

P069/136 CIGARETTE SMOKING AND INTRACRANIAL ANEURYSMS: CYP2A6 GENE SNPS PILOT ANALYSIS IN THE ITALIAN POPULATION

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Introduction Cigarette smoking is a modifiable risk factor associated with intracranial aneurysms (IAs) formation and rupture. Cytochrome P450 2A6 (CYP2A6) is the main enzyme implied in nicotine and xenobiotics catabolism.

Aim of Study Our study aimed to investigate the associations between specific single-nucleotide polymorphism (SNPs) of the CYP2A6 gene and the presence of single or multiple sporadic IAs as well as their rupture with respect to the smoking habit.

Methods 331 Italian patients with sporadic IAs were recruited in a single Institution. We recorded data about the number of aneurysms, clinical onset with subarachnoid hemorrhage (SAH), and smoking habits. Genetic analysis was performed on peripheral blood samples: CYP2A6 *B2, CYP2A6 *2, and CYP2A6 *14 SNPs were analyzed in the patients' group, and in 150 healthy control subjects. Statistical analysis was conducted according to genetic association studies guidelines.

Results The frequency of aSAH was higher in smokers than non-smokers (98% vs 70%), regardless of the CYP2A6 SNPs pattern. There was a significant correlation between IA rupture and tobacco consumption in patients with the heterozygous CYP2A6 *B2 allele ($p=0.0001$). All patients carrying the heterozygous CYP2A6 *14 allele had an aSAH event (100%), independently of smoking habits.

Conclusion A cigarette smoker carrying a fully active CYP2A6 enzyme (heterozygous *B2 allele) may have an increased risk of IA rupture, compared to people having functionally less active variants: further investigation on a larger sample is needed to verify this result. The role of the heterozygous CYP2A6 *14 allele in aSAH is yet to be clarified.

Disclosure of Interest Nothing to disclose

P070/143 SYSTEMATIC COMPARISON OF ROBOTIC-ASSISTED AND CONVENTIONAL MANUAL FLOW DIVERTER TREATMENT OF AN ICA ANEURYSM ON A TRUE-TO-LIFE ENDOVASCULAR SIMULATOR

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Introduction The vascular robotic Corindus Corp Path GRX system has been recently used in experimental treatment of cerebral aneurysms. Nevertheless, data on feasibility and safety is limited to case reports. In addition, treatment safety has not yet been systematically compared to manual intervention in anatomically identical aneurysms.

Aim of Study Systematic comparison of treatment failure, flow diverter placement accuracy and procedural time depending of treatment modality (transfemoral robotic vs. manual) on an identical 3D-printed supraorbital ICA aneurysm in the Hamburg Anatomic Neurointerventional Endovascular Simulator (HANNES).

Methods Measurement of treatment failure rate (abort of procedure, displaced flow diverter) and procedure time (navigation of parent vessel + deployment) among 4 interventionalist with different manual experience levels (highly experienced to novice). All interventionalist treated the aneurysm robotically in 50% of the procedures.

Results The identical supraorbital ICA aneurysm was treated a total of 32 times (50% robotic-assisted). Failure rate due to technical abort of the procedure or stent displacement was 3/16 (19%) in the manual group, while no failure was recorded in the robotic group. Navigation of the parent vessel was significantly faster in the robotic group (median 37 [IQR 22–47] vs. 83 sec [44–171], $p=0.002$), while stent deployment was faster in the manual group (median 25 [IQR 17–41] vs. 44 sec [33–65], $p=0.026$).

Conclusion Robotic-assisted flow-diverter treatment of ICA aneurysms may be associated with lower technical treatment failure rate compared to conventional manual treatment in a true-to-life endovascular simulator. Advantage of the robotic setting seems to be a technically easier navigation of the parent vessel.

Disclosure of Interest Nothing to disclose (for all authors)

P071/150 BIPLANE PROJECTION FOR INTRACRANIAL ANEURYSM TREATMENTS – SAME, SAME, BUT DIFFERENT?

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Introduction Clear delineation of intracranial aneurysms (IA) on angiographic working projections is essential for endovascular treatment to achieve successful occlusion and avoid complications. However, only little is known about what different interventional neuroradiologists (INRs) understand as optimal biplane IA working projections and how much the chosen working projections differ for a given anatomy.

Aim of Study The aim of our study is to gain a better understanding and objectification of biplane working projections, chosen for endovascular aneurysm treatment between different INRs, to develop an AI-assisted treatment projection optimization considering the possibility of improving head positioning.

