Study finds no link between subcortical brain volumes and genetic risk for schizophrenia

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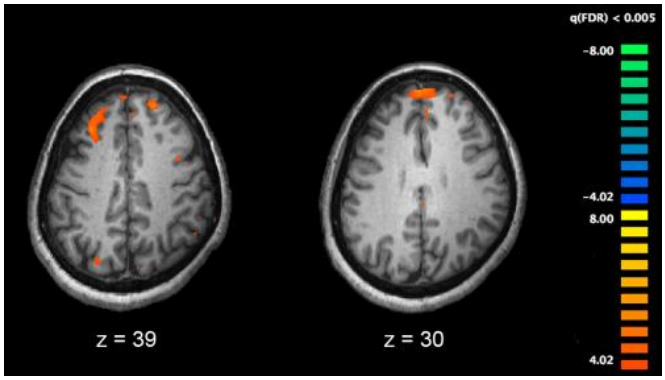

Functional magnetic resonance imaging (fMRI) and other brain imaging technologies allow for the study of differences in brain activity in people diagnosed with schizophrenia. The image shows two levels of the brain, with areas that were more active in healthy controls than in schizophrenia patients shown in orange, during an fMRI study of working memory. Credit: Kim J, Matthews NL, Park S./PLoS One.

Over the last decade, important contributions to our understanding of schizophrenia have come from two different types of studies.

Neuroimaging studies have found that certain parts of the brain, such as the hippocampus and amygdala, are smaller in people with schizophrenia - a devastating psychiatric illness with high heritability. At the same time, large genome-wide association studies (GWAS), which analyzed gene sequences from thousands of people, have found evidence suggesting that schizophrenia arises from the combined effects of many genes and not from a defect in any single gene.

Combining these two approaches was a logical next step. A new study led by Patrick F. Sullivan, MD, FRANZCP, a researcher and professor at both the University of North Carolina School of Medicine and the Karolinska Institutet in Stockholm, Sweden, evaluated the relationship between common genetic variants implicated in schizophrenia and those associated with subcortical brain volumes.

The study, which was a large-scale, global collaboration involving nearly 600 researchers from more than 350 institutions, was published online ahead of print by the journal *Nature Neuroscience* on Monday, February 1, 2016.

"In our study, we integrated results from common variant studies of schizophrenia and volumes of several brain structures," Sullivan said. "We did not find evidence of genetic overlap between schizophrenia risk and subcortical volume measures, either at the level of common variant genetic architecture or for single genetic markers.

"However, this proof-of-concept study defines a roadmap for future studies investigating the genetic covariance between structural/functional brain phenotypes and risk for psychiatric disorders," Sullivan said.

At UNC, Sullivan is Yeargan Distinguished Professor of Genetics and Psychiatry and Director of Psychiatric Genomics. At Karolinska Institutet he is Professor of Psychiatric Genetics in the Department of Medical Epidemiology and Biostatistics. He is also the founder and the lead principal investigator of the Psychiatric Genomics Consortium, the largest consortium in the history of psychiatry.

More information: Genetic influences on schizophrenia and subcortical brain volumes: large-scale proof of concept, DOI: 10.1038/nn.4228

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