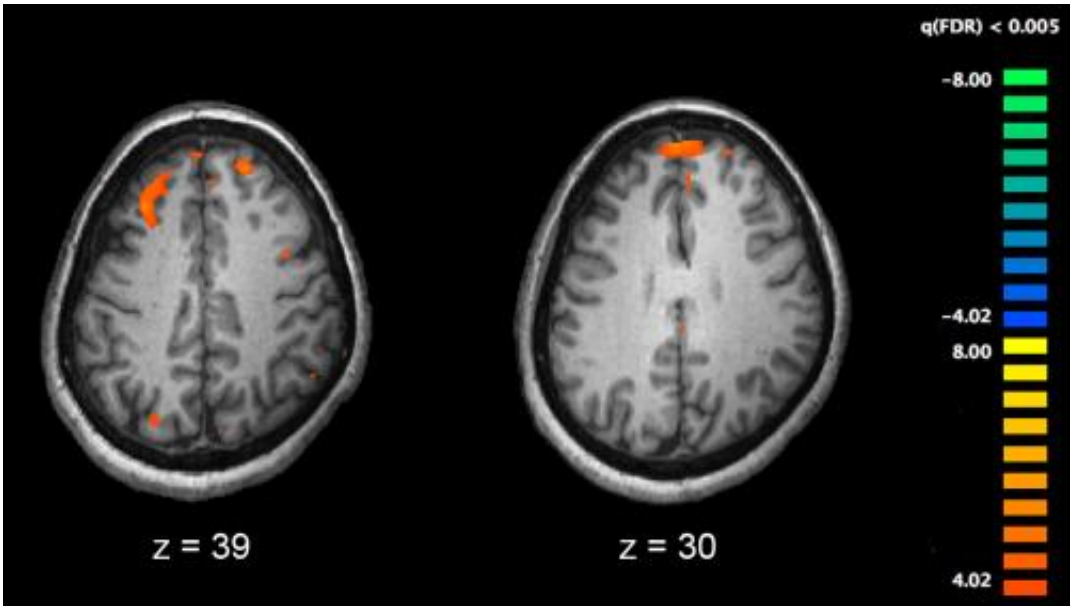
MedicalXpress

Birth factors may predict schizophrenia in genetic subtype of schizophrenia

August 13 2015



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.

Low birth weight and preterm birth appear to increase the risk of schizophrenia among individuals with a genetic condition called the 22q11.2 deletion syndrome, a new study from the Centre for Addiction and Mental Health (CAMH) shows.

The research, published in *Genetics in Medicine*, is "...part of ongoing efforts among schizophrenia researchers to predict and prevent illness at the earliest stages possible," says senior author Dr. Anne Bassett, Clinician-Scientist in CAMH's Campbell Family Mental Health Research Institute and Canada Research Chair in Schizophrenia Genetics and Genomic Disorders.

"Low birth weight and preterm birth have been proposed as risk factors in schizophrenia in general, but past studies have not shown a large effect on risk," says Dr. Bassett, who is also the Director of the Clinical Genetics Research Program at CAMH. "We've focused our lens on these risks in a small population with a specific genetic subtype of schizophrenia, where the connection between birth factors and risk of developing schizophrenia is noticeably stronger."

The risk of schizophrenia is known to be high in individuals with 22q11.2 deletion syndrome, as about one in four develops schizophrenia. This study found the risk was even higher - nearly one in two - among those who were born with a low birth weight or prematurely, based on standard measures.

The syndrome is caused by a small deletion on chromosome 22. It can lead to heart or palate abnormalities, developmental delays and other physical health problems, and in one in four cases, a schizophrenia diagnosis in late adolescence or early adulthood.

The research, led by medical student and first author Lily Van, included 123 adults with 22q11.2 deletion syndrome. After completing genetic tests to confirm this deletion, the researchers did a comprehensive review of participants' medical records to capture details on birth weight and prematurity and through development. Psychiatrists on the study team also assessed all participants for the presence of major psychiatric illnesses, including schizophrenia.

In total, 51 patients were diagnosed with schizophrenia or schizoaffective disorder. The risk of developing schizophrenia, based on birth factors, was compared against those who did not have schizophrenia. In addition, researchers ruled out other factors, besides the genetic deletion in the baby, that could lead to prematurity or low birth weight, such as high blood pressure, gestational diabetes, smoking and substance use.

"The results needs to be replicated, but do have important clinical implications," says Dr. Bassett.

For instance, there are now prenatal tests that can signal the possibility of a 22q11.2 deletion as early as the first trimester of pregnancy. While such screening requires further confirmation through additional testing, it raises the idea of intervening, in cases where the deletion exists, during pregnancy or immediately after birth.

"The big-picture question is whether there is a way to support the developing fetal brain to improve outcomes, and lower the risk of schizophrenia," says Dr. Bassett.

Provided by Centre for Addiction and Mental Health