Two synchronous non small cell lung carcinomas with different morphologies in the same lobe

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ABSTRACT

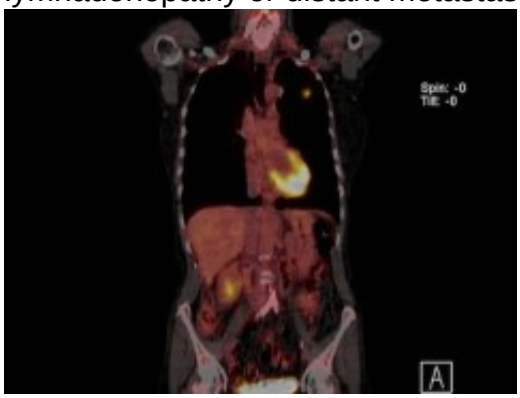
We report the case of a sixty one year old female diagnosed with two synchronous primary lung cancers located within the same lobe. Surgical resection was performed, followed by adjuvant chemotherapy. The patient developed distant bone and skin metastases one year post-surgical resection. In this report we discuss the multimodality therapy used to treat this patient.

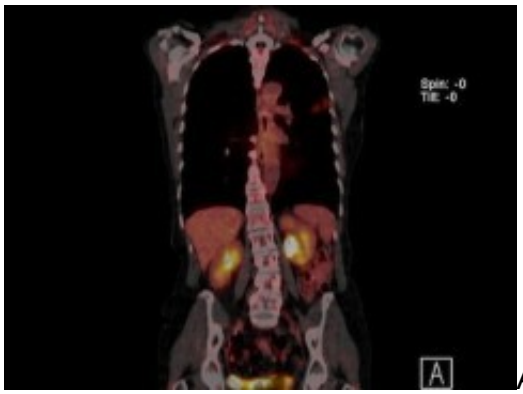
INTRODUCTION

Synchronous primary lung cancers are uncommon and the occurrence of synchronous non small cell lung carcinomas (NSCLC) with different histological morphologies within the same lobe is rare. The aim of this report is to discuss surgical and oncological management of this entity together with a review of the current literature.

CASE REPORT

A 61-year-old female smoker (42 pack years) was found to have left upper zone shadowing on chest X ray following a history of weight loss. Her performance status was 1 with a Forced expiratory volume in one second (FEV1) of 1.94 Litres. Positron emission tomography in conjunction with computed tomography (PET-CT) showed two nodules in the left upper lobe. There was a 2cm spiculated lesion in the anterior segment with a Standardised Uptake Value (SUV) max of 5.6 units (Fig 1A) and a 2.2 cm cavitating lesion in the apico-posterior segment with a SUV max of 2.7 units (Fig 1B). There was no radiologic evidence of mediastinal lymhadenopathy or distant metastases.





A left thoracotomy with upper lobectomy was performed and the intra-operative findings were consistent with the radiological appearances seen in the PET-CT scan. The patient made an uneventful post-operative recovery. Histopathology confirmed the presence of two nodules in the left upper lobe. There was a 2 cm infiltrating squamous cell carcinoma in the anterior segment with vascular invasion (pathological (p) T2a according to TNM 7th Edition) and a separate 2.4cm adenocarcinoma with associated broncho-alveolar spread in the apical segment (pT1b). An adjacent peribronchial lymph node was positive for tumour (pN1), however due to the poorly differentiated morphology of the tumour cells it was unclear as to which tumour it originated. The vascular and bronchial resection margins were clear (R0). Cisplatin and Vinorelbine adjuvant chemotherapy was administered with no overt complications; however recurrence of the disease was discovered radiologically one year post-operatively in the form of a left hilar soft tissue mass with bony metastases. The patient subsequently received radiotherapy without complications but a staging CT chest/abdomen/pelvis performed three months later showed progressive disease with left lung collapse in addition to multiple, palpable subcutaneous nodules. These features were in keeping with the patient's symptoms of worsening breathlessness and wheeze. Further investigations including bronchoscopy showed a tumour in left main bronchus which was treated with laser ablation and placement of a tracheo-bronchial stent. One of the subcutaneous nodules from the left axillary region was biopsied. Histological assessment of this nodule showed a poorly differentiated adenocarcinoma, which was confirmed with immunohistochemical techniques. Specialist genetic analysis of the subcutaneous lesion was performed, which showed the presence of an EGFR mutation sensitive to anti-EGFR tyrosine kinase inhibitors. This enabled the oncologists to use monoclonal antibody therapies (anti EGFR TKI) and the patient was treated for one month with Iressa (Gefitinib). She responded well with significant decrease in the size of the metastatic subcutaneous nodules. Due to her progressive disease the patient deceased with an overall survival (from the time of the lung resection) of 20 months.

