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Giant aneurysm, tiny patient: flow diversion stenting of a giant MCA aneurysm in a young child

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Background: A 3-year-old girl presented with a 6-day history of severe headaches. On examination, upper motor neuron signs were noted in the left upper and lower extremities with increased tone, reflexes, and a positive Babinski sign. MRI of the brain revealed a giant right middle cerebral artery (MCA) aneurysm with significant mass effect, associated with cerebral edema and ventricular effacement. CT and CT angiogram showed evidence of aneurysmal wall calcification and lamellar thrombosis within the aneurysmal sac. In addition, there was a smaller right MCA aneurysm in close proximity to the giant aneurysm. Methods: After a balloon occlusion test to assess collateral blood flow to the MCA territory, it was decided to treat both aneurysms with a flow diverting stent. Dual antiplatelet loading was done with aspirin and clopidogrel. The smallest available diameter of Pipeline Shield stent was deployed. Results: The patient remained neurologically unchanged. Early follow-up imaging demonstrated stent patency, reduced size and mass effect of the large aneurysm, reduced cerebral edema, and no flow into the smaller aneurysm. Conclusions: Flow diversion stenting may be employed successfully in pediatric patients, though has unique technical considerations including small size vessels and limited evidence for antiplatelet agent choice and dosing.

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Spinal subdural hematoma from a type I spinal arteriovenous malformation: case report and literature review

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Background: Type 1 spinal arteriovenous malformations (AVM) are dural fistulas which classically present due to progressive congestive myelopathy. Acute hemorrhage resulting in a spinal subdural hematoma is exceedingly rare with only three reported cases. Methods: This 46-year-old female experienced rapidly progressive paraplegia over several hours. There was no history of anti-coagulant use, trauma, fever, or infection. On examination, she had 0/5 in the lower extremities bilaterally and decreased sensation to pinprick below the T6 level on both sides. She also had loss of bowel and bladder control. MRI demonstrated evidence of an intra-dural extramedullary lesion located anteriorly causing significant compression on the spinal cord from T4 down to T7 level. Results: She underwent thoracic laminectomy from T4 – T7. After dural opening, a well organized sub-dural hematoma with significant mass effect on a distorted spinal cord was evacuated. Subsequently, a large abnormal artery leading into a dilated serpiginous vein on the dorsal aspect of spinal cord at the T7 level was visualized. Indocyanine green angiography confirmed our suspicion of a dural arteriovenous fistula which was disconnected. Conclusions: Type I spinal AVM in rare cases can present acutely as subdural hematoma and should be kept in the differential diagnosis for acute paraplegia.

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Adjunctive treatment of chronic subdural hematoma with middle meningeal artery embolization – is the left side more common?

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Background: Embolization of middle meningeal artery (EMMA) is an emerging treatment for CSDH and a method to decrease CSDH recurrence. We report a single Canadian center experience of EMMA for the management of CSDH. Methods: Consecutive EMMA patients during the period July 2020 to September 2021 were retrospectively included in this series. EMMA procedures were performed using polyvinyl alcohol particles or liquid embolic agent. All patients were followed clinically and radiographically as per standard of care. Results: A total of 20 patients CSDH (mean 65.6 years; range 14-85 yrs; male 16) underwent 20 EMMA procedures. CSDH occured on the left in 13 patients, right in 4 patients and bilateral in 3 patients. No patients had periprocedural complications. There was no recurrence of CSDH on the EMMA treated side. The mean SDH size decreased from 18.4 +/- 6.34 mm at the time of presentation to 5.31 +/ 3.84 mm at last follow up. The proportion of patients with an mRS of 2 or less increased from 65% to 76%. Conclusions: EMMA was found to be effective and safe in the management of CSDH with no evidence of recurrence on the treated side. Left sided hematomas appear to be more common that right sided hematomas.

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Middle meningeal embolization for pediatric chronic subdural hematoma

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Background: Chronic subdural hematoma (CSDH), although common in the adult and geriatric populations, is a relatively rare condition in pediatric patients. Middle meningeal artery (MMA) embolization is a novel adjuvant endovascular procedure used to minimize the risk of recurrence of CSDH, and its use in pediatric populations is exceptionally rare. Methods: This is a case-report and review of the available literature. Results: A 14 year old male presented to the children hospital after an episode of dysarthria, word-finding aphasia and subtle right sided weakness. MRI revealed a CSDH left cerebral hemisphere with evidence of septations and an arachnoid cyst in the left middle cranial fossa. The patient underwent surgical drainage of the CSDH and subsequent MMA embolization. The patient made an excellent functional recovery with complete resolution of CSDH. Conclusions: Here we report our experience with MMA embolization as an adjuvant therapy for the treatment of a pediatric CSDH. We have found that MMA embolization provides a safe adjuvant