intracranial arteries constitutes conclusive evidence that the brain is dead, there is apparent discrepancy between the BF, and sufficient cerebral perfusion; In 15% of patients with confirmed clinical diagnosis of brain death, BF is still preserved. In these patients, cerebral perfusion is significantly impaired suggesting that cerebral perfusion rather than BF more accurately assesses brain function. We aim to present a history of brain death, its pathophysiology, and ancillary tests utilized for its diagnosis-specifically CT Perfusion studies. Methods: A literature search using titles and key terms was conducted for articles containing brain death ancillary testing diagnosis, and CTP as primary focus. Results: Across selected studies, CTP diagnosed brain death with 100% positive predictive value, as none of the patients were proven not-dead on follow-up. The early prediction of mortality outcome in these patients with proven high mortality rate may help decisions for withdrawal of life support. It may also facilitate procurement of organs for transplants. Conclusions: Although clinical assessment is the gold standard method of brain death determination, CTP has shown promising results that could alter our current clinical approach.

Neurosurgery (CNSS) Functional Neurosurgery and Pain

P.095

Functional neuroimaging signatures associated with analgesic effects of neuromodulation for chronic pain and their value in predicting treatment outcome

*L Boone (St John's) T Noble (St John's) A El Helou (Moncton)**

doi: 10.1017/cjn.2023.190

Background: Responses to invasive neuromodulation therapy for chronic pain are highly variable after several months of sustained treatment, with some experiencing a complete loss of therapeutic effect. We sought to assess whether functional neuroimaging can provide a biomarker for treatment success and whether these biomarkers offer value in predicting treatment response. Methods: We searched Ovid MEDLINE and EMBASE from 1967 to 2022, including prospective studies correlating functional neuroimaging signatures with treatment response after surgical implantation. Results: After considering 355 studies for initial review, 22 studies were included. While there was significant heterogeneity in experimental design, preliminary findings suggest that differential regional cortical activation profiles and signatures can be employed to differentiate good from poor therapeutic responders. Three studies correlated pre-operative functional imaging with treatment effects post-implantation. For example, baseline activation patterns of specific brain regions on functional imaging modalities such as 11C-diprenorphrine PET and Tc-99m-SPECT significantly correlated with therapeutic response to motor cortex stimulation, and spinal cord stimulation (SCS), respectively. Conclusions: The included studies demonstrate the potential for functional imaging to predict the likelihood of successful neuromodulation treatment. The concept is relatively unexplored in the literature and could benefit from more studies with larger sample sizes to confirm clinical utility.

P.096

Effectiveness of palliative focal resective surgery in intracranial EEG confirmed multifocal intractable epilepsy in adult patients

G Tamura (Calgary) S Wiebe (Calgary) C Josephson (Calgary) A Salmon (Calgary) S Singh (Calgary) W Hader (Calgary)*

doi: 10.1017/cjn.2023.191

Background: Effectiveness of "palliative resections" of a dominant epileptogenic focus in adults with multifocal intractable epilepsy confirmed on intracranial EEG has rarely been reported. Methods: We retrospectively reviewed our database to identify patients who underwent focal resection after confirmation of multiple seizure foci on intracranial EEG. Results of presurgical investigations, intracranial EEG, procedures, complications and outcome were collected. Results: A total of 17 patients underwent palliative resection (8 left, 9 right). Preoperative MRI revealed malformations of cortical development in 6 patients, and MTS in 6 patients. Intracranial stereo EEG revealed 8 bilateral and 9 unilateral multifocal epileptogenic foci. Surgical procedures included anterior temporal lobectomy (ATL) or selective amygdalohippocampectomy in 4 patients, ATL plus additional cortical resection in 7 patients, and extratemporal resection in 6 patients. One patient had dysphasia post ATL and a second patient had worsened cognitive dysfunction post extended frontal lobectomy. Favorable seizure outcome (Engel class I and II) was achieved in 10 patients (58.8%). Pathology revealed focal cortical dysplasia in 6 patients and hippocampal sclerosis in 5 patients. Conclusions: Palliative resection of a dominant epileptogenic focus confirmed by intracranial EEG is effective in carefully selected adult cases of intractable epilepsy, particularly in patients with lesional epilepsy.

P.097

Effect of stimulation site on brain network activity and phonemic verbal fluency: an fMRI study.

B Santyr (Toronto) M Cohn (Toronto) J Germann (Toronto) A Ajala (Niskayuna) J Qiu (Niskayuna) A Boutet (Toronto) A Lozano (Toronto)*

doi: 10.1017/cjn.2023.192

Background: In Parkinson's disease, deep brain stimulation (DBS) of the subthalamic nucleus (STN) or globus pallidus internus (GPi) produces comparable motor benefits. Although both increases the risk of cognition and verbal fluency (VF) decline, the risk is greater following STN-DBS. The consequences of stimulating these different sites on brain network activity is unknown. We use functional magnetic resonance imaging (fMRI) during in vivo stimulation to investigate differences between STN-DBS and GPi-DBS and correlate with change in VF. Methods: Left-sided, stimulation-cycling block-design fMRI was acquired at 3-Tesla in 51 STN-DBS and 15

GPi-DBS following routine clinical programming. Blood oxygen level-dependent (BOLD) response to stimulation was compared between groups. Phonemic VF was assessed pre- and postoperatively. Results: Voxel-wise t-test between STN-DBS and GPi-DBS BOLD response maps revealed areas of significant difference ($p<0.001$) in the left frontal operculum and the left caudate head. Stimulation BOLD response appears to show slight inverse correlation with postoperative VF decline. The trend is reversed at the left frontal operculum in STN-DBS compared to GPi-DBS. Conclusions: Decline in VF in PD-DBS seems associated with the stimulation BOLD response at the left frontal operculum and the left caudate head. The effect differs depending on stimulation site, suggesting differing effects on brain network activity.

