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Case Report

The diagnostic dilemma of Masticator space tumor

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ABSTRACT

The masticator space is an anatomical and functional entity centered on the mandibular ramus, which divides it into medial and lateral compartments. The masticator spaces considered paired supra-hyoid cervical spaces on each side of the face that extend from the angle of the mandible to the parietal bone. The masticator space contains the mastication muscles, posterior mandible, and mandibular nerve. They are separated from the nasopharynx by the parapharyngeal spaces bilaterally. Primary malignancy of the masticator space is very uncommon.

Here we report a diagnostic dilemma of primary masticator space malignancy mistaken by nasopharyngeal carcinoma as the patient 40-year old gentleman presented with left lateral rectus palsy and left nasopharynx fullness.

1. Introduction

The masticator space as the name implies consist of the masticator muscles (medial and lateral pterygoid, temporalis and masseter muscles) and the posterior body and ramus of the mandible along with mandibular nerve and the internal maxillary artery. The space is located anterolateral to the parapharyngeal space. Neoplasms affecting the masticator space may result primarily or secondarily from either the direct extension of a neoplasm involving nearby anatomical structures or from distant metastasis.[1,2] Primary malignancy of the masticator space are uncommon such as malignant schwannomas and various sarcomas.[2,3] Neoplasms involving the masticator space through direct extension include squamous cell carcinomas of the upper aero digestive tract, major and minor salivary neoplasms, lymphomas, and adenocarcinomas.[2,3] Non-Hodgkin lymphoma (NHL) of the head and neck commonly develops in lymphoid tissue, particularly in the cervical lymph nodes as a nodal lymphoma and in the Waldeyer ring as an extranodal lymphoma.[1,2] Extra nodal lymphoma also occasionally arises in an extralymphatic site, such as the paranasal sinuses, oral cavity, jaws, orbit, or salivary glands, and less commonly in facial spaces, such as the parapharyngeal or masticator space.[3,4] This diversity in site of origin results in distinct presenting symptoms.In particular, deeply situated lymphomas are often difficult to locate via relatively simple clinical signs as palpable mass or trismus. Signs of cranial neuropathy can help define the location.[5]Diagnosis requires a careful imaging approach, which may aid in estimating accessibility for surgical biopsy, and is ultimately confirmed by histopathologic study with proper immunophenotyping.

2. Case Report

40-year-old gentleman with no known medical illness, presented with 2 months history of progressive limited lateralization of the left eye associated with mild headache and occasional diplopia. No history of trauma or mid-

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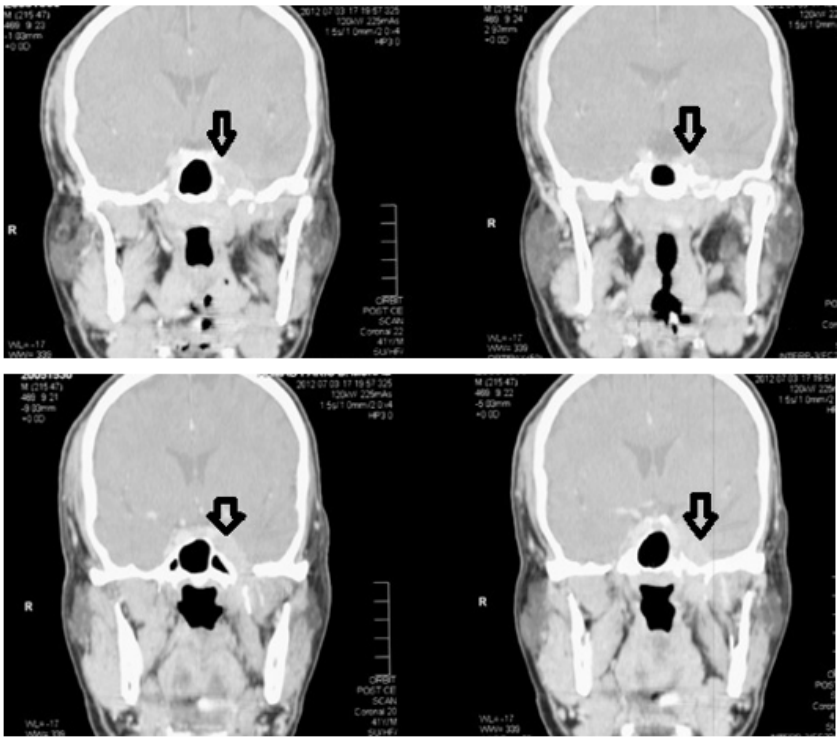

Fig. 1: Coronal images CECT showing ill-defined enhancing tumor mass at the left masticator space with cephalic extension via foramen lacerum into ipsilateral cavernous sinus and adjacent meninges.

