



Seizure Outcomes Following Radiosurgery for Cerebral Arteriovenous Malformations

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Introduction

Seizures are a common presentation of cerebral arteriovenous malformations (AVM). Our goals were to evaluate the efficacy of stereotactic radiosurgery (SRS) for the management of seizures associated with AVMs and to identify factors influencing seizure outcomes following SRS for AVMs.

Methods

A systematic literature review was performed using PubMed. Studies published in English comprised of at least five patients with both cerebral AVMs and presenting seizures treated with SRS, and those with post-SRS outcome data regarding obliteration of AVMs and/or seizures were selected for review. Demographic, radiosurgical, radiologic, and seizure outcome data were extracted and analyzed. All seizure outcomes are categorized into (1) seizure-free, (2) seizure improvement, (3) seizure unchanged, and (4) seizure worsened. Systematic statistical analysis was conducted to assess the effect of post-SRS AVM obliteration on seizure outcome.

Results

Nineteen case series with a total of 3,971 AVM patients were included for analysis. Of these, 28% of patients presented with seizures, and 997

patients with available seizure outcome data who met the inclusion criteria were evaluated. Of these, 437 (43.8%) patients achieved seizure-free status after SRS, and 530 (68.7%) of 771 patients with available data were able to achieve seizure control (seizure-freedom or seizure improvement) following SRS. Factors associated with improved seizure outcomes following SRS for AVMs were analyzed in nine studies. Seizure-free status was achieved in 82% and 41.0% of patients with complete and incomplete AVM obliteration, respectively. Complete AVM obliteration offered superior seizure-free rates compared to incomplete AVM obliteration (OR = 6.13; 95% CI: 2.16 – 17.44; p = 0.0007).

Conclusions

SRS offers favorable seizure outcomes for AVM patients presenting with seizures. Improved seizure-control is significantly more likely with complete AVM obliteration.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the importance of AVM obliteration in seizure control, 2) Discuss, in small groups, factors associated with improved seizure control following SRS, 3) Identify an effective treatment for AVM associated

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