Case Report

Benign Lesions Mimicking Local Recurrence after Lung Cancer Segmentectomy

Yuki Takahashi¹, Mitsuhiro Tsujiwaki², Masahiro Miyajima¹, Taijiro Mishina¹, Makoto Tada¹, Ryunosuke Maki¹ and Atsushi Watanabe*¹

¹Department of Thoracic Surgery, Sapporo Medical University, School of Medicine and Hospital, South 1, West 16, Chuo-ku, Sapporo, Hokkaido, Japan
²Department of Surgical Pathology, Sapporo Medical University, School of Medicine and Hospital, South 1, West 16, Chuo-ku, Sapporo, Hokkaido, Japan

ABSTRACT

We report two cases of benign lesions mimicking local recurrence after lung cancer segmentectomy. Positron emission tomography (PET) and computed tomography (CT) revealed new nodules with abnormal uptake in the remaining lobes; they were found to be benign lesions. In the first case, the new nodule reduced during the clinical course of the patient. In the second case, completion lobectomy was performed as the intraoperative frozen section diagnosis was malignancy three years after the segmentectomy. These cases suggest that oncologist should consider the possibility of benign lesions mimicking local recurrence in the remaining lobes after segmentectomy for lung cancer.

© 2018 Atsushi Watanabe. Hosting by Science Repository. All rights reserved.

Case Presentation

The number of radical and anatomical pulmonary segmentectomies performed in cases of early lung cancers with small tumor sizes has been increasing recently in Japan [1, 2]. Segmentectomy is useful for preserving respiratory function; however, the rate of local recurrence of lung cancer is higher for segmentectomy than for lobectomy [3]. The detection of new solitary pulmonary nodules during follow-up after a surgery for lung cancer, especially after limited resection, poses a diagnostic challenge. Positron emission tomography (PET) and computed tomography (CT) is used extensively for the clinical characterization of solitary pulmonary nodules and to differentiate between malignant and benign lesions [4]. However, PET-CT is associated with a high false positive rate in cases of inflammatory lesions, which can lead to unnecessary surgical treatment [5]. We report the cases of two patients with lesions mimicking local recurrence with abnormal uptake on PET after segmentectomy for primary lung carcinomas.

Case Reports

Patient 1

A 69-year-old woman underwent right medial basal segment (segment 8) segmentectomy and node dissection for T1aN0M0 adenocarcinoma visualized as a pure ground-glass opacity (GGO) in a preoperative CT scan. Three years post-surgery, a new solitary pulmonary nodule with a maximum standardized uptake value (SUV max) of 9.1 on PET appeared in the remaining lobe (segment 7), and local recurrence was suspected.
lesions were T1N0M0 lung cells due to st should consider the:ive mycology culture.

Surgical Case Reports

mycobacterial disease and granuloma caused by an inflammatory mycobacterial disease, but the acid-fast bacteria stain was negative. It is conceivable that the inflammation image with the lymphocytic infiltrate showed the abnormal uptake on PET. We included atypical mycobacterial disease and granuloma caused by an inflammatory response to the sutures and stapler used in the first surgery in the differential diagnosis. A mycobacterial culture of the patient’s sputum sample should have been examined before the surgery to diagnose or rule out tuberculosis and atypical mycobacterial disease; however, this was not done in this case because we did not suspect these conditions based on the non-inflammatory reaction in the blood chemistry. Granulomas caused by an inflammatory response to staple lines and tissue degeneration with an energy device occur frequently during segmentectomies because of the resection between lung segments.

An intraoperative frozen section diagnosis is recommended to decide which surgical treatment is needed for lesions suspected to be recurrence after surgeries for lung cancer. In the case of patient 2, the intraoperative frozen section diagnosis was malignancy as the needle biopsy of the tissue samples revealed cells with larger nuclei, dark-stained chromatin, and a high nucleo-cytoplasmic ratio. The final pathological diagnosis however was epithelioid granuloma with necrosis. The atypical cells that had been suspected as carcinoma cells in the intraoperative frozen section diagnosis were in fact enlarged alveolar epithelial cells due to inflammation or bronchiole cells crushed by needle biopsy. Completion lobectomy is extremely difficult, especially after a segmentectomy. Nevertheless, it must be performed when the intraoperative frozen section indicates a malignancy during surgeries for lesions suspected to be local recurrence. It is possible that an intraoperative frozen section diagnosis is more accurate for wedge resection tissue samples.

In conclusion, our report suggests that oncologist should consider the possibility of benign lesions showing abnormal uptake on PET and mimicking local recurrence in the remaining lobes after segmentectomy for lung cancer. Further studies should establish the optimal diagnosis and treatment for new solitary pulmonary nodules suspected of local recurrence after segmentectomies in cases of lung cancers.

Disclosures

The authors declare that they have no conflicts of interest. Ethical approval was not required for a case report. The patient gave informed consent before being included in this report.

Figures

Figure 1: Computed tomography scan showing a solitary pulmonary nodule in the remaining lobe (segment 7) after right medial basal segment (segment 8) segmentectomy (A) and abnormal uptake on positron emission tomography (PET), with a maximum standardized uptake value (SUV max) of 9.1 (B).
Figure 2: Computed tomography scan showing a solitary pulmonary nodule near the margin in the remaining lobe after right anterior segment (segment 2) segmentectomy (A) and abnormal uptake on positron emission tomography (PET), with a maximum standardized uptake value (SUV max) of 4.5 (B).

Figure 3: Epithelioid granuloma and Langerhans giant cells, caseous necrosis, and lymphocytic infiltrate (yellow arrows). Hematoxylin & eosin staining, magnification × 10.

REFERENCES