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Intraosseous meningioma of the sphenoid bone

Syed Mansoor Hussaini, MD, MPH; Kristine Dziurzynski, MD, MSPH; Jonathan D. Fratkin, MD; J. Randall Jordan, MD: Syed Afzal Hussain, MD; and Majid Khan, MD

A 50-year-old female presented to the Neurosurgery clinic with dimness of vision and proptosis of her right eye. Maxillofacial CT showed a hyperostotic mass involving the right sphenoid ridge, anterior clinoid process, orbital roof, and lateral wall with mass effect on the intraorbital contents and lateral wall of the sphenoid sinus. MRI of the brain and orbit showed a heterogeneous enhancement of underlying dura and right orbital apex extending into the cavernous sinus. The patient underwent a staged resection in which pathological analysis showed an intraosseous meningioma. When a hyperostotic mass of the skull is encountered, meningioma should be considered in the differential diagnosis. Although primary intraosseous meningiomas are rare benign tumors, they can be associated with morbidity secondary to mass effect.

Case report

A 50-year-old female with history of hypertension and right eye injury three years ago presented with a several months' history of "dimming" of her vision in the injured eye. On examination, there was no relative afferent pupillary defect, and visual acuity was 20/20 OS and 20/25 OD, but she could only achieve a result of 1/14 on color chart tests. A fundus exam showed temporal disc pallor, on the right more than the left. There was no motor, sensory, coordination, or gait deficit, or any asymmetry in reflexes. Lab results showed her to be slightly anemic but were otherwise unremarkable.

An MRI brain scan with orbit protocol, with and without gadolinium, was obtained. It demonstrated heterogeneous enhancement involving the right orbital apex, extending to the right cavernous sinus, with linear thick nodular enhancement involving the dura overlying the right temporoparietal lobes. Precontrast T-weighted images demonstrated bony expansion with predominantly low marrow signal involving the right sphenoid wing and right lateral orbital wall. On T2-weighted images, these demonstrated slightly hyperintense signal (Fig. 1).

There was a moderate mass effect on the right orbital wall with thickening of the right lateral rectus. No optic nerve enhancement was seen. Noncontrast maxillofacial CT images were obtained for pre-operative planning and showed a 38.5-mm hyperostotic calvarial mass, primarily involving the right sphenoid wing, with involvement of the right lateral orbital wall, the anterior clinoid process, and the lateral wall of right sphenoid hemisinus (Fig. 2).

There was also demonstrated linear adjacent dural calcification/ossification with mass effect on the right lateral rectus, which was bowed medially. The optic canal and the superior and inferior orbital fissures were unremarkable, with a normal-appearing globe and its contents. Following the surgery, a maxillofacial CT image without contrast showed postoperative changes with partial resection of the hyperostotic bony mass.

The patient underwent a staged resection of the mass, optic nerve decompression, and tumor debulking with orbital reconstruction, respectively (Fig. 3). More than 90% of the tumor was removed. All of the grossly visible tumor was resected except the optic strut, the lateral wall of the sphenoid sinus, a portion of the greater sphenoid wing comprising the inferior lateral wall of the superior orbital fissure and posterior lateral wall of the inferior orbital fissure, and an eggshell remnant of the anterior clinoid process overly-

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Dr. Hussaini is a Neurology Resident in the Department of Neurosurgery, Dr. Dziurznski is in the Department of Neurosurgery, Dr. Fratkin is a Professor of Pathology, Dr. Jordan is a Professor of Otolaryngology, Dr. Hussain is a research assistant in the Department of Psychiatry, and Dr. Khan is an Assistant Professor of Radiology, all at the University of Mississippi Medical Center, Jackson MS.

