Efficacy and Safety of First Line Embolization Policy to Control Seizures in Patients with Cerebral Arteriovenous Malformations

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Disclosure

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Drug-resistant epilepsy in patients suffering from the brain arteriovenous malformations (AVM) has a marked impact on their quality of life. Therefore, seizure control is an important factor to consider in the multidisciplinary management. The effect of treatment modalities to seizure control remains the subject of debates.
542 AVM patients underwent first line endovascular embolization (EE). 202 (37.3%) patients among them suffered from symptomatic epilepsy. All patients were followed up for 1-7 years (mean 4 years). The seizure control were evaluated with Engel scale in three groups. 55 patients had total and another 20 patients subtotal AVM endovascular obliteration (group I), 97 patients had partial AVM embolization (group II). 30 patients underwent microsurgery for complete AVM resection following EE (group III).
Onyx18 AVM total embolization

Onyx18 AVM subtotal embolization

Onyx18 cast after total AVM microsurgical resection
% mortality&morbidity  EE technology

- % M&M

2009-2013 16.2%
2014-2015 5.7%
2016-2017 1.6%
In first group, 58 (77.3%) patients had class I by Engel scale. Only 33 (33.8%) patients in second group had the same class (F=5.8, p<0.01). In the third group, class I was achieved in 23 (76.7%) patients. In our series of endovascular treatment of AVM patients with symptomatic epilepsy, the safety of technology is constantly improving over the years: in 2009-2013 the mortality & morbidity was 16.2%, in 2014-2015 morbidity declined to 5.7% and in 2016 -2017 to 1.6% with no mortality after EE. 2.1% patients among all patients underwent EE had de novo seizures.
CONCLUSIONS

Total AVM embolization provides the best seizure control.

Microsurgery after partial embolization is effective technology for seizure control.

Current EE technology for AVM management is safe and effective.

The risk of de novo seizures following endovascular treatment is low.