Metastatic neuroendocrine carcinoma mimicking a breast abscess: a case report

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Large cell neuroendocrine carcinoma (LCNEC) is a rare and exceedingly aggressive high-grade cancer. This is a subtype of neuroendocrine carcinoma, which commonly originates in the lung but may arise in other organs, including the gastrointestinal tract and pancreas.[1] This is heavily associated with smoking and typically affects males with a median age of around 65 years.[2]

Common sites of metastasis include the liver, bone, brain and adrenal glands.[3] Metastatic involvement, from any primary, of the breast is rare.[4] It has been estimated that only 0.005–0.02% of breast malignancies represent metastases from neuroendocrine tumours.[5] Reported cases have typically presented as breast masses or nodules.[5–7]

This case illustrates an unusual presentation of LCNEC, initially presenting as breast metastasis mimicking an abscess.

Case presentation

A 38-year-old previously well, non-lactational, non-smoking female patient presented with a painful 5×5cm erythematous lump in the lower outer quadrant of the left breast. This was indurated, firm and mobile. She was otherwise clinically well, with no constitutional symptoms. An abscess was suspected by the emergency department team, and she was discharged with antibiotics.

One week later, she re-presented due to persistent symptoms and failure to improve on antibiotics. She was referred to general surgery. The abscess was surgically treated, and cavity biopsies were taken due to the intraoperative finding of a hard lesion with central necrosis, suspicious for malignancy.

Histological examination demonstrated features consistent with metastatic LCNEC of unknown primary origin. Tumour markers were markedly elevated, including chromogranin A, cancer antigen (CA) 15-3, CA 19-9, CA 125 and carcinoembryonic antigen.

During subsequent assessment, the patient was admitted with significant back pain. Computed tomography of the chest, abdomen and pelvis demonstrated an extensive malignant spread, including a large left upper lobe mass, with nodal, skeletal, pelvic and possible hepatic metastases; however, the primary tumour was not identified (Figure 1). Magnetic resonance imaging (MRI) confirmed lumbar spinal involvement (Figure 2).

Figure 1: Computed tomography demonstrating widespread metastatic disease.

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Figure 2: Magnetic resonance imaging demonstrating spinal metastases.

This case was discussed at the neuroendocrine tumour multidisciplinary meeting, favouring the diagnosis of stage IVB LCNEC, most likely of lung origin, with widespread metastases.

Discussion

Breast abscess is a common benign condition that is frequently managed by general surgeons.[8] To our knowledge, presentation of neuroendocrine carcinoma as a breast abscess has not previously been reported. Awareness of this presentation is important, as metastases from neuroendocrine tumours to the breast may be more common than previously recognised.[6]

Management guidelines for LCNEC remain limited due to the rarity of the disease. Surgical resection is recommended for early-stage disease when feasible, while advanced disease is typically treated with platinum-based chemotherapy similar to that used for small cell lung cancer. The prognosis remains poor.[9]

Another notable feature of this case was the patient's clinical profile. LCNEC is strongly associated with tobacco exposure, and its occurrence in a young lifelong non-smoker, as observed in this case, is uncommon.

Interestingly, molecular testing demonstrated an anaplastic lymphoma kinase rearrangement, a finding most commonly associated with lung adenocarcinoma and rarely reported in LCNEC.[10] In this case, palliative radiotherapy for symptomatic spinal metastases was completed, and the patient was initially waitlisted to commence systemic chemotherapy with carboplatin and paclitaxel. However, after identifying this molecular alteration, targeted therapy with alectinib was commenced.

This case highlights an unusual presentation of metastatic LCNEC. It emphasises the importance of considering malignancy in the differential diagnosis of an apparently benign breast infection, and the necessity of high clinical suspicion in abscesses that are refractory to treatment.

COMPETING INTERESTS
Nil.

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