

modeled as Newtonian fluid, using incompressible transient solver. We have set patients-specific ICA blood velocity waves obtained with Doppler ultrasound as inlet boundary conditions. After performing simulation we calculated haemodynamic parameters of the aneurysm dome. We additionally obtained average blood velocity, pulsatility index and resistive index from ICA blood velocity wave.

Results: Among all antihypertensive drugs, only b-blockers intake significantly influenced hemodynamic parameters of aneurysm dome. We found that for patients who took b-blockers maximum (68.33 ± 1.46 vs 71.51 ± 6.45 mmHg; $p=0.02$) and average pressure (66.43 ± 6.69 vs 68.45 ± 4.81 mmHg; $p=0.01$), Time-Averaged Wall Shear Stress Gradient (1.14 ± 4.59 Pa vs 3.67 ± 1.23 Pa; $p=0.01$) and vorticity (0.14 ± 0.05 vs 0.17 ± 0.03 ; $p=0.03$) were significantly lower in aneurysm dome. Additionally, we found that dome vorticity was significantly negatively correlated to ICA pulsatility ($R=-0.42$; $p=0.04$) and resistive index ($R=-0.43$; $p=0.04$). In multivariate model, after adjustment for aneurysm size, location, average blood velocity and pressure, intake of b-blockers remained independently associated with lower aneurysm dome vorticity (OR:0.15; 95%CI:0.13-0.14; $p<0.01$) and average pressure (OR:0.91; 95%CI:0.88-9.97; $p=0.04$).

Conclusions: Intake of b-blockers might contribute to more favourable hemodynamics inside aneurysmal sac.

1443

BRAIN AND SPINE 3 (2023) 101794 102006

RAPID VENTRICULAR PACING IN A COMMUNITY CENTER FOR CEREBROVASCULAR NEUROSURGERY - FIRST INTERDISCIPLINARY EXPERIENCE

Bogdan Corbu¹, Leonie Helmbold¹, Luer Geerken¹, Dieter Suhr², Martin Bauer¹, Arya Nabavi¹. ¹ *Krh, Germany*; ² *Ini, Hannover, Germany*

Oral e-Poster Presentations - Booth 1: Vascular A (Aneurysms), September 25, 2023, 1:00 PM - 2:30 PM

Background: The aim of this study was to establish intraoperative rapid ventricular pacing (RVP) and to test its methodological applicability in a community center for cerebrovascular surgery. Intraoperative rapid ventricular pacing (RVP) leads to a time-controlled blood pressure regulation in the sense of hypotension while maintaining perfusion of the vascular system.

Methods: Intraoperative rapid ventricular pacing was performed in 4 of 33 patients with aneurysms of the anterior and middle arterial supply and in 4 of 10 patients with arteriovenous malformations or dural AV fistulas in the period from May 1, 2022 to January 1, 2023 during elective surgical treatment. Only patients without any cardiac pathology, as examined in the preoperative workup, were included. The pacing catheter was tested after placement and positioning of the patients. Intraoperative stimulation was performed for 2-3 times and for a maximum of up to 90 sec.

Follow up examinations included neuropsychological evaluations and neuroimaging studies.

Results: In all patients, an immediate decrease of blood pressure with preserved residual perfusion could be achieved. At the end of pacing, the normotensive baseline was reached after a few cardiac actions without an exaggerated reaction. Both aneurysms and vascular malformations showed significantly reduced turgor, which facilitated dissection/elimination. Perioperative cardiac complications did not occur.

Conclusions: The establishment of rapid ventricular pacing is also possible in a community setting with careful consideration of safety controls. The workflow could be improved and shortened after a few trial runs.

Thus, without the disadvantages of interruption the blood flow (cardiac arrest/temporary clipping) or unpredictable blood pressure manipulation and in close cooperation of the neurovascular team, patient care in more complex cerebrovascular clinical pictures is possible

1535

BRAIN AND SPINE 3 (2023) 101794 102007

MULTIMODAL INTRAOPERATIVE MONITORING DURING SUPRATENTORIAL ANEURYSM SURGERY. A COMPARATIVE STUDY

Pablo López Ojeda¹, Julia Miró¹, Alex De Vilalta¹, Alexei Marnov¹, Laura Contreras¹, Laura Pariente¹, Isabel Fernández Conejero¹, Andreu Gabarrós¹. ¹ *Hospital Universitari De Bellvitge, Barcelona, Spain*

Oral e-Poster Presentations - Booth 1: Vascular A (Aneurysms), September 25, 2023, 1:00 PM - 2:30 PM

Background: IONM has been shown to be useful in aneurysm surgery and is now routinely used. But in the absence of well established and accepted standards and considering that the risk of symptomatic strokes still remains high, we present 268 intracranial ruptured and unruptured aneurysms treated surgically with and without IONM, with the aim to determine whether the use of multimodal IONM influences overall outcome.

