Abstracts

Articles appearing in the October 2018 issue

Genetic landscape of pediatric movement disorders and management implications

Objective To identify underlying genetic causes in patients with pediatric movement disorders by genetic investigations.

Methods All patients with a movement disorder seen in a single Pediatric Genetic Movement Disorder Clinic were included in this retrospective cohort study. We reviewed electronic patient charts for clinical, neuroimaging, biochemical, and molecular genetic features. DNA samples were used for targeted direct sequencing, targeted next-generation sequencing, or whole exome sequencing.

Results There were 51 patients in the Pediatric Genetic Movement Disorder Clinic. Twenty-five patients had dystonia, 27 patients had ataxia, 7 patients had chorea-athetosis, 8 patients had tremor, and 7 patients had hyperkinetic movements. A genetic diagnosis was confirmed in 26 patients, including in 20 patients with ataxia and 6 patients with dystonia. Targeted next-generation sequencing panels confirmed a genetic diagnosis in 9 patients, and whole exome sequencing identified a genetic diagnosis in 14 patients.

Conclusions We report a genetic diagnosis in 26 (51%) patients with pediatric movement disorders seen in a single Pediatric Genetic Movement Disorder Clinic. A genetic diagnosis provided disease-specific treatment or affected management in 10 patients with a genetic diagnosis, highlighting the importance of early and specific diagnosis.

NPub.org/NG/9203a

Protein network analysis reveals selectively vulnerable regions and biological processes in FTD

Objective The neuroanatomical profile of behavioral variant frontotemporal dementia (bvFTD) suggests a common biological etiology of disease despite disparate pathologic causes; we investigated the genetic underpinnings of this selective regional vulnerability to identify new risk factors for bvFTD.

Methods We used recently developed analytical techniques designed to address the limitations of genome-wide association studies to generate a protein interaction network of 63 bvFTD risk genes. We characterized this network using gene expression data from healthy and diseased human brain tissue, evaluating regional network expression patterns across the lifespan as well as the cell types and biological processes most affected in bvFTD.

Results We found that bvFTD network genes show enriched expression across the human lifespan in vulnerable neuronal populations, are implicated in cell signaling, cell cycle, immune function, and development, and are differentially expressed in pathologically confirmed frontotemporal lobar degeneration cases. Five of the genes highlighted by our differential expression analyses—*BAIAP2*, *ERBB3*, *POU2F2*, *SMARCA2*, and *CDC37*—appear to be novel bvFTD risk loci.

Conclusions Our findings suggest that the cumulative burden of common genetic variation in an interacting protein network expressed in specific brain regions across the lifespan may influence susceptibility to bvFTD.

NPub.org/NG/9203b

Most-Read Articles

As of November 13, 2018

CHCHD10 variant p.(Gly66Val) causes axonal Charcot-Marie-Tooth disease

M. Auranen, E. Ylikallio, M. Shcherbii, et al. 2015;1:e1. doi.org/10.1212/NXG.0000000000000003

Mendelian randomization shows a causal effect of low vitamin D on multiple sclerosis risk

B. Rhead, M. Bäärnhielm, M. Gianfrancesco, et al. 2016;2:e97. doi.org/10.1212/NXG.0000000000000097

The Clinical Outcome Study for dysferlinopathy: An international multicenter study

E. Harris, C.L. Bladen, A. Mayhew, et al. 2016;2:e89. doi.org/10.1212/NXG.0000000000000089

A novel *DYNC1H1* mutation causing spinal muscular atrophy with lower extremity predominance

Q. Niu, X. Wang, M. Shi, and Q. Jin. 2015;1:e20. doi.org/10.1212/NXG.0000000000000017

KCNQ2 encephalopathy: Features, mutational hot spots, and ezogabine treatment of 11 patients

J.J. Millichap, K.L. Park, T. Tsuchida, B. Ben-Zeev, et al. 2016;2:ex. doi.org/10.1212/NXG.0000000000000096

Neurology®

What's happening in *Neurology*® *Genetics*
Neurology 2019;92;133
DOI 10.1212/WNL.0000000000006835

This information is current as of January 14, 2019

Updated Information & Services

including high resolution figures, can be found at:
<http://n.neurology.org/content/92/3/133.full>

Permissions & Licensing

Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
http://www.neurology.org/about/about_the_journal#permissions

Reprints

Information about ordering reprints can be found online:
<http://n.neurology.org/subscribers/advertise>

Neurology® is the official journal of the American Academy of Neurology. Published continuously since 1951, it is now a weekly with 48 issues per year. Copyright © 2019 American Academy of Neurology. All rights reserved. Print ISSN: 0028-3878. Online ISSN: 1526-632X.