Respiratory Medicine Case Reports 31 (2020) 101270

Contents lists available at ScienceDirect

Respiratory Medicine Case Reports

journal homepage: http://www.elsevier.com/locate/rmcr

Case report

A rare case of synchronous multiple primary lung cancer with different responses to gefitinib

Che-Chi Liao [a], Yu-Sen Lin [b,c], Yu-Chao Lin [b,d,e], Chiao-Jen Cheng [a], Shuo-Chueh Chen [d,f,*]

[a] Department of Internal Medicine, China Medical University Hospital, Taichung, 404, Taiwan
[b] Graduate Institute of Clinical Medical Science, China Medical University, Taichung, 404, Taiwan
[c] Division of Thoracic Surgery, Department of Surgery, China Medical University Hospital, Taichung, 404, Taiwan
[d] Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, China Medical University Hospital, Taichung, 404, Taiwan
[e] School of Medicine, China Medical University, Taichung, 404, Taiwan
[f] Department of Respiratory Therapy, College of Health Care, China Medical University, Taichung, 404, Taiwan

ARTICLE INFO

Keywords:
Lung cancer
Multiple primary
Synchronous
Gefitinib

ABSTRACT

Differentiating multiple primary lung cancer (MPLC) from lung metastasis is important, and the pathology and gene mutations may be different between the tumors. A lung biopsy to differentiate lesions should be considered, especially when the response of different tumors to treatment is distinct.

1. Introduction

Lung cancer is the leading cause of cancer-related death worldwide. In Taiwan, lung cancer causes over 9000 deaths annually. Most lung cancers are non-small cell lung cancers, of which adenocarcinoma is the most prevalent. Multiple primary lung cancer (MPLC), which can be classified into synchronous or metachronous, is uncommon, however the frequency has been increasing in recent years due to the widespread use of early detection tools such as low-dose computed tomography (LDCT) [1]. Herein, we report a rare case of synchronous multiple primary lung cancer (SMPLC) involving adenocarcinoma and carcinosarcoma, with different locations, image findings, histology, status of epidermal growth factor receptor (EGFR) mutations, programmed death-ligand 1 (PD-L1) mutations, and responses to gefitinib.

2. Case presentation

A 66-year-old man presented to our clinic with chronic cough and worsening dyspnea on exertion. He was a lathe worker and had a smoking history of 40 pack years. A plain chest X-ray revealed one nodular lesion in the right upper zone and another nodule in the left upper zone. Further workup with chest computed tomography (CT) also showed two solid nodules in the right upper lobe (RUL) and left upper lobe (LUL) (Fig. 1a), and another two part-solid ground-glass nodules in the LUL and left lower lobe (LLL) (Fig. 1b). He underwent a CT-guided lung biopsy of the LUL solid nodule, which revealed adenocarcinoma. In addition, EGFR analysis revealed the presence of L858R and PD-L1 (weakly positive TPS: 5%) mutations, and negative results for anaplastic lymphoma kinase (ALK) mutations. Positron emission tomography (PET) showed intensely increased FDG-uptake in the two solid nodules, and moderately to intensely increased FDG-uptake in the other two part-solid ground-glass nodules (GGNs), as well as in the bilateral interlobar, right para-tracheal, and subcarinal lymph nodes.

The patient was started on gefitinib according to the positive EGFR mutation results. Follow-up chest X-ray and CT after target therapy showed a partial response in the LUL tumor, however the RUL mass had become larger (Fig. 2a). Right upper lobe thoracoscopic lobectomy was performed, and pathologic report revealed undifferentiated carcinosarcoma.

