

Treatment results of Stereotactic Radiosurgery for cerebral arteriovenous Malformations

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Abstract

Background and Purpose: Stereotactic radiosurgery (SRS) has been widely used for the treatment of cerebral arteriovenous malformations (AVMs), but as for the long term results, little information is available on this relatively new treatment modality. The aim of the current study was to assess the treatment results of SRS for cerebral AVMs in an attempt to identify the possible factors that affected the response (success or failure) to such treatment modality.

Patients and Methods: Sixteen patients with angiographically proved cerebral AVMs were enrolled in the study. Pretreatment clinical and radiological data were reviewed. Stereotactic radiosurgery was applied either as an initial treatment (11 patients) or after failure of endovascular embolization (5 patients). Post radiosurgery assessment included evaluation of the clinical outcome, obliteration results, and complications.

Results: The follow up period ranged from 25 to 104 months with a median follow up of 72 months. Assessment of the clinical outcome revealed that 11 patients (68.75%) were improved and remained symptom free and 3 patients (18.75%) improved significantly (partial response) with occasional mild headache or disorientation. Two patients (12.50%) were deteriorated clinically (progression) with either progressive persistent headache and/or convulsions. Neuroradiological assessment showed that total obliteration of the AVMs was encountered in 10 patients (62.50%) with a mean duration of 15.9 ± 11.24 months (range 9-47 months) after SRS, subtotal or partial obliteration in 4 patients (25%) and minimal or no obliteration in 2 patients (12.50%). Subgroup analysis revealed that none of the clinical characteristics or treatment parameters influenced significantly the obliteration rate. The progression-free survival (PFS) was 87.50 % and mean time to progression was 91.750 ± 8.103 months (95% CI, 75.869 - 107.631). None of the patients had any permanent radiation induced adverse effects or newly developed neurological deficits.

Conclusion: Stereotactic radiosurgery is an effective and safe treatment modality for cerebral AVMs with few complications. Candidates for treatment should be selected on the basis of AVM volume and location, and relative risk analysis compared with surgical and endovascular therapies