

Introduction

Modern management of brain AVMs is multimodal, and includes observation or treatment with microsurgical resection, endovascular embolization, stereotactic radiosurgery, or some combination. While the cure rates, morbidity, and mortality of different treatment modalities have been well studied, there is little data on the cost or cost-effectiveness of treating brain AVMs.

Methods

140 patients with brain AVMs at the University of California San Francisco were included in the study. All patients were prospectively enrolled in the UCSF BAVM registry, and treated with surgery alone, surgery with embolization, or SRS alone between 2012 and 2015. Cost reported in U.S. dollars was obtained from the hospital’s internal accounting database, and includes costs of inpatient and outpatient encounters, interventions, and imaging attributable to the AVM. We used generalized linear models to examine the associations between patient and AVM characteristics, treatment and cost.

Results

We found that surgery with embolization cost about 40% more than surgery alone (PI=1.40, 95% CI: 1.10 – 1.79, p=0.007) and SRS was cheaper than surgery alone (PI=0.26, 95% CI: 0.18 – 0.38, p<0.001). Each point increase in Spetzler-Martin grade was associated with increased cost (PI=1.18, 95% CI: 1.05 – 1.31, p=0.004). Cases that presented with hemorrhage also had increased costs (PI=1.42, 95% CI: 1.11 – 1.82, p=0.005). The overall median cost of treatment was \$77,865 (49,566 – 107,448). Surgery with embolization was the most expensive with a treatment cost of \$91,948 (79,914 – 140,600), while SRS alone was the least costly at \$20,917 (13,915 – 35,583).

Conclusions

Hemorrhage, AVM grade, and treatment modality are significant cost determinants in AVM management. Surgery with embolization was the most costly treatment, and SRS the least. More studies are needed to examine the cost-effectiveness of different treatment modalities.

Learning Objectives

By the conclusion of this session, participants should be able to:

- 1) Describe the different treatment modalities in management of brain AVMs
- 2) Discuss cost determinants in brain AVM management.