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Candidate blood transcriptomic markers of early onset major depression derived from etiological animal models of depression

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Abstract

Early onset Major Depressive Disorder (MDD) is a serious and prevalent psychiatric illness in adolescents and young adults. Current treatments are not universally effective. Biological markers of early onset MDD could increase diagnostic and treatment specificity, but no such biomarker exists. Our innovative approach to biomarker discovery for early onset MDD combined results from genome-wide transcriptomic profiles in the blood of two animal models of depression, representing the genetic and the environmental, stress-related, etiology of MDD. Transcriptomic differences between the different animal models that showed the same directional expression differences in the blood as in the hippocampus or amygdala, were selected as potential blood markers for MDD.

We then carried out unbiased analyses of the 26 candidate blood transcriptomic markers, selected from the two models, in a sample of 15-19- year-old subjects with MDD and subjects with no disorder (ND). A panel of 11 blood markers differentiated participants with early onset MDD from the ND group. A separate, but partially overlapping panel of 18 transcripts distinguished subjects with MDD with or without comorbid anxiety. Based on an interacting protein network analysis, transcripts were differentiated as markers of MDD alone, MDD and anxiety and anxiety alone, suggesting overlapping and separate molecular mechanisms for MDD with and without comorbid anxiety. Thus, our approach could lead to clinically valid diagnostic panels of blood transcripts for early onset MDD, which could reduce diagnostic heterogeneity in this population and has the potential to advance individualized treatment strategies.

Biography

Kathleen Pajer obtained her medical degree from the University of South Alabama in the U.S., did her residency in Psychiatry at Dartmouth Hitchcock Medical Center and Yale School of Medicine, and did a research fellowship as a Robert Wood Johnson Clinical Scholar, also at Yale School of Medicine. She is currently Chief, IWK Department of Psychiatry and Head, Division of Child and Adolescent Psychiatry at Dalhousie University Faculty of Medicine. Dr. Pajer is the author of over 70 scientific publications. Her work has been primarily supported by the U.S. National Institutes of Health and some private foundations.