A functional connectivity comparison between attention deficit hyperactivity disorder and bipolar disorder in medication-naïve adolescents with mood fluctuation and attention problems

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Abstract

In order to compare patterns of connectivity between affective and attention networks in adolescents with bipolar disorder (BD) and attention deficit hyperactivity disorder (ADHD), we investigated differences in resting-state functional connectivity (RSFC) between these populations. Study participants were medication-naïve adolescents (aged 13–18 years) with BD (N=22) or ADHD (N=25) and age- and sex-matched healthy adolescents (healthy controls [HC]) (N=22). Forty-seven adolescents with mood fluctuation and attention problems showed increased functional correlation (FC) between two pairs of regions within the affective network (AFN), compared to 22 HC: the left orbitofrontal cortex (OFC) to the left thalamus and the left OFC to the right thalamus. In post-hoc testing, adolescents with BD showed increased FC between two pairs of regions compared to ADHD: the right amygdala to the left temporoparietal junction (TPJ) and the right amygdala to the right TPJ. Adolescents with BD showed increased FC within the attention network (ATN) as well as increased FC between the ATN and the AFN, while those with ADHD showed decreased FC within the ATN. The current suggests that these features could be used as biomarkers for differentiating BD from ADHD in adolescents.