Methods: All patients diagnosed with an intracranial aneurysm who were surgically treated between 2008 and 2017 were prospectively collected in a database. We analyzed a total of 268 cerebral aneurysms: ruptured (119;44%) and unruptured (149;55.6%). We grouped the aneurysms for analysis into cohorts based on the use of IONM (180;67.16%) or non use of IONM (88;32.84%).

Results: Background: A significant difference was seen in the incidence of ischemic surgery complications between the IONM and non-IONM groups, with a reduction of perioperative stroke in the IONM group ($p=0.011$), and a better motor outcome surgery related in this group ($p=0.016$). Patients with post-operative ischemic lesions on CT were 16 (8.9%) in the IONM group over 18 (20.5%) in the non-IONM group. Permanent motor deficit was seen in 9 patients (5%) in the IONM group and in 12 patients (13.6%). The logistic binary regression analysis, identified that temporary clipping time $\geq 6'05''$ (OR)=3.03; 95%CI=1.068-8.601; $p<0.037$), aneurysm size ≥ 7.5 mm (OR=2.65; 95%CI=1.127-6.235; $p<0.026$) and non-use of IONM (OR=2.79; 95%CI=1.171-6.636; $p<0.021$) independently increased the risk of ischemic surgery complications.

Conclusions: Longer temporary clipping time, larger aneurysm size and the non-use of IONM could be considered as potential risk factors for ischemic complications. Multimodal IONM is an effective and feasible tool to prevent ischemic aneurysm surgery complications and should be taken into account in the treatment strategy decision.

1627

BRAIN AND SPINE 3 (2023) 101794 102008

ANTI-INFLAMMATORY RESPONSE OF VITAMIN D ON EXTRACRANIAL VESSELS AFTER SUBARACHNOID HEMORRHAGE

Sepide Kashefiolasl¹, Ralf Brandes², Lina Qasem¹, Vincent Prinz¹, Marcus Czabanka¹. ¹ *University Hospital Frankfurt, Frankfurt am Main, Deutschland*; ² *Institute for cardiovascular Physiology, Frankfurt am Main, Germany*

Oral e-Poster Presentations - Booth 1: Vascular A (Aneurysms), September 25, 2023, 1:00 PM - 2:30 PM

Background: Vitamin D has been promoted to vascular regeneration in non-cerebral arteries because of its anti-inflammatory properties. Systematic inflammatory reaction as a multifactorial complication after subarachnoid hemorrhage (SAH), correlated with higher mortality and poor outcome, is the result of a multifactorial mechanism with vasoactive inflammation on extracranial vessels. We therefore hypothesized that vitamin D attenuates the systemic vascular inflammatory reaction.

Methods: We investigated the effect of vitamin D pretreatment (100 ng/kg/d; 5 days) in a blood injection SAH model in adult male C57BL6 mice. Vasomotor function (via wire myograph) of carotid and femoral artery and neurological deficits were measured. Different inflammatory factors such as tumor necrosis factor α (TNF- α), interleukin 6 (IL-6), vascular cell adhesion molecule (VCAM) and intercellular adhesion molecule (ICAM), were also tested.

Results: A significantly enhanced vasorelaxation was identified in Vitamin D pretreated mice (SAH-VitD versus SAH-control: $p<0,001$; $n=10$). Missing a relevant difference in vasoconstriction of carotid and femoral artery comparing SAH mice with and without vitamin D treatment, there was a significantly higher endothelial related vasorelaxing effect in treated SAH mice ($p<0,01$, $n=5$). Neurological deficits in vitamin D pre-treated SAH mice were significantly decreased ($p<0,05$; $n=10$). All tested inflammatory factors were down-regulated in vitamin D pre-treated mice (SAH-VitD versus SAH-control: $p<0,0001$; $n=10$).

Conclusions: Extracranial vascular Inflammation after SAH, as one of the influencing components in the follow-up after SAH onset, was significantly attenuated by Vitamin D pretreatment. Furthermore, anti-inflammatory effect of vitamin D resulted in a decrease of extracranial vasoconstriction and neurological deficits. Further research should be focused on vitamin D to optimize therapeutic strategies for SAH patients in critical care units.