Case report

Sequential right upper sleeve lobectomy and left pneumonectomy for bilateral synchronous lung cancer

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Abstract

Bilateral pulmonary resections can be performed in patients with synchronous non-small cell lung cancers. However, pneumonectomy and lobectomy in the same patient is still an arguable approach. We report a successful sequential right upper sleeve lobectomy and left pneumonectomy performed in a 47-year-old male patient who had bilateral synchronous primary lung cancer.

Keywords: Lung cancer; Synchronous lung cancer; Pneumonectomy; Lobectomy

1. Introduction

The incidence of synchronous lung cancer (SLC) is increasing due to the common use of new diagnostic technologies such as spiral computed tomography (CT) and positron emission tomography (PET). Bilateral lung resections for SLC in earlier stages have been reported to be associated with prolonged survival [1,2]. However, performing pneumonectomy and lobectomy in the same patient is controversial. We present a patient who underwent sequential right upper sleeve lobectomy and left pneumonectomy for bilateral non-small cell lung cancer (NSCLC).

2. Case report

A 47-year-old male patient admitted with bloody sputum expectoration for 5 days. He had smoking history of 38 years, and both his parents had died of lung cancer. Physical examination was normal except for decreased breath sounds in the left chest.

The CT of the chest showed a 4 cm tumor in the left hilum and a 1 cm nodule at the right upper lobe division (Fig. 1A). An endobronchial tumor in the left main bronchus and a submucosal tumor invasion at the right upper lobe bronchus entrance were observed by auto-florescence bronchoscopy. Pathological results of the biopsies taken from both sides were squamous cell carcinoma. The PET-CT showed increased fluorodeoxyglucose uptakes in both lesions (Fig. 1B) and no metastasis in other body regions including the lymph nodes. There was no metastasis on magnetic resonance imaging of the brain.

Forced expiratory volume in the 1st second (FEV1) and carbon monoxide diffusing capacity (DLCO) were 67% (2.30 l) and 68% of predicted, respectively. Quantitative perfusion lung scan (QPLS) revealed 81%, 19% and 14% perfusion rates in the right lung, left lung and right upper lobe field, respectively. The predicted postoperative (ppo) FEV1 was 45% (1.54 l) for left pneumonectomy and right upper lobectomy. Cardiologic examination with echocardiography revealed no pathology. The patient accepted the surgical option after discussing the possible outcomes and consequences of the available alternatives for the management of his disease.

There was no metastasis in the pathological examination of the lymph nodes taken by standard cervical mediastinoscopy. Right upper lobe sleeve resection with lymph node dissection was performed via thoracotomy. Postoperative course was uneventful and pathology revealed a R0 resection for T2N0 squamous cell carcinoma.

Three weeks later, the FEV1 and DLCO values were 62% (2.15 l) and 64% of predicted, respectively. Total perfusion of the left lung was 22% in QPLS. The ppo-FEV1 for left pneumonectomy and right upper lobectomy. Cardiologic examination with echocardiography revealed no pathology. The patient accepted the surgical option after discussing the possible outcomes and consequences of the available alternatives for the management of his disease.

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Three weeks later, the FEV1 and DLCO values were 62% (2.15 l) and 64% of predicted, respectively. Total perfusion of the left lung was 22% in QPLS. The ppo-FEV1 for left pneumonectomy was 48% (1.67 l). With these results, left pneumonectomy with lymph node dissection was performed via thoracotomy for the tumor invading the distal part of the left main bronchus. On postoperative day 5, the patient developed dyspnea, and his chest X-ray showed pulmonary
infiltrates in the right lower lobe area. Antibacterial therapy and respiratory rehabilitation were applied and the patient was discharged from hospital on the 11th postoperative day. Pathological examination revealed a T2N1 (1 metastatic lymph node in station 11) squamous cell carcinoma with tumor-free margins. The patient received adjuvant chemotherapy and he now has no significant discomfort in his regular daily activities 7 months after the operations. Fig. 2 displays his computed chest tomography 5 months after the second operation.

3. Discussion

Distinguishing two lung cancers in the same histology in one patient as 'synchronous' or 'one tumor being a metastasis of the other' has always been a debate. Martini and Melamed defined two cancers in the same histology in the lung as SLC if; (a) the two tumors locate in different segments, lobes, or lungs, (b) they originate from the carcinoma in situ, (c) no carcinoma in the lymphatics common to both is present and, (d) extrapulmonary metastases at the time of diagnosis are absent [3]. In regard to this description, we accepted our patient who had bilateral endobronchial lung cancers as having SLC.

When the tumors are resectable, wedge or segmental resection is generally preferred for peripherally located small-sized tumor if pneumonectomy is necessary for the tumor on contralateral lung in patients with bilateral SLC. However, there is no other curative option but a lobectomy when the smaller tumor locates in a lobar bronchus. Undoubtedly, right pneumonectomy and left upper or lower lobectomy cannot be a surgical alternative for any patient with any pathology; yet, as a common practice, patients who need a left pneumonectomy and right upper lobectomy for bilateral SLC are also considered as 'unresectable'. Even one of the largest series that included 125 patients with multiple synchronous lung cancer published in 2007 comprised no patient who underwent pneumonectomy and lobectomy for their lung cancers [4]. However, there exist a few cases of left pneumonectomy and a lobectomy in the right side with a good postoperative outcome in the literature [5–7].

The 5-year survival after pulmonary resection in patients with multiple lung cancers was reported to be between 6% and 41% in regard to the extent of disease [1–4]. For this reason, only those patients with stage I or II NSCLC are recommended to opt for surgery for multiple lung cancers after undergoing work ups including QPLS, searching for distant metastatic diseases, and invasive staging [1,2,4–6]. For such patients with bilateral endobronchial tumors in whom the tumor on the left can be removed by pneumonectomy and that on the right by lobectomy, we recommend that the lobectomy side be explored first. This approach avoids an unnecessary pneumonectomy in the left when operative findings in the right side reveal that the tumor cannot be removed completely by a lobectomy.

4. Conclusion

This current case shows that a successful sequential right upper lobectomy and left pneumonectomy for bilateral SLC could be achieved in selected patients who have good pulmonary function. However, large series are necessary to evaluate its accurate place in the management of lung cancer.

References