



## Letter to the editor

**A unique case of mandibular metastasis from primary lung mucoepidermoid carcinoma**

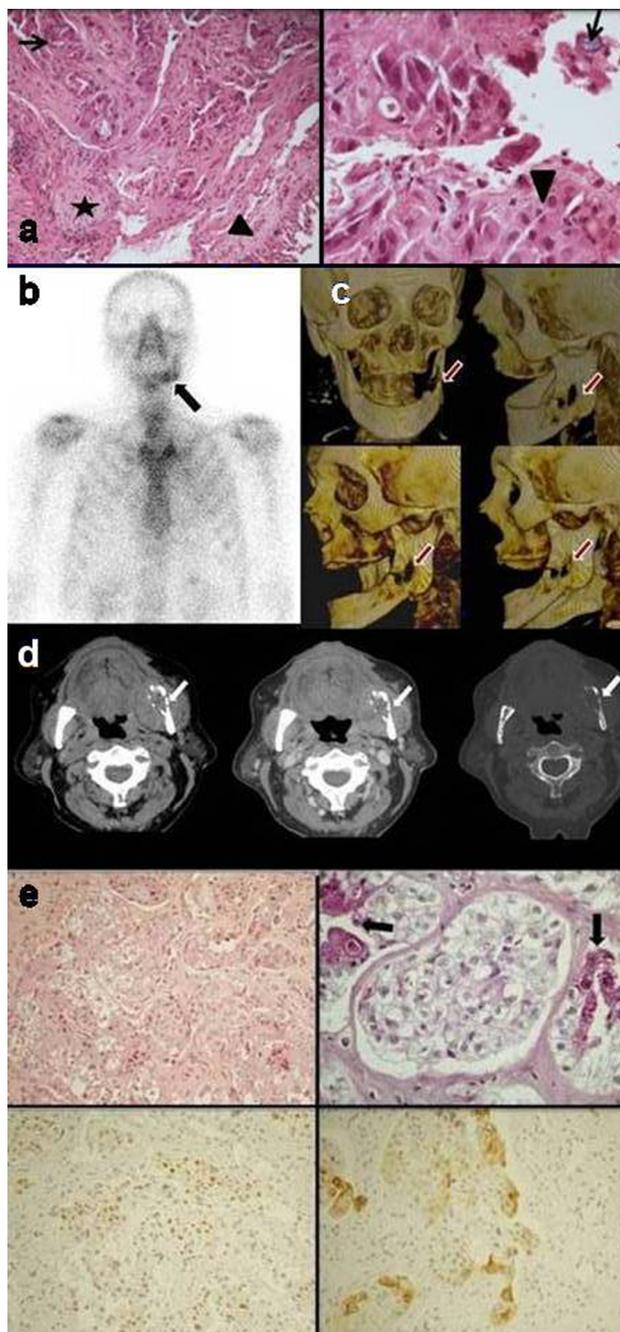
Dear Editor-in-Chief

I would like to describe a unique case of mandibular metastasis from primary lung mucoepidermoid carcinoma.

A 69-year-old man with 10-day history of shortness of breath was found in another hospital to have a mass in his left upper lobe (LUL) on chest CT accompanied by pleural effusion. The patient was transferred to the pulmonary inpatient service of our hospital for further evaluation and treatment. During the initial examination, a facial swelling in the patient's left jaw was noted, which according to his daughter, was probably traumatic due to an i.v pole fallen on his face during his brief hospitalization to the outside hospital. Cytology of the pleural fluid and of the bronchial lavage was consistent with non-small cell lung carcinoma. Bronchoscopy revealed a bronchial mass that was obliterating the LUL. Biopsy of the lesion (Fig. 1a) demonstrated atypical glandular structures with mucin vacuoles, negative for TTF1, accompanied by atypical squamoid cells positive for p63, consistent with non-small cell carcinoma and suggestive of high grade mucoepidermoid carcinoma (MEC).

As part of his evaluation to rule out possible metastatic disease, a Tc99m MDP bone scan was performed (Fig. 1b), which revealed increased osteoblastic activity in vertebrae, as well as very intense radiotracer uptake in the left mandible. Due to the previously reported facial injury, further imaging with CT of the skull was performed, and a corrosive pathologic fracture of the left mandible was depicted (Fig. 1c). There was also soft tissue mass with swelling of the adjacent muscles and mild inhomogeneous contrast enhancement (Fig. 1d). These CT findings were suggestive of a pathologic fracture, related either to metastasis or to an infectious/traumatic etiology. Ear Nose and Throat evaluation showed unremarkable oropharynx and salivary glands. Finally, a direct mandibular biopsy was obtained through an intraoral approach which showed intermediate, squamoid without keratinization and mucin secreting cells arranged in sheets or cords. Nuclear atypia, brisk mitotic activity and necrosis were noticed. Immunohistochemically, the neoplastic cells were positive for cytokeratin 7, cytokeratin 5/6, p63, and negative for TTF1. The special stain PAS diastase revealed mucin secreting elements. The morphological and immunohistochemical features were consistent with high grade mucoepidermoid carcinoma (Fig. 1e).

