MedicalXpress

Study shows that a combination of common genetic variations can lead to schizophrenia

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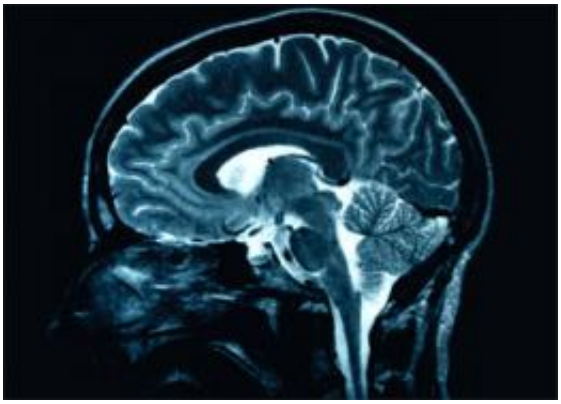

A multi-national group of investigators, including a scientist at the University of North Carolina at Chapel Hill, has discovered that nearly a third of the genetic basis of schizophrenia may be attributed to the cumulative actions of thousands of common genetic variants. The effects of each of these genetic changes, innocuous on its own, add up to a significant risk for developing both schizophrenia and bipolar disorder.

The finding, published online July 1, 2009, in the journal *Nature,* suggests that schizophrenia is much more complex than previously thought, and can arise not only from both rare genetic variants but also from a significant number of common ones.

"This is an enormous first for our field," said co-author Patrick Sullivan, M.D., Ray M. Hayworth and Family Distinguished Professor of Psychiatry in the department of genetics at the UNC School of Medicine. "You could say that we now have the outline of the puzzle, and we just need to take all of these pieces that we have identified and see how they fit them together."

Schizophrenia is a chronic and often devastating mental illness that affects one person in every 100 in the course of their lives. Scientists have long recognized that the disease - which can run in families -- has a strong genetic component. However, only recently have they begun to pinpoint the exact spots in our genetic material that contribute to the illness. Last year, the International Schizophrenia Consortium found that rare chromosomal structural variants elevate the risk of developing schizophrenia.

In this study, Sullivan and other investigators in the Consortium used "genechip" technology to identify 30,000 genetic variants (single nucleotide polymorphisms or "SNPs") that were more common in 3,000 individuals with schizophrenia than in 3,000 comparison subjects without schizophrenia. This pattern was found in three separate samples of individuals with schizophrenia and two samples with bipolar disorder - indicating a previously unrecognized overlap between the two diseases. These risk variants were not present in patients with other non-psychiatric diseases, such as hypertension or diabetes.

"While our study finds a surprising number of genetic effects, we fully expect that future work will assemble them into meaningful pathways that will teach us about the biology of schizophrenia and bipolar disorder," says senior author Pamela Sklar, MD, PhD, associate director of the Department of Psychiatry and Center for Human Genetic Research at Massachusetts General Hospital (MGH) and a senior associate member of the Broad Institute of MIT and Harvard.

The researchers are also investigating how genes and environment interact to cause the disease. One additional finding of their study was the identification of the human leukocyte antigen (HLA) locus as a possible risk factor. Because this region plays an important role in immune response to infection, it could suggest that exposure to an infectious agent increases risk of developing psychiatric disease.

Source: University of North Carolina School of Medicine (news : web)