

Grade A (36.1%). 102 patients (68.5%) required spine surgery; 26 (17.4%) required intensive care; 34 (22.8%) required inpatient rehabilitation. Mean length of stay was 13.5 days and acute admission costs for the healthcare system averaged \$35,251 (95% CI \$27,080-\$43,424). Conclusions: MTB spinal injuries are associated with significant medical, personal, and financial burden. As injury prevention remains paramount, further investigation of the roles of education and safety measures is recommended.

F.6

Cranial neurosurgery medicolegal cases in Canada: a ten-year analysis of Canadian Medical Protective Association (CMPA) data

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Background: Neurosurgery is a high-risk specialty with a low margin of error. We aim to assess the risk of neurosurgeons

being involved in medicolegal cases in Canada. Methods: This retrospective descriptive study evaluated ten years (2012-2021) of closed legal cases, college cases, and hospital complaints against neurosurgeons with data from the CMPA. Included cases were cranial cases, VP shunts, or cases where a catheter or wire was inserted into the brain. Cases excluded angiography, radiation, ultrasound, or percutaneous procedures. Results: We identified 77 cases (66 urgent or emergent). Neurosurgeons had a significantly higher medicolegal risk than the CMPA surgeon membership, however lower risk compared to all physician specialties. Legal cases accounted for 69% with favourable outcomes in 52%. Forty-one cases involved post-operative complications and 16 cases involved VP shunts. Multiple surgeons or residents could be involved spanning age groups and years in practice. Thirty-four cases had a harmful incident, 41% of these severe. The majority of cases occurred at urban centers. The average case duration was 41 months. Conclusions: This study provides a recent medicolegal analysis of cranial neurosurgery in Canada. We identified areas of common complaints and hope the data can be used to mitigate risk surgical risk in the future.

POSTER PRESENTATIONS

ADULT NEUROLOGY (CNS/CSC)

DEMENTIA AND COGNITIVE DISORDERS

P.001

Application of low-intensity transcranial focused ultrasound to the hippocampus in Alzheimer's Disease

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Background: The purpose of this study was to evaluate the safety and efficacy of low-intensity tFUS under the threshold for BBB disruption in patients with AD. In addition, we assessed changes in the regional cerebral metabolic rate of glucose (rCMRglu) using F-18 fluoro-2-deoxyglucose positron emission tomography (FDG-PET) and cognitive function after tFUS. Methods: Eight AD patients were recruited. We applied low-intensity tFUS to the right hippocampus for 3 minutes using an image-guided tFUS system. For multi-modal neuroimaging guidance, MRI and CT data were spatially co-registered using the maximization of normalized mutual information. The subjectspecific coordinates of the hippocampus in the right hemisphere were identified as the tFUS target location. Results: Radiological evidence of contrast enhancement associated with BBB opening was not found in neither the visual inspection nor the ICA of the DCE-MRI data. No adverse events were observed during the hospitalization and follow-up outpatient visits for 5 to 24 months. The immediate recall and recognition memory on the SVLT were significantly improved after the sonication. The PET analysis showed the increased level of rCMRglu in the right hippocampus. Conclusions: Application of low-intensity tFUS to

the hippocampus with MB did not open blood brain barrier but increased hippocampal glucose metabolism and memory function.

P.002

Increased epileptiform activity during N2 and slow wave sleep in Alzheimer's Disease

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Background: Recent evidence shows that epileptiform activity (EA) in sleep can present early in Alzheimer's Disease (AD) with faster cognitive decline. Existing literature examining sleep, AD and seizures is mostly qualitative. We conducted a systematic review to quantify the sleep stage most associated with EA in AD and amnesic mild cognitive impairment (aMCI) Methods: We searched MEDLINE and Embase using MeSH terms: "Alzheimer's Disease" AND "Epilepsy" OR "Seizures" AND "Sleep" OR "REM" (rapid eye movement sleep). We extracted data to determine the EA distribution across sleep stages. We averaged percentages across studies. If a study had AD and aMCI subgroups, we averaged percentages to represent that study. Results: 4/14 articles had quantitative sleep stage EA data from a total of 111 AD or aMCI patients. Most EA occurred in the non-REM stage (N2; 36.1±17.8%). EA next most frequently occurred in slow-wave sleep (SWS; 34.1±9.9%), N1 (15.5±6.7%), and REM (14.4±11.6%). Conclusions: N2 and slow-wave sleep were most associated with sleep EA in AD or aMCI. This suggests the importance of therapeutic interventions that may decrease N2 and slow-wave sleep and increase REM. Future studies could explore whether it is the quantity or quality of the N2 and slow-wave sleep that is associated with EA.