DISCUSSION

Synchronous primary lung cancers (SPLC) were first described in 1924 by Beyreuther H (1). The true incidence of these remains uncertain but evidence has shown figures between 1% to 8% (2). The criteria for the diagnosis of SPLC, which was proposed by Martini and Melamed in 1975, are that synchronous tumours are physically distinct and that the histology is different Surgical resection of SPLC was recommended by many of the reviewed authors (3-5). Rostad et al studied the outcome and characteristics of synchronous primary lung cancers. In 15,308 lung cancer resection cases, 94 patients were found to have synchronous non small

cell lung cancers, NSCLC, 9 patients had synchronous lung cancers with different histological morphologies and only 2 (0.01%) patients had synchronous lung cancers with different histological morphologies within the same lobe. The relative survival rate in patients with different histological morphologies (n=9) was 12.7%. Patients with similar morphologies had a better outcome with a relative survival rate of 29.2%, although the difference was not statistically significant (p=0.24). The authors concluded that surgical resection should be offered to patients with synchronous lung cancers who are operable with respectable tumour. (3) Lymph node metastases were found to be a statistically significant prognostic factor. In a study of 92 patients who had surgical resections for multiple synchronous primary lung cancers, the results showed the 5-year survival were 52.5% and 15.5% for patients without and with lymph node metastasis respectively (P=0 .001). (3) Skin metastases from lung cancers are not uncommon, and their presence is a poor prognosis factor (6). Recently anti-EGFR TKI molecules have been introduced for the treatment of advanced malignancies including lung cancers, however long term treatment resistance remains a therapeutic challenge. Our patient had a disease free survival of 12 months post surgery despite a positive lymph node, but she later developed recurrence with distant subcutaneous metastases and an endobronchial mass, which was treated palliatively. She received anti EGFR1-TK inhibitors based on genetic analysis from the metastatic adenocarcinoma subcutaneous lesions and her initial response was good. Patients with resectable synchronous primary non small cell lung carcinomas within the same lobe should be offered surgical resection after careful pre-operative staging. Skin metastases should be biopsied and EGFR testing should be requested in order to determine the originating the tumour and to assess the patients' suitability for anti EGFR-TKI treatment.

REFERENCES

1. Beyreuther H. Multipicate von carcinomen bei einem fall von sog. Schenecberger Lungenkrebs mit tuberkulose. Virchows Arc. 1924; 250:230-43
2. Martini N, Melamed MR. Multiple primary lung cancers. The Journal of Thoracic and Cardiovascular Surgery. 1975; 70:606-612
3. Rostad H, Strand T, Naalsund A, Norstein J. Resected Synchronous Primary Malignant Lung Tumors: A Population-Based Study. Ann Thorac Surg 2008; 85:204 –10
4. Okada M, Tsubota N, Yoshimura M, Miyamoto Y. Operative approach for multiple primary lung carcinomas. J Thorac Cardiovasc Surg 1998;115:836-840
5. Chang Y, Wu C, Lee Y. Surgical treatment of synchronous multiple primary lung cancers: Experience of 92 patients. J Thorac Cardiovasc Surg 2007;134:630-7
6. Kamble R, Kumar L, Kochupillai V, Sharma A, Sandhoo MS, Mohanti BK. Cutaneous metastases of lung cancer. Postgrad MedJI 1995; 71: 741-743