

Natural history of brainstem cavernous malformations: on the variation in hemorrhage rates

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BACKGROUND

Hemorrhage rates of conservatively managed brainstem cavernous malformations (BSCMs) vary widely in the literature. We aimed to elucidate the reason for the variation and to add the results of our experience of BSCMs management over the past decade.

METHODS

We performed a review of consecutive patients with BSCMs referred to our department in the period 2006-2018. A hemorrhagic event was defined as a radiographically verified intralesional and extralesional hemorrhage. Both retrospective and prospective hemorrhage rates were calculated based on the patient age in years, counted either from birth or from the time of initial presentation until the last contact (or until surgical resection). In addition, we retrieved and reviewed publications with a clear definition of hemorrhagic event and a detailed description of BSCM hemorrhage rate.

RESULTS

In total, 118 patients with BSCMs were reviewed, and 78 patients (mean age on admission 45.9 years) were included in the final analysis. The retrospective and prospective hemorrhage rates were 1.9% (95% confidence interval (CI): 1.6-2.3%) per year and 11.9% (95% CI: 7.5-17.8%), respectively. The retrospective hemorrhage rate in the literature review ranged from 1.9- 6.8% per year with a median value of 3.8%, while the prospective hemorrhage rate ranged between 4.1-21.5% with a median value of 10.2%.

CONCLUSION

The reported hemorrhage rates are calculated in two different ways. In our patient cohort, both the retrospective and prospective hemorrhage rates were in accordance with those in the literature. The long-term hemorrhage rate lies between the prospective and retrospective rate.

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