Expanding the Phenotype of HNRNPU-related Disorders to Include Brief, Resolved, Unexplained Events (BRUE)

Jonah L. Scheffler et al

Tell us how you used this information in this short survey.

Follow this and additional works at: https://digitalcommons.unmc.edu/gmerj

Part of the Higher Education Commons, and the Medicine and Health Sciences Commons

Recommended Citation
Scheffler et al, J. L. Expanding the Phenotype of HNRNPU-related Disorders to Include Brief, Resolved, Unexplained Events (BRUE). Graduate Medical Education Research Journal. 2022 Jul 14; 4(1). https://digitalcommons.unmc.edu/gmerj/vol4/iss1/31

This Conference Proceeding is brought to you for free and open access by DigitalCommons@UNMC. It has been accepted for inclusion in Graduate Medical Education Research Journal by an authorized editor of DigitalCommons@UNMC. For more information, please contact digitalcommons@unmc.edu.
Expanding the Phenotype of HNRNPU-related Disorders to Include Brief, Resolved, Unexplained Events (BRUE)

Creative Commons License

This work is licensed under a Creative Commons Attribution-Noncommercial-No Derivative Works 4.0 License.

This conference proceeding is available in Graduate Medical Education Research Journal:
https://digitalcommons.unmc.edu/gmerj/vol4/iss1/31
Expanding the Phenotype of HNRNPU-related Disorders to Include Brief, Resolved, Unexplained Events (BRUE)
Jonah L. Scheffler1, Kristen P. Fishler1,2, Elizabeth H. Null1,2, Lois J. Starr1,2,3
1College of Medicine, University of Nebraska Medical Center
2Munroe-Meyer Institute for Genetics and Rehabilitation
3Children’s Specialty Physicians, Children’s Hospital & Medical Center

Mentor: Lois Starr
Program: Genetics
Type: Case Report

Background: hnRNP-U deficiency is caused by pathogenic variants in HNRNPU, which encodes the heterogeneous nuclear ribonucleoprotein U (HNRNPU), a highly conserved protein responsible for assisting spliceosomes in mediating transcription and alternative splicing activity. HnRNPs are responsible for the regulation of translation at the presynaptic sites as well as the transportation of stabilized mRNAs along the axonal cytoskeleton.

Case: Here, we report a 2-year-old male with a HNRNPU variant with a new presentation of apparent recurrent apneic spells with an underlying epileptic origin. These were described as apnea followed by desaturation and tachycardia in the 180's-200 range prior to resolution of symptoms. He also had autistiform behaviors, hypotonia, global developmental delay, heart defects, and unique facial features. The anesthetist professional parents describe multiple BRUE.

At 26 months, he presented to the hospital with hypotonia and unique facial features, global developmental delay, autistiform behaviors, dyspraxia with cognitive disability and a change in mental status. On physical exam, the proband had telecanthus, a broad nasal bridge, short palpebral fissures, mild nevus flammeus changes on his face, a single right palmar crease, and a modified single crease on the left. EKG showed a sinus rhythm with intermittent 1st degree AV block, blocked premature atrial contractions, left axis deviation, right bundle branch block, and an ejection fraction of 67%. Echocardiography re-identified an atrial septal defect. Brain MRI showed a T2/FLAIR hyperintense signal in the white matter of the parietal lobes, left greater than right. EEG identified generalized slowing indicative of mild nonspecific encephalopathy. The history of episodes was determined to be consistent with partial onset seizures with eye opening, deviation, and tachycardia with apnea and medical treatment ensued.

Genetic testing including microarray and an epilepsy panel identified no genomic dosage alterations. The genetic testing also recommended including the HNRNPU- related disorders in a differential diagnosis of BRUE and recurrent apneic episodes as any underlying clonic activity may be profoundly subtle.

https://doi.org/10.32873/unmc.dc.gmerj.4.1.023

Presurgical Evaluation of the Dominant Hemispheric Function in an Adolescent Patient with Rasmussen’s Encephalitis using Magnetoencephalography
Srihna Pavuluri1,2, Sooky Koh1,2, Valentina Gumenyuk1, Arun Swaminathan1, Marcy Vandam2, Afshin Salehi3, Cynthia M. Schmidt3, Olga Taraschenko1
1Department of Neurological Sciences, College of Medicine, University of Nebraska Medical Center
2Department of Neurological Surgery, College of Medicine, University of Nebraska Medical Center
3Leon S. McGoogan Health Sciences Library, University of Nebraska Medical Center

Mentors: Olga Taraschenko and Sooky Koh
Program: Neurological Sciences
Type: Case Report

Background: Rasmussen’s encephalitis (RE) is a devastating progressive inflammatory disease causing debilitating neurological deficits and intractable focal epilepsy. The therapeutic benefits of hemispherectomy in RE have been well established at this time; however, some patients do not achieve optimal seizure control following the surgery. The reasons for such suboptimal outcomes have included the presence of bilateral epileptogenic foci and involvement of the dominant language hemisphere leading to concerns regarding surgical implications on preserved cognition, motor functions and language. There are currently no effective diagnostic tools to provide quantitative data regarding the potential deficits from the disconnection procedures in patients with RE.

Case: We present a case of a 15-year-old male with RE, right hemiparesis, recurrent status epilepticus and Epilepsia Partialis Continua who was considered for functional hemispherectomy of the dominant hemisphere. Due to his low baseline ambulatory function, and inability to cooperate with WADA test requirements, the non-invasive magnetoencephalography (MEG) functional study was performed. This provided quantitative assessment of the lateralization of his language function and of his motor cortical organization to derive predictions for post-operative deficits. Using a passive listening auditory language paradigm, developed at our institution, the cortical responses to verbal stimuli were recorded within 350-450 ms in the right hemisphere and 600 ms in the left hemisphere, suggesting that language function was represented bilaterally. The source localization analysis confirmed that response in the right hemisphere was localized to the temporal–parietal area (angular gyrus), while response in the left hemisphere was localized to the posterior middle temporal gyrus.