

mechanics could be precisely evaluated over time using registration and fusion algorithms.

Conclusion The new I.V MicroDynaCT protocol improves image quality to assess aneurysm occlusion, vessel patency, and luminal narrowing in patients with FD treatment. Advanced post-processing techniques allows precise comparisons with previous studies to evaluate adverse mechanics and their changes over time. Although the preliminary experience is promising, more data are needed to establish its role as a potential substitute for DSA and intraarterial cone-beam CT.

Disclosures R. Holmboe Dahl: None. B. Ferreira: 5; C; Part time product specialist hos Novamed A/S. G. Benndorf: None.

O-054

PROSPECTIVE STUDY ON EMBOLIZATION OF INTRACRANIAL ANEURYSMS WITH THE PIPELINE DEVICE (PREMIER STUDY): 3-YEAR RESULTS WITH THE APPLICATION OF A SPECIFIC FLOW-DIVERTER OCCLUSION CLASSIFICATION

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10.1136/neurintsurg-2022-SNIS.54

Introduction Flow diverters proved to be a safe and efficacious approach for the management of large intracranial lesions. The PREMIER trial was the first prospective study to examine the efficacy of the pipeline embolization device (PED, Medtronic) for the management of small and medium size wide-necked aneurysms. Herein, we present the 3-year follow-up results from the PREMIER cohort.

Methods The PREMIER was a prospective, single-arm study, including patients with a target wide-necked aneurysm of ≤ 12 mm, located in the internal carotid artery or vertebral artery. The primary effectiveness endpoint (complete aneurysm occlusion) and primary safety endpoint (major stroke in the supplied territory or neurologic death) were independently monitored and adjudicated. Additional angiographic evaluation to highlight the natural history of aneurysms treated with

flow diverters was performed using the modified Cekirge-Saatci Classification (mCSC).

Results According to CRL review, of 141 patients treated with PED, 25 (17.7%) required angiographic follow-up after the first year due to incomplete aneurysm occlusion. Three (12%) of these patients progressed to complete occlusion, resulting in a complete aneurysm occlusion rate at 3-year of 83.3% (115/138). Further angiographic evaluation using mCSC demonstrated that complete occlusion, neck residual, or aneurysm size reduction occurred in all cases with consecutive available follow-ups (97.1%). Overall safety endpoint occurred in 2.8% (4/140) of the patients over the 3-year follow-up, with only one event occurring after the first year – which was non-disabling at 2-year follow-up. Retreatment rate since initial device implantation was 5.0% (7/138): 4 within the first year and 3 within the second year, all carried on with PED in elective procedures. There was one case of aneurysm recurrence (0.7%) in a patient with an initially occluded aneurysm who afterward demonstrated residual neck at a 3-year follow-up. Not a single case of aneurysm rupture occurred in the series.

Conclusions A high rate of aneurysm occlusion, low morbidity, and absence of aneurysm rupture emphasize the PED as a safe treatment strategy for small and medium-sized aneurysms located along the ICA and VA in the long term.

