

The Coexistence of Intracranial Aneurysms with Cerebral Artery Stenosis: Incidence, Risk Factors, and Imaging Characteristics

Jizong Zhao; xingju liu

Introduction

Intracranial aneurysm is a significant cause of hemorrhagic stroke, while atherosclerotic cerebral artery stenosis (AAS) is the leading cause of ischemic stroke. Recently, there is an increasing number of patients who have both intracranial aneurysms and AAS, but data is limited.

Methods

A multi-center, prospective study of 4335 patients consecutively diagnosed with intracranial aneurysms and admitted to two cerebral vascular disease units was conducted. All patients cerebral angiography data were reviewed alone by two neuroimaging specialist. Patients with symptomatic or asymptomatic cerebral artery stenosis were selected.

Results

A total of 659 patients with AAS were identified (mean age 54 ± 15). The overall prevalence of intracranial aneurysm with coexisting AAS was 15%. Of them, multiple stenosis and multiple cerebral aneurysms accounting for 50.6% and 23.5%, respectively. 427 (64.7%) cases of stenosis located in intracranial vessel and more than half patient had $\geq 50\%$ diameter stenosis. Ischemic stroke was the most common primary symptom, accounting for 46.8%, followed by asymptomatic (27.7%) and hemorrhagic stroke (25.3%). Hypertension was an important risk factor to both hemorrhagic and ischemic stroke ($p < 0.01$), female patients (OR 3.3, 95% CI 2.3-4.8) and patients with multiple cerebral aneurysms (OR 1.7, 95% CI 1.1-2.5) had higher risk of bleeding. Patient with history of hyperlipidemia (OR 2.4, 95% CI 1.6-3.7), smoking (OR 2.6, 95% CI 1.9-3.6), drinking alcohol (OR 2.3, 95% CI 1.6-3.2), transient ischemic attack (OR 2.8, 95% CI 1.5-5.3) and cerebral infarction (OR 2.7, 95% CI 1.8-4.0) were more likely to have ischemic stroke.

Conclusions

Our data suggest that there is very high incidence of the co-occurrence of intracranial aneurysm with ACAS. Most patients facing hemorrhagic and ischemic risk. Further epidemiology survey is needed and more attention should be paid to the management of these patients.

Learning Objectives

To assess the incidence and clinical significance of intracranial aneurysm with coexisting AAS.

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