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Article Title: Oesophageal adenocarcinoma metastasis to the external auditory canal

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Case Report

A 64-year-old male with known metastatic oesophageal adenocarcinoma presented to our institution with a two-week history of increasing left ear fullness and ten days of bloody otorrhoea and otalgia. The patient had human epidermal growth factor receptor 2 negative upper thoracic oesophageal adenocarcinoma with right para-oesophageal and supraclavicular lymphadenopathy and multisite bony metastases. He was on regular opiate analgesia for pain and his Eastern Cooperative Oncology Group Performance Status was 3.

On examination, he had a soft tissue mass with surface bleeding extending from the left external auditory canal (EAC) and filling the entire conchal bowl (Figure 1). The EAC could not be examined deep to the lesion. The remainder of the ENT examination including cranial nerves and nasendoscopy were unremarkable. Computed tomography of the brain and petrous temporal bones showed an erosive, calcified left peri-auricular and EAC mass eroding into the anterior mastoid air cells consistent with a metastatic deposit (Figure 2).

A biopsy of the mass showed an infiltrative poorly differentiated carcinoma with some tubular aggregates and focal rudimentary gland formation. Immunostains showed marked positivity for BERE4, patchy positivity for AE1/AE3 and no significant reaction with S100, CK7 and CK20. This was in keeping with metastatic poorly differentiated adenocarcinoma.

The patient was urgently reviewed at his regular oncology institution and given his rapid progression and multisite metastases, a decision was made for palliative measures with symptom and pain control.

Discussion

There are a range of benign and malignant lesions which can involve the EAC. Benign lesions include chronic inflammatory aural polyp, osteoma, exostoses, foreign body granuloma, paraganglioma and haemangioma¹. Rarely, malignant lesions occur. Primary tumours of the EAC such as squamous cell carcinoma (SCC) or basal cell carcinoma (BCC) are the most common with rarer lesions including melanoma or adenoid cystic carcinoma^{1,2}. However, metastatic disease must be considered in the differential diagnoses of EAC soft tissue mass². There are only 12 cases of non-cutaneous metastatic EAC disease described in the literature to date. The primary tumours were located in the kidneys (3 cases), breast and colon (2 cases each), and isolated cases in the oesophagus, lung, liver, rectum and prostate¹⁻³.

The temporal bones more commonly develop metastases compared with the EAC. Metastases are most commonly found in the petrous portion, the internal auditory canal or the mastoid process⁴. Gloria-Cruz *et al* reported that 22% of patients with primary non-disseminated neoplasms had metastatic disease involving the temporal bone at autopsy. The primary site in majority of these was the breast (21%), followed by the lungs (12%), kidneys, prostate and liver. No oesophageal metastases were identified⁵.

Temporal bone metastases most commonly occur via haematogenous spread, accounting for 76% cases⁵. However, perineural invasion has also been reported. Imauchi *et al* describe a case of oesophageal adenocarcinoma metastasis to Rouviere's lymph node with subsequent infiltration of the petrous temporal bone, followed by the middle ear and anterior EAC wall. This was via perineural invasion of the mandibular branch of the trigeminal nerve and the auriculotemporal nerve⁶.

There is only one case of oesophageal adenocarcinoma metastasis to the EAC alone without direct or perineural invasion in the literature to date⁷. An otherwise well 60-year-old African American man presented with four weeks of swelling in his right EAC and some associated mild hearing loss. Otoscopy revealed an aural polyp originating from the anteroinferior EAC wall. Subsequent investigations revealed that this was the first presenting symptom of multi-site metastatic oesophageal adenocarcinoma.

Metastatic spread of malignancy to the temporal bone may present with hearing loss, pain, otorrhoea, bleeding, facial nerve paralysis, or a mass in the ear canal⁸. A malignant lesion in the EAC may have clinical features similar to those of benign lesions, making clinical differentiation difficult. Hence a high index of clinical suspicion is required in these patients

Primary pinna or periauricular SCC or metastatic intraparotid SCC which directly invade the EAC are not uncommonly seen by Australian clinicians due to high UV radiation exposure. In the absence of metastases, patients without significant comorbidities can be considered for surgical

resection with the extent tailored toward the size, location and the tumour's biological behaviour. Given our patient's functional status and prognosis, a decision for palliative treatment was most appropriate. In the treatment of non-cutaneous EAC metastases from distant primary sites, radiation and chemotherapy can be considered as palliative therapies. Curative surgical resection is sometimes impossible, however in patients with low burden of other metastatic disease and few comorbidities, palliative surgery could be considered in appropriate cases.

