

presents significant diagnostic challenges. This is a unique case of GPA with sinonasal, airway, skull base, petrous bones, vascular, and brain parenchyma involvement. **Methods:** We present a case of a 45-year-old female with a several day history of headache and left hearing loss. MRI brain demonstrated a large erosive enhancing soft process in the sinonasal cavity and nasopharynx. **Results:** She developed new ipsilateral rightward tongue deviation. A second MRI demonstrated disease progression. It showed posterior pharyngeal wall ulceration, involvement of the skull base foramina, petrous bones, and central bony skull erosion. It demonstrated right hemiglossal edema secondary to right hypoglossal nerve compression at the skull base. There was enhancing soft tissue partially encasing the left petrous internal carotid artery and more extensively encasing and narrowing bilateral intradural vertebral arteries with associated brainstem edema secondary to direct mass effect and new left occipital thromboembolic infarct. She underwent a nasopharyngeal biopsy which demonstrated acute inflammation on a background of GPA. **Conclusions:** There are no pathognomonic imaging characteristics for GPA. By recognizing the common and less-common imaging features, radiologists play a crucial role in both diagnosing and monitoring the disease activity.

NEUROTRAUMA

P.117

Initial imaging predicts mortality in severe traumatic brain injuries in pediatric population - a systematic review and meta-analysis

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Background: The purpose of this systematic review was to synthesize evidence based on existing studies on the ability of initial imaging to predict mortality in severe traumatic brain injuries (TBIs) in pediatric patients. **Methods:** An experienced librarian searched for all existing studies based on the inclusion and exclusion criteria. The studies were screened by two blinded reviewers. The data was extracted to calculate the sensitivity (SN), specificity (SP), positive predictive value (PPV), negative predicted value (NPV), area under the curve (AUC), and receiver operating characteristic (ROC) for extradural hematoma (EDH), subdural hematoma (SDH), traumatic subarachnoid hemorrhage (tSAH), skull fractures, and edema. **Results:** Of the 3277 studies included in the search, data could only be extracted from 22 studies. There were a total of 2219 patients, 747 females, and 1461 males. 564 patients died and 1651 survived. 293 patients had SDH, 76 had EDH, 347 had tSAH, 244 had skull fractures, and 416 had edema. Seven of the studies had sufficient data to calculate the AUC, ROC, and generate a forest plot for the

imaging findings. **Conclusions:** Out of the different CT scan findings, brain edema had the highest SN, PPV, NPV, and AUC. EDH had the highest SP to predict in hospital mortality.

NEUROVASCULAR AND NEUROINTERVENTIONAL

P.118

Radial to femoral “through and through” access for high grade ostial subclavian and innominate artery stenoses: a novel technique

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Background: Endovascular approaches are typically preferred to open surgical techniques for symptomatic subclavian/innominate artery stenosis. Due to individual patient anatomy, endovascular treatment from a conventional femoral arterial approach can be technically challenging. Our alternative technique using a combined radial to femoral artery approach can facilitate an otherwise challenging revascularization procedure. **Methods:** Retrospective analysis between November 2017 to March 2021 yielded five procedures (in four patients) using a combined radial to femoral “through and through” access and stenting technique. **Results:** All patients presented with hypoperfusion symptoms, either to their extremities, brain, or both. Technical success was achieved in 100% of the five vessels treated in four patients with symptomatic subclavian/innominate artery stenosis using this approach. One of the patients developed a recurrent stenosis after 40 months, requiring a repeat procedure. Three patients received treatment to the left subclavian artery and one to the innominate artery. All of the patients experienced marked symptomatic improvement without significant complications. **Conclusions:** A combined radial to femoral “through and through” access technique is a simple and safe method to achieve successful recanalization of high grade symptomatic ostial stenoses of the subclavian and innominate arteries.

