Brain arteriovenous malformations: the impact of associated nidal lesions in outcome after radiosurgery with or without embolization.

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Introduction

Radiosurgery is an option to treat arteriovenous malformations. The benefits of pre-radiosurgical embolization have not been well established in the treatment of this entity.

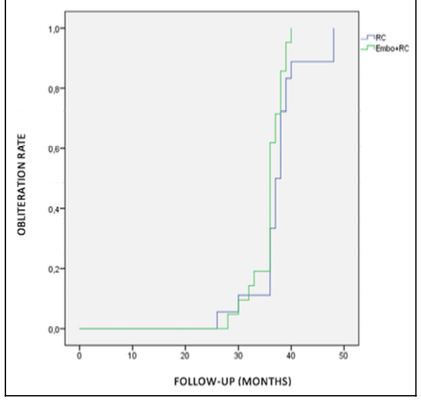
Methods

A longitudinal cohort of 47 consecutive patients who underwent radiosurgery with or without previous embolization were analyzed. Radiosurgery was delivered either as a single or divided in up to 5 equal fractions. Embolizations were performed exclusively with n -butyl cyanoacrylate. The follow up was obtained for 36 months at least. Presence of nidal lesions, such as aneurysms, venous outflow ectasias venous outflow stenosis, and/or intranidal arteriovenous fistulas were evaluated, and their relation with outcome and complications were studied.

Results

Hemorrhagic event occurred in 68.1% of patients; of these, 62.5 % demonstrated intranidal arteriovenous fistulas, 83.3% had venous ectasias and 90% had venous outflow stenosis. Occlusion rate of embolization plus radiosurgery was 46.1% and SRS alone was 52.4% (p = .671). Variables significantly associated with obliteration were l lack of intranidal arteriovenous fistula, lower nidus volume, higher SRS dose and lower radiosurgical based AVM scale score.

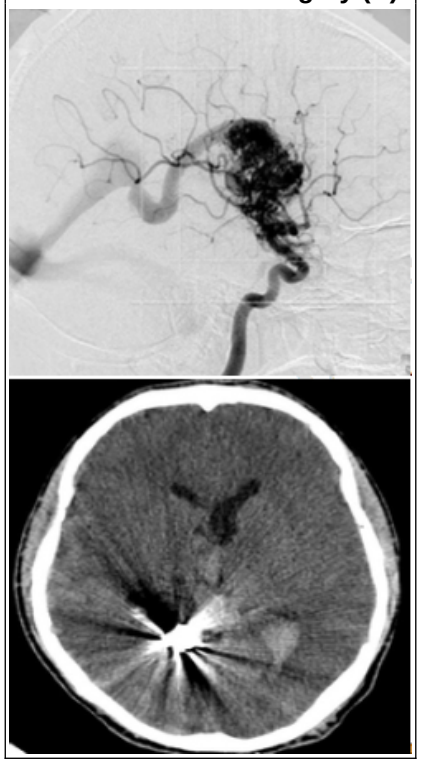
Kaplan-Meier plots of obliteration rate over time for AVM patients who underwent treatment with embolization and SRS (green) and SRS alone (blue).



Conclusions

An untreated arteriovenous fistula inside the AVM at the moment of SRS was associated with lower cure rates (p = .001). Embolization followed by radiosurgery was not superior to radiosurgery alone, although targeted embolization of intranidal arteriovenous fistulae in order to increase obliteration rates and to protect the patient from bleeding during the radiosurgery latency period should be considered.

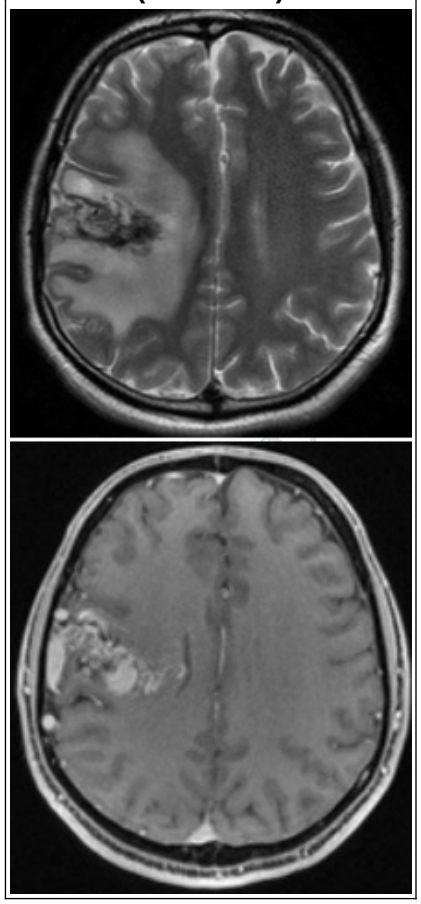
Deep AVM with arteriovenous fistula (A), previously embolized (2 sessions). Intracranial hemorrhage 38 months after radiosurgery (B)



Learning Objectives

To demonstrate the possible benefits of pre-radiosurgical embolization of AVMs

Radionecrosis in the right perirolandic area. Figure 1 shows edema area (hypersignal in T2, arrow in A) and hypointense areas of hemosiderin deposits. Figure 2 shows nidal enhancement (arrow in B)



References

Peres CMA, Cesar de Souza E, Teixeira MJ, Figueiredo EG, Caldas JGMP. The impact of associated nidal lesions in outcome of brain arteriovenous

malformations after radiosurgery with or without embolization. World Neurosurg. 2017 Jun 15.