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Case Report
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Intraventricular Meningioma in A 5-Year-Old Female Patient: Case Report

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Abstract

Background: Intraventricular meningiomas are rare tumors which comprise 1-5% of all intracranial meningiomas mainly located in the ventricular atrium. These types of tumors increase incidence according to aging mainly because symptomatology appears as the meningioma gets bigger, that´s why seeing a 5 year kid with an intraventricular meningioma is extremely rare.

Case report: We present the case of a 5 YO female with a history of cyclic headaches and vomiting for the last 3 years in which medical treatment was ineffective and associated a mass in the left occipital lateral ventricle. Due to the continuity of symptoms, we decided to schedule the patient for surgery resulting in an intraventricular meningioma according to the pathology report. We reviewed the patient 6 months later and found that the headaches ceased, and she had no neurological deficit.

Conclusion: Intraventricular meningioma is a rare entity which is part of the differential diagnosis when a mass is present inside the ventricles. This is a slow growing tumor that can produce symptomatology of intracranial hypertension and can reach large sizes making the surgical procedure more complex. Because of the possibility that the surgery offers to the patients, it is imperative to realize it in early stages because, just like with our patient, once the tumor was gone the symptomatology disappeared, with a minimal invasion and without sequelae.

Introduction

Intraventricular meningiomas are rare intracranial tumors with an incidence that range from 1-5% of all the intracranial meningiomas [1,2]. They are mainly located in the atrium of the lateral ventricles [3] producing symptomatology compatible with intracranial hypertension. The main treatment is the complete resection of the lesion generally through surgical procedure, nevertheless it can be treated by stereotactic radiosurgery.

Clinical Case

A 5 YO female had a 3-year history of episodic headache and vomiting 2 to 5 times per year for the last 3 years. The headaches subsided with emesis and were predominantly nocturnal according to the mother. Due to worsening of these manifestation, she was referred to our center for evaluation. Initially she was managed by the Neurological department considering it as a migraine because the patient did not have papilledema or any other finding in the neurological examination that could suggest intracranial hypertension. The first line of treatment was with sodium valproate for 6 weeks getting clinical improvement for a short time. For this reason, complementary studies were performed. In the CT we could observe a hyperdense image in the left occipital atrium which initially was thought to be a hemorrhage at that level (Figures 1-3). Due to the possibility of that image being a tumor, an MRI was performed in which the suspicion was cleared. At first hand we thought that the image we sought in the MRI was a choroid plexus papilloma, for that a surgical intervention was scheduled even thought there was no ventricular dilatation, but the clinical condition of the patient persisted. We performed an image guided posterior parietal craniotomy with ventricular access and total tumor resection.

Discussion

Intraventricular meningiomas are extremely rare, they have an incidence between 1-5% of all the intracranial meningiomas [1-4]. According to the Central brain tumor Registry of the United States, there is an adjusted age incidence rate that reveals an increasing risk with age. According to this report, there is an incidence of 0.11 (per 100.000 person-years) from ages 0-19 of developing meningioma [5,6]. Because of that, we need to enhance the fact that the intraventricular meningioma in a 5 year old girl is extremely rare. The first one was reported by Shaw in 1854 [7] As found in the literature, Bertalanffy et al. reported 16 cases between 1980 and 2004 [3], Ødegaard, K.M et al. [8] reported a series of 22 patients between 1990 and 2010 and Liu et al. [9] reported a series of 25 patients just to mention a few. These tumors are mainly located in the atrium, comprising approximately 77.8%,

the third ventricle 15.6% and the fourth ventricle comprise 6.6% of the meningiomas [4,3,6,10]. Usually, patients become symptomatic when theses tumors reach a large size, commonly finding diameters of 6 cm and higher [11,12], nevertheless, in our case we found that our patient presented a variety of symptoms, including intracranial hypertension symptoms, with a tumor of 1.3x1.69x^3.29 cm in the posterior left horn (Figure 4).

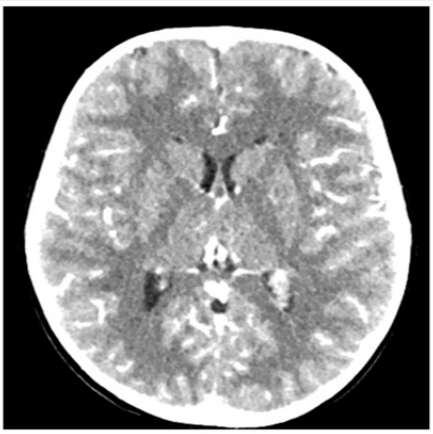

Figure 1: Hyperdense lesion at the left occipital atrium at the time of the diagnosis.

