therapy in the treatment of CSDH in the pediatric population, lending support to the limited literature of the utility of MMA in this age group. We propose that MMA embolization is safe and potentially efficatious in reducing risk of recurrence in pediatric complex, multi-loculated CSDHs

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Saskatchewan experience with mechanical thrombectomy under general anesthesia

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Background: While mechanical thrombectomy (MT) has become broadly used, many nuances around its performance are still contentious. In particular, the optimal sedation strategy for MT is not clear in the literature. Methods: This study was a single-center retrospective cohort study of a prospectively collected database. Age, gender, pre-treatment NIH stroke score (NIHSS), Alberta stroke program early score CT (ASPECTS), quality of collateralization, whether the patient underwent thrombectomy, tandem carotid occlusion, and thrombolysis in cerebral infarction (TICI) score were recorded in the database. Results: We identified 228 patients having anterior circulation mechanical thrombectomy (MT). 91 were right-sided, 108 were left-sided. Collaterals were graded as good in 135 (71.4), moderate in 44 (23.2%), and poor in 10 (5.3%). The average pre-MT ASPECTS was 8.1 (range). We found significant differences between all patients, patients with good outcome (mRS 0-2) and death in age, baseline NIHSS, collateralization, and TICI revascularization score. Multivariate analysis was performed with showed significant associations of sidedness, collateralization, TICI score and hemorrhage with neurological outcome. Right-sided stroke, better collaterals, higher TICI score and absence of hemorrhage were associated with better outcomes. Conclusions: We found comparable outcomes to those reported in the literature with use of general anesthetic. We identify several factors that influence outcomes.

OTHER MULTIDISCIPLINARY

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Safety and effectiveness of the assessment and treatment of idiopathic normal pressure hydrocephalus (iNPH) in the Adult Hydrocephalus Clinical Research Network (AHCRN)

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Background: Idiopathic Normal Pressure Hydrocephalus (iNPH) is a disorder of the elderly with progressive worsening of gait and balance, cognition, and urinary control which requires assessment using criteria recommended by International iNPH guidelines. Methods: Adult Hydrocephalus Clinical Research Network (AHCRN) prospective registry data from 5-centers over a 50-month interval included entry criteria; demographics; comorbidities; examination findings using standard AHCRN gait and neuropsychology assessments; shunt procedures, complications of CSF drainage, complications within 30 days of surgery, and 1-year postoperative follow-up. Results: 547 patients were referred for assessment of suspected-iNPH. 123 patients(21.6%) did not meet clinical criteria to proceed with further testing. 424 patients(74.4%;mean age 76.7 ± 6.0 years;males=269) underwent an LP or lumbar drain, and 193(45.6%) underwent insertion of a ventriculoperitoneal shunt. By 8-12 months after shunt surgery, gait velocity was 0.96±0.35m/s (54% faster than pre-CSF-drainage). Mean MoCA scores increased from 21.0 ± 5.0(median=22.0) at baseline to 22.6±5.5(median=24) 12-months post-surgery. Gait and cognitive improvements were clinically significant. No deaths occurred. 8% of shunt-surgery patients experienced minor complications. The 30-day reoperation rate was 4.1%. Conclusions: This AHCRN study demonstrated that CSF-drainage testing of patients with suspected-iNPH successfully identified those who could undergo CSF-shunt surgery with a high rate of improvement and a low rate of complications.

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Spatiotemporal dynamics of neuronal ensembles in the primate prefrontal cortex during virtual reality navigation tasks

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Background: Brain-machine-interface research has utilized multichannel single neuron recordings to decode movement intention. However, the prefrontal cortex (PFC) contains mental representations of more abstract task and goal elements which may be utilized as important signals in a brain-machine-interface. We therefore utilized virtual reality to simulate a real-world task while recording from ensembles of primate PFC neurons. Methods: Two male rhesus macaques (macaca mulatta) were trained to navigate a virtual reality environment using a joystick and learn a context-object association rule. We implanted each monkey with two 96-channel Utah arrays (Blackrock Microsystems) in the lateral PFC (areas 9/46 and 8a) and simultaneously recorded from multiple single neurons. Results: A linear support-vector-machine decoded task elements (context, target location and chosen direction of movement) with significantly greater than chance accuracy. This information was decoded in a sequential manner as the primates made a rule-based decision, with context information appearing first, followed by target location, and chosen side. Conclusions: We found that different neuronal ensembles encode the elements needed for implementing the context rule, and that such ensembles are activated sequentially. Brain-machine-interface systems may benefit by integrating neural data from the PFC, providing salient goal-related information such as the content of the goal and its spatial location.