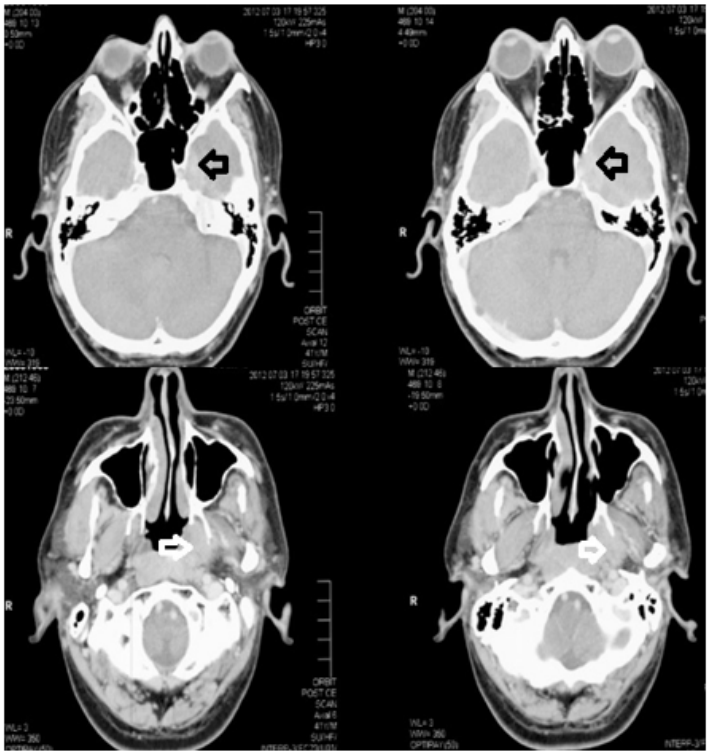

Fig. 2: Axial images CECT showing the mass causing obliteration of the left fossa of Rosenmuller without evident mucosal extension.

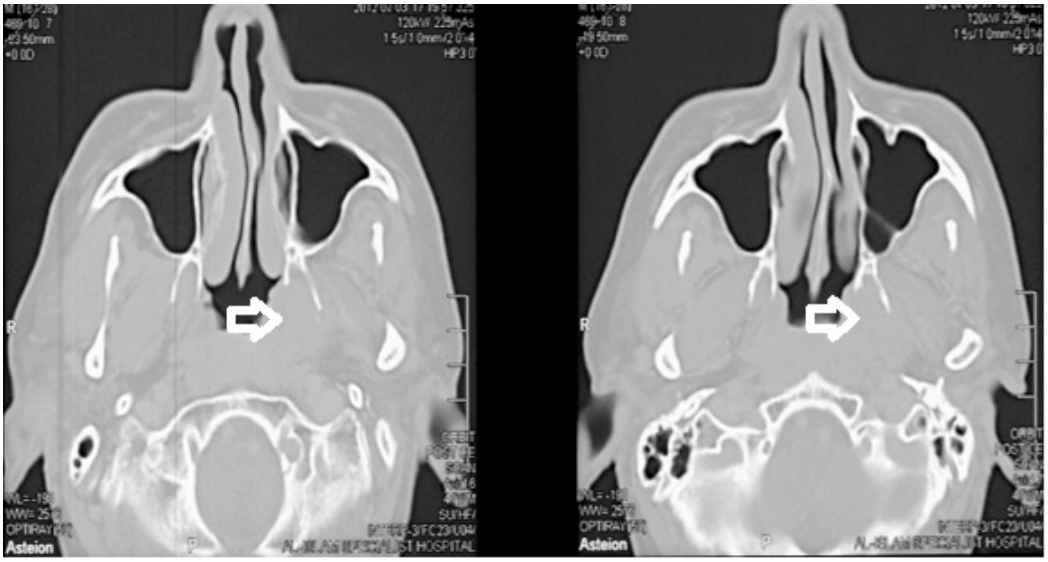

Fig. 3: Axial images in bone window setting showing subtle erosive bony changes induced by tumor to adjacent skull base

