



Case report

Cavernous sinus syndrome associated with metastatic colorectal cancer and perineural spread along the trigeminal nerve



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ABSTRACT

Purpose: We report the case of a patient with cavernous sinus syndrome associated with biopsy-confirmed metastasis from colorectal cancer.

Observations: A patient known for laryngeal carcinoma and metastatic colorectal carcinoma presented with symptoms of left trigeminal neuralgia and progressive, near-complete ophthalmoplegia. Magnetic resonance imaging (MRI) revealed a mass in the left cavernous sinus, extending into Meckel's cave with perineural spread along the mandibular branch of the left trigeminal nerve. A transsphenoidal biopsy was performed and demonstrated metastatic colon adenocarcinoma. We review the existing literature on colorectal cancer associated cavernous sinus syndrome.

Conclusions and importance: Cavernous sinus metastasis from colorectal cancer is exceedingly rare. We report the second case of this entity with histopathologic confirmation, and the first case with concurrent perineural spread involving the trigeminal nerve. Cavernous sinus metastasis may represent a poor prognostic factor in colorectal cancer.

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Introduction

Cavernous sinus syndrome, also known as parasellar syndrome, is characterized by unilateral ophthalmoplegia of varying degree that may be associated with pain, pupillary changes and trigeminal nerve dysfunction. A variety of etiological processes have been associated with cavernous sinus syndrome including neoplastic, vascular, infectious and inflammatory pathologies. Neoplastic lesions are the most common, and can range from benign to locally invasive and metastatic disease.^{1,2} While metastases to the cavernous sinus are often attributed to primary breast and lung malignancies, gastrointestinal cancers are rarely associated with such lesions.³ Cavernous sinus metastasis associated with colorectal cancer is exceedingly rare with less than a handful of documented cases in the literature.^{4–6} We report the clinical course and pathology of a patient with biopsy-confirmed cavernous sinus syndrome resulting from metastatic adenocarcinoma of the colon.

Case report

An 82-year-old man presented to our ophthalmology service for diplopia in the context of a known cavernous sinus mass. The patient was also known for a history of laryngeal cancer and metastatic colorectal cancer. He was diagnosed with laryngeal invasive basaloid squamous cell carcinoma 2 years prior to presentation (Fig. 1D), and within the same month, he was also found to have a T3, N1 invasive adenocarcinoma of his descending colon (Fig. 1A). The patient received radiotherapy for laryngeal cancer and underwent a hemicolectomy with adjuvant chemotherapy for his colorectal carcinoma. Over one year later on positron emission tomography (PET) screening, a spiculated lesion was noted in the right lung apex. A transthoracic needle biopsy was performed and pathology with immunohistochemistry (positive for CK20, negative for CK7, TTF1 and Napsin A) showed moderately differentiated adenocarcinoma consistent with metastasis from the colon (Fig. 1B). At the time of presentation, the patient was receiving chemotherapy for metastatic disease.

The patient initially presented to ENT with headache and left-sided numbness in both the V2 and V3 distributions of the trigeminal nerve. Magnetic resonance imaging (MRI) of the head demonstrated a gadolinium-enhancing lesion exhibiting perineural spread extracranially along V3 (Fig. 2A) and extending posteriorly

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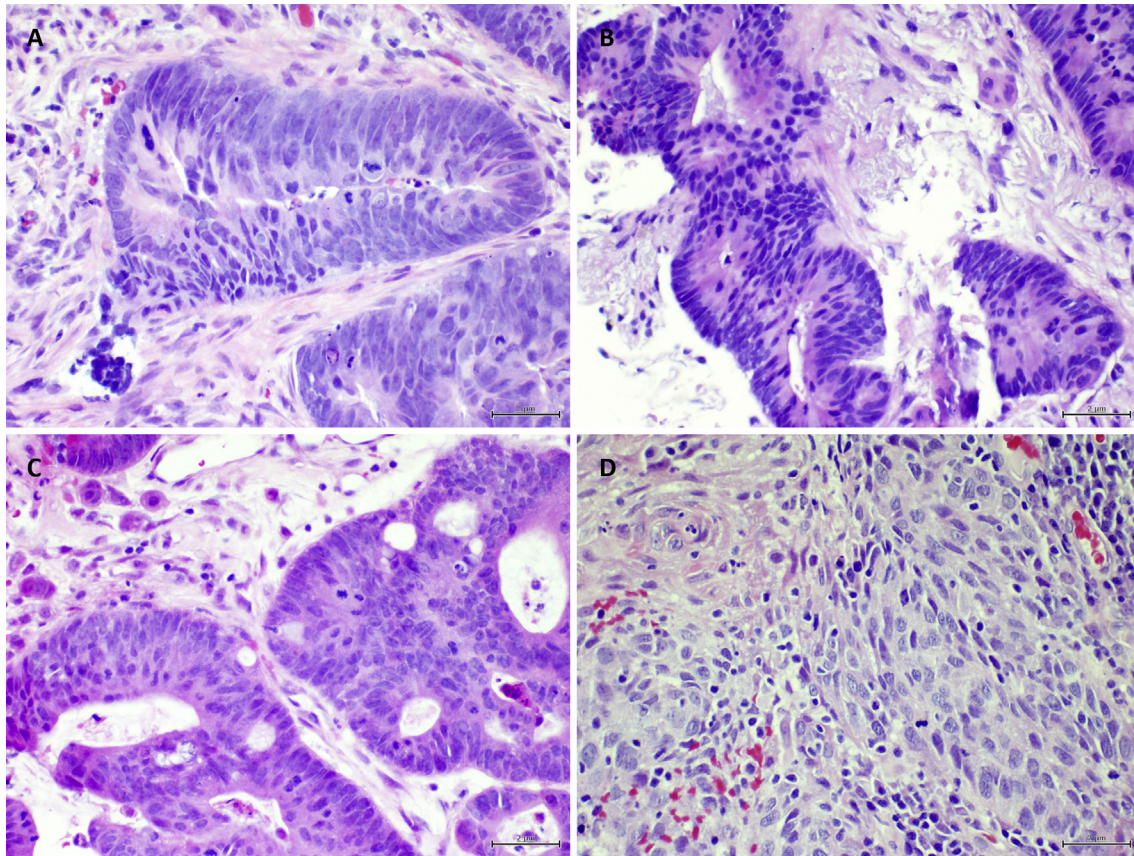


