Reward Processing Deficits During a Spatial Attention Task in Patients with ADHD: An fMRI Study

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Abstract

Objective:
In this study, we aimed to explore how cues signaling rewards and feedbacks about rewards are processed in ADHD.

Method:
Inside the scanner, 16 healthy children and 19 children with ADHD completed a spatial attention paradigm where cues informed about the availability of reward and feedbacks were provided about the earned reward.

Results:
In ventral anterior thalamus (VA), the controls exhibited greater activation in response to reward-predicting cues, as compared with no reward cues, whereby in the ADHD group, the reverse pattern was observed (nonreward > reward). For feedbacks; absence of rewards produced greater activation than presence in the left caudate and frontal eye field for the control group, whereas, for the ADHD group, the reverse pattern was again observed (reward > nonreward).

Discussion:
The present findings indicate that ADHD is associated with difficulty integrating reward contingency information with the orienting and regulatory phases of attention.