We maintained target therapy with gefitinib, and a follow-up CT 3 months later showed that the target lesion in the LUL had become smaller. However, the other LUL/LLL part-solid GGNs had become mildly enlarged (Fig. 2b), while there was no tumor recurrence in the right lung. Thoracoscopic segmentectomy of S1-3 and wedge resection of segment 6 were performed, and the pathology reports showed that both lesions were moderately differentiated adenocarcinoma. In addition, EGFR, ALK, ROS1, PDL1 mutations were all negative. The patient received four cycles of adjuvant chemotherapy with carboplatin and

* Corresponding author. No. 2 Yu Der Road, Taichung, 404, Taiwan.
E-mail address: scchen18@gmail.com (S.-C. Chen).

https://doi.org/10.1016/j.rmcr.2020.101270
Received 31 August 2020; Received in revised form 20 October 2020; Accepted 20 October 2020
Available online 24 October 2020

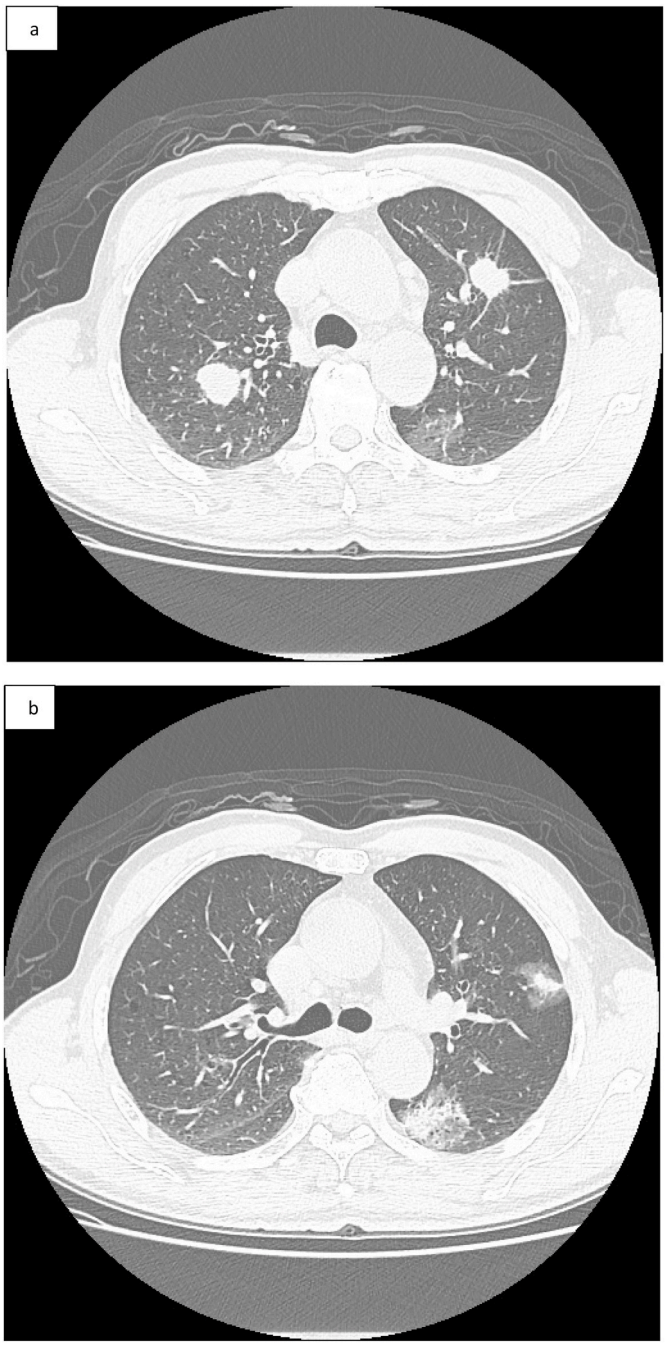

Fig. 1. a/1b: Chest CT demonstrated LUL and RUL solid nodules (1a) and LUL and LLL part-solid GGO lesions (1b).