Fig. 1. Representative microphotographs of hematoxylin and eosin stained histological slides, magnification $\times 400$. A, initial adenocarcinoma from the colon. B, lung metastatic adenocarcinoma showing the same characteristics as the colon tumor. C, left cavernous sinus tumor showing an adenocarcinoma with presence of glandular differentiation consistent with a metastasis of the colon adenocarcinoma. D, tongue/larynx tumor showing a squamous cell carcinoma.

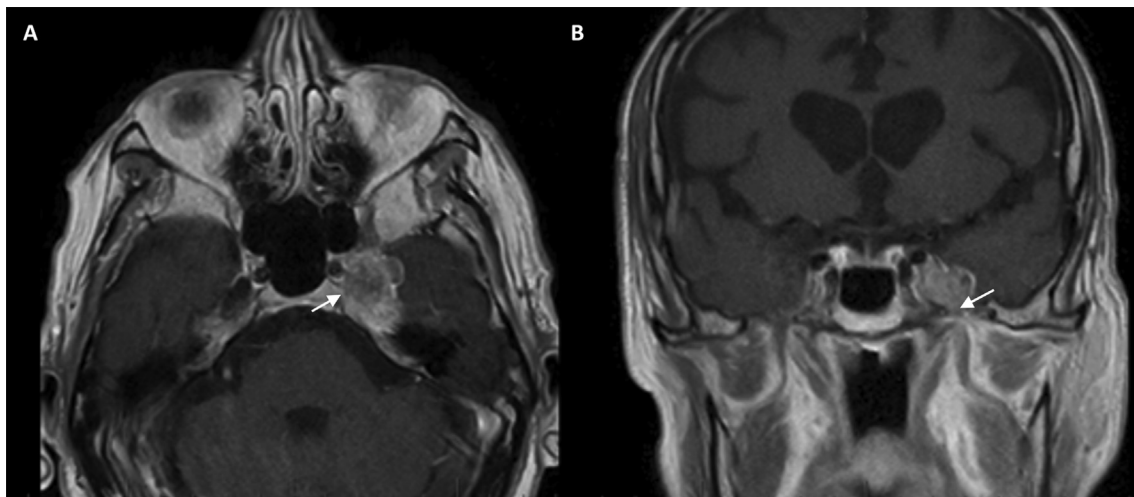


Fig. 2. Gadolinium-enhanced T1-weighted magnetic resonance imaging demonstrating left cavernous sinus mass. A, axial section showing posterior extension into Meckel's cave (white arrow). B, coronal section showing perineural spread into the left foramen ovale (white arrow) along the mandibular branch (V3) of the trigeminal nerve.

into Meckel's cave and in the subarachnoid space, anteriorly in the cavernous sinus, laterally into the left middle fossa, and inferiorly through the foramen ovale (Fig. 2B). An endoscopic trans-sphenoidal biopsy of the cavernous sinus lesion was performed showing adenocarcinoma with the presence of glandular differentiation (Fig. 1C). The samples were positive for cytokeratin 19/20

and CDX2, and negative for cytokeratin 5/6/7. These markers supported the diagnosis of metastatic colon adenocarcinoma, and no histological features suggestive of squamous cell carcinoma were noted.

Two months afterwards, the patient developed diplopia and presented to ophthalmology. Examination showed visual acuity of

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