

Introduction

Anatomic variations of the anterior communicating artery (ACOM) complex have been shown to influence ACOM aneurysm formation. However, it is not known whether these variations may predispose unruptured ACOM aneurysms to grow over time.

Methods

We retrospectively reviewed the course of patients with untreated, unruptured ACOM aneurysms managed with serial imaging at our institution. The primary outcome of interest was aneurysm growth. Predictors of aneurysm growth were determined using a Cox proportional hazards model.

Results

There were 81 patients with an unruptured ACOM aneurysm that were included in our study. Growth occurred in 9 (11.1%) patients. Aneurysms that grew were larger on initial detection than those that remained stable in size (8.3 mm vs 6.2 mm; $p = 0.031$). The ratio of the diameter of A1 segments was greater in patients with aneurysms that grew (2.1 vs 1.4; $p = 0.003$), as was the frequency of patients with an A1 ratio >2.3 (25.0% vs 6.6%; $p = 0.023$). Among aneurysms that grew, location at the A1-2 junction was more common than origin from the ACOM proper (88.9% vs 11.1%). After adjusting for follow-up time, increasing aneurysm size (Unit RR 1.25, 95% CI 1.06-1.45; $p = 0.011$) and location at the A1-2 junction (RR 6.15, 95% CI 1.12-114.49; $p = 0.035$) were significant predictors of aneurysm growth.

Conclusions

We identify several anatomic characteristics that may be associated with increased risk of ACOM aneurysm growth. These data could influence management strategies of unruptured ACOM aneurysms.

Learning Objectives

1) To facilitate the identification of anatomic characteristics that may represent increased growth potential for unruptured ACOM aneurysms.