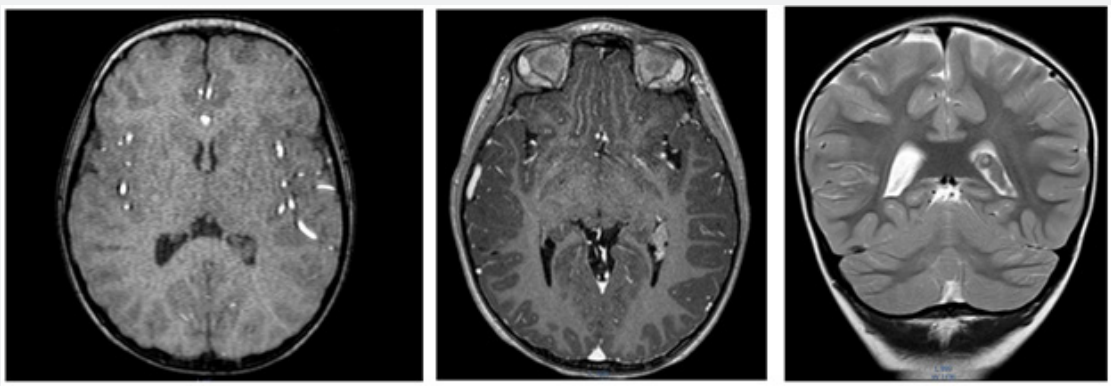

Figure 2: Hyperintense lesion in the left occipital atrium in the MRI.

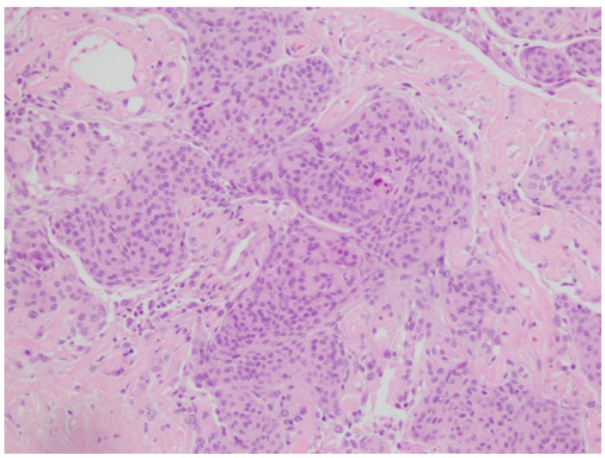

Figure 3: We managed to remove 100% of the tumor and sent it to the pathology department.
Meningothelial meningioma with lobular growth pattern. Scattered clear nuclear holes and occasional intranuclear pseudo inclusions.

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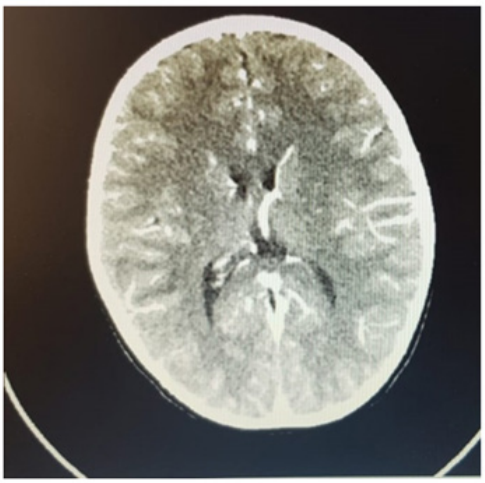

Figure 4: Follow up 6 months after surgery.
The patient was discharged without complications. We realized the follow up 1 month and then 6 months after the surgery in which the patient and her mother referred that the symptomatology had ceased (figure 4). No neurological deficit was found.

The patients age usually ranged from 12 to 84 years [1,3,13], probably because these patients need to have a larger tumor to develop symptoms including headaches, nausea and vomiting, as well as visual field defects, speech disturbances, sensorimotor deficits and seizures [1,14]. In the literature exist a few series of pediatric intraventricular meningiomas and the existing ones show slight male preponderance [15] making our case even more particular. Chinmaya Dash et al. reported a series of 6 cases in which the mean age was of 14. 6 years with a minimum age of 8 years [16]. The main treatment for these kinds of tumors is the surgical resection but it generally imply a great challenge because of the proximity with basal ganglia and main vascular structures [17]. Another possibility is to apply radiosurgery which effectiveness goes from 85% to 98%, the only problem is that it can only be used in tumors with a maximum size of 2cm and the patient could suffer from subependymal toxicity and late local hydrocephalus a few months after the procedure [9,18]. Besides the possibility of applying radiosurgery, surgery remained the first treatment of choice for intraventricular meningiomas [19].

Conclusion

It is important to consider the intraventricular meningioma as part of the differential diagnosis even though it is a rare entity. Surgical approaches predominantly depended on tumor location, while patient's health condition and surgeon's experience must be taken into consideration when making the appropriate operation route.

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