



Multimodality Treatment of Arteriovenous Malformations of Basal Ganglia and Thalamus: Factors that Affect Outcome

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Introduction

We report the results of multimodality management of basal ganglia and thalamic AVMs at our institution over a 33 year period and investigate the factors that influence outcomes.

Methods

A prospectively maintained database was reviewed retrospectively and appropriate patients identified. Demographics, radiological data, treatment methods as well as clinical follow-up and outcomes were collected and analyzed. Both univariate and multivariate analyses were conducted to explore the influence of various factors on outcome.

Results

Analyses of 122 patients treated over 33 years are presented. In this cohort, 98% of patients were symptomatic and 75% presented with hemorrhage. Good outcomes (mRS < 3) were observed in 67% of all patients and in 42% of patients with grade 4 or 5 AVMs at a mean follow-up of 5.1 years (0.25-18). Annual risk of hemorrhage by the person-years method was significantly less after treatment (5.7% vs. 10.3%, $P = .004$). Repeat hemorrhage (OR = 15, $P = <.001$), higher grade (OR = 12, $P = .001$) and pre-treatment mRS (OR = 11, $P = .001$) were the strongest independent predictors of a poor outcome (mRS>2).

Conclusions

Good outcomes are achievable with multimodality treatment in these complex patients. As recurrent hemorrhage is the strongest predictor of outcome and hemorrhage rates are significantly lessened by treatment, we recommend early treatment of symptomatic deep AVMs via carefully selected multimodality therapy strategies.

Learning Objectives

By the conclusion of this session, participants should understand the natural history of deep AVMs, be able to describe the role of multimodality management strategies and the discuss the factors that affect functional outcomes of symptomatic patients with Basal Ganglia and Thalamic AVMs.