

**P.127****Hemodynamic factors of internal carotid artery blister aneurysms: role of the Wall Shear Stress Distribution**

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**Background:** The pathophysiology of internal carotid artery (ICA) blister aneurysms is poorly understood. Our goal is to investigate the hemodynamic factors contributing to their formation and progression using computational fluid dynamics. **Methods:** We developed software allowing 3D reconstruction of type I and II blister aneurysms (Bojanowski et al., 2015) from ICA angiography. Kinematic blood flow data was obtained using a finite volume solver. We compared the wall shear stress distribution (WSS) of the healthy arterial wall under various blood pressure conditions. **Results:** WSS was maximal on the dorsal wall of the supraclinoid segment of the ICA at the distal part of the future site of the aneurysm sac, suggesting that the aneurysm sac initially develops in a retrograde fashion. The WSS gradient (WSSG) was maximal at both the proximal and distal boundaries of the bulging aneurysm. Hypertension exponentially exacerbates the WSS distribution. Very low WSS associated with a high WSSG at the proximal part of the aneurysm sac could explain the extension of the hemorrhage proximal to the forming blister. **Conclusions:** WSS and its gradient participate in the formation and progression of blister aneurysms of the supraclinoid segment of the ICA. Increasing blood pressure contributes exponentially to the formation of blister aneurysms.

**P.128****Recurrent subarachnoid hemorrhage secondary to Chiari 1 malformation**

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**Background:** We describe a patient with recurrent subarachnoid hemorrhage (SAH) secondary to Chiari 1 malformation. **Methods:** A retrospective review of the clinical chart was performed. **Results:** A previously healthy female in her 70's presented with worst headache of life. CT demonstrated 4<sup>th</sup> ventricular hemorrhage with SAH extending into the bilateral cerebellomedullary fissures. CTA did not show a vascular etiology and patient was discharged home. Incidental note was made of a right persistent trigeminal artery. The patient then represented 2 weeks later with worst headache of life and decreased level of consciousness. CT demonstrated extensive SAH extending into the 3<sup>rd</sup> and 4<sup>th</sup> ventricles. CTA and diagnostic cerebral angiogram did not show a vascular etiology. MRI brain/C-spine revealed Chiari 1 malformation. An external ventricular drain was placed but could not be weaned. She underwent suboccipital craniectomy with C1 laminectomy. Intraoperatively, there was a prominent dorsal spinal vein that appeared under tension as it pierced the arachnoid membrane and subsequently entering the dura as a rudimentary occipital sinus. This vein was coagulated and divided. The patient recovered well and was at neurological baseline at 6 month follow-up. **Conclusions:** This is the first reported case of recurrent SAH secondary to Chiari 1 malformation.

**P.129****Endovascular coiling of ruptured basilar fenestration aneurysm: case report and review of literature**

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**Background:** Basilar fenestration is a rare congenital anomaly. When present, it is commonly found at the proximal portion of the artery near the vertebrobasilar junction. **Methods:** This is a case report of a ruptured basilar fenestration aneurysm in a 47-year-old male successfully treated with endovascular coiling. **Results:** A 47-year-old male presented with sudden onset headache, neck pain, blurry vision, nausea, vomiting, and diaphoresis. Cerebral angiogram revealed a saccular basilar fenestration aneurysm located at the vertebrobasilar junction measuring 3.1 x 2.6 x 3.4 mm with a 2.3 mm neck. Multiple coils were placed including Target 360 Nano 2mm x 4 cm (Stryker, Kalamazoo, MI, US), Target 360 Nano 1.5 mm x 2 cm (Stryker, Kalamazoo, MI, US), and Target Helical Nano 1.5 mm x 1 cm (Stryker, Kalamazoo, MI, US). A repeat angiogram revealed complete exclusion of the aneurysm with preservation of both vertebral arteries. **Conclusions:** A literature review was conducted on basilar fenestration aneurysms which included 158 patients from 39 studies. Overall, complete exclusion of the aneurysm was achieved in 75.8% of cases, with 22.4% of cases having residual flow and 1.8% of cases with unreported exclusion status.

**P.130****Efficacy of decompressive craniectomy after subarachnoid hemorrhage: a propensity-matched analysis of a South Australian Cerebrovascular Registry**

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**Background:** The efficacy of decompressive craniectomy (DC) for patients with intracranial hypertension secondary to aneurysmal subarachnoid haemorrhage (aSAH) remains unclear. **Methods:** We identified aSAH patients who underwent DC following microsurgical aneurysm repair from a prospectively maintained cerebrovascular registry and compared their outcomes with a propensity-matched cohort who did not. **Results:** A total of 45 aSAH patients underwent DC between 01/09/2011 and 20/07/2020 and were compared with 45 propensity-matched controls. There were no differences in patient age ( $p=0.48$ ), gender ( $p=0.53$ ) or the proportion requiring endovascular vasospasm treatment ( $p=1.00$ ). However, patients in the DC subgroup had a higher mean WFNS grade ( $3.47\pm 1.53$ ) compared with matched controls ( $2.8\pm 1.25$ ,  $p=0.03$ ). Patients treated with DC had a higher rate of inpatient mortality (20.00% vs 0.00%,  $p=0.0025$ ), unfavourable outcome (mRS $\geq 4$ ) at 1<sup>st</sup> (42.22% vs 11.11%,  $p=0.0016$ ) and final (31.11% vs 2.94%,  $p<0.001$ ) follow-up, and NIS-Subarachnoid Hemorrhage Outcome Measure positivity (40.00% vs 13.33%,  $p=0.0079$ ). They also had a