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Clinical Records

Occult bronchogenic carcinoma presenting as metastasis to the site of a bone anchored hearing aid

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Abstract

The first report of a patient with metastatic bronchogenic carcinoma of the skin surrounding the abutment of a bone anchored hearing aid (BAHA) is presented. Complications of bone anchored hearing implantation have been well documented to date. We present a 68-year-old lady who presented with an unusual skin lesion surrounding the abutment of her BAHA. This was the first presentation of her bronchogenic tumour.

We also review the literature regarding cutaneous metastasis and complications of BAHA.

Key words: Carcinoma, Bronchogenic; Neoplasm, Metastasis; Skin Neoplasms; Hearing Aids; Osseointegration

Case report

The patient, a 68-year-old female, had suffered from bilateral progressive hearing loss for more than 30 years. She had been diagnosed as suffering from otosclerosis and had undergone a right stapedectomy and a left fenestration procedure in the 1970s. Unfortunately she had not managed well with conventional hearing aids and so she had been fitted with a right-sided BAHA five years previously.

She presented to the ENT clinic with a discharge from the site of her right BAHA abutment. Immediately prior to this she had been taking antibiotics from her General Practitioner to treat presumed infection for one week with no resolution of her symptoms. Her past medical history was otherwise unremarkable.

On examination, the skin at the abutment site was irregularly raised and indurated and the abutment was buried under a centrally placed dry punctum (Figure 1). Swabs of the lesion were taken for culture and sensitivity and an incisional biopsy was also performed. The antibiotic regime was reassessed.

Histopathological examination showed invasive, poorly differentiated carcinoma with a heterogeneous admixture of glandular structures and fewer, highly pleomorphic dispersed cells, some of bizarre giant cell morphology (Figures 2, 3). It was considered that these appearances most likely represented metastatic disease and a bronchopulmonary origin was suggested for this.

A subsequent chest radiograph revealed a 4 cm diameter lesion at the lower pole of the left hilum, that led to the suspicion of a primary bronchogenic neoplasm. Interestingly, there was also the suspicion of another lesion involving the right fifth rib (Figure 4). An urgent referral was made to the chest physicians.

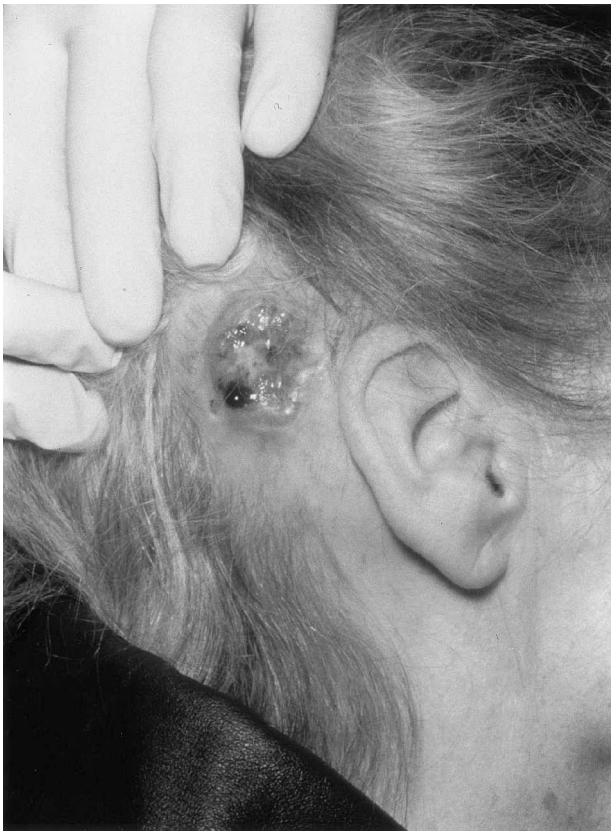

Fig. 1

Clinical photograph demonstrating the raised irregular skin completely obscuring the BAHA abutment.

