

The Unruptured Cerebral Aneurysm Study Japan

The Unruptured Cerebral Aneurysm Study Japan, is a project of the Japan Neurosurgical Society, designed to clarify the natural course of unruptured intracranial aneurysms (UIAs). From January 2001 through March 2004, 6697 UIAs among 5720 patients were prospectively registered. At registration, 2839 patients (49.6%) had 3132 (46.8%) small UCAs of 3-4 mm. The registered, treated, and rupture numbers of these small intracranial aneurysms and the annual rupture rate were investigated. The rate was assessed per aneurysm. The characteristics of patients and aneurysms were compared to those of unruptured large intracranial aneurysms (≥ 5 mm). Cumulative rates of SAH were estimated per aneurysm. Risk factors underwent univariate and multivariate analysis.

Treatment and rupture numbers of small UCAs were 1132 (37.1% of all treated aneurysms) and 23 (20.7% of all ruptured aneurysms), respectively. The registered, treated, rupture number, and annual rupture rates were 1658 (24.8%), 495 (16.2%), 11 (9.9%), and 0.30%, respectively, among 3-mm aneurysms, and 1474 (22.0%), 637 (20.9%), 12 (10.8%), and 0.45%, respectively, among 4-mm aneurysms. Multivariate risk-factor analysis revealed that a screening brain checkup (hazard ratio [HR] 4.1, 95% confidence interval [CI] 1.2-14.4), history of SAH (HR 10.8, 95% CI 2.3-51.1), uncontrolled hypertension (HR 5.2, 95% CI 1.8-15.3), and location on the anterior communicating artery (ACoA; HR 5.0, 95% CI 1.6-15.5) were independent predictors of rupture.

Although the annual rupture rate of small aneurysms was low, the actual number of ruptures was not low. Small aneurysms that ruptured during follow-up could be detected, screened, and managed based on each risk factor. Possible selection criteria for treating small UCAs include a history of SAH, uncontrolled hypertension, location on the ACoA, and young patients. Further large prospective and longitudinal trials are needed. Clinical trial registration no.: C000000418 (<https://www.umin.ac.jp/ctr>)

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Ikawa F, Morita A, Tominari S, Nakayama T, Shiokawa Y, Date I, Nozaki K, Miyamoto S, Kayama T, Arai H; Japan Neurosurgical Society for UCAS Japan Investigators. Rupture risk of small unruptured cerebral aneurysms. J Neurosurg. 2019 Jan 25;1-10. doi: 10.3171/2018.9.JNS181736. [Epub ahead of print] PubMed PMID: 30684948.

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