

P.157**Frame-based stereotactic brain biopsy: A retrospective review of diagnostic yield and complications at a Canadian Center**

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Background: Historically, frame-based stereotactic brain biopsy (SBB) has played an important role in the diagnosis of intracranial lesions. We performed a single centre analysis of the outcomes and efficacy of SBB at the London Health Sciences Centre (LHSC). **Methods:** We performed a retrospective chart review of frame-based SBB from 2006 to 2017 at the LHSC. Intra-operative and final pathology reports were analyzed for biopsy diagnosis and the diagnosis was compared with pre-operative neuroimaging reports for correlation. SBB-associated morbidity and mortality were investigated using chart review and post-operative neuroimaging. **Results:** 173 consecutive patients were identified. The overall morbidity rate was 8.7% (15 cases) and mortality rate was 0.6% (1 case). Final biopsy diagnostic accuracy was 96%, intra-operative diagnostic accuracy was 94% and pre-operative imaging diagnostic accuracy was 65%. Elevated partial thromboplastin time and the presence of hemorrhage on post-operative CT were associated with neurological morbidity and mortality. The need to obtain three or greater samples the time of biopsy was associated with non-diagnostic biopsy. **Conclusions:** At the LHSC, SBB is a relatively safe and effective surgical procedure with high diagnostic yield and relatively low risk of complications. Intra-operative pathology has a high efficacy in determining diagnosis when compared to final pathology.

P.158**Feeling Green**

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Background: Myeloid sarcoma (MS) is a rare solid tumour made of myeloblasts or immature myeloid cells in an extramedullary site or in bone, associated with systemic hematologic neoplasms. When they occur in the brain parenchyma, they can often be misdiagnosed. **Methods:** The authors report a case of a 4-year old boy 6 months out of remission from AML, presenting with a short history of headaches and vomiting, and found to have a heterogenous contrast-enhancing lesion in the right cerebellar hemisphere, with differential diagnosis of myeloid sarcoma, astrocytoma, medulloblastoma and ATRT. Preliminary diagnosis was made flow cytometry from an intraoperative biopsy. The patient had a long course of chemotherapy and radiation, but eventually died from the systemic burden of his AML. **Results:** The authors present a literature review on 178 published cases of CNS myeloid sarcomas, and their radiological presentation and the basis of immunohistochemical and pathological diagnosis is discussed. **Conclusions:** Diagnosis rests on a combination of

immunohistochemistry and histopathology of biopsied tissue. Surgical resection is controversial, especially given the efficacy of chemotherapy and radiation, and prognosis remains unclear. As with all uncommon and rare clinical entities, further investigation is warranted to determine prognosis and optimal management of CNS myeloid sarcomas.

P.159**Association Between Extent of Resection and Survival in Pediatric Patients with High-Grade Glioma: A Systematic Review and Meta-Analysis**

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Background: While pediatric high-grade glioma (HGG) has a poor prognosis, the relationship between extent of resection (EOR), tumor location, and survival remains unclear. Our aim is to determine whether gross-total resection (GTR) is associated with prolonged survival relative to subtotal resection (STR) and biopsy. **Methods:** PubMed, Ovid EBM Reviews, Embase, and MEDLINE were systematically reviewed. Eligible articles were included for study-level and individual-patient data (IPD) meta-analysis. Difference by study-level and IPD characteristics were estimated using subgroup meta-analysis and meta-regression. PRISMA guidelines were followed. **Results:** In total, 33 studies were included. Study-level meta-analysis found GTR conferred decreased mortality relative to STR at 1 year (RR=0.73, 95% CI=0.59-0.89) and 2 years (RR=0.74, 95%CI=0.64-0.84). STR did not demonstrate survival advantages compared to biopsy at 1 year (RR=0.81, 95%CI=0.64-1.03), but showed decreased mortality at 2 years (RR=0.90, 95%CI=0.82-0.99). IPD meta-analysis comprised 186 patients, and indicated that STR (HR=2.61, 95% CI=1.56-4.38) and biopsy (HR=2.83, 95%CI=1.54-5.19) had shortened survival relative to GTR, with no differences between STR and biopsy (HR=0.93, 95%CI=0.55-1.56). In subgroup analysis, GTR was associated with prolonged survival for hemispheric tumors (HR=0.16, 95%CI=0.07-0.36) **Conclusions:** Among pediatric patients with HGGs, GTR was independently associated with better overall survival compared to STR and biopsy, especially in patients with hemispheric tumors.

