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Angiogram Negative Subarachnoid Hemorrhage: Incidence, Outcomes, and Predisposition

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(*) indicates primary project advisor

(**) indicates another student who is declaring the same project as primary for SI



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Disclosures

- None

- Background
 - Subarachnoid hemorrhage (SAH)
 - Medical emergency with risk of rebleed
 - Angiogram negative SAH (anSAH) = no underlying pathology found
 - 85% due to aneurysm¹
 - 15% angiogram negative²
- Rationale
 - Lack of data related to multiple aspects of anSAH
 - Predispositions
 - Current incidence
 - Few recognized prognostic factors
 - Bleeding pattern³ associated with outcome

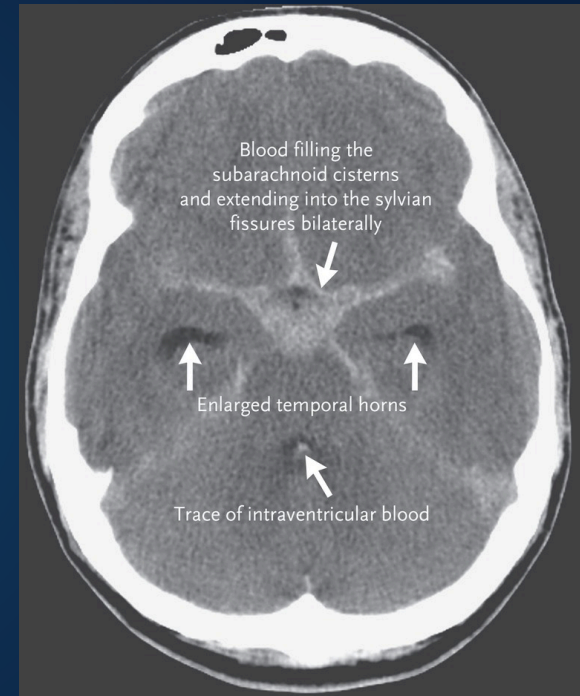


Figure 1. CT scan showing subarachnoid hemorrhage. Adapted from *Subarachnoid Hemorrhage*, by Lawton and Vates, 2017. Retrieved from <https://www.nejm.org/doi/full/10.1056/NEJMcp1605827>.

Objectives & Hypothesis

- Goals
 - Identify factors associated with outcomes in anSAH patients
 - Analyze possible predispositions to anSAH
 - Improve understanding of anSAH epidemiology



Objectives & Hypothesis

- Research Question
 - What is the current incidence of angiogram negative subarachnoid hemorrhage (anSAH), and what factors are associated with prognosis and predisposition among patients diagnosed with anSAH?
- Hypothesis
 - The incidence of anSAH has increased in recent years, and there are various prognostic or predisposing factors in patients with anSAH that have yet to be identified.

Approach & Results

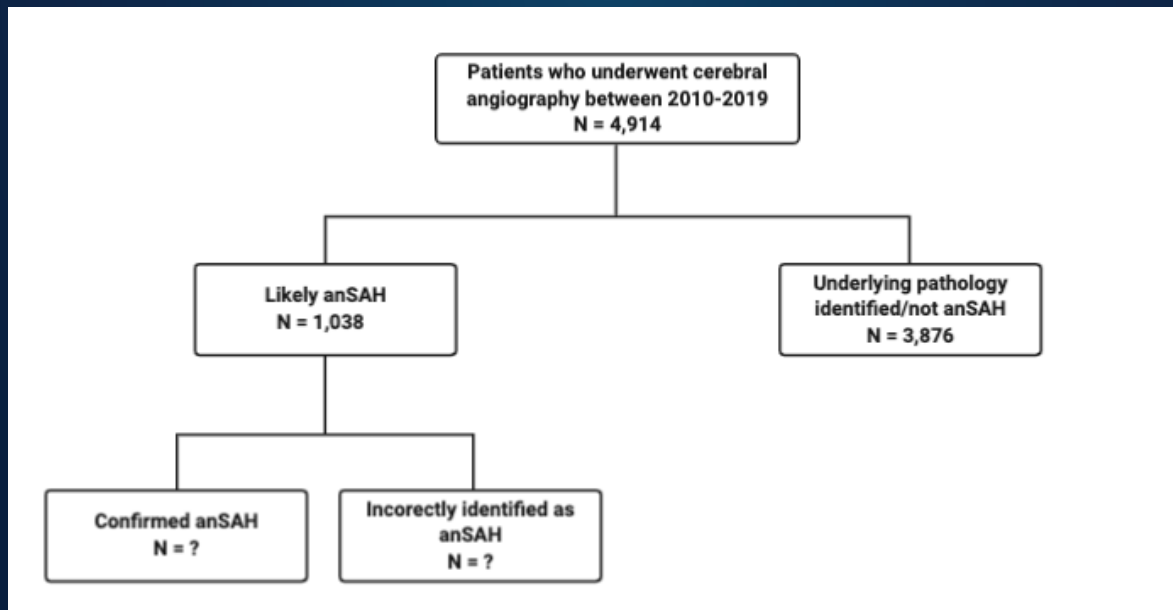
- Study design
 - Retrospective medical chart review
- Population / study sample
 - Jefferson Hospital for Neuroscience patients with anSAH
- Data source and collection
 - Jefferson patient charts on Epic from 2010-2019
 - Cerebral angiography
 - Fisher grade, clinical outcome, medical history, demographics

Approach & Results

- Rationale for Approach
 - Significant sample size
 - Broad assessment of potential prognostic and predisposing factors
 - Database to determine incidence
 - Also useful for future studies
- Analysis
 - Pending
 - Chi-square test

Approach & Results

- Findings
 - Official results pending
 - 1038 patients (21.1%) with likely anSAH initially identified
 - Actual incidence likely somewhat lower



- Possible increase in anSAH incidence
- No clear conclusions yet
 - Impact on predicting outcomes and assessing predisposition for anSAH is unknown
- anSAH remains a significant subtype of SAH
 - Consistent with current literature
 - Should be considered in differential diagnosis

Future Directions

- Larger study to determine anSAH incidence on a national level
- Assess role of prognostic and predisposing factors in future patient care
- Continue current standard of follow-up angiography
 - Important to exclude all possible causes
 - Do not want to overlook treatable underlying pathology

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Thank you



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