Meningioma of the Mandible: Imaging with CT

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CASE REPORT
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SUMMARY: We present the first description of CT of a meningioma of the mandible in the literature. Extracranial meningiomas are exceedingly rare. There have been 3 cases of meningioma of the mandible described in the literature, but none characterized with cross-sectional imaging. We describe the clinical and CT features used to establish the diagnosis as well as how to differentiate this lesion from other pathology of the mandible.

Only 3 cases of a meningioma of the mandible have been described in the literature.1,2 The mandibular meningiomas are classified as primary extracranial meningiomas. Extracranial meningiomas are usually an extension of an intracranial tumor but can arise independently, such as meningioma of the mandible. The independent formation of these tumors is believed to involve meningocytes along the sheaths of cranial nerves as they exit the skull foramina, fibroblastic mesenchymal cell transformation, or displaced arachnoid cap cells. Metastasis from a central nervous system (CNS) meningioma can naturally give rise to an “ectopic” meningioma as well. Extracranial meningiomas are exceptionally rare. To our knowledge, we report the first CT findings of a mandibular meningioma.

Case Report
A 62-year-old man presented with fullness on the left mid-body of the mandible. The patient’s history dated to 2 years earlier when he sought consultation from his dentist. A swelling was noted on his left lower gum with mild pain, which was clinically thought to represent an abscess. Plain films revealed a large well-delineated radiolucent lesion involving the mandibular body. He was treated with 4 different antibiotic regimens during the following year with no regression of the mass. The patient denied any bleeding from the oral cavity or any problems with speech or mastication. At that point, his primary care physician referred him to an otolaryngologist for further management and work-up of the mass.

The work-up included a CT of the mandible without contrast, which showed a well-circumscribed lytic expansile mass involving the mandibular body. The patient was referred to a specialist in oral pathology for analysis. The salivary gland was found to be benign, but the mandible showed a low-grade spindle cell neoplasm consistent with meningioma (Fig 2). It was unencapsulated and was present within the mandibular bone extending through the cortex into the gingival submucosa as well as abutting surrounding skeletal muscle. Mitoses were not readily identifiable, and the possibility of malignancy was unlikely. There was no tumor necrosis, and all margins of resection were negative. Furthermore, on pathology, there was no perineural invasion and no evidence of involvement of the inferior alveolar nerve.

Discussion
Meningiomas usually originate from meningothelial cells of the arachnoid layer that constitute the external lining of the brain and arise mostly at the base of the skull, in the parasellar regions as well as along the cerebral convexities. In general, these lesions are solitary with the exception of individuals with neurofibromatosis, for whom multiple lesions are common. Intracranial meningiomas come to clinical attention as a result of symptoms, including hemiparesis, seizure, or cranial neuropathy such as vision loss. These symptoms are the result of compression of surrounding neural tissues by the meningioma. Extracranial meningiomas present most frequently in the orbit, paranasal sinuses, temporal bone, and oral cavity in that order.3 The most common presentation of all extracranial meningiomas is a change in cutaneous expansion or color. Both intracranial and extracranial meningiomas may be...
A small focus of calcification was also present within the le-

calvaria, scalp, nasopharynx, orbit, paranasal sinuses, extradural meningiomas have been reported to occur in the "primary extradural meningioma" for these lesions. Primary CNS meningiomas were unencapsulated and consisted of elongated spindle cells that make up larger whorl-like collections. No mitotic figures have been noted in the small num-
cerebral cortex, and no primary brain lesion present on CT, the man-

Extracranial meningiomas are most often due to extension from an intracranial primary lesion and occur much more infrequently in an independent fashion. These independent meningiomas with no association with intracranial tumors can arise in 4 ways. They may arise from meningocytes along the sheaths of cranial nerves when they exit the skull foramina, from fibroblastic mesenchymal cell transformation, displaced embryonic rests of arachnoid cells, or from a metastasis from a primary CNS meningioma.

Metastasis from a CNS meningioma is the least likely rea-

The CT appearance is also suggestive of an ameloblastoma because ameloblastomas are low attenuation without matrix mineralization. The lesion was not associated with an unerupted tooth, suggesting a dentigerous cyst, and did not contain fluid-fluid levels as one would expect with an aneurysmal bone cyst and giant cell tumor. An unusually large odonto-

The first case of meningioma of the mandible was reported in 1992 by Landini and Kitano. They proposed that with the mandibular nerve being prone to other types of neural tumors, it may be in some way predisposed to the development of primary extradural meningiomas. For instance, one third of intraosseous neurilemomas and neurofibromas occur in the mandible possibly due to the length and size of the mandibular nerve.

The CT images of the present case showed multiple regions of cortical breakthrough and scalloping of the residual cortex. A small focus of calcification was also present within the le-

categorized as benign (90%), atypical/borderline (5%), and malignant (5%). In the benign category, there are several histopathologic subtypes, including syncytial, fibrous, and transitional. The current case and the previously described cases of mandibular meningiomas were unencapsulated and consisted of elongated spindle cells that make up larger whorl-like collections. No mitotic figures have been noted in the small num-

Masson trichrome, original magnification ×200).

References
2. Jones AC, Freedman PD. Primary extracranial meningioma of the mandible: a


Erratum

In the article published in the June–July 2007 issue titled "Meningioma of the Mandible: Imaging with CT" (Mussak EN, Holodny AI, Karimi S. AJNR Am J Neuroradiol 2007;28:1157–59), the authors deeply regret the inadvertent omission of Dr. Diane L. Carlson’s name from the authors’ list due to submission of incorrect files. Dr. Carlson’s contribution to the manuscript, particularly in terms of pathologic discussion and imaging, was most significant and this work would have never been accomplished without her help.

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