

## CASE REPORT

# Facial Nerve Palsy due to Temporal Bone Metastases: A Rare Case Report

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## ABSTRACT

Temporal bone as a site of metastasis is uncommon and usually asymptomatic. However, on rare occasions, they may present with facial nerve paralysis. The primary origin of the metastases is commonly the breast and lung and hematogenous spread is frequently the route of spread. A 70-year-old woman with newly diagnosed lung adenocarcinoma presented to our clinic with complaints of left-sided facial weakness. Radiological investigations revealed lytic destructive lesions in the left squamous part of the temporal bone extending and eroding into adjacent mastoid cells. The patient was given low-dose prednisolone planned for chemotherapy. Here, we present a rare case of facial nerve paralysis secondary to temporal bone metastases from a primary lung adenocarcinoma.

**Keywords:** Facial nerve palsy, Temporal bone metastases.

*Otorhinolaryngology Clinics: An International Journal* (2022); 10.5005/jp-journals-10003-1420

## INTRODUCTION

Metastasis to the temporal bone is seldom mentioned as compared to other sites of bony metastases. Histopathologically, subclinical metastases to the temporal bone have been found to be more common than we thought. The age of occurrence varies from the young to the old.<sup>1</sup> The usual sites of the primary tumor are the breast, lung, kidney, prostate, stomach, and liver with breast and lung being the two most common sites.<sup>2</sup> Meanwhile, in the temporal bone, the petrous apex is the preferred site of metastases with as many as 82.9% being found there as compared to the other sites such as the mastoid and the internal auditory canal.<sup>3</sup> Hematogenous spread is the commonest route of spread as the sluggish blood flow in the temporal bone predisposes to tumor cell deposition.<sup>4</sup> The usual presentations of temporal bone metastases include hearing loss, otalgia, otorrhea, headache, vertigo, and tinnitus. Rarely, they may present with facial nerve paralysis.<sup>5</sup> We report a case of a patient with temporal metastases from a primary lung adenocarcinoma presenting with left-sided facial paralysis.

## CASE DESCRIPTION

A 70-year-old woman presented to the orthopedic clinic with complaints of left-sided neck pain. Subsequent radiological investigations revealed a lytic lesion in the vertebral body of T2 and a mass at the right upper lobe of the lung measuring 5.2 × 5.3 × 5.9 cm. A computer tomography (CT)-guided biopsy was then performed for the right lung mass which was consistent with that of adenocarcinoma. The patient subsequently developed a pathological fracture of the left head and neck of femur. Bone fragments taken were then sent for histopathological evaluation and revealed bony metastasis: moderately differentiated adenocarcinoma. Five months after the initial presentation to the orthopedic clinic, the patient had sudden onset left facial nerve paralysis. On examination, there was left-sided facial nerve paralysis grade IV. CT scan done showed evidence of lytic destructive lesions of the left squamous part of the temporal bone extending and eroding into the adjacent mastoid cells (Figs 1A and B). The patient was given low-dose prednisolone and was planned for

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**How to cite this article:** Loong S, Al-Azzawi S. Facial Nerve Palsy due to Temporal Bone Metastases: A Rare Case Report. *Int J Otorhinolaryngol Clin* 2022;14(1):36–37.

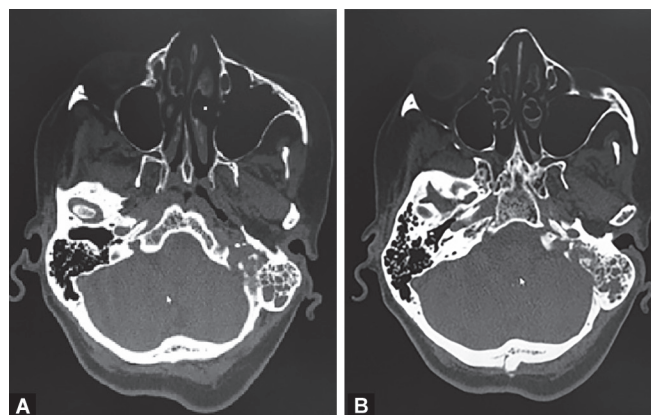
**Source of support:** Nil

**Conflict of interest:** None

chemotherapy. However, after only one course of chemotherapy, the patient succumbed to the illness.

## DISCUSSION

Metastasis to the bone from a primary tumor site is a common occurrence; however, temporal bone as a site of the metastases is not frequently mentioned. In the cases of temporal bone



**Figs 1A and B:** CT scan images (axial view) showing lytic lesion in the left temporal bone with erosion of the mastoid air cells

metastases, the usual primary sites include the breast, lung, liver, stomach, kidney, and prostate with lung primary being the source in as many as 10% of the cases.<sup>2</sup> In a retrospective study done utilizing autopsy records of two hundred twelve patients by Gloria-Cruz et al., it was reported that 47 of them had subclinical metastases to the temporal bone, and out of this, the petrous apex was the commonest site. This was followed by the mastoid and internal auditory canal in equal percentages.<sup>3</sup> The theory behind the petrous apex being the most common site of metastases in the temporal bone is due to its sluggish flow which predisposes to tumor cell deposition.<sup>4</sup> Hematogenous spread is therefore the commonest mode of spread for temporal bone metastases representing 76.7%. Other modes of spread include meningeal, lymphatic, or direct extension from the primary tumor.<sup>6</sup>

From these data, it was noted that temporal bone metastasis was not as uncommon as we thought with the most common histological type being adenocarcinoma. In the same study, they found 62%; out of this, forty-seven patients had bilateral metastases. Facial nerve paralysis is usually not the first presentation of temporal bone metastases as the facial nerve is relatively resistant to invasion by a tumor. A tumor would have to invade the epineural sheath before a facial paralysis is evident.<sup>7</sup> In patients who were adequately treated, temporal bone metastases were not found in these patients.<sup>3</sup>

Temporal bone metastases are not confined to a certain age group and have been found in equal amounts among both the young and the elderly. Patients with temporal bone metastases usually present with symptoms of their primary tumor and rarely present with symptoms from the temporal bone as their first presentation. When they do present with symptoms, their symptoms include hearing loss, otalgia, otorrhea, vertigo, tinnitus, headache, or a mass in the external auditory canal. Hearing loss is the commonest symptom of presentation out of these and was reported to be around 40%.<sup>3</sup> Rarely, they may present with facial nerve paralysis; however, on very rare occasions, the paralysis may be the first symptom of presentation.<sup>8</sup> A high index of suspicion for temporal bone metastases should be present in any patients with a history of malignancy who presents with facial nerve paralysis.

Palliative chemotherapy with localized external beam radiotherapy is often the choice of treatment for these patients.<sup>9</sup>

In cases of isolated facial nerve palsy, prompt initiation of radiotherapy and steroids may improve outcome.<sup>8</sup>

## CONCLUSION

Subclinical temporal bone metastasis is not as uncommon as we once thought. However, facial nerve palsy as a presenting sign in temporal bone metastases is rare as the facial nerve is relatively resistant to invasion by the tumor. Therefore, a high index of suspicion is needed to assess for temporal bone metastases, especially in patients who have an underlying history of malignancy.

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