Dural-Based Posterior Fossa Cavernous Malformation: A Case Report

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Introduction

Dural-based cavernous malformations presenting in the posterior fossa are rare. . Cerebral cavernous malformations (CMs) are benign vascular lesions that have a prevalence of 0.4 to 0.6% in the general population. Dural-based CMs are far less common, with most cases being reported in the middle cranial fossa. We describe a case of a patient with an indolently growing posterior fossa lesion later found to be a dural-based CM.

Methods

Patient clinical history, imaging, operative findings, and histologic analysis were obtained via chart review. Patient consent was obtained per standard protocol.

Results

A 40M PMH migraines associated with visual disturbance, right-sided numbness and tingling, and gait instability. He was referred to neurology for migraine work-up and had a magnetic resonance imaging (MRI) of his brain that demonstrated a 1.9cm T1 contrast-enhancing, T2 hyperintense lobulated extra-axial lesion. The patient's symptoms were felt to be unrelated and surveillance was recommended. Three years later, repeat MRI demonstrated growth of the lesion, now 2.1cm. Given the increase in size, the patient opted to proceed with surgical resection.

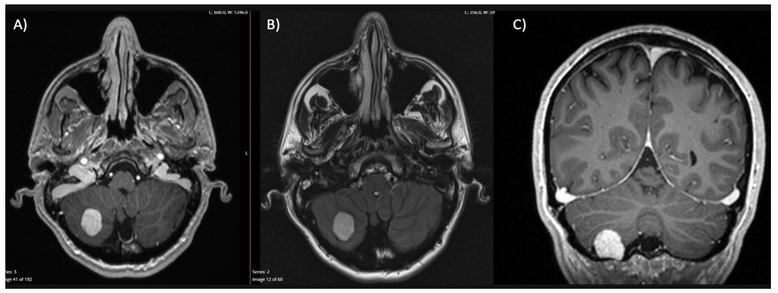

Figure 1. Pre-operative MRI highlighting the posterior fossa lesion. Pre-operative MRI Brain with contrast: A) axial T1 post-contrast B) axial T2 FLAIR c) coronal T1 post-contrast. MRI demonstrates a contrast-enhancing T2 hyperintense, dural based, extra-axial mass in the inferior right posterior fossa. The mass measures approximately 2.1 x 2.0 x 2.0 cm (AP x TV x CC) with mild mass effect on the adjacent right cerebellar parenchyma without significant vasogenic edema.

A standard suboccipital craniectomy was performed. During resection, an arachnoid plane was maintained around the lesion noting no intraparenchymal extension. There were no intra- or post-operative complications and the patient was discharged home on post-operative day 2. Grossly, the lesion was a well-circumscribed 2.1 x 2.0 x 1.8cm tan-red ovoid mass composed of fibromembranous tissue. H&E staining demonstrated closely packed blood vessels with hyalinized and fibrotic walls. The tumor was negative for epithelial membrane antigen (EMA). SSTR2, common in meningiomas, only stained occasionally in inflammatory cells. Smooth muscle actin (SMA) staining, typically negative in meningiomas, was positive and highlighted vessel walls. Formal histologic diagnosis was consistent with cavernous malformation.

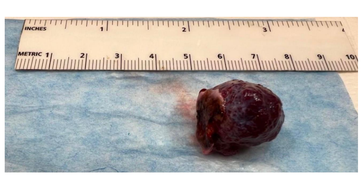

Figure 2. Gross pathological appearance of tumor specimen. 2.1 x 2.0 x 1.8 cm, tan red ovoid mass with a smooth glistening surface and fibromembranous tissue

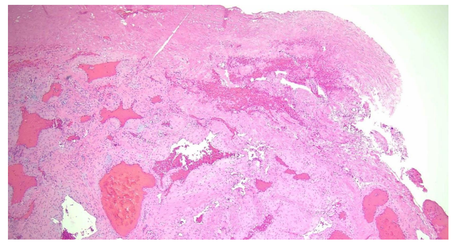

Figure 3. H&E Stained Section of Tumor Specimen. Tumor specimen H&E stained section. Highlighted are closely packed vessels with hyalinized and fibrotic walls. An endothelial lining composed of regular, small, and hyperchromatic cells is evidence as well.

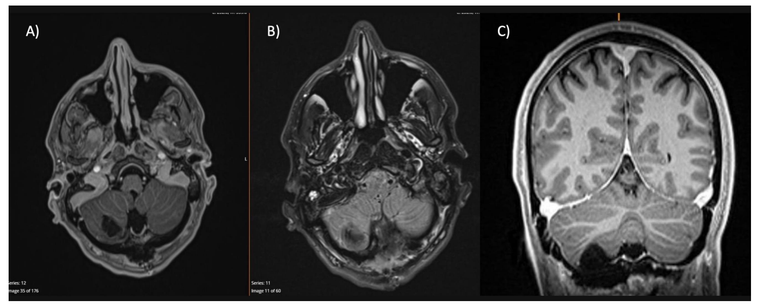

Figure 4 Post-operative MRI demonstrates gross total resection. Post-operative MRI Brain with contrast: A) axial T1 post-contrast B) axial T2 FLAIR c) coronal T1 post-contrast. All panels depict the post-surgical changes of a suboccipital craniotomy with complete resection of the posterior fossa dural-based mass.

Conclusion

Posterior fossa dural-based cavernous malformations are rare and can be radiographically difficult to distinguish from meningiomas. Both can be T1 contrast enhancing, T2 mixed to hyperintense, and hyperdense on CT. CM's have a rate of hemorrhage of 2-3% per year in lesions that have not previously bled. Thus, distinguishing these two entities is important in patient counseling and management. Although rare, dural-based CM should be kept in the differential diagnosis for certain patients. Further investigation is needed to determine a method of pre-operative differentiation of these lesions.