CNS 2017 ANNUAL MEETING
BOSTON, MASSACHUSETTS
OCTOBER 7–11, 2017

Early versus late arteriovenous malformation responders after stereotactic radiosurgery: an international multicenter study.

O. Cohen-Inbar; R. Starke; G Paisan; H. Kano; P. Huang; R. Rodriguez-Mercado; L. Almodovar; I. Grills; D. Mathieu; D. Silva; M. Abbassy; S. Missios; JY Lee; G. Barnett; D. Kondziolka; L. Lunsford; J. Sheehan

Introduction

The goal of stereotactic radiosurgery (SRS) for arteriovenous malformation (AVM) is complete nidus obliteration. This outcome can be observed within the first 18 months, although documentation of AVM obliteration can extend to as much as 5 years after SRS. A shorter time to obliteration may impact the frequency and effect of post-SRS complications and latency hemorrhage. The authors' goal was to determine predictors of early obliteration (18 months or less) following SRS for cerebral AVM.

Methods

Eight centers participating in the International Gamma Knife Research Foundation (IGKRF) obtained institutional review board approval. A cohort of 1398 patients. Patients were sorted into early responders (198), defined as those with confirmed nidus obliteration at or prior to 18 months after SRS, and late responders (1200). The median clinical follow-up time was 63.7 months (7-324.7).

Results

Outcome parameters including latency interval hemorrhage, mortality, and favorable outcome were not significantly different between the 2 groups. Radiation-induced changes were noted more often in the late responder group (376 patients [31.3%] vs 39 patients [19.7%] for early responders, $p = 0.005$). Multivariate independent predictors of early obliteration included a margin dose > 24 Gy ($p = 0.031$), prior surgery ($p = 0.002$), no prior radiotherapy ($p = 0.025$), smaller AVM nidus ($p = 0.002$), deep venous drainage ($p = 0.039$), and nidus location ($p < 0.0001$). Basal ganglia, cerebellum, and frontal lobe nidus locations favored early obliteration ($p = 0.009$). The Virginia Radiosurgery AVM Scale (VRAS) score was significantly different between the 2 responder groups ($p=0.039$). The VRAS score was also shown to be predictive of early obliteration on univariate analysis ($p=0.009$).

Conclusions

Early obliteration (=18 months) was more common in patients whose AVMs were smaller, located in the frontal lobe, basal ganglia, or cerebellum, had deep venous drainage, and had received a margin dose > 24 Gy.

Learning Objectives

The authors' goal in the present study was to determine predictors of early obliteration (18 months or less) following SRS for cerebral AVM.

[Default Poster]