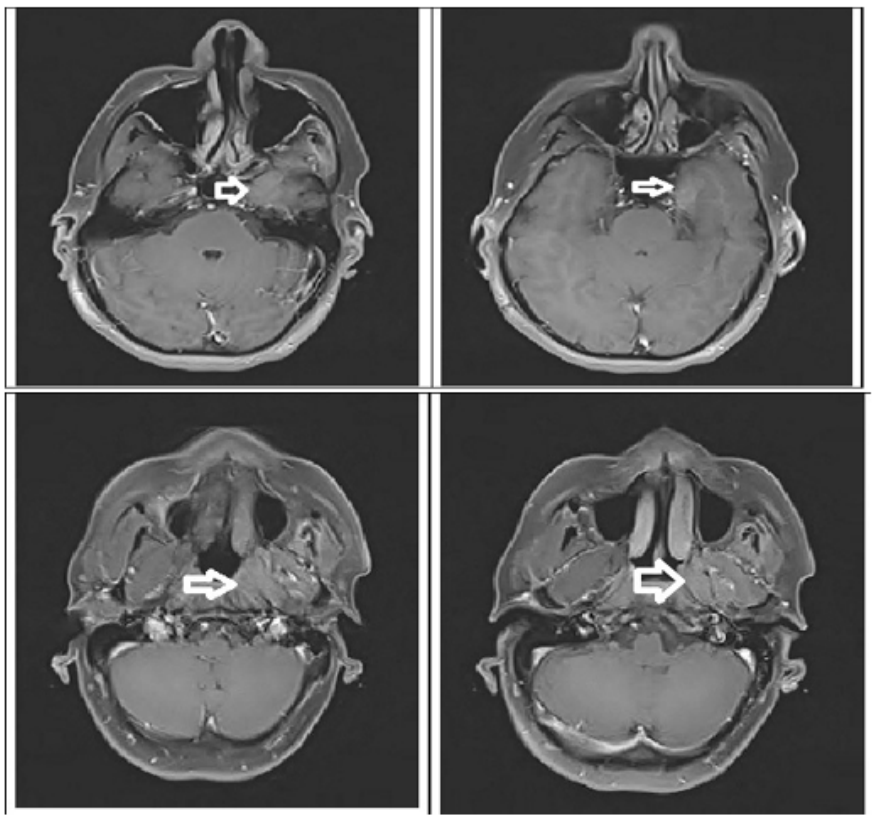

Fig. 4: Axial images of post contrast MRI showing homogenously enhancing soft tissue mass lesion at the medial aspect of left masticator space infilterating the pterygoid musculature with extradural extension into left cavernous sinus

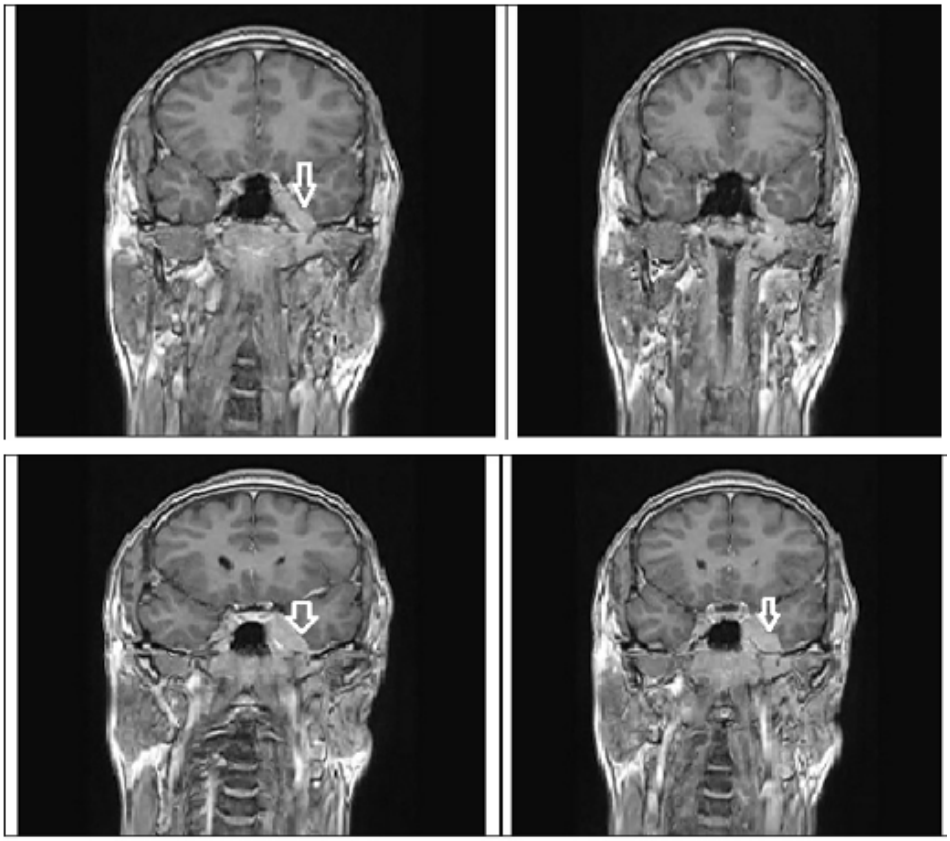

Fig. 5: Coronal images of MRI post Gad reveals the vertical extension of the mass through the left foramen lacerum into ipsilateral cavernous sinus

