



Clinical Study

Elderly age associated with poor functional outcome after rupture of anterior communicating artery aneurysms

Lorenzo Rinaldo^{a,*}, Alejandro A. Rabinstein^b, Giuseppe Lanzino^{a,c}^a Department of Neurosurgery, Mayo Clinic, College of Medicine, 200 1st St SW, Rochester, MN 55905, USA^b Department of Neurocritical Care, Mayo Clinic, Rochester, MN, USA^c Department of Neurointerventional Radiology, Mayo Clinic, Rochester, MN, USA

ARTICLE INFO

Article history:

Received 4 May 2016

Accepted 15 May 2016

Keywords:

Aneurysmal subarachnoid hemorrhage
 Anterior communicating artery aneurysm
 Elderly
 Outcomes assessment

ABSTRACT

The effect of age on patient outcomes after rupture of the anterior communicating artery (Acom) aneurysms is not well-defined. We performed a retrospective cohort study of patients presenting to our institution with a ruptured Acom aneurysm between 2003 and 2012. Patients were divided into two groups on the basis of age at presentation, with patients 65 years and older categorized as the elderly group. The effect of elderly age on patient outcomes was then evaluated using multivariate logistic regression analysis. There were 147 patients presenting with a ruptured Acom aneurysm. Of these, 41 (27.9%) were 65 years or older. Patients in the elderly group were more likely to be female (68.3% vs. 40.6%, $p = 0.0026$), and less likely to be active smokers (22.0% vs. 60.4%, $p < 0.0001$) or to abuse alcohol (7.3% vs. 21.7%, $p = 0.0404$). Elderly patients were more likely to have a history of hypertension (70.7% vs. 52.8%, $p = 0.0487$) and coronary artery disease (19.5% vs. 2.8%, $p = 0.0006$). Elderly patients were more likely to require a ventriculostomy (61.0% vs. 37.7%, $p = 0.0109$) and ultimately to require permanent cerebrospinal fluid diversion (36.6% vs. 17.0%, $p = 0.0106$). On adjusted analysis, age 65 years or older was associated with a greater likelihood of poor outcome at last follow-up within 1 year of aneurysmal subarachnoid hemorrhage (odds ratio = 3.76, 95% confidence interval: 1.30–11.78, $p = 0.0144$). Our results suggest that elderly age is an independent risk factor for poor functional outcome after rupture of an Acom aneurysm.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

Increasing age has been consistently and independently associated with poor functional outcome after aneurysmal subarachnoid hemorrhage (aSAH) [1–7]. aSAH is nevertheless a heterogeneous disease, and the influence of age on patient outcomes after rupture of aneurysms at different locations, particularly at the anterior communicating artery (Acom), is less well-studied. Herein, we performed a retrospective cohort analysis examining differences in risk factors, clinical course and outcome in patients 65 years and older with a ruptured Acom aneurysm.

2. Methods

2.1. Data

After obtaining approval from our Institutional Review Board, we performed a retrospective cohort study on patients presenting

to our institution with aSAH secondary to a ruptured Acom aneurysm between 2003 and 2013. Patients were included for analysis if an Acom aneurysm was visualized on either CT angiography (CTA) or digital subtraction angiography (DSA) and thought to be the source of the SAH.

2.2. Covariates and outcomes of interest

The primary covariate of interest was patient age. Patients were dichotomized according to age less than, or greater than or equal to 65 (≥ 65) at the time of aSAH. The primary outcome of interest was functional outcome as determined by the modified Rankin Scale (mRS) at last follow-up within 1 year of aSAH. Poor functional outcome was defined as a mRS score of greater than 2.

Additional covariates included:

- sex
- family history of aSAH
- history of smoking
- alcohol abuse
- hypertension

* Corresponding author. Fax: +1 507 255 2249.

E-mail address: Rinaldo.Lorenzo@mayo.edu (L. Rinaldo).

- diabetes mellitus
- coronary artery disease

Smoking history was described as either a history of smoking, which encompassed patients that were both prior and current smokers, and active smoking at the time of aSAH. Covariates quantifying patient disease severity at admission included:

- World Federation of Neurosurgical Societies (WFNS) and modified Fisher (mF) scores on initial presentation
- presence of intracerebral hemorrhage (ICH) and intraventricular hemorrhage (IVH) visualized on CT scan within 24 hours of admission, and
- need for external ventricular drainage.

WFNS scores were dichotomized into scores of 1 to 3 and 4 to 5, representing non-severe and severe categories, respectively. Similarly, mF scores were dichotomized into scores of 1 to 2 and 3 to 4. Maximal aneurysmal width visualized on either CTA or DSA was also recorded. Information on the incidence of angiographic and symptomatic vasospasm, delayed cerebral ischemia (DCI), cerebral infarction, and need for permanent cerebrospinal fluid (CSF) diversion during the inpatient period were also documented. Angiographic vasospasm was defined as the presence of arterial vasospasm visualized on CTA or DSA within 21 days of initial aSAH. Symptomatic vasospasm was defined as angiographic vasospasm in tandem with focal neurologic deficits not attributable to other causes. DCI was defined as worsening level of consciousness or new focal deficit not attributable to other causes within 21 days of aSAH. Cerebral infarction was defined as a hypodensity within a vascular distribution visualized on CT scan.

