

Unusual presentation of progressive metastatic disease in temporal bone resulting in facial paralysis.

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Abstract

Metastatic disease in temporal bones are extremely rare. Based on the location of metastatic disease, the symptoms can vary from incidental findings with no symptoms to hearing loss and facial weakness. When symptoms and signs correlate it will not be difficult for clinical diagnosis. When symptoms and signs are intermittent, investigation does not support clinical diagnosis. It will be extremely difficult to manage a patient symptoms and their expectations, especially when there are no signs to support clinical symptoms during consultation. We present a rare case of very small metastatic deposit in temporal bone causing facial palsy, which only became evident over few weeks and diagnosis was only possible with surgical exploration.

Keywords: Facial Palsy; Metastatic Disease; Mastoiditis; Cancer; Earache; Temporal Bone.

1. Introduction

Metastasis of malignant tumours to temporal bones are rare. In a temporal bone, petrous apex is the most common site for metastatic lesions, followed by mastoid, internal auditory canal and middle ear cleft (in that order). Although the presentation depends on the site of temporal bone involved, commonly they present with hearing loss, facial paralysis, otorrhea, otalgia, vertigo and aural mass. However, these clinical features are not pathognomonic for temporal bone metastasis making the diagnosis quite challenging. Incidence of facial paralysis in the presence of temporal bone metastases has been reported to be between 14.9 % - 50% [1-3].

2. Case Report

76-year-old lady presented with an intermittent intractable right earache for 3 months. Initially treated in primary care with antibiotics and ear spray. She was assessed in ENT clinic, at initial assessment - she was pain free, no hearing loss, normal looking ear canal and tympanic membrane, so as rest of ENT examination. Audiological assessment was within normal limits. She was under palliative medical team for breast cancer with bony metastasis in the spine. She was treated for neurological pain and was reviewed after few weeks. Her pain become more intense and developed intermittent weakness of her face on right side. During her second appointment, once again she was pain free and there were no abnormalities detected. As symptoms were getting progressed, as per patient despite no clinical abnormalities were detected. CT of temporal bone and neck was organised to rule out any other cause for her symptoms. CT showed a small area of haziness at the tip of the mastoid process without bony destruction and rest of the temporal bone was normal (Fig 1). Her previous CT scan of head did not show similar findings in the temporal bone. Her pain and facial

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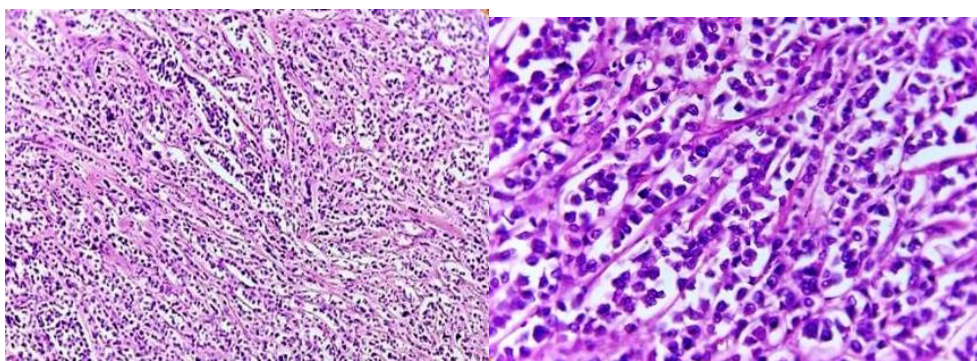
weakness progressed to more permanent features, as we she was reviewed in the clinic with CT results. She had grade 4 facial weakness on right side (Fig 2).



Figure 1 Axial and coral section of CT temporal bone showing haziness suggestive of inflammation with no destruction of trabeculae to suggest destructive lesion like malignancy.



Figure 2 Patient with right sided facial paralysis.



a- lower magnification

b- higher magnification

Figure 3 Histopathology result from the right mastoid show extensive infiltration by metastatic adenocarcinoma. The malignant cells express CK7, GATA-3 and E-cadherin. They are negative for CK20.

