Integrity of Amygdala Subregion-Based Functional Networks and Emotional Lability in Drug-Naïve Boys With ADHD

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Abstract

Objective: This study evaluated the functional networks of amygdala subregions (basolateral [BLA], centromedial [CMA], and superficial amygdala [SFA]) in ADHD and their association with emotional lability (EL) symptoms.

Method: Resting-state functional connectivity (RSFC) of amygdala subregions and their correlations with EL scores were evaluated in 35 drug-naïve boys with ADHD and 30 age-matched healthy controls (HC).

Results: Compared with HC, altered RSFC were detected differently for each amygdala subregion in ADHD: altered RSFC of BLA with the thalamus and vermis; aberrant RSFC of CMA with the superior temporal gyrus/pole and insula, precuneus and cerebellum; reduced RSFC of SFA with dorsal frontoparietal cortices. Within ADHD, higher EL scores were associated with reduced negative RSFC of SFA with the dorsolateral prefrontal cortex and inferior parietal lobe.

Conclusion: Diffuse alterations of amygdala subregion-based networks are associated with ADHD, and the weaker SFA-frontoparietal networks might be involved in the hypothesized top-down effortful regulation of emotion.