impairment (MCI, n =16), and AD, (n = 16)] acquired by the Alzheimer's Disease Neuroimaging Initiative (ADNI) were analyzed with an automated segmentation software (HippUnfold) to compute thickness measurements. ADNI data such as Positron Emission Tomography (PET) biomarkers, Cerebrospinal Fluid biomarkers, and cognitive scores such as Mini-Mental State Exam (MMSE), Montreal Cognitive Assessment (MoCA), Alzheimer's Disease Assessment Scale (ADAS13), and Rey Auditory Verbal Learning Test (RAVLT), were correlated to thickness along the hippocampal long axis using linear regression models. Results: We found significant cluster correlations ($p < 0.05$) throughout the long axis between hippocampal subfield thickness to MoCA scores, ADAS13 scores, PET phosphorylated tau levels, and PET beta-amyloid levels. Conclusions: Subfield atrophy throughout the hippocampal long axis is associated with disease severity (as measured with existing biomarkers and cognitive testing) in patients with MCI and AD.

## E.5

### Large scale network changes immediately after Magnetic Resonance Imaging-Guided Laser Interstitial Thermal Therapy (MRgLITT) for hypothalamic hamartoma

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doi: 10.1017/cjn.2023.99

Background: Hypothalamic hamartomas (HH) are a challenging cause of seizure in children, partly because the neural circuitry involved in ictogenesis is incompletely understood. We review our institutions' use of magnetic resonance imaging-guided laser interstitial thermal therapy (MRgLITT) to treat hypothalamic hamartoma (HH) with resting-state fMRI performed immediately before and after ablation. Methods: Seed-based whole brain connectivity to thalamic regions of interest was performed immediately pre- and post- MRgLITT. Multivariable generalized linear models were used to correlate resting-state data with seizure outcomes. Results: Eight patients underwent MRgLITT treatments for HH, with a mean follow up of 29 months. Four patients (50%) were seizure free at 12 months and two (25%) had a significant improvement in seizure frequency. We identified reduced thalamocortical connectivity involving the anterior cingulate and posterior parietal regions, consistent with disconnection of the mammillothalamic tract and interruption of Papez circuit. Large-scale thalamocortical connectivity changes were driven by children who subsequently became seizure free. Conclusions: Disconnection of the mammillothalamic tract and interruption of thalamic circuitry in patients undergoing MRgLITT for HH appears to be associated with improved seizure outcomes. The ability to assess network changes immediately post- MRgLITT could enable operative adjustments to be made mid-procedure to optimize seizure outcome in real time.

# Neurosurgery (CNSS)

## F.1

### DNA methylome profiling identifies stability of IDH mutations throughout glioma evolution

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doi: 10.1017/cjn.2023.100

Background: Isocitrate dehydrogenase (IDH) mutation status is a key diagnostic and prognostic feature of gliomas. There are conflicting reports regarding the stability of IDH mutations throughout glioma evolution and treatment. Here, we provide an institutional experience of patients with conflicting IDH mutation status longitudinally in order to determine if IDH mutation status changes over time. Methods: We retrospectively identified patients from 2009-2018 with immunohistochemistry (IHC)-recorded IDH mutation status discrepancies longitudinally. Archived frozen tissue samples were analyzed using methylation profiling, Sanger sequencing, and droplet digital PCR (ddPCR). Results were compared to the IHC-reported IDH mutation status. Results: We reviewed 1491 archived glioma samples including 91 patients with multiple tumour samples collected longitudinally. In all instances of IDH mutation discrepancy, we found reasonable explanations through multi-platform profiling that resolved the discrepancies. This included the presence of non-canonical IDH2 mutations identified through Sanger sequencing and perilesional tumour samples or reactive brain tissue identified through methylation profiling. Conclusions: Our findings support the hypothesis that IDH mutations occur early in gliomagenesis and are stable throughout glioma treatment and evolution. Our study highlights the importance of accurate surgical sampling and the role of DNA methylome profiling in diagnostically uncertain cases for integrated pathological and molecular diagnosis.

## F.2

### Multiplatform molecular analysis of vestibular schwannoma reveals two robust subgroups with distinct microenvironment

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doi: 10.1017/cjn.2023.101

Background: Vestibular schwannoma (VS) is the most common tumour of the cerebellopontine angle and poses a significant morbidity for patients. While many exhibit benign behaviour, others have a more aggressive nature. There is a need for a better understanding of the molecular landscape, and important subgroups therein, of this disease. Methods: We select all VS from our tumour bank with both methylation and RNA profiling.



https://doi.org/10.1017/cjn.2023.100 Published online by Cambridge University Press