P.119

Clinical outcome and recurrence rate of chronic subdural hematoma after surgical drainage: a retrospective study

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Background: Chronic subdural hematoma (CSDH) is of the most encountered neurosurgical cases, predominantly in older individuals. Surgical drainage remains the mainstay, yet is

challenged by variable recurrence rates. Less invasive methods of embolization of the middle meningeal artery (EMMA) could reduce the recurrence rates. Before adopting a newer treatment (EMMA), it is prudent to establish the outcomes from surgical drainage. The purpose of this study is to assess the clinical outcome and recurrence risk in surgically treated CSDH patients. Methods: A retrospective search of our surgical database was done to identify CSDH patients undergoing surgical drainage in 2019-2020. Demographic and clinical details were collected through chart review and a qualitative statistical analysis was performed. Results: A total of 136 patients (mean age-68 years; range-21-100 years; Male-105) with CSDH underwent surgical drainage with repeat surgery in 11.8%(n=16). Periprocedural mortality and morbidity were 8.8%(n=12) and 20.6%(n=28), respectively. No radiological follow-up was seen in 30(22%) of patients. Of those with follow-up, recurrence was seen in 21.7%(n=23). Mean hospital stay was 9.64 days. Conclusions: Our retrospective study showed periprocedural morbidity (20.6%) and mortality (8.8%) with a 21.7% risk of recurrence. This is likely due to older patients but is in keeping with what is reported in the literature.

P.120

Contrast induced encephalopathy following endovascular therapy for the treatment of cerebrovascular disease

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Background: Contrast induced encephalopathy (CIE) is an underrecognized, adverse effect of contrast administration during endovascular procedures. A paucity of literature exists regarding CIE following treatment of cerebrovascular disease. As such, we sought to describe our institutional experience with this entity. Methods: We searched our neurovascular database for instances of CIE following endovascular therapy for cerebrovascular disease. We extracted patient data, including demographics, comorbidities, procedural data, symptoms, radiological findings, and treatment. Informed consent was obtained in all cases. Data was analyzed using descriptive statistics. Results: Two patients underwent coiling of cerebral aneurysms; four were treated for ischemic stroke (thromboembolism or large artery atherosclerosis). Mean age was 67.2 years. Risk factors for microvascular dysfunction were identified for most patients: hypertension (100%), obesity (83%), dyslipidemia (83%), prior stroke (83%), renal disease (80%), and connective tissue disorders (33%). Mean operative duration: 284.5 minutes. Mean contrast volume: 285.7 mL. Decreased level of consciousness and lateralizing neurological deficits were the most common CIE-related symptoms. Treatments included intravenous fluids, corticosteroids, and anti-hypertensives. Radiographic findings included effaced cortical sulci, parenchymal edema, and cortical/subarachnoid contrast enhancement. Conclusions: Here, we describe our

institutional experience with CIE following endovascular therapy for cerebrovascular disease. We hypothesize that CIE may be facilitated by pre-existing microvascular pathology.

P.121

Ruptured intracranial infectious aneurysms: single Canadian center experience

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Background: Ruptured Intracranial Infected Aneurysms (IIAs) are relatively rare, but they portend high mortality. To our knowledge, there are no Canadian case-series on IIA, as well there is a relative paucity of international published experiences. Our purpose is to share the experience of a single Canadian tertiary centre in managing ruptured IIA and to conduct a systematic review. Methods: We did a retrospective case review series of adult patients with ruptured IIA treated at our institution. Secondly, we conducted a systematic review of literature on ruptured IIA between 2011-2021 inclusive. Results: At our institution, of a total 8 cases with ruptured IIA, 4 were treated endovascularly and 2 by surgical bypass. For the systematic review, we included 9 non-comparative studies with a total of 509 patients (318 males) and at least 437 ruptured IIA aneurysms. Favourable outcome was specified for 63.3% of patients (n=57). Regarding ruptured IIA, favourable clinical outcome was described in 59.3% (n=16). Conclusions: This study highlights a single Canadian tertiary centre experience in the management of IIA and compares it to the global trends of the last 10 years in a systematic review.

NEUROSURGERY (CNSS)

FUNCTIONAL NEUROSURGERY AND PAIN

P.122

Unbiased whole brain circuit interrogation reveals neurons restoring walking after spinal cord injury

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Background: There is presently no cure for locomotor deficits after spinal cord injury (SCI). Very few therapies effectively