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Case Report

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Challenges in Intraventricular Meningiomas Surgery, Case Presentation and Review of the Literature

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ABSTRACT

Objectives: Review on the management of meningiomas of the ventricular atrium according to what has been reported in the literature and in the experience of our institution.

Background: Intraventricular meningiomas represent 1 to 5% of meningiomas. Approaches are suggested depending on tumor location and extension, proximity to eloquent areas or pathways (motor, sensory, optic radiation, language), vascular pedicles. In this case, it is a 41-year-old female patient who presents a stabbing headache in the left parieto-temporal region with an intensity of 7/10. Clinically mental functions with impaired retrograde memory and anterograde, acalculia, preserved judgment and abstraction, bradilalia, bradypsychia, for which he went for evaluation and a cranial tomography study with contrast was carried out, evidencing intraventricular extra axial tumor lesion, for which he underwent surgical procedure through excision of a probable left intraventricular extra axial lesion meningioma vs choroid plexus papilloma.

Methods: A bibliographic review on the surgical management of atrioventricular meningiomas and the experience at our institution was carried out.

Results: For meningiomas of the trigone, the superior transparietal or interparietal sulcus approach, with late access to the vascular pedicle and a long corridor to the lesion, provided the best option for tumor evacuation without interrupting optical radiation. Therefore, the patient presents adequate post-surgical evolution.

Conclusions: When the endoscopic intraventricular technique is not successful , the extradural subfrontal technique is recommended for direct sealing of the defect and it is important to assess IIH data during follow-up.

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Introduction

One of the great challenges of neurosurgery is access to intraventricular pathology [1-3]. Intraventricular meningiomas are rare tumors and constitute 1% to 5% of all intracranial meningiomas and 13% to 30% of all intraventricular tumors [4, 5-9]. The most common location of intraventricular meningiomas is the trigone that is formed by the confluence of the temporal and occipital horns [8]. Intracranial meningiomas arise from the cells of the arachnoid layer that cover the arachnoid villi or arachnoid granulations, their leptomeningeal origin comprises cells and the progenitor cells at the level of the telencephalon have origin in the neural crest, progenitor cells at the base of the skull have an origin mesodermal, however studies have been carried out where the origin of these intraventricular tumors is presumed to originate in the precursor cells of the epithelium of the choroid plexus [3,6].

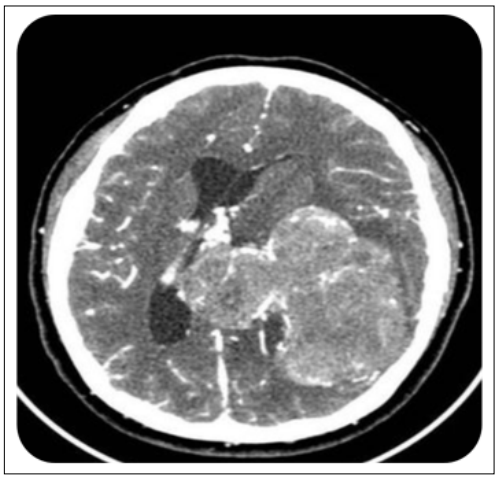
Surgical treatment of intraventricular meningioma is a considerable challenge due to the deep location of the tumor and the presence of eloquent structures adjacent to the ventricles [7]. Multiple approaches to the lateral ventricle have been proposed, with a specific approach to the atrium, the approach is proposed through the middle temporal gyrus, superior parietal gyrus, inferior temporal gyrus, the occipitotemporal gyrus or the collateral sulcus in order to avoid damaging radiation as little as possible. optical, cognitive and language [1-11].

Case Report

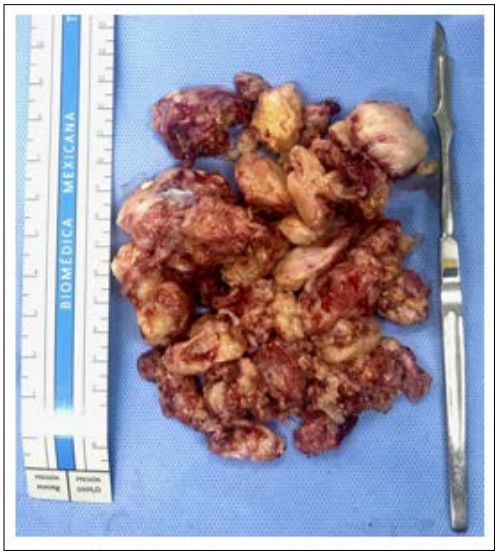
A 41-year-old female patient presented with a stabbing headache in the left parietal-temporal region with intensity 7/10. Clinically, he had a Glasgow score of 15 points, mental functions with deterioration of retrograde and anterograde memory, acalculia, bradylalia, bradypsychia and right homonymous hemianopia, for which he attended evaluation. A cranial tomography study with contrast was performed, showing intraventricular tumor lesion, with high suspicion of intraventricular meningioma dependent on the left atrium, so a surgical excision procedure was decided.

