CASE REPORT

Parotid gland: an unusual site of breast cancer metastasis

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SUMMARY

Parotid gland metastases from breast cancer are an extremely rare and unusual event with a limited number of cases recorded in the literature. A 71-year-old woman with a history of ductal adenocarcinoma of the left breast presented to the maxillofacial clinic with an asymptomatic swelling of the left parotid gland. The presentation occurred 21 years after she underwent treatment for recurrent breast cancer. Investigations led to the diagnosis of a breast cancer metastasis which was oestrogen receptor and progesterone receptor positive and negative. Positron emission tomography scan confirmed this as a solitary metastasis. She was treated with aromatase inhibitors and a stable clinical response was observed on follow-up. Surgical intervention was avoided with its potential complications such as facial nerve injury. Metastasis from breast cancer to the parotid gland is a very rare phenomenon. However, in a patient with previous breast cancer, it should be considered as a possible differential diagnosis.

BACKGROUND

A tumour of the parotid gland would usually be expected to be a primary tumour. Metastases to the parotid gland are extremely rare and present as a diagnostic challenge. According to one report, only 14 cases of parotid gland metastases were reported in the period 1982–2010.¹ Kidney, lung and breast are the most commonly reported primary sites leading to metastases in head and neck region.² Immunohistochemistry (IHC) is an invaluable diagnostic tool in differentiating primary salivary gland tumours from secondary ones.³ We report a case of parotid gland metastases in a patient after being treated for breast cancer around 26 years ago.

CASE PRESENTATION

A 71-year-old woman presented to the maxillofacial clinic with a few months' history of gradual swelling of the left parotid gland and was found to have a 2×2 cm hard lump. She had a wide local excision of the left breast 26 years ago for an invasive ductal carcinoma followed by adjuvant radiotherapy to the breast, axilla and supraclavicular fossa. No nodal sampling or axillary staging was carried out. She had a local recurrence with axillary node involvement 5 years later and underwent completion mastectomy and axillary clearance followed by six cycles of cyclophosphamide, methotrexate and fluorouracil and 8 years of tamoxifen. She had no other major comorbidities.

INVESTIGATIONS

Ultrasound-guided fine-needle aspiration of the lump was performed and cytology showed malignant epithelial cells which were oestrogen receptor (ER) positive (Q score 8). A core biopsy was carried out subsequently. This displayed features of an adenocarcinoma with a mixed ductal/lobular pattern, consistent with a breast metastasis. It was also shown to be progesterone receptor (PR) positive (Q score 6–7) and borderline for HER-2. FISH testing was then performed which gave a result 1.82, which is borderline negative and was regarded as negative for HER-2 overexpression (figure 1). These investigations were carried out to distinguish this disease as malignant instead of being a benign lesion.

IHC was used in the differentiation of the lesion between a primary and secondary tumour. This used IHC biomarkers to identify the broad cancer type, subtype and finally help to predict the possible primary sites. Regarding IHC markers, CAM 5.2 cytokeratin, ER, Gross cystic disease fluid protein 15 (GCDFP-15) and HER-2 were stained. The tumour cells were strongly positive for CAM 5.2 cytokeratins.⁴ CAM 5.2 cytokeratin can be used to identify tumours of epithelial origin, such as breast cancer.

An Fludeoxyglucose (FDG) positron emission tomography CT (PET-CT) showed an avid lesion in the left parotid with no other areas of high uptake. A nuclear imaging bone scan did not show any metastatic disease (figures 2 and 3).

Figure 1 Papanicolaou stain (PAP) cytology 20× magnification. Cellular specimen comprising sheets of atypical plasmacytoid epithelial cells.

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Figure 2 PET-CT image showing parotid gland metastasis. PET, positron emission tomography.

DIFFERENTIAL DIAGNOSIS

1. Primary parotid tumour.
2. Metastatic tumour deposit from previously treated breast cancer.

TREATMENT

Following discussion in the multidisciplinary meeting, she was commenced on aromatase inhibitors. Radiotherapy is another management option which can be used in inoperable tumours to achieve a palliative effect. However, the use of this treatment was decided against due to the positive response to treatment by hormonal therapy.⁵

OUTCOME AND FOLLOW-UP

On subsequent follow-up appointments, the tumour was noted to have slightly reduced in size. It is now >5 months since she was diagnosed to have parotid gland metastases, and she has stable disease on endocrine treatment.

DISCUSSION

The majority of salivary gland tumours are benign with only 20% being malignant. Making up about 33% of cases, muco-epidermoid carcinoma is the most common type of malignant parotid gland tumour.⁶ Malignancy of the salivary glands is most commonly due to primary tumours, with metastases only accounting for 10% of tumours.⁷ While the parotid gland is the

Figure 3 Axial PET-CT image showing parotid gland metastasis. PET, positron emission tomography.

most commonly involved salivary gland in secondary cancer, metastases to it from breast cancer are rare. Most parotid gland metastases arise from primary tumours located in the neck and head, with malignant melanoma and squamous cell cancer being the most common.^{1,8} Metastases from primary tumours located more distally are thought to reach the parotids via Batson's spinal venous plexus or the thoracic duct.⁹

The nature of presentation is also variable, with most patients reporting with a swelling in parotid gland. Other presentations include those of facial nerve palsy. Of the cases reported in the literature, nine are ductal carcinomas and two are lobular.

Due to its rarity, the treatment of parotid gland metastases from breast cancer is not standardised. Of the cases reported in literature, most have been treated with radiotherapy, chemotherapy and parotidectomy. A total parotidectomy was the second most common treatment.¹ Our patient was treated with only endocrine blockade which is the recommended treatment option for patients with asymptomatic metastatic breast cancer. Surgery should not be the primary treatment option in parotid metastatic disease thus avoiding potential side effects such as a dry mouth and facial nerve paralysis.

Learning points

- ▶ In a patient with a parotid lump and a history of cancer, metastatic disease should be considered.
- ▶ Immunohistochemistry is a useful tool to differentiate primary from secondary salivary gland tumour.
- ▶ Surgery is not always the appropriate treatment in oestrogen receptor-positive breast cancer metastases to the parotid gland.

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with final approval of the version to be published. AJ was involved in the care of the patient from an oncology perspective.

Competing interests None declared.

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