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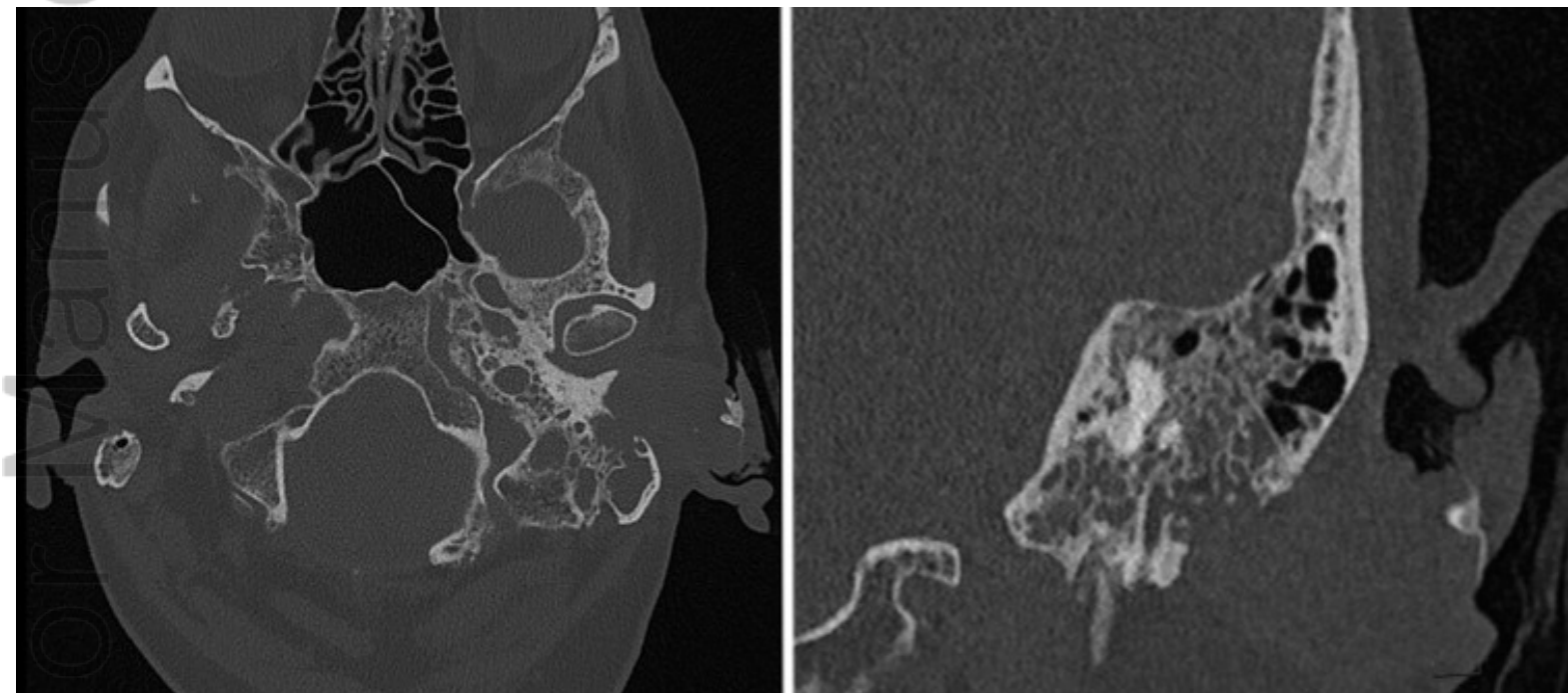
Figure Legends:

Figure 1: Photos taken of the patient's left ear which shows a mass arising from the left external auditory canal and filling the conchal bowl (Patient consent obtained).

Figure 2: Axial (a) and coronal (b) views of CT petrous temporal bones with contrast showing an erosive and focally calcified enhancing mass centred on the left external auditory canal (EAC) and the overlying soft tissue with erosion of the posterior EAC wall and underlying mastoid air cells.



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ANS_15657_Figure 1 patient photo.jpg



ANS_15657_Figure 2.jpg