Unruptured anterior communicating artery aneurysm rupture risk

Although the research on the risk factors of anterior communicating artery aneurysm has made great progress, the independent effect of each risk factor on the rupture of AComA aneurysm is controversial among different studies. For this answer Xie et al. will present the results employing the random effects model. Quality assessment of the included studies will be evaluated using the Newcastle–Ottawa Scale. Statistical analyses will be performed using Stata16 (Stata Corporation, College Station, TX, USA) software.The findings of this study will be submitted to peer-reviewed journals for publication. This systematic review will provide evidence to determine the risk factors that affect the rupture of the AComA aneurysm and quantify their independent effects [1)].

Ma et al. found that larger size, greater size ratio, larger flow angle, irregular shape, and smoking of the patient were associated with the rupture of ACoA aneurysms based on univariate analysis. Size ratio (OR = 3.890, P = 0.003), irregular shape (OR = 1.068, P = 0.001), flow angle (OR = 1.054, P = 0.001), and current smoking (OR = 4.435, P = 0.009) were the strongest factors related to ruptured ACoA aneurysms based on multivariate logistic regression analysis. The areas under the curves for the flow angle and size ratio were 0.742 (95% CI 0.646-0.838; P = 0.001) and 0.736 (95% CI 0.621-0.796; P = 0.001), respectively. The strongest risk factors for rupture include size ratio, irregular shape, flow angle, and current smoking. These features should be taken into consideration to aid in the prediction of the rupture risk of ACoA aneurysms [2)].

Multiple logistic regression model revealed that A1 dominance [odds ratio (OR) 3.034], an irregular shape (OR 3.358), and an aspect ratio ≥1.19 (AR; OR 3.163) increased the risk of rupture, while cerebral atherosclerosis (OR 0.080), and mean diameters ≥2.48 mm (OR 0.474) were negatively correlated with ACoAA rupture. Incorporating these five factors, the ROC analysis revealed that the threshold value of the multifactors was one, the sensitivity was 88.3%, and the specificity was 66.0%. The scoring model is a simple method that is based on A1 dominance, irregular shape, aspect ratio, cerebral atherosclerosis, and mean diameters from CTA and is of great value in the prediction of the rupture risk of ACoAAs [3)].

According to the International Study of Unruptured Intracranial Aneurysms (ISUIA), anterior circulation (AC) aneurysms of <7 mm in diameter have a minimal risk of rupture. It is general experience, however, that anterior communicating artery (AcoA) aneurysms are frequent and mostly rupture at <7 mm. Bijlenga et al. found that AC aneurysms are not a homogenous group. Aneurysms between 4 and 7 mm located in AcoA or distal anterior cerebral artery present similar rupture odds to posterior circulation aneurysms. Intervention should be recommended for this high-risk lesion group [4)].

For Matsukawa et al. the anterior projection of an ACoA aneurysm may be related to rupturing. The authors would perhaps recommend treatment to patients with unruptured ACoA aneurysms that have

an anterior dome projection, a bleb(s), and a size ≥ 5 mm [5].

Aneurysms found unruptured in the ACoA show a risk of rupture twice as high as that of other intracranial aneurysms (95% confidence interval, 1.29-3.12). It is the first time this fact has been demonstrated based on the follow-up of unruptured aneurysms.

When deciding whether to operate on UIAs located in the ACoA, surgeons should consider their higher risk of rupture [6].

1)
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