Multiple synchronous primary tumours in a single lobe

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Abstract
We present the case of a 70-year-old man with three synchronous histologically different primary tumours in the same lobe. He initially presented with an intermittent productive cough, dyspnoea and non-specific abdominal pains. Radiological investigation revealed three areas of high-intensity fludeoxyglucose uptake of varying size within the right upper lobe. He underwent thoracoscopic right upper lobectomy. Histological analysis confirmed the three lesions to be undifferentiated squamous cell carcinoma, adenocarcinoma and atypical adenomatous hyperplasia. The reclassification of the T descriptors of the tumour-node–metastasis staging of a lung cancer has lead to the transition of classification of tumour nodules in the ipsilateral primary tumour lobe from T4 to T3. In the case of our patient, this has lead to the downstaging of the tumour allowing consideration for surgical management.

Keywords: Lung cancer surgery • Lobectomy • Positron emission tomography • Histology

INTRODUCTION
The incidence of synchronous primary lung tumours is reported around 0.2–20% [1] and has been increasing recently due to the widespread use of imaging modalities such as multislice spiral computed tomography (CT), fluorescence endoscopy and positron emission tomography (PET) scanning. The simultaneous detection of more than one pulmonary nodule in patients with a lung cancer raises the clinical dilemma of whether these lesions represent intrapulmonary metastases that migrated from the same origin or the secondary primary lung tumours. The criteria proposed by Martini and Melamed [2] in 1975 for the diagnosis of synchronous multiple primary lung tumours are still commonly used and are primarily based on the histological characteristics of the tumours, location, presence or absence of carcinoma in situ, vascular invasion, metastasis and other empirical features without the biological and molecular bases. Herein, we present the first reported case of three synchronous histologically different primary tumours in the same lobe.

PATIENTS AND METHODS
A 70-year-old man initially presented to his general practitioner with an intermittent productive cough, dyspnoea on moderate exertion and non-specific abdominal pains. Radiological investigation in the form of chest roentgenogram and CT revealed the presence of right upper lobe spiculated nodules, prompting PET scanning. This revealed three areas of high-intensity fludeoxyglucose (FDG) uptake of varying size within the right upper lobe; a 2.8-cm mass with SuV 18.0, a separate 1.9-cm soft tissue opacity lateral to this mass with SuV 8.0 and a further 9-mm nodule superiorly with SuV 5.4 (Fig. 1). There was also associated intermediate intensity FDG uptake in the mediastinal nodes (SuV 3.6). A further relatively large focus of the high-intensity FDG uptake (SuV 13.4) was detected in association with the thickening of the descending colon just below the pelvic brim. This finding prompted a thorough colorectal investigation in the form of two separate flexible sigmoidoscopies revealing only mild diverticular disease. A multidisciplinary team decision was reached in favour of surgical resection and the patient underwent thoracoscopic right upper lobectomy. A flexible bronchoscopy was carried out revealing no visible endobronchial lesions. The surgical procedure was performed under general anaesthesia with single-lung ventilation and the examination of the thoracic cavity by means of thoracoscopy revealed the location of the two largest nodules. Right upper lobectomy was performed by division using endostaplers. Mediastinal and hilar lymph node stations R4 and 10 were sampled. Histological analysis of the resected lung tissue revealed the largest lesion to be a poorly differentiated non-small cell carcinoma, immunohistochemically squamous (pT1b, N0), the next lesion to be adenocarcinoma with a peripheral bronchiole–alveolar pattern of spread (pT1a, N0) and the smallest lesion to be atypical adenomatous hyperplasia. The position of all three nodules correlated with that of the hypermetabolic lesions on pre-operative imaging. Histological analysis of the sampled lymph nodes revealed no evidence of tumour. The patient made an initial uneventful recovery, however, on the seventh post-operative day developed generalized abdominal distension and peritonism raising the suspicion of intra-abdominal perforation. CT imaging revealed this to be of probable diverticular origin, and urgent laparotomy and sigmoid colectomy were performed. Histological analysis of the resected segment of the bowel revealed diverticulitis with evidence of abscess formation. The patient made a successful recovery following the second operation and no recurrence was observed during the 3-month follow-up period.

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and it is often difficult to determine whether multiple lesions represent multifocal lung cancers or intrapulmonary metastases. The use of adjuvant chemo- or radiotherapy has been shown to improve the 3-year survival in comparison with patients not undergoing adjuvant therapy (66.7 vs. 56.3%) [6], and poorer 5-year survival has been demonstrated with pneumonectomy rather than lobectomy/segmentectomy (27 vs. 71%) [6]. The operative mortality in these patients ranges from 1.1 to 7.6% [5, 6]. Long-term survival after resection for patients with synchronous primary lung tumours has been reported to be better than that of patients with a tumour classified as stage IIIIB or IV for reasons other than synchronous tumours [7]. Considering this observed survival advantage, surgical resection is presumed to offer the best chance for prolonged survival in these patients; however, the controversies related to diagnosis and patient selection for surgical resection still exist. The seventh revision of the International Association for the Study of Lung Cancer (IASLC) tumour-node-metastasis (TNM) staging of the lung cancer [8] has lead to alterations in the classification of the T and M descriptors of the staging system. T4 tumours with additional nodule(s) in the same lobe of the primary tumour have been reclassified as T3; and M1 tumours with additional nodules in another ipsilateral lobe have been reclassified as T4 tumours. In the case of our patient, this has lead to the downstaging of the tumour from T4 to T3 and as a result has allowed consideration for surgical resection. We present the first reported case of three synchronous histologically different primary tumours in the same lobe with supporting evidence of the efficacy of the new TNM classification in increasing the applicability of surgical resection for the treatment of the lung cancer.

Conflict of interest: none declared.

REFERENCES