

and the likelihood of a successful trial proceeding to implant. **Results:** Compared to non WCB, the WCB patients were more likely to be offered a trial (86% vs 77%) and more likely to proceed with a trial if offered (82% vs 71%). Trial to implant ratios were similar in both WCB and non WCB patients (78% vs 77%). **Conclusions:** WCB patients were more likely to be offered a SCS trial and more likely to accept if offered, compared to non-WCB patients. However, both groups were similar in trial to implant probability.

## MOVEMENT DISORDERS

### P.154

#### Subcutaneous intrathecal catheter and port implants for administration of Nusinersen in patients with Spinal Muscular Atrophy

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**Background:** Until recently, no effective treatment was available for spinal muscular atrophy (SMA). In 2017, Health Canada approved intrathecal Nusinersen a medication that prevents degeneration of the motor neurons in the spinal cord. The administration is intrathecally most commonly via lumbar puncture (LP) to have a direct effect on the motor neurons of the spinal cord. Many older patients with SMA and concomitant spinal deformities present technical challenges to access the thecal sac. Different routes have been described for delivery of the medication whoever these techniques may require sedation, are associated with radiation exposure, and demand experience personnel. **Methods:** A new surgical technique has been proposed to overcome these obstacles by combining two Health Canada approved devices: 1) an intrathecal catheter designed for intrathecal baclofen pumps and 2) an implantable subcutaneous port designed for intravascular medication administration **Results:** We describe the technical nuances and outline the clinical outcomes of six patients with complex spine deformities who have undergone such an implant for administration of Nusinersen. **Conclusions:** We discuss the benefits of the procedure which includes: 1) administration in the outpatient setting without sedation, 2) avoidance of costly imaging and experienced personnel, and 3) placement of the catheter in the cervicothoracic junction.

### P.155

#### Prospective cohort analysis of normal versus mild cognitive impairment for quality of life outcome following DBS for Parkinson's disease

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**Background:** All guidelines for DBS in Parkinson's disease (PD) include a contraindication for 'dementia'. It is unclear where this cut-off should occur and if patients with mild cognitive

impairment (MCI) do not do as well. This prospective cohort analysis assessed if pre-operative cognition affected post-operative quality of life. **Methods:** PD patients receiving bilateral STN-DBS (n=100) were prospectively studied using STROBE guidelines. All had Montreal Cognitive Assessment (MoCA), motor (UPDRS), mood (BDI-II), and quality of life (Parkinson Disease Questionnaire summary index, PDQ-39-SI). Two cohorts, pre-operative MCI (MoCA:18-25) and normal cognition (MoCA:26-30), had post-operative PDQ-39-SI at 1-year. The primary outcome was the proportion of patients with an improved PDQ-39-SI at 1-year. **Results:** Cohorts were not significantly different in age, severity of illness, response to dopamine, or mood. MCI was present in 27/100. Improved quality of life at 1-year occurred in 75% with normal cognition and 70% with MCI (p=0.54) with RR=1.1 (95% CI, 0.8-1.5). Linear regression analysis showed no correlation between pre-operative cognition and post-operative outcome (R<sup>2</sup>=0.02). **Conclusions:** Parkinson's patients with MCI should be offered DBS if their motor symptoms require surgery. Guidelines for DBS surgery in PD should change from "dementia is contraindicated" to "patients require adequate cognitive functioning, MoCA<sup>3</sup>18".

## NEURO-ONCOLOGY

### P.156

#### Outcomes of Cranial Nerve Deficits in Patients with Pituitary Apoplexy: The Ottawa Hospital Experience

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**Background:** One of the rare but urgent presentations of a pituitary tumor is pituitary apoplexy. In this case series, we describe our experience regarding the cranial nerve recovery in patients with pituitary apoplexy following endoscopic endonasal transsphenoidal surgery (EETS). **Methods:** Retrospective cohort study with patient characteristics, tumor type, endocrine data, operation data collected. Postoperative data were extracted for the follow-up period available for each patient. **Results:** 15 pituitary apoplexy cases were identified. The cranial nerve deficits presented at admission were: visual deficit (33% patients); unilateral third nerve palsy (47% patients), unilateral sixth nerve palsy (27% patients). Postoperatively, 60% of patients with preoperative visual deficit had normal visual fields and the other 40% showed improvement. From those with oculomotor nerve dysfunction preoperatively, 43% have returned to normal nerve function and 57% presented improvement. 75% cases of abducens nerve palsy resolved postoperatively, while 25% showed improvement. **Conclusions:** Based on this series, surgical treatment should be offered to patients presenting with cranial nerve deficit in the setting of pituitary apoplexy. In this series, all cranial nerve deficits either returned to normal or improved following surgery. Though a small series, the presented results are superior to those reported in the literature for conservative management.

**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