

Introduction

The benefit of intervention for patients with unruptured intracranial arteriovenous malformations (AVM) was challenged by results demonstrating superior clinical outcomes with conservative management from A Randomized Trial of Unruptured Brain AVMs (ARUBA). The aim of this multicenter, retrospective cohort study is to analyze the outcomes of stereotactic radiosurgery for ARUBA-eligible patients.

Methods

We combined AVM radiosurgery outcome data from seven institutions participating in the International Gamma Knife Research Foundation (IGKRF). Patients with ≥12 months of follow-up were screened for ARUBA eligibility criteria. Favorable outcome was defined as AVM obliteration, no post-radiosurgery hemorrhage, and no permanently symptomatic radiation-induced changes (RIC). Adverse neurological outcome was defined as any new or worsening neurological symptoms or death.

Results

The ARUBA-eligible cohort comprised 509 patients (mean age 40 years). The Spetzler-Martin grade was I-II in 46% and III-IV in 54%. The mean radiosurgical margin dose was 22 Gy and follow-up was 86 months. AVM obliteration was achieved in 75%. The post-radiosurgery hemorrhage rate during the latency period was 0.9%/year. Symptomatic and permanent RIC occurred in 11% and 3%, respectively. The rates of favorable outcome, adverse neurological outcome, permanent neurological morbidity, and mortality were 70%, 13%, 5%, and 4%, respectively.

Conclusions

Radiosurgery may provide durable clinical benefit in some ARUBA-eligible patients. Based on the natural history of untreated, unruptured AVMs in the medical arm of ARUBA, we estimate that a follow-up duration of 15-20 years is necessary to realize a potential benefit of radiosurgical intervention over conservative management in unruptured AVM patients.

Learning objectives

By the conclusion of this session, participants should be able to 1) Describe the importance of stereotactic radiosurgery in the management of ARUBA-eligible patients, 2) Discuss, in small groups the outcomes after radiosurgery in patients who were eligible for A Randomized Trial of Unruptured Brain AVMs (ARUBA), and 3) Identify an effective treatment for unruptured brain arteriovenous malformations.

References

1. Ding D, Starke RM, Kano H, et al. Radiosurgery for Cerebral Arteriovenous Malformations in A Randomized Trial of Unruptured Brain Arteriovenous Malformations (ARUBA)-Eligible Patients: A Multicenter Study. Stroke. Feb 2016;47(2):342-349.