Immune signatures and disorder-specific patterns in a cross-disorder gene expression analysis.


Open Access: http://bjp.rcpsych.org/content/early/2016/04/21/bjp.bp.115.175471.long

Abstract

BACKGROUND:
Recent studies point to overlap between neuropsychiatric disorders in symptomatology and genetic aetiology.

AIMS:
To systematically investigate genomics overlap between childhood and adult attention-deficit hyperactivity disorder (ADHD), autism spectrum disorder (ASD) and major depressive disorder (MDD).

METHOD:
Analysis of whole-genome blood gene expression and genetic risk scores of 318 individuals. Participants included individuals affected with adult ADHD (n = 93), childhood ADHD (n = 17), MDD (n = 63), ASD (n = 51), childhood dual diagnosis of ADHD-ASD (n = 16) and healthy controls (n = 78).

RESULTS:
Weighted gene co-expression analysis results reveal disorder-specific signatures for childhood ADHD and MDD, and also highlight two immune-related gene co-expression modules correlating inversely with MDD and adult ADHD disease status. We find no significant relationship between polygenic risk scores and gene expression signatures.

CONCLUSIONS:
Our results reveal disorder overlap and specificity at the genetic and gene expression level. They suggest new pathways contributing to distinct pathophysiology in psychiatric disorders and shed light on potential shared genomic risk factors.