ANEURYSMAL SUBARACHNOID HEMORRHAGE
OVERNIGHT: URGENT OR EMERGENT INTERVENTION?

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Abstract E-011

Introduction Optimal timing of intervention after aneurysmal subarachnoid hemorrhage (aSAH) remains unclear. Practices vary from urgent/early intervention within a day of presentation to emergent/ultra-early occlusion upon presentation. While emergent intervention aims to minimize re-ruptures, this must be weighed against increased procedural risks and resource utilization. Here we compare the clinical course and outcomes of patients presenting during regular versus after-hours to determine whether timing of presentation drives disparities in outcomes.

Methods We performed a retrospective cohort study of aSAH patients admitted to a tertiary care center between January 1, 2012 through March 31, 2019. Patients were grouped based on the time of presentation during regular hours (0700hrs-1700hrs) vs. after-hours (1700hrs-0700hrs). Local practice for same-day intervention where feasible for regular hours presentation, patients presenting after-hours undergo treatment as the first case the following morning. Patients requiring emergent surgical decompression were excluded from analysis. Prospectively defined baseline characteristics, timing intervals, and clinical outcomes were compared.

Results 415 patients were included for analysis, 145 (34.9%) presenting during regular hours and 270 (65.1%) presenting during after-hours. Baseline demographics, latency to presentation, and severity of presentation where comparable between groups. Latency from presentation to initial angiography was shorter for regular versus after-hours presentations, with 30.3% vs. 14.9% undergoing angiography within 4 hours of arrival (p<0.001). 71.2% vs. 74.0% underwent endovascular embolization. Aneurysmal re-rupture was rare in both cohorts (1.5% vs. 0.8%, not significant). Complications including cerebral vasospasm (52.4% vs. 52.8%, not significant) and radiographic delayed cerebral ischemia (DCI, 15.9% vs. 11.4%, p=0.070) were similar between cohorts, although there was a non-significant trend towards decreased DCI with after-hours presentation. In-hospital mortality and rates of good functional outcomes (defined as modified Rankin score of 0–2 at 1–6 months post discharge), were comparable between groups. After-hours presentation did not correlate with good functional outcome in multivariable binary logistic regression analyses accounting for age, latency from ictus, latency from admission to angiography, Hunt and Hess grade, Fisher grade, and smoking (aOR 0.83 [0.55 - 1.25], p=0.368).

Conclusions In this retrospective cohort study, timing of presentation did not correlate with in-hospital complications or long-term functional outcomes after aSAH. Although aneurysmal re-rupture is front-loaded in the ultra-early window, it is likely that this window has already passed by the time patients ultimately filter into a tertiary referral center. A practice of urgent and not-emergent aneurysmal occlusion did not lead to disparities in outcomes for patients presenting after-hours.

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OUTCOMES FOLLOWING THROMBECTOMY IN CEREBRAL VENOUS SINUS THROMBOSIS: A PROPENSITY MATCHED ANALYSIS OF THE NATIONAL INPATIENT SAMPLE FROM 2016–2019

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Abstract E-012

Introduction/Purpose Cerebral venous sinus thrombosis (CVST) is a relatively uncommon but significant cause of cerebrovascular injury that can lead to severe morbidity and mortality. The primary aims of this study were to investigate the use of thrombectomy in CVST on rates of mortality and to determine factors predictive of good outcomes.

Methods A query of the 2016–2019 National Inpatient Sample was performed for patients admitted with ICD-10 diagnosis codes (I636,G08,I676,O225,O873) for CVST. The rate of endovascular thrombectomy was identified using ICD-10 codes (03CG,03CK3,03CL3,03CP,03CQ3,037K3,037L3,037P3,037Q3,05CL3ZZ). Demographics, baseline comorbid conditions, and indicators of disease severity (defined as presence of seizure, ICH, SAH, coma and hydrocephalus) were compared between the patients who underwent endovascular thrombectomy and those who were medically managed. The rates of in-hospital mortality and discharge to home/acute-rehabilitation facility (good outcome) were identified in each group. Propensity score matching was utilized to control for all significantly different potential baseline confounders such as age, race, gender, smoking, atrial fibrillation, hypertension, hyperlipidemia, diabetes, and indicators of disease severity. A multivariate logistic regression was performed to determine predictors of good outcome while controlling for comorbidity covariates and disease severity. Odds ratios were calculated for each respective predictor. Statistical significance was set at an alpha level of 0.05. All statistical analysis performed using R version 4.1.3.

