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Case report

Mucoepidermoid carcinoma of lung masquerading as urothelial carcinoma of bladder

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ABSTRACT

Background: Mucoepidermoid carcinoma (MEC) of the lung is a rare subtype of non-small cell lung cancer. There is no consensus regarding optimal management for this disease.
Case report: We present a case of MEC of the lung in a 75 year-old female with a history of superficial urothelial carcinoma of the bladder. The patient was found to have an asymptomatic lung mass. Initial biopsy suggested metastatic recurrence of urothelial carcinoma and therefore, cisplatin and gemcitabine chemotherapy was administered prior to surgical resection. Pathological analysis of the resected specimen confirmed a diagnosis of stage IIIA MEC with focal high-grade features including transitional cell-like areas. Adjuvant radiotherapy was administered due to a positive microscopic resection margin. No chemotherapy was given due to lack of supporting data. The patient developed widespread metastatic disease 3 months following completion of radiotherapy and died 1 month later.
Conclusion: This case demonstrates the possibility of dual pathology in cases where metastatic disease is suspected. The use of small tissue samples may complicate diagnosis due to the heterogeneity of malignant tumours.

1. Introduction

Mucoepidermoid carcinoma (MEC) of the lung is a rare tumour subtype comprising approximately 0.1% of lung cancers.[1] There is no consensus for its management. We present a case of asymptomatic MEC of lung identified on follow-up imaging for another malignancy.

2. Case

A 75 year-old, Caucasian female with a 50 pack-year smoking history underwent a radical cystectomy for a urinary bladder tumour causing bilateral hydronephrosis. No distant disease was identified on CT imaging. Pathology revealed a grade II, 10 cm superficial urothelial carcinoma without muscle

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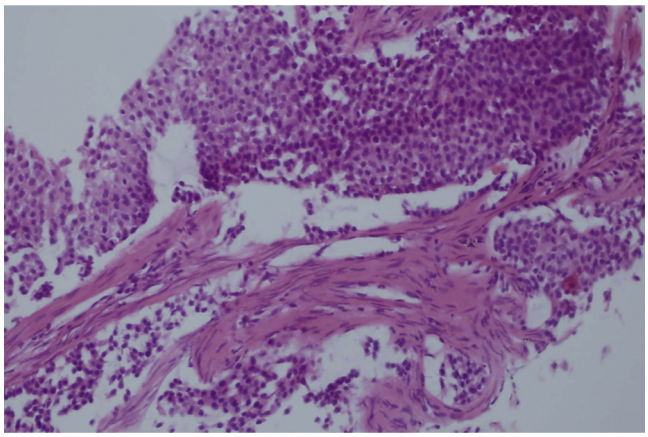

Fig. 1 – Biopsy sample (high power 20×) demonstrated fibrotic tissue incorporating islands of monomorphic cells with plentiful eosinophilic cytoplasm. An occasional mitotic and apoptotic figure was identified. Immunohistochemical staining was positive for CK7, CK20 and AE1/3 and negative for TTF-1, suggesting urothelial carcinoma.

invasion (Ta N0 M0).[2] No adjuvant therapy was given. Three years later, routine chest X-ray demonstrated a lesion in the left upper lobe. Computed tomography (CT) confirmed an isolated lesion in the lingula measuring 5.2 cm in the maximal diameter. Pathological analysis of a core needle biopsy of the lesion, when compared with the previously resected bladder tumour, suggested the possibility of metastasis from the prior bladder tumour (Fig. 1). Cystoscopic examination of the bladder did not demonstrate any evidence of local recurrence. Multidisciplinary team discussion was focused on the early stage of the prior bladder tumour and the low probability of development of metastatic disease. Despite this, there was a distinct similarity between the core needle biopsy of the current lesion and the prior bladder sample on pathological review. Therefore, a trial of systemic chemotherapy was recommended, followed by consideration of surgery or radiation therapy. Platinum and gemcitabine chemotherapy was administered over a 2-month period and treatment was stopped early secondary to persistent myelosuppression. Positon Emission Tomography (PET) scan confirmed no further metastatic disease but low to moderate FDG uptake was noted within normal sized right sided hilar nodes (maximum SUV 3.5) and a modified lingular resection of the lung was performed. Pathology revealed a non-small cell lung carcinoma (NSCLC)/MEC with focal high-grade features including transitional cell-like areas (pT2b, pN2), stage IIIA[2] (Fig. 2). Immunohistochemical staining highlighted diffuse positivity for AE1/AE3, p63 and CK7. There was focal CK20, MOC31, BerEp4 and CK5/6 positivity. TTF-1 and Napsin A were negative within the lesional cells. Epidermal growth factor receptor (EGFR) analysis demonstrated the absence of classical activating mutations in exon 19 and 21. In view of positive resection margins and positive lymph nodes, adjuvant radiotherapy was delivered. The target volume was the left hilum and ipsilateral mediastinal lymph nodes including the subcarinal area. 60 Gy in 30 fractions was delivered using a 3D-conformal technique. Following multidisciplinary discussion, adjuvant chemotherapy was not given due to the paucity of supporting data, and lack of response to initial platinum-based therapy.