Imaging Studies

Preoperative MRI



Transoperative Imaging



Postoperative Resonance

Surgical Technique

A left parietotemporal craniotomy was performed with a subsequent superior temporal transurcal approach, with the support of neuronavigation, the tumor portion closest to the approach was located, finding the lesion 1 cm deep from the transurcal dissection, with a hard consistency, pearly white in color, with adequate plane of differentiation of the white matter, fixed to deep planes. Devastation of the capsule was carried out to reduce tumor volume, allowing supracapsular dissection towards the mesial tumor portion until reaching the temporal horn, so vascular pedicles of the parenchyma and choroid plexus were coagulated and cut, removing several tumor fragments until reaching the limits towards frontal and parietal lobe, which allowed the lateral wall of the left atrium to be approached posteriorly with the presence of a pedicle towards the chorionic plexus of the atrium, which was coagulated and cut, removing that tumor portion en bloc.

Discussion

When choosing the surgical technique, it is necessary to determine the approach to be performed, thus, when choosing the type of surgical approach it is important to consider the size of the lesion, location, extension, proximity to eloquent areas, and associated vascular relationships. In this case, the location of the tumor lesion in the ventricular atrium allows for parietal (transcortical or transulcal), temporal (transcortical or transurcal), interhemispheric, precuneal or transcallosal approaches. Although parietal access offers better visualization of the lesion, especially if it has growth towards the occipital horn or ventricular body, it presents a lower risk of injury from optic radiation and can be used when there are language disorders regardless of the dominant hemisphere.

Conclusion

In our case we opted for a temporary transurcal approach since it would allow us to have greater vascular control, in addition to being more comfortable in relation to the neurosurgeon's experience.

References

1. Chaturvedi J, Basu G, Singh D, Singh N, Sharma A, et al. (2020) Intraventricular meningioma: Neurosurgical challenge worth taking. Interdiscip Neurosurg 19.
2. Choi JW, Jung S, Jung TY, Jang WY, Moon KS, et al. (2011) Modified trans-middle temporal gyrus approach for trigonal tumor to preserve visual field. J Korean Neurosurg Soc 50: 538-541.
3. Güngör A, Danyeli AE, Akbaş A, Ekşi MŞ, Güdük M, et al. (2019) Ventricular Meningiomas: Surgical Strategies and a New Finding That Suggest an Origin From the Choroid Plexus Epithelium. World Neurosurg 129: e177-e190.
4. Kim JH, Jang WY, Duy Khuong LN, Jung TY, Moon KS, et al. (2018) Selection of Surgical Approach for Trigonal Meningiomas in Consideration of Visual Outcome. World Neurosurg 118: e436-e442.
5. Jun Cecil L, Butik Stephen L (1985) Surgical approaches to intraventricular meningiomas of the trigone. Neurosurgery 16: 416-417.
6. Leśniewski K, Kunert P, Matyja E, Czernicki T, Wójtowicz K, et al. (2019) Trigone ventricular meningiomas-clinical characteristics, histopathology and results of surgical treatment. Polish Journal of Neurology and Neurosurgery 53: 34-42.
7. Nanda A, Bir SC, Maiti T, Konar S (2016) Intraventricular Meningioma: Technical Nuances in Surgical Management. World Neurosurg 88: 526-537.
8. Nayar V V, DeMonte F, Yoshor D, Blacklock JB, Sawaya R (2010) Surgical approaches to meningiomas of the lateral ventricles. Clin Neurol Neurosurg 112: 400-405.

9. Pereira BJA, de Almeida AN, Paiva WS, de Aguiar PHP, Teixeira MJ, et al. (2020) Natural history of intraventricular meningiomas: systematic review. Neurosurg Rev 43: 513-523.
10. Wang X, Cai BW, You C, He M (2007) Microsurgical management of lateral ventricular meningiomas: A report of 51 cases. Minimally Invasive Neurosurgery 50: 346-349.
11. Zanini MA, Tadeu A, Faleiros S, Almeida CR, Clara CA, et al. (2011) Trigone ventricular meningiomas Surgical approaches. Arq Neuropsiquiatr 69: 670-675.