

Metastatic breast tumor as a differential diagnosis for clival lesion

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ABSTRACT

M.M.J.O.S., a 60-year-old woman, presenting with progressive paresthesia on the left side of her face, for the past 4 months. No nasal, otological or ocular complaints. Physical exam showed no alterations. Four months ago, a MRI was performed, showing a median and paramedian left expansile lesion of probable neoplastic nature in the clivus, located medially and paramedially to the left. A past history of breast carcinoma personal history, patient refers tumor in left breast 9 years ago, with histopathological exams pointing to invasive ductal carcinoma with compromised margins after surgery. Patient underwent treatment and follow-up, with no recurrence of the tumor until the present moment. Two years and four months ago, patient presented with occipital headache, face drooping and left body paresthesia. Seven months ago, a similar episode occurred, with normal MRI and a hypothesis of Transient Ischemic Attack. Fibroscopic laryngoscopy showed a tumor invading the rhinopharynx, and a left sphenoid sinus biopsy was performed, via endonasal approach. The pathological exam showed a poorly differentiated invasive malignant neoplastic lesion, poorly differentiated. The immunohistological analysis presented similar positive markers as to the previous breast tumor in the patient's history.

Keywords: Cerebral metastasis; Endoscopic endonasal biopsy

INTRODUCTION

The clivus is the smooth and sloping surface of the central portion of the skull base, located between the sella turcica and the foramen magnum. It is formed by the fusion of the sphenoid and occipital bones, which have abundant adipose tissue between the bony trabeculae in their interior and is therefore hyperintense in T1- and T2-weighted magnetic resonance imaging (MRI)^{1,2}.

Tumors of the clivus are extremely rare³. Chordoma and chondrosarcoma are the most common types; however, they each account for only 0.1% to 0.2% of all intracranial tumors. Metastatic lesions of the clivus form an even smaller subgroup of these tumors, and few have been reported^{3,4,5}.

The main differential diagnoses for tumors of the clivus include chordoma, chondrosarcoma, plasmacytoma, and metastasis. MRI is the best tool with which to assess tumor extension in soft tissues. Pathognomonic images that are unique to lesions of the clivus have not been identified. Computed tomography (CT) is a very useful tool for studies of bone lesions. Reported imaging findings of metastases involving the clivus have a wide array of T1 and T2 intensity. Pathognomonic characteristics of chordoma and chondrosarcoma cannot be determined by T1- and T2-weighted MRI; all reported images showed heterogeneous enhancement after injection of paramagnetic contrast^{6,7}.

Chordomas of the skull base are rare slow-growing tumors arising from embryonic notochord tissue⁷. Although these remnants can persist along the entire axial skeleton, the sacrococcygeal region and the clivus are the most frequently affected sites^{8,9}.

The clinical presentation is determined by the tumor location and size. Lesions of the upper clivus affect the first pairs of cranial nerves, the hypophysis, and the hypothalamus, whereas lesions of the lower clivus interfere with the lower cranial pairs. Tumor growth can lead to more complex neurological presentations. Intracranial chordomas can present symptoms such as headache, neck pain, cranial nerve neuropathy, diplopia, facial numbness, and even hypopituitarism if the sella turcica is involved^{8,9}.

Anomalies in the clivus usually occur as a result of disease dissemination from adjacent structures but can also result from primary involvement of the clivus. Traditionally, a definitive diagnosis has been reached based on CT-guided biopsy or craniotomy. However,

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endoscopic transsphenoidal approaches to the skull base are now feasible due to recent technological advances that are more direct, less invasive, more effective and available to rhinologists^{10,11}.

Metastases located in the base of the skull are usually secondary to breast or prostate carcinomas and are late events. The main clinical feature is the gradual ipsilateral involvement of the cranial nerves. Five syndromes have been described according to the metastatic site: orbital and parasellar syndromes and middle fossa, jugular foramen, and occipital condyle syndromes. MRI is currently the most useful tool in the investigation of these lesions but regular imaging findings cannot exclude a diagnosis. Treatment depends on the nature of the underlying tumor. Radiotherapy is the standard treatment for most clival tumors, whereas some patients with chemosensitive or hormone-sensitive lesions benefit from chemotherapy or hormone therapy¹².

Reports of metastatic lesions as a differential diagnosis of clival tumors are scarce in the literature³. We aimed to update published data by presenting a patient with rare metastasis in the clivus region.

CASE DESCRIPTION

A 60-year-old woman from Indaiatuba, presented with paresthesia on the left side of the face that had progressed for four months, accompanied by loss of chewing strength on the left. She denied nasal, otologic, and ocular complaints. Her family history revealed that her father had prostate cancer, one sister died at 61 years of liver and bowel cancer, another sister died at 62 years of chronic lymphoid leukemia, a nephew died at 46 years of oropharyngeal cancer, and a great aunt had breast cancer.

Oroscopy revealed atrophic tonsils without lesions, otoscopy revealed intact and bilaterally translucent tympanic membranes, and rhinoscopy revealed grade 2 turbinates with a good response after vasoconstriction, without septal deviation or apparent lesions. The patient also exhibited preserved facial mimicry and eye movement.

