

Ruptured intracranial aneurysm

Risk factors

Cerebrovascular atherosclerotic [stenosis](#) (CAS) and [intracranial aneurysm](#) (IA) have a common underlying arterial pathology and common [risk factors](#), but the clinical significance of CAS in IA [rupture](#) (IAR) is unclear. A study of Feng et al. aimed to investigate the effect of CAS on the risk of IAR.

They observed substantial differences in the severity of atherosclerotic stenosis, parent-artery stenosis, number of stenotic arteries, and intracranial/extracranial stenosis as indicators between ruptured and unruptured aneurysms. CAS is significantly associated with the risk of [intracranial aneurysm rupture](#), whether in patients aged ≥ 65 years or < 65 years. These findings indicate the clinical significance of CAS in IAR ¹⁾.

Complications

see [Ruptured intracranial aneurysm complications](#)

Treatment

see [Ruptured intracranial aneurysm treatment](#).

Bibliometrics

16468 global papers were identified that were cited 273500 times until 2013-08-15. The United States accounted for 31.497% of the articles, 58.64% of the citations, and the highest h-index (127). Japan and Germany followed in frequency. China's articles ranked eighth (third in 2012) in total number, with most of the contributions occurring since 2002 (91.33%). China was at the early stage of the logic growth curve (exponential growth), with the citation frequency and h-index per year increasing. The quality of the publications was low. The main research centers were located in Beijing, Shanghai, [Taiwan](#), and Hong Kong. The main Asian funding body was the National Natural Science Foundation of China. The number of publications and frequency of citations of papers from mainland China was greater than that of Taiwan or Hong Kong.

Global intracranial aneurysm research has been developing swiftly since 1991, with the United States making the largest contribution. Research in China started later, in 2002. Since then, China has increased its rate of publication, and became the third largest contributor by 2012 ²⁾.

Case series

Cerebrovascular atherosclerotic [stenosis](#) (CAS) and [intracranial aneurysm](#) (IA) have a common underlying arterial pathology and common [risk factors](#), but the clinical significance of CAS in IA [rupture](#) (IAR) is unclear. A study of Feng et al. aimed to investigate the effect of CAS on the risk of IAR.

A total of 336 patients with 507 saccular IAs admitted at our center were included. Univariable and multivariable logistic regression analyses were performed to determine the association between IAR and the angiographic variables for CAS. We also explored the differences in CAS in patients aged < 65 and ≥ 65 years.

In all the patient groups, moderate (50%-70%) cerebrovascular stenosis was significantly associated with IAR (odds ratio [OR], 3.4; 95% confidence interval [CI], 1.8-6.5). Single cerebral artery stenosis was also significantly associated with IAR (OR, 2.3; 95% CI, 1.3-3.9), and intracranial stenosis may be a risk factor for IAR (OR, 1.8; 95% CI, 1.0-3.2). In addition, IAs with lobulation may be at a higher risk for rupture than IAs with regular shape (OR, 2.6; 95% CI, 1.1-5.8; $P = 0.026$), although the same was not true of aneurysms with a daughter sac (OR, 1.8; 95% CI, 0.9-3.7; $P = 0.098$). Bifurcation location (OR, 2.4; 95% CI, 1.5-3.8; $P < 0.001$) was significantly associated with aneurysmal rupture. For the patient subgroup aged <65 years, rupture risk was higher for aneurysms with moderate stenosis (OR, 3.4; 95% CI, 1.8-6.5). For patients aged ≥ 65 years, single-artery stenosis (OR, 1.9; 95% CI, 1.2-3.0) was statistically associated with IAR.

They observed substantial differences in the severity of atherosclerotic stenosis, parent-artery stenosis, number of stenotic arteries, and intracranial/extracranial stenosis as indicators between ruptured and unruptured aneurysms. CAS is significantly associated with the risk of [intracranial aneurysm rupture](#), whether in patients aged ≥ 65 years or <65 years. These findings indicate the clinical significance of CAS in IAR ³⁾.

2017

The outcomes at discharge for ruptured cerebral aneurysms after subarachnoid hemorrhage (SAH) were investigated using data from the Japanese stroke databank. Among 101,165 patients with acute stroke registered between 2000 and 2013, 4693 patients had SAH caused by ruptured saccular aneurysm. Of these, 3593 patients (1140 men and 2453 women; mean age 61.3 ± 13.7 years) were treated by surgical clipping (SC) and/or endovascular coiling (EC). The outcomes of modified Rankin scale (mRS) at discharge were compared between the SC and EC groups. There were 2666 cases in the SC group, 881 cases in the EC group, and 46 cases in the SC and EC group. The rates of poor outcome of mRS > 2 were 33.0 and 45.5% in the SC and EC groups ($p < 0.05$), respectively. Cases were selected using two types of criteria compatible with both treatments. Under the first compatible criteria, the rates of poor outcome of mRS > 2 were 18.9 and 24.8% in the SC and EC groups ($p < 0.05$), respectively. Under the second compatible criteria, the rates of poor outcome of mRS > 2 were 16.0 and 14.8% in the SC and EC groups ($p = 0.22$), respectively. No significant differences were found in clinical characteristics or outcomes between the two groups. Multivariate analysis of aneurysmal SAH revealed no significant risk for poor outcome associated with the treatment method. The present study was not a randomized controlled study, but no significant differences in mRS at discharge were found between SC and EC in the Japanese stroke databank ⁴⁾.

2016

3210 patients underwent treatment for [ruptured intracranial aneurysms](#). Of these patients, 1206 (37.6%) had surgical [clipping](#) and 2004 (62.4%) had endovascular [coiling](#). The median total Medicare expenditures in the 1st year after admission for [subarachnoid hemorrhage](#) (SAH) were \$113,000 (IQR \$77,500-\$182,000) for surgical clipping and \$103,000 (IQR \$72,900-\$159,000) for endovascular coiling. When the authors adjusted for unmeasured [confounding factor](#) by using an instrumental variable analysis, clipping was associated with increased 1-year Medicare expenditures by \$19,577 (95% CI \$4492-\$34,663).

In this cohort of Medicare patients with aneurysmal SAH, after controlling for unmeasured confounding, surgical clipping was associated with increased 1-year expenditures in comparison with endovascular coiling ⁵⁾.

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