Methods Five INRs used a self-developed software solution to simulate the best possible, IA working projection for 20 aneurysms. Due to the heterogeneity between the INRs, 17 biplane and 3 monoplane representative median projections were selected. In the next step, the usability of different viewing angles from 5° to 30° were rated as yes-no question.

Results The average proportion of agreement to remain usable per angle across all raters are as follows: 81.5% (5°), 66.4% (10°) down to 34.4% (30°).

Conclusion There is a wide variation between the raters for the initial treatment projection. Even if the angle of an IA projection differs by only 10°, already 33.6% of the resulting projections are considered as inappropriate compared to the primary selected projection. Up to a 5° angular change, the resulting IA projection is still feasible. Based on these results, an automated head repositioning suggestion can be considered in anatomically difficult conditions despite possible manual inaccuracies.

Disclosure of Interest Nothing to disclose.

P072/153 ENDOVASCULAR TREATMENT OF WIDE-NECK ANEURYSM OF THE BIFURCATED ARTERY WITH THE NEUROFORM ATLAS STENT

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Introduction When the aneurysm neck is incorporated with the parent vessel, endovascular coiling can be technically more challenging.

Aim of Study This study evaluated the use of a single Neuroform Atlas stent as a safe and effective solution for complex bifurcated aneurysms.

Methods Seventy-six complex bifurcated intracranial aneurysms, including 49 unruptured and 27 ruptured aneurysms, were treated with Neuroform Atlas stent-assisted coil embolization. The clinical and angiographic outcomes were retrospectively analyzed.

Results In 68 patients (mean age, 58.3 ± 11.6 years; male/female ratio, 20 (29.4%):48 (70.6%)), 76 stents were successfully delivered to the target aneurysms, and the technical success rate was 98.6%. There was complete occlusion in 59 (77.6%) of 76 cases, neck remnants in 16 (21.1%) cases, and partial occlusion in 1 (1.3%) case. Two patients experienced treatment-related morbidity: one had branch occlusion and the other suffered from parenchymal hemorrhage, but no unruptured aneurysms showed any new neurologic symptoms at discharge. Of the 27 ruptured aneurysms, 20 had good outcomes (Glasgow Outcome Score 4 or 5) at latest follow-up (mean 12.2 months, range 6–29 months) and 1 died from initial SAH. Post-treatment angiograms showed complete occlusion in 89.1%, neck remnant in 7.8% and incomplete occlusions in 3.1%. 88.2% had at least 1 follow-up diagnostic angiography or MR angiogram (mean 12.5 ± 4.3 months; range 6–29 months) and there were 5 (7.8%) minor and 2 (3.1%) major recurrences.

Conclusion A single Neuroform Atlas stenting is a safe and effective method for treating wide-neck bifurcated aneurysms incorporated with parent vessels.

Disclosure of Interest Nothing to disclose.

P073/162 CLEVER: CLINICAL EVALUATION OF WEB 0.017 DEVICE IN INTRACRANIAL ANEURYSMS. FINAL RESULTS FOR RUPTURED AND ENRAPTURED ANEURYSMS AT 12 MONTHS

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Introduction WEB is an endovascular device allowing treatment of wide-neck bifurcation aneurysms. WEB 17 has been developed to make easier the treatment and to manage smaller aneurysms.

Aim of Study CLEVER objective is to provide safety and efficacy data on the WEB 0.017 in treatment of ruptured and unruptured bifurcation aneurysms at 12 months.

Methods CLEVER is an observational, prospective multicenter study conducted in 17 European sites.

Data collected are 100% monitored and primary endpoints independently evaluated (adverse events adjudicated by CEA, occlusion rates by Corelab).

Data were analyzed on the full population as well as separately for ruptured and unruptured aneurysm. Sample size calculation is based on objective performance approach for safety and efficacy rates.

Results 163 patients were enrolled with 103 unruptured aneurysms and 60 ruptured aneurysms.

Aneurysms treated were ranging from 2 to 9.2 mm.

The primary safety endpoint, defined as the proportion of patients with death of any nonaccidental cause or any major stroke within the first 30 days after treatment or major ipsilateral stroke or death due to neurologic cause from day 31 to the 1 year after treatment, was 1.8%.

The primary efficacy endpoint, defined as the 12-month rate of adequate occlusion without retreatment, was 82.2%.

Detailed description of endpoints will be provided with a specific attention to the aneurysm initial presentation (ruptured vs unruptured).

Conclusion These results show good efficacy and safety results at 12 months, and no WEB related mortality, confirming safety and efficacy of WEB 0.017 use in unruptured and ruptured aneurysms.

Disclosure of Interest Istvan Szikora has a consulting agreement with Microvention. I Szikora, Chr Cognard and L Spelle served as research coordinators for the CLEVER study