

using open database containing muscle MRIs Mercuri scores from 950 individuals. Results: AI and machine learning were applied on 10 types of NMD muscle MRI Mercuri scores that represented muscle involvement based on the degree of fatty infiltration. Different models were generated, the one with highest accuracy was used. When tested on new patients, it achieved a 90% accuracy. Subsequently, was turned into a mobile application. Conclusions: Muscle MRI is a valuable tool to help in NMD diagnosis. Specific muscle involvement pattern can be predictive. Besides, AI facilitates the interpretation and comprehension of muscle imaging in NMD.

### C.3

#### **Childhood Absence Epilepsy: Prevalence of neuropsychiatric comorbidities and predictors of treatment resistance**

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doi: 10.1017/cjn.2022.104

Background: Seizures in childhood absence epilepsy (CAE) are typically easily controlled with anti-seizure medications (ASMs). Factors predictive of treatment resistance remain unclear. Our objectives were to assess prevalence of neuropsychiatric problems and factors influencing treatment resistance in a cohort of CAE at a single centre. Methods: We retrospectively reviewed patients with CAE diagnosed between January 1999 and December 2016 with at least 1-year follow-up. Treatment resistance was defined as failure to respond to two appropriate ASMs. Exclusion criteria included eyelid myoclonia with absence, myoclonic absence, and generalized tonic-clonic (GTC) seizures prior to absence seizures. Results: The study population comprised 164 patients (65 males) with mean age at seizures onset of 6.1 years. 21% had treatment-resistant seizures. The first ASM was Ethosuximide (63.4%), Valproic acid (23.2%), and Lamotrigine (6.7%). 32.9% of children had learning disabilities, 28.7% ADHD, and 12.8 % anxiety.

A stepwise binary logistic regression analysis identified GTC seizures, learning disability (LD) and ongoing general spike and

wave on EEG as predictors of treatment resistance. At last follow-up (average of 5.4 years), 43.3% of children were seizure-free off ASMs. Conclusions: 21% of children with CAE had treatment-resistant seizures. LD, GTC and failure of normalization of the EEG were associated with treatment resistance.

### C.4

#### **Distinct BOLD signal variability changes in temporal and occipital cortices in pediatric epilepsy**

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doi: 10.1017/cjn.2022.105

Background: Greater variability of neuronal signalling, measured as the standard deviation of the blood oxygen dependent signal ( $BOLD_{SD}$ ), relates to information processing capacity. Resting-state functional magnetic resonance imaging was used to determine differences in  $BOLD_{SD}$  between children with and without epilepsy. Methods: We studied 24 controls (mean age  $8.52 \pm 1.35$  years) and 18 patients (mean age  $11.5 \pm 3.4$  years) with medically refractory epilepsy that underwent imaging for preoperative planning. Standard preprocessing steps (FSL v6.0, FMRIB) were followed and AAL atlas was used. Whole-brain two sample t-tests were used for group comparisons and significance was set at  $p < 0.05$  FDR-corrected. Results: Children with epilepsy showed significantly lower  $BOLD_{SD}$  in left inferior and middle temporal gyri ( $p < 0.001$ ), right caudate nucleus ( $p < 0.01$ ), cuneus ( $p < 0.001$ ), and fusiform gyrus ( $p < 0.001$ ), and significantly increased  $BOLD_{SD}$  bilaterally in inferior occipital gyri ( $p < 0.0001$ ). There were no significant differences when comparing whole-brain  $BOLD_{SD}$  values. Conclusions: Neuroplastic changes in epilepsy may depend on an optimal amount of internal neural variability driven by the identified key regions. Certain temporal and occipital regions may underlie neural processing differences in children with epilepsy. Further studies may correlate these findings with behavioral testing.

## POSTER PRESENTATIONS

### ADULT NEUROLOGY (CNS/CSC)

#### DEMENTIA AND COGNITIVE DISORDERS

##### P.001

#### **The neural correlates of effort-reward decision-making in older adults**

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doi: 10.1017/cjn.2022.106

Background: Effort mobilization is important in older adults to stay healthy, notably for decision-making. The process of decreasing subjective value of a reward as required effort

increases is called effort discounting. By identifying underlying neural correlates related to effort discounting, we can better understand factors affecting normal cognitive aging. Methods: We acquired resting-state functional magnetic resonance images from 19 cognitively normal older adults (10 males;  $66 \pm 6$  years). Participants completed a computerized cognitive task—called Effort Expenditure for Rewards Task—capturing the willingness to expend effort for rewards through binary choices between high-reward-high-effort or low-reward-low-effort option to obtain varying monetary rewards. We modelled subjective value to assess the k parameter, effort discounting. A functional connectivity analysis examined the involvement of regions associated to the salience network. Results: The seed-to-voxel analysis revealed increased connectivity within the precuneus cortex and to clusters in the right temporal and posterior cingulate gyri, with increased k-value or decreased willingness to expend effort.