Identification of genetic risk factors for stroke

24 September 2014

Stroke is one of the leading causes of death worldwide. While many lines of evidence suggest that stroke risk is heritable, only a small number of genes associated with stroke have been identified.

A new study in the *Journal of Clinical Investigation* identifies two genes that underlie cerebral small-vessel disease (CSVD), a risk factor for stroke. Ordan Lehmann and colleagues at the University of Alberta analyzed genome-wide association data from individuals that received brain MRI scans as part of the Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) study.

Patients with mutations that reduced expression of a protein involved with brain development, FOXC1, exhibited signs of CSVD. In zebrafish, reducing Foxc1 levels mimicked symptoms of CSVD, including cerebellar hemorrhage.

Lehmann and colleagues also found that patients with mutations that reduced expression of a protein that interacts with FOXC1, PITX2, also exhibit CSVD. Further, deletion of Pitx2 in mouse models resulted in defects in brain vasculature.

Thus, this study identifies two genes that underlie development of the stroke risk factor CSVD.

More information: Mutation of FOXC1 and PITX2 induces cerebral small-vessel disease, *J Clin Invest*. DOI: 10.1172/JCI75109

Provided by Journal of Clinical Investigation