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UC San Diego News Center

June 19, 2015 | By Michelle Brubaker

New Biomarker Identified in Women with Mental Illness

Findings could lead to easier diagnoses and new treatment options

Psychiatric disorders can be difficult to diagnose because clinicians must rely upon interpreted clues, such as a patient's behaviors and feelings. For the first time, researchers at University of California, San Diego School of Medicine report identifying a biological marker: the over-production of specific genes that could be a diagnostic indicator of mental illness in female psychiatric patients.

The study was published this week in the journal *EBioMedicine*.

Researchers found that the gene XIST, which is responsible for inactivating one of the two copies of the X chromosome in cells that store genetic material, works overtime in female patients with mental illnesses, such as bipolar disorder, major depression and schizophrenia.

The study suggests that over-production of XIST and genes from the inactive X chromosome are common denominators in the development of psychiatric disorders in patients with rare chromosome disorders, such as Klinefelter syndrome and Triple X syndrome, and in the general population of female psychiatric patients.

"There has been an utmost urgency to identify biomarkers for mental illness that could significantly impact research and drug development," said Xianjin Zhou, PhD, assistant professor in the Department of Psychiatry at UC San Diego School of Medicine and lead author.

The study was conducted on 60 lymphoblastoid cell lines from female patients, most of whom had a family history of mental illness. Approximately 50 percent of the female patients exhibited abnormally higher levels of XIST and other genes related to the X chromosome.

Zhou and his team said reversing the abnormal activity of the inactive X chromosome in patients suffering from mental illness may offer a potential new strategy for treating psychiatric disorders.

“Our results indicate that a large subpopulation of female psychiatric patients from the general population may have abnormal function of the inactive X chromosome,” said Zhou. “These results are powerful in that early diagnosis of mental illness could possibly happen with a simple blood test, leading to better interventions, therapy and treatment options.”

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