

BRAINSTEM CAVERNOMAS: RETROSPECTIVE ANALYSIS OF OUR SURGICAL EXPERIENCE

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Aim.

Despite technological and technical advancement, brainstem cavernomas remains one of the great challenges in neurosurgery. Even small lesions with minimal bleeding can determine severe neurological deficits, because of their relation with multiple tracts and nuclei. Surgery remains the gold standard for brainstem cavernomas treatment; it requires good technical skills in order to remove the lesion without causing any further deficit.

Methods.

A retrospective analysis was performed in 49 patients who were surgically treated in our Institution between January 2005 and December 2015. 15 patients were male, mean age was 43 years. All patients were studied with pre-operative MRI. 7 cavernomas were bulbar, 6 bulbo-pontine, 18 pontine, 9 ponto-mesencephalic, 6 mesencephalic and 3 thalamo-mesencephalic. 2 patients presented multiple cavernomas.

Results.

Cavernoma location guided the choice of the surgical approach. We realized 56 surgeries (4 patients had more than one treatment): 13 pure sub-occipital approaches for bulbar or bulbo-pontine cavernomas; 10 telo-velar for pontin or ponto-mesencephalic lesions (with exophytic V ventricle masses); 11 retrosigmoid for ponto- or ponto-mesencephalic lateral cavernomas; 9 infratentorial supracerebellar for tegmentum mesencephali or thalamo-mesencephalic cavernomas; 5 far lateral for lateral or antero-lateral bulbar masses; 1 pterional for a ventro-lateral ponto-mesencephalic lesion. 40 patients underwent surgery after the first bleeding episode; 26 of which were treated in sub-acute phase. 9 patients presented with multiple bleeding before surgery.

Conclusion.

There is not unanimous consensus on surgery indications and timing in asymptomatic patients; however multiple bleedings and worsening neurological status require surgery, that despite its risks remains the only definitive treatment. Anatomical knowledge and surgical experience are extremely important to choose the right approach and reduce morbidity. Several instruments, such as MRI tractography, intra-operative neurophysiological mapping and monitoring and endoscopy, may help realize a safer surgery. We found that, in accordance to literature, superficial or exophytic brainstem cavernomas, if easily reachable and treated after the first bleeding, have the best outcome.