Disclosures R. Hanel: 1; C; Unrestricted research grant from NIH, Interline Endowment, Microvention, Stryker, CNX. 2; C; Medtronic, Stryker, Cerenovus, Microvention, Balt, Phenox, Rapid Medical, and Q'Apel. He is on advisory board for MiVI, eLum, Three Rivers, Shape Medical and Corindus. 4; C; InNeuroCo, Cerebrotech, eLum, Endostream, Three Rivers Medical Inc, Scientia, RisT, BlinkTBI, and Corindus. G. Cortez: None. D. Lopes: 2; C; Asahi, Medtronic, and Stryker; honoraria from Siemens, Medtronic, Stryker, and Phenox. P. Nelson: 2; C; Medtronic, Phenox, and GmbH. A. Siddiqui: 2; C; Amnis Therapeutics, Boston Scientific, Canon Medical Systems USA, Cerebrotech Medical Systems, Claret Medical, Corindus, Endostream Medical, Guidepoint Global Consulting, Imperative Care, Integra, Rap. 4; C; in Amnis Therapeutics, Apama Medical, BlinkTBI, Buffalo Technology Partners, Cardinal Health, Cerebrotech Medical Systems, Claret Medical, Cognition Medical, Endostream Medical Ltd, Imperative Care, I. P. Jabbour: 2; C; Medtronic, Cerenovus, and Microvention. V. Pereira: 1; C; Philips. 2; C; Stryker, Penumbra, Balt, Medtronic, and Neurovasc. I. István: 2; C; Medtronic. O. Zaidat: 2; C; Medtronic, Stryker, Penumbra, and Cerenovus. C. Bettogowda: 2; C; Depuy-Synthes, Bionaut labs, and Galectin Therapeutics. G. Colby: 2; C; Medtronic, Microvention-Terumo, and Stryker. M. Mokin: 2; C; Cerebrotech, Imperative Care, and Penumbra; consulting fees form Medtronic, Cerenovus, and Canon Medical. C. Schirmer: 6; C; received honoraria from the American Association of Neurological Surgeons and Toshiba, and has ownership interest in NTI. F. Hellinger: None. C. Given II: 2; C; Medtronic and Stryker. 3; C; Medtronic and Stryker. T. Krings: 2; C; Stryker, Cerenovus, Penumbra, and Medtronic. P. Taussky: 2; C; Stryker Neurovascular, Cerenovus, and Medtronic. G. Toth: 2; C; Dynamed EBSCO and Microvention. J. Fraser: 2; C; Stream Biomedical, Penumbra, and Medtronic. 4; C; Fawkes Biotechnology, LLC, and Cerelux. M. Chen: 2; C; Medtronic, Stryker, Penumbra, Genentech, and GE. R. Priest: 2; C; Medtronic, Stryker, and Cerenovus. P. Kan: 2; C; Stryker Neurovascular, Medtronic, and Cerenovus. D. Fiorella: 1; C; Balt USA, Microvention, Penumbra, Siemens, and Stryker. 2; C; Arsenal Medical, Balt USA, Cerenovus, Marblehead, Medtronic, MENTICE-Vascular

Simulations, Microvention, Neurogami, Qapel Medical, RAPID Medical, RAPID.AI, Stryker, Siemens. 6; C; honorarium from Qapel Medicine. **D. Frei:** 2; C; Penumbra, Stryker Neurovascular, Genentech, MicroVention, and Codman. **B. Aagaard-Kienitz:** None. **O. Diaz:** 6; C; proctor for Microvention/Terumo. **A. Malek:** 6; C; Cofounder, investor, and shareholder of CereVasc. **C. Cawley:** None. **A. Puri:** 1; C; Medtronic Neurovascular, Stryker Neurovascular, and Cerenovus. 2; C; Microvention, Agile, Merit, Corindus, QApel, Arsenal, and Imperative Care. **D. Kallmes:** 1; C; Medtronic, MicroVention, NeuroSave, Neurogami, Sequent Medical, NeuroSigma, and Insera. 6; C; President of Marblehead Medical and has patent pending in balloon catheter technologies.

0-055 UNDERLYING AUTOIMMUNE DISEASE IS ASSOCIATED WITH SMALLER ANEURYSM SIZE AT RUPTURE

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10.1136/neurintsurg-2022-SNIS.55

Introduction Although the role of inflammation in the development of aneurysms is established, less is known about the development of intracranial aneurysms in the setting of underlying autoimmune disease. The underlying systemic inflammation characteristic of disorders such as systemic lupus erythematosus, rheumatoid arthritis, and Sjogren's syndrome, may influence the development of intracranial aneurysms through common inflammatory pathways. We hypothesize an association between underlying autoimmune disease and aneurysm growth and rupture.

