Treatment Characteristics and Predictors of AVM Obliteration in 61 Patients with Concurrent Cerebral AVM and Aneurysm: An Institutional Experience

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Introduction

As early as the late 1950s, neurosurgeons recognized the complexity of treating aneurysms in patients with AVMs. Special considerations in these patients, such as two or more sources of potential hemorrhage and increased mortality from either or both lesions if each remains untreated.

Methods

A retrospective review of all patients treated for AVMs at the Jefferson Hospital for Neuroscience between 1994 and 2010. Patients who had co-existing aneurysms were identified, and data were collected on patient co-morbidities, characteristics of the aneurysm, Spetzler-Martin (SM) Grade of the AVM, clinical presentation, treatments received, therapeutic and clinical outcomes, as well as any complications.

Results

Of 774 patients treated at the Jefferson Hospital for Neuroscience from 1994-2010, 7.5% (N=61) of the patients were found to have angiographically documented aneurysms. 11% (N=7) patients had one AVM embolization, 39% (N=24) patients had two AVM embolization procedures, and 13.1%(N=8) patients had three AVM embolization procedures. There were a total of 36 AVM radiosurgery procedures. 26% (N=16) of patients had microsurgical resection of their AVM. 52% (N = 32) of patients had their aneurysms coiled or embolized without complication and11% (N=7) had their aneurysms clipped without complication. Identified predictors of AVM obliteration in univariate analysis (p less than 0.20) are: decreasing age, decreasing aneurysm size, superficial venous drainage, and absence of smoking and hypertension.

Conclusions

The presence of aneurysms in patients with cerebral AVMs is not uncommon and warrants consideration of treatment. Endovascular treatment of aneurysms in patients with cerebral AVMs can be expected to have safe and effective outcomes at experienced neurovascular centers. Young and healthy patients with both an AVM and a small aneurysm are likely to experience complete AVM obliteration. When applicable, patients should be counseled against smoking and on how to control high blood pressure.

Learning Objectives

1. Identify risk factors in patients with arteriovenous malformations

2. Better understand treatment paradigms and outcomes in patients with complex cerebrovascular pathology

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