facial infection gained. On physical examination at ENT clinic, he had left lateral rectus muscle palsy. No proptosis, ophthalmoplegia, epiphora, nor other cranial nerve palsy. No tinnitus or vertigo. Nasal scope findings shows fullness in the left fossa of russenmular Laboratory investigations and tumor markers were negative. Contrast enhanced CT scan of head and neck (Figures 1, 2 and 3) was done in private institute and reported as diffuse thickening of the nasopharyngeal soft tissue involving the roof, posterior and left lateral wall suggestive of nasopharyngeal carcinoma; associated with erosive changes of the adjacent skull base with extension into the left cavernous sinus.

Deep biopsy of bilateral fossa of Rosenmuller revealed no malignant growth. At that point of time, the working diagnosis was cavernous sinus lesion with secondary extension into ipsilateral infratemporal space.

Subsequently, MRI of the area was done (Figures 4 and 5) which revealed an aggressive mass at the left masticator space with local infiltration of left masticator muscles and extension into ipsilateral cavernous sinus via foramen lacerum.

Patient counseled for endoscopic sinus surgery (retromaxillay approach) with targeted biopsy of the suspected left infratemporal fossa lesion. Intra-operative documented finding of a lobulated soft tissue lesion in the medial compartment of the left infratemporal fossa obliterating ipsilateral parapharyneal space.

The cytological analysis revealed small rounded nucleus with scanty cytoplasm cells with hyperchromatic nucleus in keeping with malignant lesion. The histopathological evaluation was limited by partially crushed specimen. Immunohistochemical staining shows tumor cells expressing focal positivity to CD3 and CD2 with very weak expression to CD6 and CD7. Both TIA and CD20 stains were negative. The recorded proliferative index was high (~50%). These immunological results were interpreted as consistent with T-cell lymphoma.

In view of the results patient was referred to hematology team for further management.

3. Discussion

T-cell lymphoma arising from the masticator space is extremely rare malignancy. A review of the literature shows scant reported cases of T-cell lymphoma in masticator space.[6] Although lymphomas are the most common nonepithelial neoplasms of the head and neck, this case

demonstrates unique clinical, radiological and pathological features, including the type of neoplasm involved, the relatively extensive osseous violation, the apparent site of origin of the neoplasm, and the clinical presentation. The definitive diagnosis of T-cell lymphoma is based on various histologic and immunophenotyping markers. However, the radiologist should be aware of its potential to occur in the head and neck region and that it should be included in the differential diagnosis of neoplastic processes occurring with either atypical clinical presentation and/or unusual radiologic findings. This is considered crucial, as relying solely on histologic findings, T-cell lymphoma can be mistaken for a variety of poorly differentiated tumors, such as malignant melanoma, rhabdomyosarcoma, metastaticcarcinoma, malignant histiocytic tumour, and other lymphoma.[5]

Depending on the site of involvement, extranodal lymphoma exhibits several clinical manifestations and often mimics more common conditions, such as squamous cell carcinoma or inflammatory change.[3,4] In our case, the patient presented with left VI nerve palsy causing fixed lateralization.

The radiologic findings in the current case are considered atypical for a lymphoma. CT findings most often seen in head and neck lymphomas include multiple extranodal sites of involvement; multiple large, bulky lymph nodes; and minimal bone destruction.[6] The radiologic findings, especially the bone destruction, are more consistent with a squamous cell carcinoma secondarily involving the masticator space followed by intracranial extension. The pattern of bone destruction seen in this indicates moderate to high grade of T-cell lymphoma. Although there is a high prevalence of lymphomas among persons who are HIV-positive[7] no laboratory evidence was detected in our case.

In conclusion the precise diagnosis of extranodal NHL can be difficult for a number of reasons. First, these tumors often show wide spread clinical presentations and different imaging findings. Second, surgical biopsy of deep-seated lesions is difficult, and an inadequate volume or poor handling of an excised sample can yield inappropriate pathologic specimens. Third, indistinct histologic features and an unconventional immunophenotype impede identification of tumor cell lineage and differentiation from nonneoplastic or other neoplastic lesions.

4. Source of Funding

None.

5. Conflict of Interest

The authors declare no conflict of interest.

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