P.098

Antibacterial envelopes prevent post-operative infections in neuromodulation surgery

A Persad (Saskatoon) S Ahmed (Saskatoon) R Mercure-Cyr (Saskatoon) K Waterhouse (Saskatoon) AM Vitali (Saskatoon)*

doi: 10.1017/cjn.2023.193

Background: Neuromodulation unit placement can provide efficacious control of many neurological conditions. They are high risk for infection with a historic infection rate as high as 10%. Treatment of infection requires surgical removal and a long course of systemic antibiotics. At our center, one surgeon uses antibacterial envelopes with all implanted neuromodulation devices. Methods: We conducted a retrospective cohort study of consecutive implantable pulse generator (IPG) and intrathecal pump unit implantation with an antibacterial envelope at our center. This cohort was then compared to a historical cohort of consecutive patients undergoing IPG or pump placement or revision prior to the use of the envelopes. Results: IPG: There were 18 (11.9%) class I infections in the pre-envelope cohort compared with 5 (2.1%) in the post-envelope cohort. The absolute risk reduction (ARR) with the use of antibacterial envelopes was 9.85% (95% confidence interval (CI) 4.3-15.4%, $p<0.01$).

Pump: There were 6 (14.6%) class I infections in the pre-envelope cohort compared with 1 (1.7%) in the post-envelope cohort. The ARR with the use of antibacterial envelopes was 12.9% (95% confidence interval 1.6-24.3, $p<0.05$). Conclusions: Based on our results, we recommend usage of antibacterial envelopes to reduce infection rates in neuromodulation surgery. Further study is needed.

P.099

A novel electrophysiologic reflex in neurovascular compression syndromes serving as a marker of pain resolution

A Persad (Saskatoon) JA Norton (Saskatoon) AM Vitali (Saskatoon)*

doi: 10.1017/cjn.2023.194

Background: Radiofrequency rhizotomy is a commonly used percutaneous technique for treatment of trigeminal neuralgia especially in cases not eligible for microvascular decompression. This technique is usually performed with the patient under conscious sedation. We devised a method for performance of this technique under general anesthetic with neurophysiology monitoring. Methods: The patient is put under general anaesthetic and EMG monitoring is set up. Needles are placed in temporalis muscle, masseter and mylohyoid or anterior belly of digastric. Resting activityis monitored. Rhizotomy is then performed under fluoroscopic guidance, with monitoring of EMG potentials pre- and post-lesioning, with specific attention paid to presence of an abnormal electrophysiologic reflex. Results: A total of 38 procedures were performed in 23 patients. Of these, 15 were revision procedures. Patients had improvement from BNI pain scale 3.8 ±0.8 to 1.3 ±1.5, and had a reduction in number of medications from 1.9 ±1.0 to 0.8 ±0.9. Survey results indicate greater practitioner satisfaction with this technique. Conclusions: Radiofrequency rhizotomy can be performed under GA with IONM guidance with good results. We present a novel method for EMG-based monitoring. Further study is required to validate this technique.

NEURO-ONCOLOGY

P.102

Weighing the risks and benefits of perioperative steroids in the surgical treatment of malignant brain tumours

N James (Windsor) B Jhawar (London)*

doi: 10.1017/cjn.2023.195

Background: Steroids are widely used in medicine because of their anti-inflammatory and immunosuppressive properties; however, they have numerous adverse effects. In neuro-oncology, dexamethasone is the first-line treatment for vasogenic edema caused by malignant brain tumours. This retrospective chart review investigated the risks and benefits of perioperative steroids in the surgical treatment of malignant brain tumours. Methods: All patients (age ≥ 18 years) who underwent a craniotomy for the treatment of a malignant brain tumour at Windsor Regional Hospital between 2012 and 2020 were assessed for eligibility for this retrospective study. Baseline patient characteristics, cumulative perioperative steroid dose, and postoperative outcomes were recorded from electronic medical records (n = 362). Statistical analysis was performed using SPSS. Results: Patients who received a higher cumulative perioperative steroid dose (≥ 80 mg) had a significantly higher rate of postoperative complications compared to those who received a lower dose. These included wound dehiscence, postoperative brain edema on imaging, unplanned return to the operating room, and readmission within 30 days. Conclusions: Steroids are important medications in neuro-oncology, but they are not without potential complications. The findings of this study highlight the need for careful consideration when using steroids in patients undergoing surgical treatment of a malignant brain tumour.