Minimally Invasive Endoscopic Intracerebral Hemorrhage Evacuation in Patients with Biopsy-Proven Cerebral Amyloid Angiopathy

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INTRODUCTION

Cerebral amyloid angiopathy (CAA) is a common cause of intracerebral hemorrhage (ICH).

Some physicians have raised concern that this pathology may increase the risk of hemorrhage during or after minimally invasive endoscopic (MIS) ICH evacuation.

Risk factors of poor outcomes include older age, intraventricular hemorrhage, and dementia.

We reviewed our institutional experience of MIS ICH evacuation in patients with CAA.
METHODS

At our institution, between December 2015 and October of 2018, 100 patients underwent MIS ICH evacuation.

From a prospectively collected database, we analyzed 69 patients who underwent MIS ICH evacuation for spontaneous ICH and had a brain biopsy.

Patients were stratified by the diagnosis of CAA by biopsy. Demographics, ICH characteristics, procedural times, length of stay, and clinical outcomes at 90 days were compared between the groups.

Clinical outcomes were assessed as a composite of the modified Rankin Scale at 90 days follow-up. 0-2: Favorable; 3-6: Unfavorable

Descriptive statistics, t-Test and, $X^2$ tests were used for data analysis.
RESULTS

A total of 69 patients were included for analysis. 7 patients had CAA

CAA group mean age = 68.71 ± 12.27 years
Non-CAA group mean age = 60.84 (12.42)

Most CAA patients were male (n=6, 85.7%), developed ICH on the right side (n=4, 57.1%), and presented with an NIHSS score ≥ 14 (n=4, 57.1%).
Patients with CAA trended towards significantly larger hematomas (58 ml; IQR 19 vs 32 ml; IQR 13.9, p=0.058)

Evacuation percentage (92% vs 97%, p=0.14), was comparable between groups.
Evacuation duration (1.73 vs 1.53 hours; p=0.14) and the evacuation percentage (92% vs 97%, p=0.14), were not significantly different.

LOS ICU CAA = 6.18 days; IQR 3.69 vs Non-CAA = 8.48 days; IQR 20.20

Hospital LOS in CAA was 16.2 days; IQR 12.0 vs Non-CAA 15.2 days; IQR 14.3, p=0.49)
At 90-day follow-up, 45 patients had data available, 3 in the amyloid group and 42 in the control group. All patients in the amyloid group (n=3, 100%) had an mRS of 0-2 compared to 28.6% of the non-amyloid group (p=0.01).
DISCUSSION

CAA has previously been discussed as a potential contraindication to minimally invasive ICH evacuation.

In this patient population, all patients who underwent minimally invasive ICH evacuation and were found to have biopsy-proven CAA had good outcomes at 90-days follow-up.

Short time to evacuation and lack rebleeding may have contributed to favorable outcomes.

This study is limited by a small sample size, the fact that it was performed at a single center, and the retrospective nature of the study.
SUMMARY POINTS

In our dataset, the diagnosis of CAA confirmed on biopsy did not appear to affect procedure-related metrics (length of procedure, rebleeding, and evacuation percentage) of patients who underwent minimally invasive endoscopic ICH evacuation.

Biopsy-proven CAA patients who underwent minimally invasive endoscopic clot evacuation had significantly more favorable 90-day functional outcomes compared with non-CAA patients.

These findings may be confounded by the lobar location of CAA patients versus potential deep location of non-CAA patients.

References