AICA Intrameatal Aneurysm – Case Report and Discussion.

Aneurisma Intrameatal da AICA- Relato de Caso e Discussão.

Claudio Henrique Fernandes Vidal
Germano Ferreira Guedes
Joacil Carlos da Silva
Hildo Rocha Cirne de Azevedo Filho

Methods: We report a case successfully treated of this rare kind of lesion, and review some available literature.

Conclusion: The management requires a detailed knowledge of the local anatomy, relying on the lesion exclusion with the integrity of the local vascular structure, as the most suitable therapeutic pattern.

Key Words: Intracranial Aneurysm, Intracranial Hemorrhages, Temporal Bone.
CASE REPORT

A 32 years-old female, without comorbidities, presented with a history of sudden and severe headache (the worst in her life) followed by loss of consciousness and vomiting. In hospital admission the patient had only somnolence and neck stiffness. CT evaluation showed diffuse subarachnoid hemorrhage (grade 3 Fisher Scale). Oral nimodipine was started.

After three days, the patient complained of right-sided hypoacusia, and the exam revealed: horizontal nystagmus with a drift of the eyes toward the left side and a mild right side peripheral facial palsy. A mild hypervolemic regime was introduced and after some days she underwent cerebral angiography, which showed a peripheral saccular aneurysm of the right AICA (Fig.1).

Figure 1. Preoperative angiography of patient reveals distal AICA aneurysm (circle).

She was submitted to a right sub-occipital paramedian craniectomy in “park bench” position, with access to the cerebello-pontine cistern, which revealed only traces of local bleeding: the aneurysm was completely buried in the IAM. After unroofing the meatus, clipping of the aneurysm was done (Fig. 2).

Figure 2. Complete obliteration of patient’s aneurysm is revealed by postoperative angiography.

The patient evolved with remission of the cranial nerves dysfunction, and has been discharged from hospital on the 34th day after admittance, ready to perform her daily activities independently.

DISCUSSION

After penetrating the cerebellopontine cistern and before reaching the origin of the VII and VIII nerves on the brainstem, the AICA bifurcates in a caudal and in a rostral branch. The first courses inferomedially juxtaposed to the brainstem, reaching the inferior cerebellar surface, while the second follows the VII and VIII cranial nerves towards IAM and then looping medially (meatal segment) beneath the cerebellum10. Already in 1945, Sunderland7 characterizes the meatal segment as reaching or protruding into IAM in 64% of the cases. The labyrinthine artery arises from the meatal loop in 50% to 90% of the cases2, supplying the dura-mater and the surrounding bones, as well the nerves inside the auditory channel and the vestibulocochlear system.

The aneurysms develop at the junction of AICA with the internal labyrinthine artery, with 71.9% of the cases coming from the meatal segment6 and consequently develop a close relation with the IAM5.

The AICA’s peripheral aneurysms are rare lesions that become symptomatic only after its rupture, by dysfunction of the VII and VIII nerves probably from circulatory disturbances by the vasospasm or direct compression by clot8, and may simulate a tumor of the cerebellopontine angle11,12. The time elapsed for development of cranial nerves deficits, in the reported case,
spoke in favor of vasospasm as its possible cause. In a survey done by Kamiya, the most frequent symptom was headache related to subarachnoid hemorrhage (58.3%), with disorders of the VII nerve in 50% of the cases and of the VIII nerve in 39%. What calls attention is that 41.7% of these aneurysms did not bleed, being diagnosed based on the symptoms caused by the compression of the cranial nerves. Dysfunctions of the V nerve and cerebellar symptoms are unusual.

The therapeutic option of choice consists in the microsurgical clipping of the aneurismatic neck, once the patients are treated this way they do not develop additional deficits, possibly due to the preservation of the flow through the vascular trunks (AICA and labyrinthine artery). In the present patient, the prompt establishment of systemic treatment for reversal of the local decreased blood flow, and the probable existence of a good arterial collateral system, helped to preserve the function of the vestibule-cochlear apparatus and facial nerve as informed.

Despite the great number of anastomosis among the AICA, the superior cerebellar artery and the posterior inferior cerebellar artery, the possibility of a decrease of the flow at the level of the brainstem should always be considered when an interruption of AICA is proposed, which then represents a procedure of exception possible only if a good collateral system is verified, and in patients in which deficits of the VII and VIII nerves were already defined. Thus the endovascular management by embolization of the lesion should not represent the first treatment option, because of the incapacity of preserving the parent vessel in this situation (distal lesions) in the majority of cases. The development of coils capable of obliterating these lesions while preserving patency of the vessels, or stents applicable to the arteries of small caliber, can surpass conventional surgery.

In conclusion, AICA distal aneurysms constitute a very uncommon affection whose management requires a detailed knowledge of the local anatomy, relying on lesion exclusion with the integrity of the local vascular structure as the most suitable therapeutic pattern. The case reported above, with satisfying results, was fully based on the basic neurosurgical premise: anatomical preservation, which will reflect no functional deficits.

REFERENCES


CORRESPONDENT AUTHOR

Claudio Henrique F. Vidal: Rua Francisco da Cunha, 206- 51020-041, Recife –PE, Brazil. E-mail: vidal-claudio@ig.com.br