Extremely Didactic Experience About the Postoperative Recurrence of Lung Cancer: a Case Report

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Abstract

We often encounter the postoperative recurrence of lung cancer. It is generally diagnosed based on the clinical course and the results of imaging studies, such as computed tomography (CT) and positron emission tomography (PET). The organization diagnosis is often not done. We present the case of a patient who was treated for the postoperative recurrence of lung cancer that was later proven by biopsy to be a second lung cancer. It is possible that cases of a second cancer, like ours, are overlooked because they are incorrectly classified as postoperative recurrences of lung cancer based on the clinical course and imaging findings. However, when we encounter a case of suspected postoperative recurrence, we should also consider that it could be a second lung cancer.

Keywords Lung cancer · Recurrence · Second cancer · Second biopsy

Introduction

It is deemed desirable to diagnose the recurrence based on a pathological diagnosis. However, it is often difficult to obtain a biopsy because of the rejection of biopsy, such as bronchoscopy, or because the recurrence is in a location that is difficult to biopsy. Thus, we generally diagnose recurrences based on the clinical course and imaging findings.

Here, we present a case in which we originally treated a patient for the postoperative recurrence of lung cancer and then later learned that the patient was actually experiencing a second lung cancer.

Case Findings

A 55-year-old Japanese man with clinical stage IIIA (cT2bN2M0) squamous cell lung carcinoma (Fig. 1a–c) was admitted to our hospital. Squamous cell carcinoma-related

antigen (SCC) was 10.8 ng/mL, soluble cytokeratin-19 fragment (CYFRA) was 7.3 ng/mL, gastrin discharge peptide precursor (ProGRP) was 51.9 pg/mL, and nerve specific enolase (NSE) was 18.9 ng/mL. PET indicated an abnormal accumulation at the primary lesion and subcarinal lymph nodes. Six cycles of concurrent preoperative chemotherapy and radiotherapy were performed. After this treatment, his computed tomography (CT) showed that his carcinoma reduced enough to be resectable. Thus, we performed right middle and lower lobectomy with partial resection of the pericardium and lymph node dissection. The postoperative diagnosis was squamous cell carcinoma (ypT1bN0M0, stage IA). There were no findings of another histological type. In addition, he underwent 2 cycles of adjuvant chemotherapy. Eighteen months after the operation, his follow-up CT revealed a tumor in the right lung and an enlarged mediastinal lymph node, and PET indicated an abnormal accumulation at the same site (Fig. 1d–g). Thus, we diagnosed him with a postoperative recurrence. At this time, SCC was 1.1 ng/mL, CYFRA 1.2 ng/mL. Other tumor makers were not measured. He received 2 regimens of the systemic chemotherapy. However, many metastases in the liver and left adrenal gland were observed on CT. Moreover, the enlarged mediastinal lymph node had obstructed the right superior lobe bronchus. A biopsy using bronchoscopy of the lymph node indicated small cell carcinoma (the carcinoma cells were diffusely positive for synaptophysin, thyroid transcription factor-1, and CD56, focally positive for

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Fig. 1 Pre-therapeutic CT (a–c). The tumor is localized to the right lower lobe with involvement in the hilar lymph nodes (a, b). The subcarinal lymph nodes are enlarged (c). CT and PET 18 months after the surgery (d–g). The tumor emerged on the right upper lobe and the right hilar lymph nodes were enlarged near the resection stump (d, e). The same sites had abnormal 18-fluorodeoxyglucose uptake (f, g)

chromogranin G, whereas negative for p40.). In addition, SCC was 0.5 ng/mL, CYFRA 2.0 ng/mL, Pro GRP was 577 ng/mL, and NSE was 23.3 ng/mL. Thus, what we thought was a postoperative recurrence was actually a second primary lung cancer (cT1aN1M0, stage IIB).

Discussion

We present an extremely illustrative case. Initially, when postoperative follow-up CT showed a tumor in the right upper lung and an enlarged mediastinal lymph node, we assumed that the patient was experiencing postoperative recurrence because of only 1.5 years following the surgical treatment of the cancer and the focus was close the primary site. As a matter of fact these tumors, we diagnosed as the recurrence, were the second primary lung cancer (small cell carcinoma). It is possible that such cases are overlooked for many patients, as they may initially be incorrectly diagnosed with a postoperative recurrence of lung cancer. In addition, it was said that second primary cancers developed less frequently than recurrences did [1]. In recent years, the incidence of second primary lung cancers have increased due to the increase of long-surviving patients after resection of primary lung cancer and the development of diagnostic modalities [2]. However, it was said that the incidence of second primary lung cancer after complete resection was only 1 to 6% per year [1, 3, 4]. It was said that a large majority of the second primary lung cancers have a similar histological type to the first primary [5, 6]. On the other hand, the second lung cancer with

different histology is a very rare [7, 8]. However, we bear in mind that the cases, like our case, remain in existence when the recurrence is suspected because therapeutic strategy is very widely with the histological type of the cancer.

There are two things that should have been done better in this case. First, when we suspected the postoperative recurrence of lung cancer based on follow-up CT findings, a wide variety of serum tumor marker tests should have been done. The preoperative serum tumor markers levels of squamous cell carcinoma were abnormally high. On the other hand, when we diagnosed him with recurrence postoperative these markers were normal. At this point, we should have considered the possibility of a second primary lung cancer and of measuring other tumor markers. Second, we should have performed a biopsy of the tumor or the enlarged lymph node. Importantly, physicians should consider the possibility of a second lung cancer when encountering such patients.

It is possible that the small cell carcinoma had existed before the surgery. We could not find any evidences of small cell carcinoma from the surgical specimen. In addition, the serum tumor markers of small cell carcinoma were at normal levels before the surgery. Because of these findings, the existence of small cell lung cancer was presumed to be negative.

This case cannot completely deny the possibility of radiation-induced malignancy [9]. Our case was of a small cell lung cancer that developed in the irradiated field. In Japan, it has been reported that the average incubation period of radiation-induced carcinogenesis was 17.7 years [10].

We concluded that the reasons why cases such as ours are rare are not only because of the abovementioned factors but also because, in routine care, physicians can overlook the

possibility of a second lung cancer in patients who appear to have a postoperative recurrence of lung cancer.

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