The patient subsequently presented with increasing shortness of breath and back pain 3 months following radiotherapy. CT and magnetic resonance (MR) imaging confirmed widespread metastatic disease involving both lungs, multiple nodal sites, bony pelvis and multiple vertebrae. ECOG performance status was 3.[3] Radiotherapy was administered to the lumbar spine and left hip for pain control. Systemic therapy was not administered. The patient was referred to palliative care and passed away 3 weeks later.

3. Discussion

MEC originates from minor salivary gland tissue of the tracheobronchial tree and is the most common primary salivary gland carcinoma.[4] It can also occur as a rare subtype of NSCLC and usually occurs in the central bronchial region.[1] Pathologically, MEC of the lung closely resembles MEC of the salivary glands and can be divided into low-grade or high-grade variants. Low-grade tumours tend to contain a higher portion of mucous cells and high-grade tumours are distinguished by

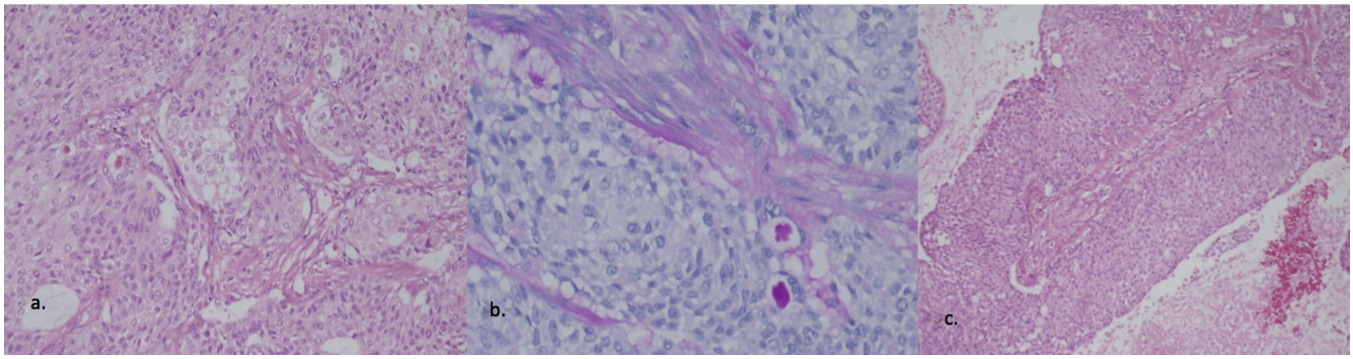

Fig. 2 – Resection specimen. H&E staining of tumour showing (a) areas of clear cells and glandular areas embedded within fibrous stroma, (b) PAS-D stain highlights cellular mucin in the glandular spaces and in lesional cells consistent with mucoepidermoid carcinoma and (c) transitional cell-like areas similar to the initial biopsy.

poorly-differentiated cells, mitoses and necrosis.[5] EGFR mutations have been reported in all grades of these tumours.[6,7] It has also been noted that bronchopulmonary MEC have chromosomal abnormalities in common with MEC of the salivary glands. The major chromosomal abnormality in MEC of salivary glands is the translocation t(11;19)(q21;p13) resulting in the fusion of mucoepidermoid carcinoma translocated 1-mammalian mastermind-like 2 genes. This has been detected in MEC of the lung but is not found in other subtypes of NSCLC.[8]

In localised bronchopulmonary MEC, surgical resection is the treatment of choice with re-excision in the case of positive margins.[9] However, adjuvant radiotherapy may be used in the case of positive margins where re-excision is not possible. There are little data on adjuvant chemotherapy after surgical resection. In the metastatic setting, the most common sites of disease are lymph nodes, lung and bone (as in our case), brain and adrenal glands. However, metastases have been noted, in rare cases, to the kidney, pleura, pericardium, muscle, skin and gastrointestinal tract.[10–14] High-grade tumours are thought to be relatively chemotherapy insensitive. Although a varied selection of chemotherapeutic agents and EGFR-targeted tyrosine kinase inhibitors have been administered to small numbers of patients in this setting with contrasting responses,[7,9,15–17] the evidence-base for systemic therapy remains poor.

4. Conclusion

Urothelial carcinoma may be confused with other histologies and MECs are composed of varying proportions of squamous, mucous and intermediate cell types.[5] In our case, the presence of a transitional cell-like area within MEC led to a histological diagnosis on limited biopsy material suggesting urothelial carcinoma. This resulted in preoperative chemotherapy being delivered, which may not have been ideal management. This case demonstrates the importance of the possibility of dual pathology in situations where metastatic disease is suspected radiologically. The inherent heterogeneity of malignant tumours[18] may lead to diagnostic confusion. Therefore, adequate tissue is essential in order to accurately diagnose and optimally treat malignancy.

Conflict of interest

None declared.

Financial disclosure

None declared.

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