

Small middle cerebral artery aneurysm

Small intracranial aneurysm.

From January 2009 to June 2020, we retrospectively reviewed patients with small MCA aneurysms (<7 mm). The aneurysms were randomly split into training (70%) and internal validation (30%) cohorts. Additional independent datasets were used for the external validation of 78 small MCA aneurysms from another four hospitals. Aneurysm morphology was determined using computed tomography angiography (CTA). Prediction models were developed using the random forest and multivariate logistic regression.

A total of 426 consecutive patients with 454 small MCA aneurysms (<7 mm) were included. A multivariate logistic regression analysis showed that size ratio (SR), aspect ratio (AR), and daughter dome were associated with [aneurysm rupture](#), whereas aneurysm angle and multiplicity were inversely associated with aneurysm rupture. The areas under the receiver operating characteristic (ROC) curves (AUCs) of random forest models using the five independent risk factors in the training, internal validation, and external validation cohorts were 0.922, 0.889, and 0.92, respectively. The random forest model outperformed the logistic regression model ($p = 0.048$). A nomogram was developed to assess the rupture of small MCA aneurysms.

[Random forest](#) modeling is a good tool for evaluating the rupture status of Small [middle cerebral artery aneurysm](#) and may be considered for the management of [Small intracranial aneurysms](#) ¹⁾.

¹⁾

Zhou J, Xia N, Li Q, Zheng K, Jia X, Wang H, Zhao B, Liu J, Yang Y, Chen Y. Predicting the rupture status of small middle cerebral artery aneurysms using random forest modeling. *Front Neurol*. 2022 Jul 28;13:921404. doi: 10.3389/fneur.2022.921404. PMID: 35968311; PMCID: PMC9366079.

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