (CPT-3) on cerebral blood flow (CBF) in adults with ADHD. The data for this study was derived from a large SPECT database. Participants in the ADHD group (n=81, Mage=37.97) were similar to those in the healthy control group (n=8503, Mage=41.86). All participants were assessed for cerebral blood flow levels before and after CPT-3 administration. Both age and gender were considered covariates. Multiple 2-by-2 ANCOVAs with repeated measures were conducted with sphericity assumed. The main effects of CPT-3 administration on CBF levels were significant in the left and right side of the frontal and occipital, and right temporal lobe. The main effects of ADHD diagnosis were significant in all brain areas assessed. The interaction between CPT-3 administration and ADHD diagnosis was significant in the left and right side of the limbic system, basal ganglia, the frontal lobe, and occipital lobe. Post hoc tests with a Bonferroni adjustment revealed that CBF levels increased following CPT-3 administration but less so in the ADHD group. Individuals had higher levels of CBF following the administration of CPT-3. Due to a significant interaction, we can infer that ADHD diagnosis changes the effect of CPT-3 administration on CBF levels. This is consistent with our hypothesis considering that CPT-3 is a test of sustained attention, a common challenge for children with ADHD. The aforementioned interaction was not found to be significant in the parietal lobe. This may be due to the nature of CPT-3 which does not require an integration of sensory information.

Keywords : SPECT, ADHD, conners continuous performance test, cerebral blood flow

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