Pulmonary mucoepidermoid carcinoma is a rare neoplasm, accounting for < 1% of all lung carcinomas [1]. However, primary MEC occur most frequently in salivary glands (52.9%), followed by the oral cavity (23.6%) and bronchopulmonary location (5.9%) [2]. When it is located in the lungs, it usually presents in the fifth decade as a central endobronchial mass. The neoplasm frequently harbors MAML2 rearrangement [3], and it is often a low-grade neoplasm with a 5-year survival of 62.2% [2]. Adverse prognostic factors are older age, male gender, high-grade histology and distant metastases [2]. Epidemiological studies regarding lung MEC metastatic potential are largely lacking. Most case series report a potential for lymph node metastases, while bone metastases are rare, reported in five out of 169 patients with pulmonary MEC [1,4–6]. Establishing a diagnosis of mandibular metastasis from lung MEC metastasis is very difficult, even with comparable histology between lung and mandible sites, as in the present case, because primary osseous MEC of the mandible does exist, yet it is very rare, accounting for < 1% of salivary gland carcinomas [7]. Criteria supporting primary mandibular MEC are the absence of other primary MEC and imaging showing bone destruction with intact cortical plates [8]. Metastases from primary mandibular MEC to other sites, including the lung, are found in 9–12% [7]. In our case, the presence of an endobronchial mass with mediastinal lymphadenopathy and multiple bone metastases highly supported a pulmonary rather mandibular primary, while the absence of any salivary gland tumor excluded salivary glands as the primary site. In general, metastases to the jaw are rare accounting for 1% of oral malignancies; most common primary sites are the breast (21.8%) and the lung (12.6%), followed by adrenal (8.7%), kidney (7.9%), bone (7.4%), colorectum (6.6%), and prostate (5.6%) [9]. Lung primary tumors reported to metastasize to the jaws are squamous cell carcinoma, adenocarcinoma, undifferentiated carcinoma or small cell carcinoma [9]. In an autopsy study of mandibular metastases, most arose from the stomach and lung, and none showed MEC histology [10]. Metastasis of a lung MEC to the mandible has been reported only in one case, to the best of our knowledge [11]. In this case, the diagnosis was only set after autopsy which revealed a bronchial mass with features of MEC accompanied by adrenal gland, lymph nodes, vertebrae and mandibular metastases; the authors reported a very long course of this neoplasm, as the bronchial mass was present in X-ray already twenty years earlier [11].



**Fig. 1.** a: left- The bronchial biopsy reveals an infiltrative neoplasm mostly consisted of acinar structures with mucin secretion (arrow), developing under the bronchial mucosa (arrow head). The tumor also shows perineural invasion (star) (H&EX200); a right- In higher magnification, mucin secreting (arrow) but also squamoid cells (arrowhead) are seen (H&EX600). b: Bone scan, demonstrates a left mandibular metastatic lesion with intense radiotracer uptake (arrow). c: 3D volume rendering reconstructions – bone window & (d), CT of skull cavity depicts a corrosive pathologic fracture of the left mandible (arrows) with swelling of the adjacent muscles. (left – CT soft tissue window before iv contrast; middle – after iv contrast; right – bone window). e: upper panel left – Intraoral biopsy of the mandibular lesion revealed a mucoepidermoid carcinoma similar to the lung primary. Tumor cells were intermediate, squamoid, mucous and clear cell type (H&EX200). Upper panel right – The histochemical stain for PAS diastase reveals the presence of mucin (arrows) in the mucous cells (X400). Lower panel left - The neoplastic cells show immunohistochemical expression for p63 (DABX200) and (lower panel right) cytokeratin 5/6 (DABX200).

In summary, we report a unique case of primary lung MEC metastasizing to the mandible, as proven by histology. Thus, MEC tumors of the lung may occasionally metastasize to the jaw suggesting that salivary gland type tumors of the jaw are not always of primary origin.

#### Declaration of Competing Interest

The authors indicated no potential conflict of interest.

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