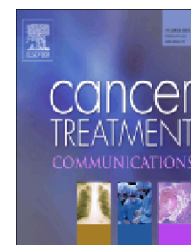


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# Acrometastasis from an epidermal-growth-factor-receptor (EGFR) mutation-positive lung adenocarcinoma



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## KEYWORDS

Acrometastasis;  
Epidermal-growth-factor-receptor (EGFR) mutation-positive;  
Lung adenocarcinoma

## Abstract

We report the first case of epidermal-growth-factor-receptor (EGFR) mutation-positive lung adenocarcinoma with acrometastasis in a 51-year-old woman who presented with a swelling on her right hand. Magnetic resonance imaging revealed an expansile lesion at the base of the 5th metacarpal bone of her right hand with cortical erosion and patchy enhancement suggestive of a malignant transformation of a giant-cell tumor. A core needle biopsy of this lesion showed a metastatic adenocarcinoma on histopathological examination which was immunoreactive to cytokeratin (CK) 7 and thyroid transcription factor (TTF)-1 but not to CK20 suggesting a lung primary. A chest radiograph and computed tomography (CT) scan revealed a right upper lobe lung mass. Fluoro-deoxyglucose hypermetabolism was noted in the lung mass and the right 5th metacarpal bone lesion but not elsewhere on positron-emission-tomography/CT scan. Needle biopsy of the lung mass showed adenocarcinoma with histopathological and immunohistochemical features similar to that of the right 5th metacarpal bone lesion. Both the primary lung adenocarcinoma and the acrometastatic lesion were tested positive for EGFR mutation in exon 21 (L858R substitution). She underwent R0 resection of her right upper and middle lobes with systematic mediastinal lymph nodes resection and wide excision of the metacarpal metastasis followed by cytotoxic chemotherapy. A curative approach with complete resection of the primary tumor and oligometastatic site in Stage IV non-small cell lung carcinoma (NSCLC) followed by additive cytotoxic chemotherapy has not been reported to date and as such there is still no data on disease-free survival with this approach.

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## 1. Introduction

While acrometastasis to the hands is uncommon, the lung remains the most common primary [1]. Acrometastasis from an epidermal-growth-factor-receptor (EGFR) mutant lung adenocarcinoma has not been reported to date.

## 2. Case report

A 51-year-old woman who had never smoked presented to us with a 6-month history of a swelling on the dorsum of her right hand (Fig. 1). A radiograph (Fig. 2) and a magnetic resonance imaging (MRI) of her right hand at another hospital revealed an expansile lytic lesion at the base of the 5th metacarpal bone with cortical erosion suggestive of a malignant transformation of a giant-cell tumor. She was then referred to us. A trucut core needle biopsy of the 5th metacarpal bone lesion revealed poorly differentiated adenocarcinoma which was immunoreactive to cytokeratin (CK)-7 and thyroid transcription factor (TTF)-1 but not to CK20 suggesting a lung primary. Computed tomography (CT) scan revealed a right upper lobe lung mass measuring  $2.3 \times 2.5 \times 3.8 \text{ cm}^3$  (Fig. 3). A positron emission tomography (PET)/CT scan revealed fluoro-deoxyglucose hypermetabolism in the lung lesion and the right 5th metacarpal bone lesion but not elsewhere. Core needle biopsy of the lung lesion showed adenocarcinoma with histopathological and immunohistochemical features similar to that of the right 5th metacarpal bone lesion. Both the primary lung and the acrometastatic lesions were tested positive for EGFR L858R substitution mutation in exon 21. She underwent complete (R0) resection of the right upper and middle lobes with systematic mediastinal lymph nodes resection and a wide excision of the right 5th metacarpal bone albeit a stage IV disease. Post-operative pathological stage was pT<sub>2</sub>N<sub>0</sub>M<sub>1b</sub> R0. She underwent four cycles of cytotoxic chemotherapy with carboplatin and vinorelbine as she could not financially afford EGFR-tyrosine kinase inhibitor (TKI) treatment. A post-treatment PET/CT scan eight months later showed no fluoro-deoxyglucose hypermetabolism suggestive of any locoregional recurrence or distant metastasis.

## 3. Discussion

Acrometastasis to the hands is uncommon, accounting for 0.1% of all bone metastases [1]. Healey et al. reported that most acrometastases involve the dominant hand, as seen in this patient, being the one that receives a larger quantity of blood and possibly the one more likely to be injured than the non-dominant hand [2]. It has been suggested that prostaglandins released following trauma may be responsible for cell migration and adherence to osseous material [3]. The radiological differential diagnosis of an expansile lytic lesion in the hand include metastases from renal cell carcinoma and thyroid malignancy, giant cell tumor and enchondroma with the latter two occurring in the younger age group.

Metastases to hand bones generally indicate very advanced primary tumors with an average survival of six months [4]. Palliative amputation was the preferred treatment in the reported cases [5]. The PET/CT scan of this patient showed only a single distant metastasis to her hand and thus her



Fig. 1 Photograph of the swelling on the dorsum of the right hand.

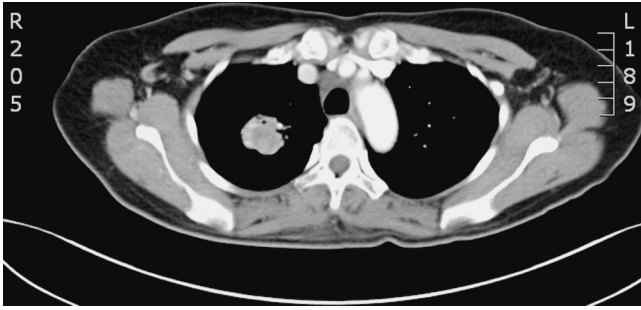


Fig. 2 Radiograph of the right hand shows an expansile lesion at the base of the 5th metacarpal bone.

prognosis is expected to be better. A curative approach with complete resection of the primary tumor and oligometastatic site in stage IV non-small cell lung carcinoma (NSCLC) followed by cytotoxic chemotherapy has not been reported to date. It is unclear whether such an approach results in a similar outcome as NSCLC with solitary brain, lung or adrenal metastasis. In the SELECT (Surgically resected EGFR-mutant Lung cancer with adjuvant Erlotinib Cancer Treatment) multicenter prospective phase II trial, patients with resected stage IA to IIIA NSCLC harboring a TKI-sensitizing EGFR mutation and treated with erlotinib 150 mg daily for 2 years after completion of standard adjuvant chemotherapy and/or radiotherapy had a 2-year disease-free survival of 90% (with a median follow-up of 3 years) compared to a historical control of 76% in resected early-stage EGFR-mutant NSCLC [6].

## 4. Conclusion

In the case of EGFR-mutant lung adenocarcinoma with oligometastasis involving the metacarpal bone, complete resection of the primary lung tumor with amputation or



**Fig. 3** Computed tomography of the thorax shows a right upper lobe lung mass.

wide excision of the affected finger should be considered followed by platinum doublet chemotherapy or EGFR TKI treatment. Such an approach has not been reported to date and the outcome including disease-free survival is still unclear.

### Conflicts of interest statement

None declared.

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