Results A total of 103,464 patients with CVST were identified from 2016–2019. Of those, 1,035 patients (1.0%) underwent endovascular thrombectomy. Average age in the thrombectomy group was significantly lower (46.92±18.62 years vs. 58.99±19.31 years, p<0.001), with a higher...
percentage of women (59.9% vs. 51.93%, p<0.05). Patients in the thrombectomy group were more likely to be diagnosed with coma (24.19% vs. 4.37%), ICH (42.03% vs. 4.15%), seizure (25.12% vs. 8.14%), SAH (22.71% vs. 1.97%), and hydrocephalus (8.21% vs. 1.64%) (p<0.001 for all). Non-thrombectomy patients were older and had higher rates of hypertension (62.1% vs. 43.48%), diabetes (22.17% vs. 13.04%), hyperlipidemia (40.81% vs. 20.77%), and atrial fibrillation (42.99% vs. 10.14%). Mortality was significantly higher in the thrombectomy group (14.01% vs. 5.66%, p<0.001), with no difference in rates of good outcome. Following propensity matched analysis, there was no difference in mortality between the two groups, however there was a lower rate of good outcome in the thrombectomy group (35.03% vs. 49.24%, OR; [95% CI]: 0.56 [0.36–0.85], p<0.01). Patients were more likely to receive thrombectomy at urban teaching hospitals (OR; [95% CI]: 4.09 [1.44–14.3], p<0.01). Presence of ICH (OR; [95% CI]: 0.43 [0.18–0.99], p<0.05), coma status (OR; [95% CI]: 0.24 [0.06–0.79], p<0.05) and hypertension (OR; [95% CI]: 0.21 [0.06–0.58], p<0.001) were independent predictors of poor outcome among patients who had thrombectomy.

Conclusion In this nationally representative analysis, patients with CVST who underwent thrombectomy were younger, more likely to be women, and had more severe neurological disease. After adjusting for disease severity, there was no difference in the rate of in-hospital mortality between the patients who had thrombectomy and those medically managed. Presence of ICH, coma and hypertension were associated with poor outcome among patients who had thrombectomy. Further studies are warranted to explore appropriate patient selection for thrombectomy in CVST.


Abstract E-013 Figure 1 Comparing transvenous embolization cast in foraminal and epidural venous plexus and A) CSF-venous fistula at Left L1, using the dual microcatheter coil/balloon pressure cooker technique and B) Fistula at Left T8 without pressure cooker technique. Embolization was successful in both patients; however, using the pressure cooker technique ensured thorough penetration of embolic agent in exiting venous tributaries and saved time and embolic agent.

outcome was determined with 1–3 month post-operative post-global impression of change.

Results Twenty procedures were performed among 18 patients (mean [SD] age 58 [10] years, 78% female. Pressure cooker technique was used in 10 (50%) of the procedures ranging from thoracic 6 levels to the lumbar 1 level. Successful embolization was achieved in all cases and there were no major complications. All ten procedures with pressure cooker technique had significant improvement in follow-up clinical symptoms and imaging. This was in contrast to conventional embolization with 1 patient with treatment failure.


Abstract E-014 Reducing frame rate and pulse rate for routine diagnostic cerebral angiography – ALARA principles in practice

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Introduction As the demand for neuroendovascular procedures increases, applying the principles of ‘As Low As Reasonably Achievable’ (ALARA) is critical to mitigate ionizing radiation dose to patients and providers. The stochastic and deterministic effects of radiation are known to cause cancer, reduce life-span, cause harmful epigenetic mutations and cause cataracts. A routine 6 vessel diagnostic cerebral angiogram in biplane can expose the patient to the equivalent radiation dose of 10–