Decision to explore only findings on CT was discussed. Exploration of the mastoid cavity showed a small fleshy lesion at the mastoid tip, measuring just over 4 mm in size exposing facial nerve underneath. The histology confirmed metastatic disease - adenocarcinoma from breast (Fig 3). The nerve was decompressed (Fig 4). Post procedure, her symptoms were resolved completely for more than 3 months. However, she succumbed to advanced breast cancer with brain metastasis within a year.

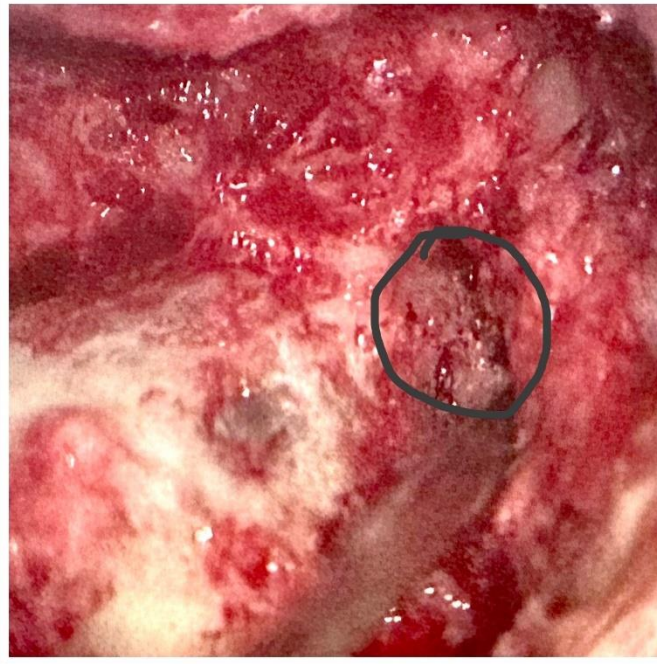


Figure 4 Intraoperative finding of fleshy lesion at the tip of the mastoid in a cortical mastoidectomy.

3. Discussion

Metastatic breast cancer frequently disseminates to distant organs such as bones, lungs, liver, and brain [1-3]. Though bone metastasis is common, only 1% [5] of them are in the skull [4]. However, atypical presentations involving unusual sites can pose diagnostic dilemmas for clinicians, especially if previous scans did not show any pathology in the affected area, signs and symptoms tend to be intermittent and when those signs / symptoms were resolved during clinicians' assessment. Despite the clinical and radiological findings does not add up to make firm diagnosis. Higher suspicion of the only findings on CT, comparing her other underlying medical problems should be taken into consideration when coming to provisional diagnosis. One has to offer all possible options to the patient, irrespective of their terminal illness. This case did pose such challenge from other colleagues considering risk and benefit for the procedure proposed to the patient. Eventually it was patient decision, which turned out to be favourable one during her final few months of her life.

Treatment of metastasis to temporal bone mainly depends on the symptom burden and the primary cancer. Several options such as radiotherapy, local excision and hormonal therapy are available. As she was under palliative teams for her advanced breast cancer. It was decided initial exploration of the mastoid and local decompression of the nerve was sufficient. She was free of any pain from her ears and her facial weakness recovered completely, which significantly improved her quality of life.

As she developed subsequent brain metastasis after her mastoid exploration, it proves her primary disease was aggressive and temporal bone metastasis was at its earliest stage in developing at the time of her first symptoms. As symptoms vary in patient with temporal bone metastasis based on its location [7]. Her symptoms were developed much early in this process as metastatic disease was closer to styloid foreman, hence early symptoms were intermittent pain from the periosteum, followed by facial weakness due to nerve involvement.

4. Conclusion

Unusual clinical presentation in any patient can be challenging. Continuous exploration of possible diagnosis, ruling out common conditions and monitoring the natural course of disease will help to get the diagnosis in a timely manner. We present complex patient with unusual presentation in terminally ill patient. Management was challenging for various reasons in her situation. When no other possible cause was found, it was worth taking the risk for patient to go through the surgery, as that resulted in much better quality of life at final months of her life.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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