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[Molecular Psychiatry] Taiwan Scientists Identify Four Genes Associated with Increased Susceptibility to Bipolar I Disorder in Han Chinese

[Molecular Psychiatry] Taiwan Scientists Identify Four Genes Associated with Increased Susceptibility to Bipolar I Disorder in Han Chinese (Chinese Version)

Academia Sinica Newsletter (2010/04/14) A group of Taiwan scientists recently successfully identified four genes that are associated with bipolar I disorder in Han Chinese. Their findings were published online in the international scientific journal Molecular Psychiatry on April 13, 2010.

Bipolar I disorder is a mood disorder defined by the presence of recurrent episodes of abnormally elevated mood (mania). A proportion of patients who experience manic episodes also experience depressive episodes, or mixed episodes in which features of both mania and depression are present at the same time. The disease often seriously interferes with patients' personal lives and socio-occupational function, as well as their families' quality of life. Heritability of bipolar I disorder has been estimated to be around 80%, and a polygenic inheritance model is favored by scientists. However, the exact cause of the disease remains to be elucidated. Bipolar I disorder currently affects approximately 1% of the world population, and has been a major public health concern.

For this study researchers analyzed the genes of 1409 patients with bipolar I disorder and 1000 normal individuals using high density genotyping technology. They identified four genes named SP8, ST8SIA2, CACNB2 and KCTD12 that were associated with bipolar I disorder in the Han Chinese population. Three of them (SP8, CACNB2 and KCTD12) were identified for the first time. Both SP8 and ST8SIA2 are involved in the development of the brain, and thus strongly support the neurodevelopmental model for the pathogenesis of bipolar I disorder. This study also increases evidence supporting a common mechanism for bipolar I disorder and schizophrenia as ST8SIA2 has previously been identified to be associated with both disorders. CACNB2 and KCTD12 are genes regulating calcium and potassium ion channels. In addition, this study also replicated another gene, ANK3 that regulates sodium ion channels and was previously found in Caucasian patients. All of these findings strongly suggest ion channelopathy (or ion channel disorder) in the development of bipolar I disorder. These genes may be related to the pharmacological effect of mood stabilizers, including lithium salt and some anticonvulsants.

The study was the result of collaboration between the Institute of Biomedical Sciences at Academia Sinica and 25 medical centers and psychiatric institutes in Taiwan. A Taiwan Bipolar Consortium was established for the collaboration in 2003 by Dr. Andrew Tai-Ann CHENG, Distinguished Research Fellow at the Institute of Biomedical Sciences at Academia Sinica, who leads the research project. Genotyping and data analyses were led by Dr. Ming-Ta Michael LEE and Dr. Chien-Hsiun CHEN from the National Genotyping Center, which was funded by the National Research Program for Genome Medicine, National Science Council. This study was entirely supported by Academia Sinica.

Dr CHENG said that this study marks important progress in the identification of disease genes for bipolar I disorder. It is the first and the only large scale bipolar I disorder study for the Han-Chinese as well as for any Asian population. The genes indentified in this study pave the way for researchers to elucidate pathogenic mechanisms for bipolar disorder and perhaps new drug targets for the disease. Dr. Yuan-Tsong CHEN, the Director of Institute of Biomedical Science at Academia Sinica and co-principal investigator of this research said that one of the major implications of the research findings is to show that common and different disease genes exist even for the same disease in different populations.

The full article entitled "Genome-Wide Association Study for Bipolar I Disorder in the Han-Chinese Population" is available at the Molecular Psychiatry journal website at: http://www.nature.com/mp/index.html

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