2.3. Statistical analysis

Descriptive statistics for continuous variables were reported as a mean and standard deviation, whereas categorical variables were reported as a frequency and percentage. Continuous and categorical variables were compared between young and elderly patients using the two-sample Student's t-test and Pearson's chi-squared test, respectively. The association between patient characteristics and likelihood of poor functional outcome was evaluated using univariate logistic regression analysis. Variables associated with poor functional outcome with a p-value of ≤ 0.10 on univariate analysis were included in a stepwise model using multivariate logistic regression model. All statistical tests were two-sided with an alpha level for statistical significance set at 0.05.

3. Results

There were 147 patients with aSAH secondary to a ruptured Acom aneurysm in the interval under study. Of these patients, 41 (27.9%) were 65 years or older. Patients in the ≥ 65 age group were more likely to be female (68.3% vs. 40.6%, $p = 0.0026$). Elderly patients were also less likely to be prior (39.0% vs. 69.8%, $p = 0.0006$) or current smokers (22.0% vs. 60.4%, $p < 0.0001$). There was no difference in the frequency of a reported family history of aSAH between young and old patients (9.8% vs. 6.6%, $p = 0.5148$). Regarding patient comorbidities, patients in the elderly group were more likely to carry a diagnosis of hypertension (70.7% vs. 52.8%, $p = 0.0487$) and coronary artery disease (19.5% vs. 2.8%, $p = 0.0006$), and less likely to have a history of alcohol abuse (7.3%

Table 1

Patient characteristics and clinical outcomes after rupture of an anterior communicating artery aneurysm by age ≥ 65 years

Variable	Age <65 (n = 106)	Age ≥ 65 (n = 41)	Total (n = 147)	p value
Age, mean (SD) range)	50.6 (8.2) (27–64)	73.7 (5.9) (66–89)	57.0 (12.9) (27–89)	NA
Gender, N (%)				
Male	63 (59.4)	13 (31.7)	76 (51.7)	
Female	43 (40.6)	28 (68.3)	71 (48.3)	0.0026
Smoking history				
No	32 (30.2)	25 (61.0)	57 (38.8)	
Yes	74 (69.8)	16 (39.0)	90 (61.2)	0.0006
Current smoker				
No	42 (39.6)	32 (78.0)	74 (50.3)	
Yes	64 (60.4)	9 (22.0)	73 (49.7)	<0.0001
Family history of SAH				
No	99 (93.4)	37 (90.2)	136 (92.5)	
Yes	7 (6.6)	4 (9.8)	11 (7.5)	0.5148
Hypertension				
No	50 (47.2)	12 (29.3)	62 (42.2)	
Yes	56 (52.8)	29 (70.7)	85 (57.8)	0.0487
Diabetes				
No	97 (91.5)	37 (90.2)	134 (91.2)	
Yes	9 (8.5)	4 (9.8)	13 (8.8)	0.8085
Coronary artery disease				
No	103 (97.2)	33 (80.5)	136 (92.5)	
Yes	3 (2.8)	8 (19.5)	11 (7.5)	0.0006
Alcohol abuse				
No	83 (78.3)	38 (92.7)	121 (82.3)	
Yes	23 (21.7)	3 (7.3)	26 (17.7)	0.0404
WFNS score				
1–3	75 (70.8)	25 (61.0)	100 (68.0)	
4–5	31 (29.2)	16 (39.0)	47 (32.0)	0.2542
Modified Fisher score				
1–2	24 (22.6)	9 (22.0)	33 (22.5)	
3–4	82 (77.4)	32 (78.0)	114 (77.5)	0.9283
Intracerebral hemorrhage				
No	83 (78.3)	32 (78.1)	115 (78.2)	
Yes	23 (21.7)	9 (21.9)	32 (21.8)	0.9734
Intraventricular hemorrhage				
No	63 (59.4)	18 (43.9)	81 (55.1)	
Yes	43 (40.6)	23 (56.1)	66 (44.9)	0.0895
Aneurysm size (mm)	6.6 (3.5)	5.5 (3.6)	6.3 (3.6)	0.0879
External ventricular drainage				
No	66 (62.3)	16 (39.0)	82 (55.8)	
Yes	40 (37.7)	25 (61.0)	65 (44.2)	0.0109
Treatment modality				
Medical	7 (6.6)	4 (9.8)	11 (7.5)	
Coiling	65 (61.3)	30 (73.2)	95 (64.6)	
Clipping	34 (32.1)	7 (17.1)	41 (27.9)	0.1808
Angiographic vasospasm				
No	47 (54.7)	24 (80.0)	71 (61.2)	
Yes	39 (45.3)	6 (20.0)	45 (38.8)	0.0142
Symptomatic vasospasm				
No	56 (65.1)	23 (76.7)	79 (68.1)	
Yes	30 (34.9)	7 (23.3)	37 (31.9)	0.2425
Delayed cerebral ischemia				
No	68 (64.8)	31 (77.5)	99 (68.3)	
Yes	37 (35.2)	9 (22.5)	46 (31.7)	0.1407
Infarction				
No	68 (64.2)	28 (68.3)	96 (65.3)	
Yes	38 (35.8)	13 (31.7)	51 (34.7)	0.6361
Shunt requirement				
No	88 (83.0)	26 (63.4)	114 (77.6)	
Yes	18 (17.0)	15 (36.6)	33 (22.5)	0.0106

(continued on next page)

Download English Version:

<https://daneshyari.com/en/article/5629864>

Download Persian Version:

<https://daneshyari.com/article/5629864>

[Daneshyari.com](https://daneshyari.com)