Materials and Methods Medical records of patients who underwent cerebral angiography between August 2018 and August 2021 were manually reviewed to identify autoimmune diseases, comorbid conditions, and aneurysm characteristics. Aneurysm sizes and location were recorded based on the angiography report. Autoimmune diseases as defined for this study included are those known to have systemic inflammatory effects on the central nervous system or multiple other organ systems. In the case of hypothyroidism patient charts were carefully reviewed to ensure that only autoimmune hypothyroidism was included in the autoimmune disease group. Statistical analysis was performed using R v4.1.0 (R Foundation for Statistical Computing). A multiple logistic regression model was built in R to determine the effect of multiple of independent variables, including autoimmune disease, on rupture status as a binary outcome. A multiple regression model was also constructed to determine the effect of multiple variables, including autoimmune disease, on size of an aneurysm at the time of rupture.

Results Chart review identified 194 patients with 273 ruptured and unruptured saccular intracranial aneurysms. There were 31 patients with 44 aneurysms identified as having an autoimmune disease. There were no significant differences in age, sex, smoking status, hypertension, or diabetes between autoimmune and non-autoimmune patients. There was no significant association between autoimmune disease and aneurysmal rupture ($p=0.66$). Average aneurysm size among patients with autoimmune disease was 5.35 mm compared to 6.38 mm in patients without autoimmune disease ($p=0.07$). The average size of a ruptured aneurysm was significantly smaller among

patients with autoimmune disease compared to patients without autoimmune disease (4.71 mm vs 5.95 mm, $p = 0.02$). Patients with autoimmune disease also had a lower mean Hunt-Hess score at presentation compared to patients without autoimmune disease (1.78 vs 2.52, $p=0.04$). The multivariate logistic regression model did not identify any significant association between rupture and autoimmune disease when controlling for other variables ($p=0.49$). In the multivariate linear regression model autoimmune disease was still significantly associated with a smaller size at rupture ($p=0.04$) and smoking was associated with a larger size at rupture ($p=0.03$) when controlling for other variables.

Conclusion In conclusion, autoimmune disease is associated with a smaller aneurysm size at rupture although it is not associated with rupture itself. This association may be due to inflammatory pathways which are common to autoimmune diseases as well as aneurysm wall development. Although we were unable to identify any association between rupture status and the presence of autoimmune disease, the association between smaller size at rupture and autoimmune disease warrants further studies as autoimmune disease may influence the trajectory of aneurysm development and the decision to treat.

Disclosures A. Matur: None. A. Yamani: None. M. Robinson: None. M. Smith: None. P. Shirani: None. A. Grossman: None. C. Prestigiacomo: None.

0-056 PREDICTORS OF IN-HOSPITAL MORTALITY AND HOME DISCHARGE IN ANEURYSMAL SUBARACHNOID HEMORRHAGE PATIENTS: A 4-YEAR RETROSPECTIVE ANALYSIS

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10.1136/neurintsurg-2022-SNIS.56

Introduction Factors associated with discharge disposition and mortality following aneurysmal subarachnoid hemorrhage (aSAH) are not well-characterized. We utilize a national all-payer database to identify factors associated with home discharge and in-hospital mortality.

Methods The National Inpatient Sample (NIS) was queried for patients with aSAH within a 4-year range. Weighted multivariable logistic regression models were constructed and adjusted for age, sex, race, household income, insurance status, comorbidity burden, NIS-SAH Severity Score (NIH-SSS), disease severity, treatment modality, in-hospital complications, and hospital characteristics (size, teaching status, and region).

Results Our sample included 37,965 patients; 33,605 were discharged alive and 14,350 were discharged home. After adjusting for baseline covariates, multivariable logistic regression revealed several independent associations with home discharge. Black patients had lower odds of in-hospital mortality compared to White patients (aOR=0.67, 95%CI: 0.52–0.86, $p=0.002$). Compared to patients with private insurance, those with Medicare were less likely to have a home discharge (aOR=0.58, 95%CI: 0.46–0.74, $p<0.001$), while those with self-pay (aOR=2.97, 95%CI: 2.29–3.86, $p<0.001$) and no charge (aOR=3.21, 95%CI: 1.57–6.55, $p=0.001$) were more likely to have a home discharge. Compared to patients aged under 50 years old, those aged 50–64 years (aOR: 0.55, 95%