



Skull Base Metastasis of a Breast Carcinoma

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Abstract

Skull base metastases from primary malignant tumors are relatively uncommon lesions. They usually originate from the breast, lung, prostate, skin, liver and cervix. We report a case of a 76 years old female complaining of dizziness, mild left hearing loss, tinnitus and recurring left facial paresis. A computed tomography scan of the temporal bones documented a much extended osteolytic lesion of the left temporal bone. A left mastoidectomy evidenced a soft-tissue etheroplastic mass involving diffusely the middle ear. Several bioptic specimens were obtained and the definite histopathological response was breast lobular carcinoma metastasis.

Case Presentation

A 76 years old woman referred to our clinical institution complaining of dizziness, mild left hearing loss, tinnitus and recurring left facial paresis. Ten years before, after a right breast carcinoma had been diagnosed, she had been submitted to surgery (right quadrantectomy) followed by radiotherapy and hormone therapy.

Vestibular symptoms (objective vertigo sometimes accompanied by nausea and vomiting) started several months before diagnosis and disappeared during a two-month period. At the moment of our neurotologic examination, no kind of nystagmus was observed. Tone audiometry evidenced a bilateral presbycusis, slightly worse at the left side where a conductive component was present, only partially affecting the patient who also complained of omolateral tinnitus. Two months before, the patient had been affected by a left facial nerve paresis (treated with vitamin B complex and regressed after four days) that recurred a few weeks later.

A previous brain and temporal bone MRI investigation had not evidenced radiologic signs of disease. An accurate high-resolution computed tomography (HRCT) scan of the temporal bones documented a much extended osteolytic lesion of the left temporal bone, comprehending bony erosion of the mastoid, *tegmen tympani* and petrous apex (Figure 1). Anteriorly, the metastatic lesion also caused a lytic erosion of the clivus, while posteriorly a suspected involvement of middle fossa dura and sigmoid sinus region was recorded (Figure 2). Finally, coronal scans evidenced the erosion of the first cervical metamers and the involvement of the vertical tract of the facial canal (Figure 3). Instead, the ossicular chain and the otic capsule appeared to be preserved.

Therefore, a left mastoidectomy was performed under general anesthesia: a soft-tissue etheroplastic mass involved the *sinodural angle* and the perisinus mastoid cells. The *tegmen antri* wall appeared infiltrated. Several bioptic specimens were obtained; the histopathological response

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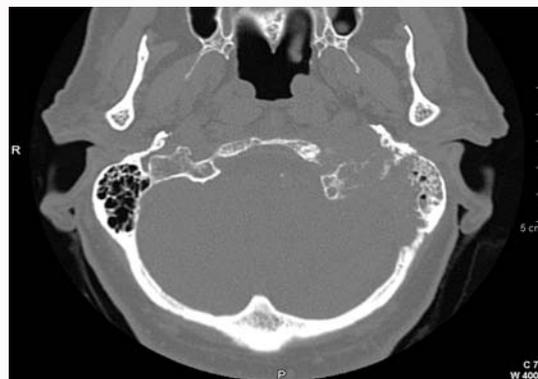


Figure 1: Axial high-resolution CT scan of the temporal bones shows an extended osteolytic erosion of the left temporal bone, including the mastoid and petrous apex.

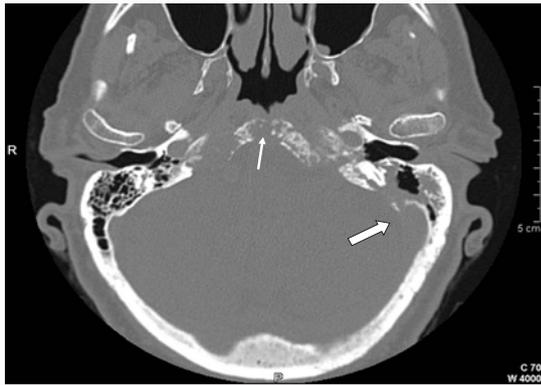


Figure 2: Axial high-resolution CT scan of the temporal bones evidences the metastatic lytic lesion of the clivus (arrow) and posteriorly a suspected involvement of left middle fossa dura and sigmoid sinus region (open arrow).

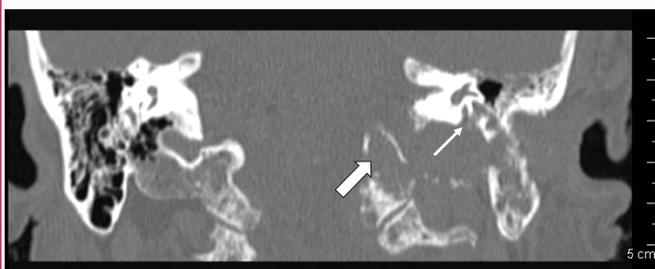


Figure 3: Coronal high-resolution CT scan of the temporal bones demonstrates the involvement of the vertical tract of the left facial nerve canal (arrow) and the erosion of the first left cervical metamers (open arrow).

reported signs of osteofibrous tissue infiltrated by neoplastic cells. Immunohistochemical investigations also evidenced a significant positivity for estrogen and progesterone hormones in the neoplastic cells. The definite response was breast lobular carcinoma metastasis.

Finally, due to both the radiologic and histopathologic findings, the patient was submitted to the oncologic section of our hospital. Actually, about one year after the surgical procedure, the patient feels better and vestibular symptoms have decreased.

Discussion

Skull base metastases from primary malignant tumors are relatively uncommon lesions. They often originate from the breast, but also lung, prostate, skin, liver and cervix are cited [1]. Generally, malignant cells are supposed to follow the hematogeneous route of dissemination to the bone marrow [1,2] and within the temporal bone, petrous apex, mastoid and internal auditory canal are the most commonly involved sites [1]; in particular, petrous apex appears the first temporal bone area affected by neoplastic cells before mastoid involvement [1].

Skull base metastases may be occult and asymptomatic, and postmortem findings in patients with possible secondary lesions confirm that their incidence is greater than previously reported [1]. Otherwise, hearing loss, otorrhea, tinnitus, vertigo and facial palsy are some of the most frequently reported symptoms [1,3].

Under a radiographic point of view, osteolytic lesions are often revealed [4], but they can be found in cholesteatoma, primary neoplasms and paragangliomas as well, even if a destructive action to bone appears more characteristic of tumoral diseases [3]. On the contrary, in other cases, soft tissue density masses in middle ear and mastoid cavities can be observed [3], leading to an initial suspect of chronic otitis media [5].

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