Her MRI findings from four months previously (Figure 1) showed a possibly neoplastic expansive lesion in the median and left paramedian sections of the clivus suggesting the possible diagnoses of chordoma, lymphoma, or a different type of tumor.

She had undergone mastectomy and lymphadenectomy due to a left breast tumor nine years earlier. Histopathology showed invasive ductal carcinoma, Bloom grade 2, without angiolymphatic or perineural invasion and with a compromised surgical margin. Immunohistochemical staining was positive for estrogen and progesterone receptors and CD34, Ki67 (25%), and moderate peritumoral angiogenesis. She underwent adjuvant treatment comprising 28 sessions of radiotherapy followed by six sessions of chemotherapy. She also received tamoxifen for six years thereafter. She currently undergoes annual mammograms and has shown no relapse.

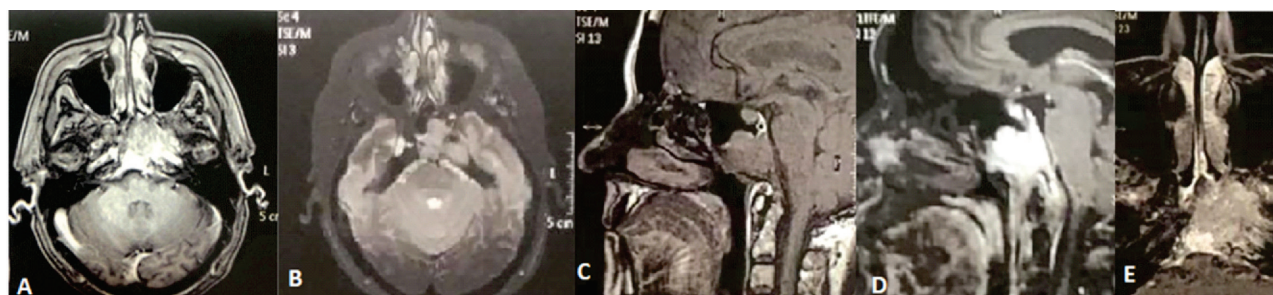
Two years and four months prior, she presented with occipital headache associated with labial commissure deviation and left-sided facial paresthesia. Seven months prior, she again experienced an occipital headache associated with transient increase in blood pressure, lip tingling on the left, and paresthesia on the ipsilateral arm. A transient ischemic attack (TIA) was suspected, but MRI findings were within the normal limits at this point.

Fibronasolaryngoscopy revealed a tumor invading the rhinopharynx and an endonasal biopsy of the left sphenoid sinus was subsequently acquired. An anatomopathological examination revealed a poorly differentiated invasive malignant tumor. Immunohistochemical staining was 100% positive for estrogen and progesterone receptors, 25% positive for Ki67, and positive for AE1/AE3 and GATA3. The morphological profile was compatible with large cells in a solid arrangement, with focal luminal formations, infiltrative in the fibroconnective and bone tissue associated with respiratory-like mucosa. A diagnosis of metastatic neoplasm of breast origin was thus

FIGURE 1

Magnetic resonance imaging findings

A: T1-weighted axial plane. B: T2-weighted axial plane. C: T1-weighted sagittal plane. D: T1-weighted sagittal plane with contrast. E: T1-weighted axial plane. Expansive formation in the clivus with hyposignal in T1, intermediate signal in T2, and intense post-contrast enhancement, with left median and paramedian location, affecting the sphenoid sinus, cavum trigeminale, and left cavernous sinus with intense post-contrast enhancement.



confirmed. The patient was then referred for oncological follow-up.

DISCUSSION

The tumor location in the clivus region raised the suspicion of chordoma, a lesion that is less rare than metastasis in this location. Although MRI is sensitive for diagnosing clival tumors; however, there are no known specific pathognomonic signal features that would allow a differential diagnosis between chordoma and metastasis. Hence, a biopsy is required to confirm the tumor etiology.

Endoscopic endonasal transsphenoidal biopsy was the route of access because it is less invasive than craniotomy. The pathological immunohistochemical findings confirmed the suspicion of a metastatic tumor from breast cancer in the clivus region as the markers in pathological study and those from her previous illness were identical.

The presentation of progressive hemiparesis might have been associated with a TIA or to the compressive effect of the tumor. The patient's history of breast cancer with positive margins further strengthened our suspicion of a metastatic lesion.

Although metastases in the clivus region are uncommon, they should be considered a diagnostic hypothesis for clinical presentations similar to those described herein. Endoscopic endonasal biopsies obtained by an otorhinolaryngologist optimize the confirmation of the diagnosis and accelerate treatment.

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Conflict of Interest

The authors declare no conflict of interest regarding this article.

Data confidentiality

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

Human and animal protection

The authors declare that the followed procedures were in accordance with the regulations established by the Ethics and Clinical Research Committee and according to the Helsinki declaration of the World Medical Association.

Privacy policy, informed consent and approval by the ethics committee

The authors declare having obtained written informed consent for the use of patients' photographs in this article.

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Availability of scientific data

There are no publicly available datasets related to this study.

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