Ethmoidal metastasis as a first presentation of breast cancer: a case report

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ABSTRACT

Distant metastasis in advanced breast cancer is not uncommon; however, spread to the paranasal sinuses is extremely rare. We present a case of a woman who presented to our ophthalmology colleagues with worsening unilateral proptosis secondary to a tumour mass within her ethmoid sinuses. Biopsy of the ethmoid tumour showed adenocarcinoma of unknown origin. Whole-body positron emission computed tomography demonstrated a breast primary lesion. The patient was treated with palliative chemotherapy, and the patient remains well at this point. The importance of specialist head and neck radiological interpretation of imaging cannot be underestimated. Early tissue diagnosis is essential before ascribing patients with orbital symptoms to non-malignant process.

KEYWORDS

Otorhinolaryngologic diseases – Paranasal sinus neoplasm

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Introduction

Distant metastases in advanced breast cancer are not uncommon; however, spread to the paranasal sinuses is extremely rare. We present a case of undiagnosed carcinoma of the breast presenting with orbital apex syndrome from ethmoidal metastasis.

Case history

A 50-year old woman of Jamaican origin presented to the local ophthalmology department with a two-year history of worsening right eye visual acuity and epiphora. In addition, she had a three-month history of worsening proptosis. Her blood inflammatory markers were within normal limits, but a lesion in her right paranasal sinuses was demonstrated on computed tomography (CT), which was reported as probable chronic fungal sinonasal disease or mucocoele (Fig 1). Unfortunately, the patient was lost to follow-up at this time and did not attend for biopsy for the paranasal mass.

Two months after this episode, the patient presented acutely to the otolaryngology department, following development of ataxia, diplopia and further deterioration of her visual acuity in the affected right eye. She had no other past medical history of note, was on no regular medication and had no previous exposure to hardwood dust or any other chemicals.

On examination, she had right-sided proptosis, chemosis and moderate ophthalmoplegia in all directions, with a tender swelling over her right maxilla and zygoma. Visual

acuity was grossly reduced to counting fingers in the affected eye. Flexible nasendoscopy showed pus within the right middle meatus. Repeat CT sinus imaging was performed, which demonstrated a large tumour mass originating from the ethmoid, with extensive local infiltration of

Figure 1 Computed tomography at original presentation, showing an expansile right ethmoidal lesion, which was reported as likely chronic fungal sinonasal disease or mucocoele

Figure 2 Computed tomography at representation, showing an infiltrative process affecting right ethmoidal air cells and medial orbital wall with right eye proptosis

the right maxilla, right anterior skull base, right medial orbital wall and pterygopalatine fossa (Fig 2).

Based on the radiological appearance, a provisional diagnosis of a fibro-osseous or chondroid tumour was made; however, histology of an urgent intranasal biopsy of the mass demonstrated moderately differentiated adenocarcinoma.

On direct questioning, the patient reported that she had noticed a lump in her right breast that had been increasing in size over the previous six months. However, due to work pressures, she had not sought medical attention. A large breast mass was palpable clinically with no involvement of the overlying skin.

Whole-body positron emission tomography (PET)/CT demonstrated the invading paranasal lesion (Fig 3), as well as a large right breast mass measuring over 12 cm in diameter (Fig 4) and evidence of a lytic lesion in her T6 vertebral body.

A core biopsy of this breast lump showed infiltrating ductal carcinoma (B5b). Based on this evidence, the breast and head and neck multidisciplinary teams recommended palliative chemotherapy treatment. The patient was immediately commenced on a regime of paclitaxel, denosumab and dexamethasone, as the cytokeratin expression of the patient's disease was strongly positive for estrogen receptors (MQS = 8), positive for progesterone receptors (MQS = 5) and borderline for epidermal growth factor type II receptor (HER2(2+)) expression.

The patient's right eye swelling and visual acuity improved markedly on commencing the steroid medication.

Figure 3 Positron emission computed tomography of the ethmoidal tumour showing anterior skull base and orbit extension

Figure 4 Positron emission computed tomography of the large primary breast lesion

She has received multiple cycles of palliative chemotherapy and radiotherapy, and palliative right mastectomy and axillary node clearance was performed in December 2015. Repeat PET/CT performed in April 2017 demonstrated new uptake in the left cervical lymph nodes and behind the right mastectomy bed, although the right paranasal disease remains well controlled. She continues to have some vision in her right eye and leads an independent life as of September 2017.

Discussion

Although neoplasia is a differential diagnosis for paranasal sinus and orbit space-occupying lesions, these remain extremely rare sites for distant metastasis, with fewer than 200 cases reported worldwide. Of those malignancies that undergo haematogenous spread to this location, renal cell carcinoma is the most common primary tumour, followed by lung, thyroid, ductal breast and prostate carcinomas in decreasing order and in vanishingly small numbers.¹

Sinus metastases from any tumour type most commonly affect the maxillary sinus and therefore generally present in a similar fashion to primary sinonasal malignancies with nasal obstruction, epistaxis and facial pain.² However, ethmoidal deposits are the primary site of just 14% of paranasal metastases¹ and can progress asymptotically

until ocular symptoms occur, such as with the orbital apex syndrome seen in our patient (defined as ophthalmoplegia, chemosis and proptosis of the affected eye).³ The disease may initially act, as in this case, as a radiological mimic for far more common pathologies such as acute or chronic ethmoiditis.

In those few previously-reported cases, craniofacial breast metastases were found in patients with known or treated breast disease and therefore the diagnosis is relatively straightforward. It is extremely rare for a head and neck metastasis to be a patient's main presenting feature, as in this case, and there is a potential for considerable diagnostic delay.⁴ The long time course of her symptoms implied a slow-growing or benign nature to her pathology, which is also unusual among the sparsely existing literature, in which breast paranasal metastasis is usually coexistent with aggressive leptomeningeal spread.

Those few cases of breast metastases to the nose or paranasal sinuses have generally been associated with an extremely poor prognosis. In particular, HER receptor positivity is associated with a mean survival of three months.⁵ Palliative treatment for orbit-involving metastases should be aimed at preserving any remaining sight in the affected eye, which can be achieved with chemotherapy or radiotherapy. Debulking surgery may be necessary to preserve sight in the immediate short-term.

The rarity of this pathology means that it is likely to be overlooked as a potential diagnosis on radiological or clinical examination. This demonstrates the vital importance of maintaining a low index of suspicion for malignancy in cases of unilateral pathology and the essential role of early specialist radiological input and tissue diagnosis.⁶

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