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Meta-analyses of developing brain function in high-risk and emerged bipolar disorder.

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Abstract

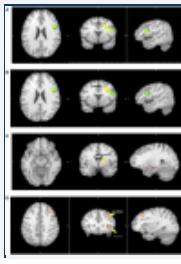
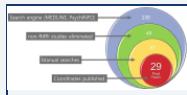
OBJECTIVES: Identifying early markers of brain function among those at high risk (HR) for pediatric bipolar disorder (PBD) could serve as a screening measure when children and adolescents present with subsyndromal clinical symptoms prior to the conversion to bipolar disorder. Studies on the offspring of patients with bipolar disorder who are genetically at HR have each been limited in establishing a biomarker, while an analytic review in summarizing the findings offers an improvised opportunity toward that goal.

METHODS: An activation likelihood estimation (ALE) meta-analysis of mixed cognitive and emotional activities using the GingerALE software from the BrainMap Project was completed. The meta-analysis of all fMRI studies contained a total of 29 reports and included PBD, HR, and typically developing (TD) groups.

RESULTS: The HR group showed significantly greater activation relative to the TD group in the right DLPFC-insular-parietal-cerebellar regions. Similarly, the HR group exhibited greater activity in the right DLPFC and insula as well as the left cerebellum compared to patients with PBD. Patients with PBD, relative to TD, showed greater activation in regions of the right amygdala, parahippocampal gyrus, medial PFC, left ventral striatum, and cerebellum and lower activation in the right VLPFC and the DLPFC.

CONCLUSION: The HR population showed increased activity, presumably indicating greater compensatory deployment, in relation to both the TD and the PBD, in the key cognition and emotion-processing regions, such as the DLPFC, insula, and parietal cortex. In contrast, patients with PBD, relative to HR and TD, showed decreased activity, which could indicate a decreased effort in multiple PFC regions in addition to widespread subcortical abnormalities, which are suggestive of a more entrenched disease process.

KEYWORDS: GingerALE; amygdala; dorsolateral prefrontal cortex; high risk; meta-analysis; pediatric bipolar disorder

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