Medical Xpress

Gene variants raise risk of migraines in African-American children

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Pediatric researchers have discovered common gene variants associated with migraines in African-American children. The research adds to knowledge of genetic influences on childhood migraine and may lead to future precision medicine treatments for African-American children with these intense headaches.

"Scientists already know that migraines may run in families, and other researchers have discovered multiple genetic links to migraine in European adults," said study leader Hakon Hakonarson, MD, Ph.D., director of the Center for Applied Genomics at Children's Hospital of Philadelphia (CHOP). "However, this is the first large-scale genetic study of migraine in children and in African-Americans."

Hakonarson and colleagues published their study online on Sept. 28, 2018 in the *Journal of Medical Genetics*.

The researchers performed genome-wide association studies (GWAS) in separate groups of African-American (AA) and European-American (EA) children from CHOP's pediatric network. One study compared 380 AA children with migraine to 2,129 ancestry-matched control subjects. Another study compared 599 EA children with migraine to 7327 EA controls.

The scientists found a novel genetic susceptibility locus on chromosome 5, specifically 5q.33.1, that predisposed AA children to migraine, but was not significant for the EA children. The team then performed a

replication study that confirmed this finding in an independent pediatric cohort of 233 AA migraine patients compared to 4038 AA control subjects without migraine.

Further analysis of the risk locus on chromosome 5 implicated two genes, *NMUR2* and *GLRA1*, both involved in signaling pathways in the central nervous system. The researchers said this finding was consistent with previous GWAS research in adults that pointed to genes involved in neurotransmitter release.

"This work provides new insights into the genetic basis of childhood migraine," said Hakonarson. He added, "Our hope is that follow-up research on these signaling pathways may eventually lead to targeted migraine treatments for African-American children."

More information: Xiao Chang et al, Common variants at 5q33.1 predispose to migraine in African-American children, *Journal of Medical Genetics* (2018). DOI: 10.1136/jmedgenet-2018-105359

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