Cureus

Open Access
Abstract

The Combined Stereotactic Radiosurgery and Endovascular Approach for Large Arteriovenous Malformations

Vladyslav Buryk [1] , Maris Mezeckis [2]

1. CyberKnife, Stereotactic Radiosurgery Center Sigulda, Sigulda, LVA 2. Stereotactic Radiosurgery Center, Sigulda Hospital, Sigulda, LVA

Corresponding author: Vladyslav Buryk, vladbur@gmail.com

Categories: Radiation Oncology, Neurosurgery, Medical Physics
Keywords: radiosurgery, endovascular embolization, srs, sbrt

How to cite this abstract
Buryk V, Mezeckis M (October 24, 2019) The Combined Stereotactic Radiosurgery and Endovascular Approach for Large Arteriovenous Malformations. Cureus 11(10): a432

Abstract

Objective(s): AVM volume is one of the crucial factors for predicting of its successful treatment. Combined treatment approach with endovascular embolization followed by SRS can help to reduce the SRS target volume and improve treatment results for large AVMs.

The aim of the work is to evaluate our clinical experience in arterio-venous malformations combined endovascular/SRS treatment approach for safety and feasibility.

Methods: 7 patients with large AVM (>10 cm^3) had CyberKnife M6 radiosurgery at the Sigulda Hospital, Stereotactic radiosurgery Centre from 2016 till 2018. 5 women and 2 men. 6 patients had history of previous hemorrhage from AVM, for 3-12 months. All patients had endovascular exclusion of AVM prior to radiosurgery using ethylene-vinyl alcohol copolymer Onyx. However, the incomplete shutdown of the nidus or recanalization was further determined. 7 patients had headaches, 3 - seizures, 3 patients had sensory and motor deficiency. Single-fraction CyberKnife SRS was performed in 2 patients at a dose of 20 Gy, 5 patients had hypofractionated SRS (2 fractions, a total dose of 24 Gy).

Results: Patients undergo a radiological examination (MRI and MRI angiography) in 6, 12 months after the treatment, any patient had signs of repeated bleeding from AVM after treatment. Digital subtraction angiography (DSA) was performed for 3 patients, who were 18 and 24 months after CyberKnife SRS. Both patients had signs of complete obliteration of AVM. Clinical condition of all patients was stable, no one had signs of postradiation toxicity grade 2-3.

Conclusion(s): The modern tactics of treatment of cerebral arteriovenous malformations involves an integrated approach with the use of methods of endovascular surgery, microsurgery and stereotactic radiosurgery. The combined endovascular/SRS approach is safe, in terms of post-SRS hemorrhage, or post-radiation toxicity. However, the assessment of statistically reliable levels of obliteration requires further observation and research.

Open Access
Abstract
Published 10/24/2019