P.160**Impact of peritumoral edema during tumor treatment field therapy: a computational modelling study**

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Background: Tumor treatment fields (TTFields) are an approved adjuvant therapy for glioblastoma. The magnitude of applied electrical field is related to the anti-tumoral response. However, peritumoral edema (ptE) may result in shunting of

electrical current around the tumor, thereby reducing the intratumoral electric field. In this study, we address this issue with computational simulations. **Methods:** Finite element models were created with varying amounts of ptE surrounding a virtual tumor. The electric field distribution was simulated using the standard TTFields electrode montage. Electric field magnitude was extracted from the tumor and related to edema thickness. Two patient specific models were created to confirm these results. **Results:** The inclusion of ptE decreased the magnitude of the electric field within the tumor. In the model considering a frontal tumor and an anterior-posterior electrode configuration, ≥ 6 mm of ptE decreased the electric field by 52%. In the patient specific models, ptE decreased the electric field within the tumor by an average of 26%. The effect of ptE on the electric field distribution was spatially heterogeneous. **Conclusions:** Given the importance of electric field magnitude for the anti-tumoral effects of TTFields, the presence of edema should be considered both in future modelling studies and as a predictor of non-response.

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Management of recurrent glioblastoma multiforme: An inter-observer variability study

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Background: A significant proportion of glioblastoma multiforme (GBM) patients are considered for repeat resection, but evidence regarding best management remains elusive. **Methods:** An electronic portfolio of MR images of 37 cases of pathologically confirmed recurrent GBM with an accompanying clinical vignette was constructed. Surgical responders from various countries, training backgrounds, and years' experience were asked for each case to select: their chosen management (repeat surgery, chemotherapy, radiation, or conservative), confidence in recommended management, and whether they would include the patient in a randomized trial that gave a 50% chance of reoperation. Responses were evaluated with kappa statistics and values interpreted according to Landis and Koch (0–0.2, slight; 0.21–0.4, fair; 0.41–0.6, moderate; 0.61–0.8, substantial; 0.81–1.0 perfect agreement). **Results:** 26 surgeons responded to the survey. Agreement regarding best management of recurrent GBM was slight, even when management options were dichotomized (repeat surgery vs. all others) ($k=0.198$ (95%CI 0.133–0.276)). Country of practice, years' experience, and training background did not improve agreement. Responders were willing to include more than 70% of patients in a randomized trial. **Conclusions:** Only slight agreement exists regarding the question of re-operation for patients with recurrent GBM. This supports the need for a randomized controlled trial.

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Effects of Systemic Corticosteroid Treatment on Pseudotumoral Hemicerebellitis

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Background: Pseudotumoral hemicerebellitis is an acute, unilateral inflammation of the cerebellum that typically affects the pediatric population. The etiology remains to be elucidated, however frequently is attributed to post-infectious inflammation. Though it tends to be self-resolving, treatment may reduce the time to symptomatic recovery. Systemic corticosteroid therapy has been proposed as a mechanism for improving outcomes and time to symptomatic recovery. **Methods:** We present a case report of a 12-year-old male with pseudotumoral hemicerebellitis and unilateral cerebellar dysfunction. Additionally, we briefly review the additional 35 reported cases of pseudotumoral hemicerebellitis with respect to length of time to symptomatic recovery with or without systemic corticosteroid treatment. **Results:** 30 cases reported length of time to symptomatic recovery. Including our case, the mean time to recovery for those treated with systemic corticosteroids ($n=20$) was 48.05 days (SE=16.3). The mean time to recovery for those treated without ($n=10$) was 86.7 days (SE=29.3). **Conclusions:** Treatment with systemic corticosteroids was associated with a faster time to symptomatic recovery compared to without. Regardless of etiology, reducing inflammation and mass effect involved in pseudotumoral hemicerebellitis may be integral to a more rapid return to neurological baseline.

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Predictors of survival in elderly patients undergoing surgery for GBM

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Background: An increasing number of elderly patients are being diagnosed with GBM and undergoing surgery. These patients often present with multiple medical comorbidities and have significantly worse outcomes compared to adult patients. The goal of this study was to determine clinical predictors of survival in elderly patients undergoing surgery for GBM. **Methods:** A retrospective chart review of all consecutive patients 65 years of age and older that underwent surgery for newly diagnosed GBM from 2005–2018 was performed. A total of 150 patients were included, and subdivided into two age categories; 65–74 and 75 or older. **Results:** Advanced age and medical comorbidities were not associated with decreased survival ($p = 0.07$ and $p = 0.09$, respectively). Postoperative complication was associated with worse survival for all patients (HR = 2.34,