

Introduction

Recent studies have suggested statins and calcium channel blockers (CCB) have inhibitory effects on aneurysms. (1-3) It is believed these drugs exert pleiotropic effects on the Rho-kinase pathway, which is associated with aneurysm formation. (4) By comparing patients prescribed different classes of cardiovascular medications, we aim to identify if any differences in aneurysm characteristics at presentation or patient outcomes exist between them.

Methods

Solitary aneurysms microsurgically treated by the senior author (M.T.L.) were included from a database of patients treated between January 2010 to April 2013 at a tertiary academic medical center. Cardiovascular medication classes were recorded, including statins, beta-blockers, diuretics, ACE inhibitors, ARBs, and CCBs. ACE inhibitors and ARBs were combined into a single group. Medication groups were compared using five-way ANOVA test for continuous variables and logistic regression for binary variables.

Results

A total 348 patients were included; 74.4% were female. The mean patient age was 57.0 years (Range 5 – 89). The number of patients on statins was 57 (16.4%), on beta-blockers was 55 (15.8%), on diuretics was 36 (10.3%), on ACE/ARB was 59 (17%), and on CCBs was 30 (8.6%). Between the medication groups, patients on statins (p-value=<.001), beta blockers (p-value=.02), and CCBs (p-value=<.001) had a mean older age; statins were more often taken by men (p-value=.01); beta-blockers were associated with larger aneurysms (= 10 mm) (p-value=.04).

Using multivariate analysis, including patient age, gender, aneurysm size, hypertension, and medication type, no difference for outcomes or mortality existed between the medication groups. However, patients taking ACE/ARBs (OR .43, p-value=.02) or CCBs (OR .16, p-value=.005) were less likely to present with a subarachnoid hemorrhage.

Conclusions

Patients taking beta-blockers who underwent microsurgical treatment of an aneurysm were more likely to present with a larger aneurysm size. Additionally, patients taking either ACE/ARBs or CCBs were less likely to present with a subarachnoid hemorrhage.

Learning Objectives

By the conclusion of this session, participants should 1) be familiarized with the aneurysm features associated with commonly prescribed cardiovascular medication classes and 2) gain a better understanding for how these medications could one day be strategically used in the medical management of patients with cerebral aneurysms.

References

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