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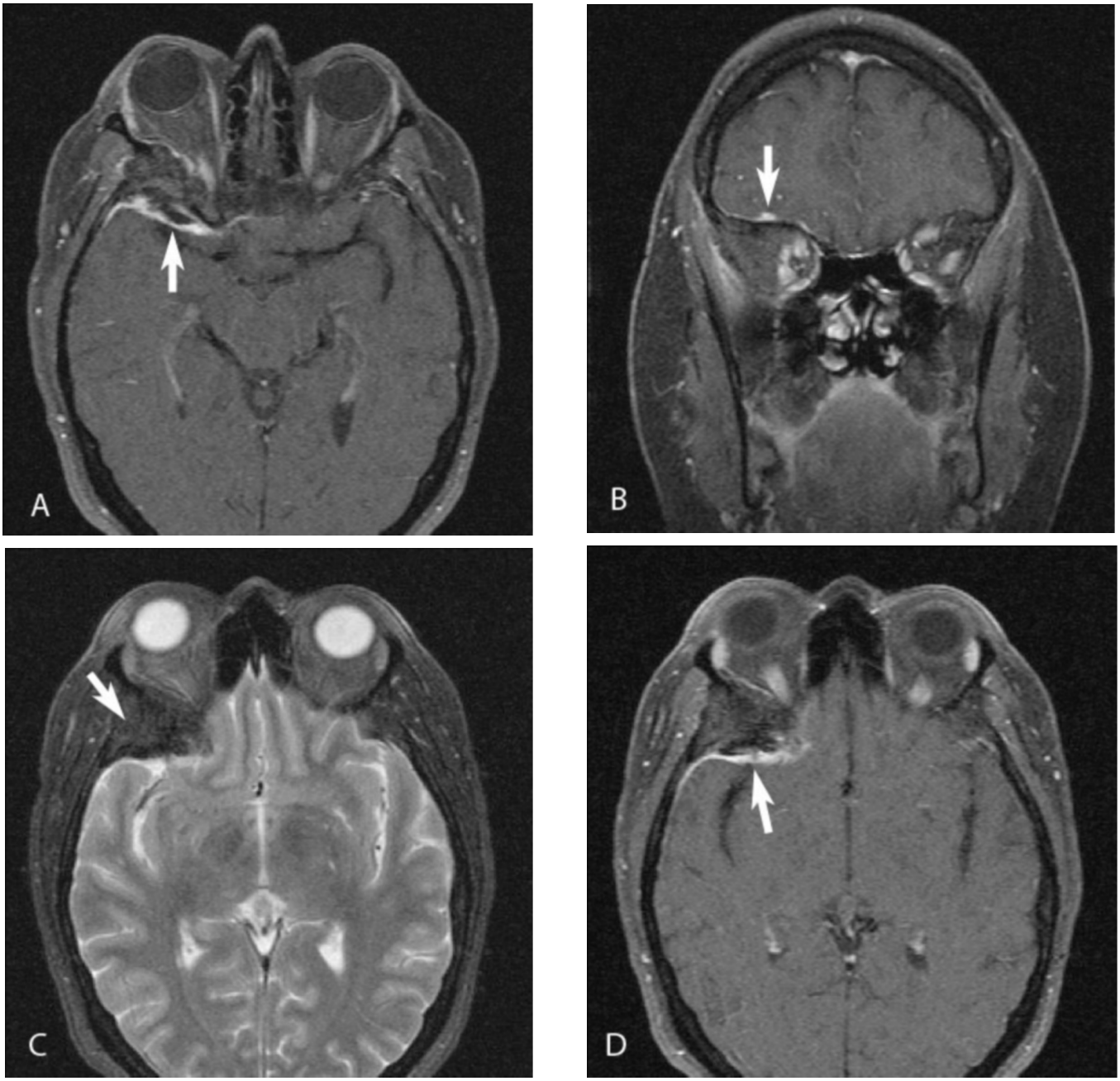

Figure 1. 50-year-old female with intraosseous meningioma. A (axial), B (coronal), and C (axial) T1-weighted fat saturation postgadolinium with fat saturation; D, axial T2-weighted image. These images demonstrate calvarial thickening involving right sphenoid wing and lateral orbital wall (arrows), with adjacent dural enhancement overlying anterior temporal lobe encroaching on the planum sphenoidale. There is a mass effect on the right lateral rectus muscle.

ing the carotid artery. Postoperatively, the patient reported improvement in her vision, claiming that vision in her right eye was far less dark. Formal postoperative evaluation is pending at the time of this publication.

Histopathological examination of the sphenoid bone specimen with hematoxylin and eosin staining showed a meningothelial mass within the bony trabeculae, with a few scattered psammoma bodies without nuclear atypia, confirming an intraosseous meningiomas (WHO grade I) (Fig. 4).