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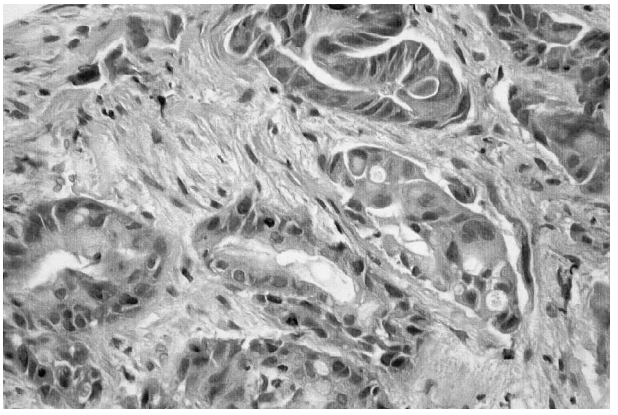

FIG. 2

High power photomicrograph illustrating invasive, moderately differentiated adenocarcinomatous glands amidst desmoplastic stroma (H&E; ×100)

Needle core biopsy of the chest lesion confirmed a primary, poorly differentiated large cell bronchogenic carcinoma of comparable heterogeneous appearance to the BAHA site tumour. Subsequent computerized tomography (CT) images of the chest and pelvis confirmed widespread metastatic disease (Figures 5 and 6).

The patient was referred for palliative radiotherapy and died from pneumonia three months after presentation.

Discussion

Osseo-integrated implants were first described in 1965 by Branemark. Their initial application was for dental implants and it was not until the late 1970s that they were first placed in the temporal bone as an attachment for BAHAs.[1]

Complications of BAHAs can be considered in two categories: intra-operative and post-operative complications. Loss of the osseointegrated fixture from its placement in the skull is a serious complication. Many cases of fixture loss have been reported as a result of trauma, especially in paediatric patients and those with poor hygiene.[2] Soft tissue reactions around the abutment have also been reported and are classified using the Gothenborg scale.[3] Inadvertent penetration of the lateral venous sinous as a result of inadequate thickness of the temporal bone is another documented but rare complication.[3] To date, there have been no reported cases of metastatic disease presenting at the site of a BAHA fixture/abutment.

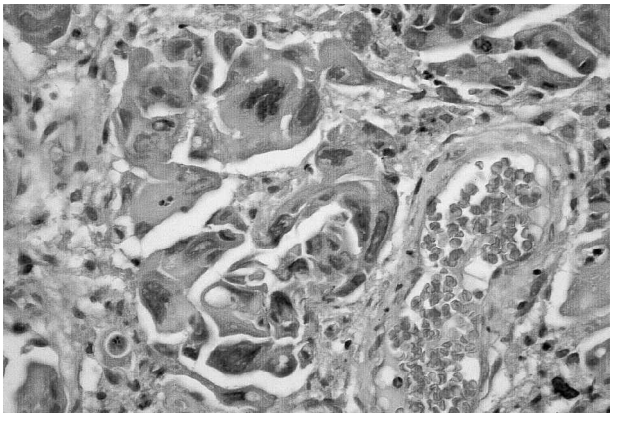

FIG. 3

High power photomicrograph demonstrating a field of more poorly differentiated elements including bizarre giant cell transformation (H&E; ×100)

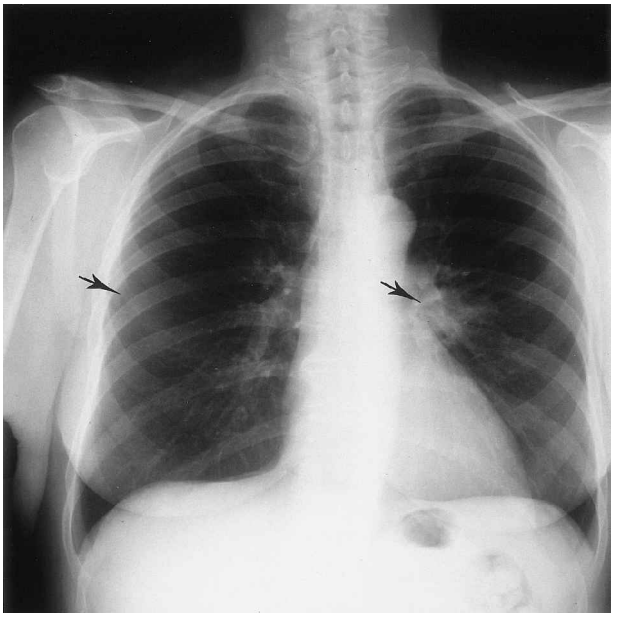

FIG. 4

Chest radiograph (anteroposterior) demonstrating a 4 cm mass projected over the lower pole of the left hilum and a lesion of the anterior end of the 5th rib.