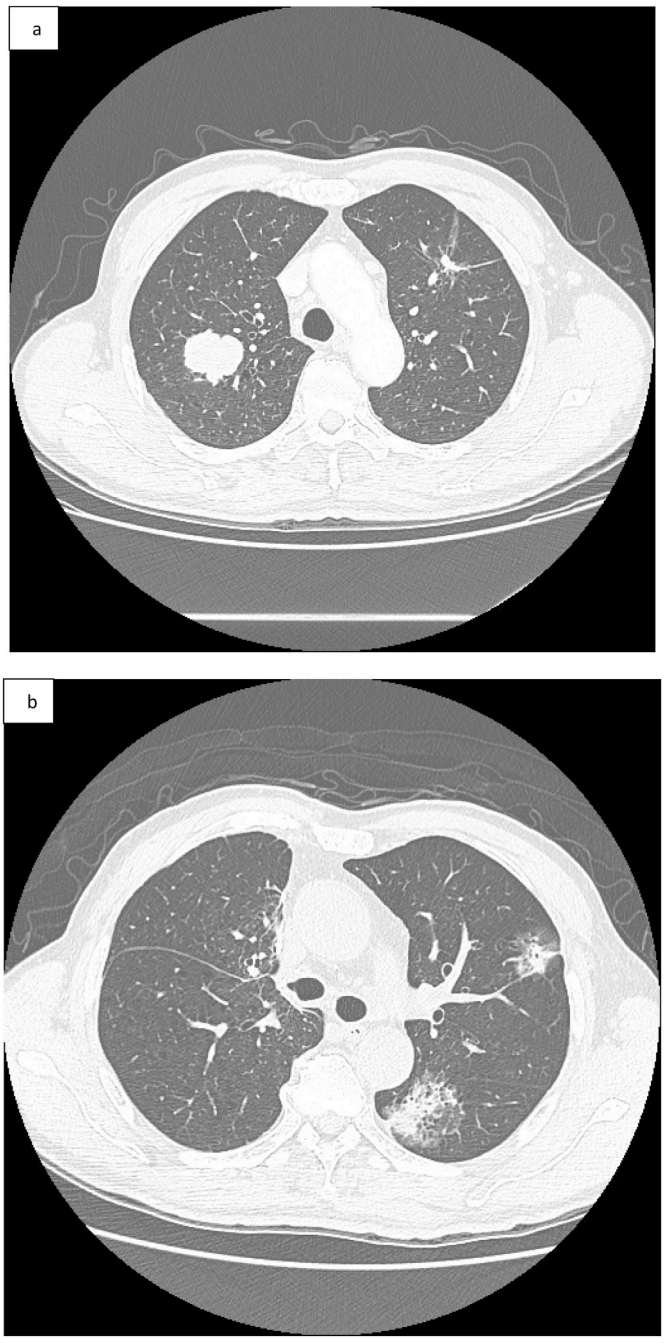

Fig. 2. a/2b: Follow-up chest CT demonstrated that the LUL lung cancer had become smaller, but that the RUL tumor had become larger (2a); and the LUL/LLL part-solid GGOs had become mildly enlarged (2b).

vinorelbine, and follow-up chest X-ray and CT showed no tumors.

3. Discussion

SMPLCs represent 19.6%–40% of MPLC patients [2]. The diagnosis of SMPLC might be delayed due to its similarity with neoplasm metastasis, and therefore separate biopsies for various pulmonary masses should be performed [3]. The prognosis of SMPLC patients is similar to that of metachronous MPLC patients [4].

Declaration of competing interest

The authors have no affiliation with any organization with a direct or indirect financial interest in the subject matter discussed in the manuscript.

References

[1] Trousse, et al., Synchronous multiple primary lung cancer: an increasing clinical occurrence requiring multidisciplinary management, J. Thorac. Cardiovasc. Surg. 133 (2007) 1193–1200.
[2] Marc Riquet, et al., Multiple lung cancers prognosis: what about histology? The Annals of thoracic surgery 86 (2008) 921–926 ·.
[3] Xue Xinying, et al., Early clinical diagnosis of synchronous multiple primary lung cancer, Oncol Lett 3 (2012) 234–237.
[4] Long Jiang, et al., Prognosis of synchronous and metachronous multiple primary lung cancer: systemic review and meta-analysis, Lung Canc. 87 (2015) 303–310.