Skin metastasis from bronchogenic tumours are a well-recognized sign of already disseminated and usually poor prognosis disease.[4] It can be the primary manifestation of occult disease as in this case report, where the primary lesion remains quiescent.[4,5] It is estimated that one to 12 per cent of patients with lung cancer develop cutaneous metastases.[6–8] This in turn influences clinical prognosis.[4] Their recognition is, therefore, important. Bronchogenic carcinoma is responsible for the majority of skin metastases in men and is second only to breast cancer in women.[5]

Such cutaneous metastases can occur at any site in the body but typically, they are described on the chest wall, scalp and abdomen. Rarer sites include the extremities.[6,8,9] Any area of the skin may be involved, but usually metastases occur near the primary tumour.[9]

Of the various histological subtypes of lung carcinoma, there is broad consensus that adenocarcinomas and large cell carcinomas as a group show the greatest propensity for

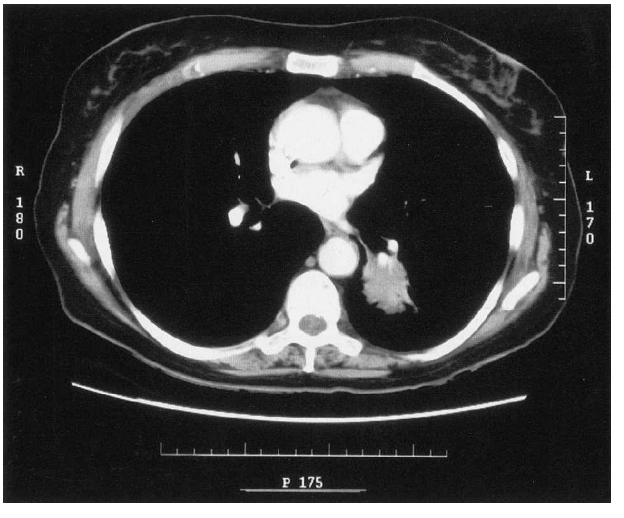

FIG. 5

Chest CT scan demonstrating a lesion in the left hilum consistent with bronchogenic carcinoma.

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FIG. 6

Pelvic CT scan showing an extensive area of abnormal bone texture in the left iliac wing, which has a mixed lytic/sclerotic appearance and a pathological fracture through it.

cutaneous metastasis[5,6] and that squamous cell carcinomas, small-cell anaplastic carcinomas, carcinoid tumours, mucoepidermoid carcinomas and sarcomas show the least proclivity to metastasize from lung to skin.[9–11] This, however, is complicated by the well-recognized phenomenon of intratumoural multidirectional differentiation within many lung carcinomas, all elements of which may not be adequately sampled in small biopsies. Distant skin metastasis from lung cancer has been shown to be lymphatogenous and haematogenous, but certain tumours such as pulmonary mesotheliomas reach the skin by direct extension and can appear in surgical scars and needle biopsy tracks.[12,13]

Clinically, cutaneous metastases can appear as nodular, inflammatory and sclerodermoid metastatic lesions.[9,14] The nodular type is generally the commonest type encountered and may be multiple.[15]

The prognosis of patients with lung cancer and skin metastases is very poor because this reflects advanced disease and there is invariably simultaneous involvement of other organs at presentation.[15] The average survival after diagnosis is three to five months.[7] However, in certain cases it can be the solitary manifestation of metastatic disease and can be prognostically crucial.

Our case demonstrates the first report of metastatic bronchogenic carcinoma at a BAHA site. Our patient had been receiving treatment over a three-week period for a presumed skin infection. The lack of response to conventional treatment prompted a biopsy, which established the malignant nature of the problem. This case demonstrates the importance of maintaining a high index of suspicion for cutaneous complications at a BAHA site.

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