



## A case of cervical lymph node tuberculosis and metastatic squamous cell carcinoma in the same lymph node

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### ABSTRACT

We report a rare coexistence of tuberculosis and squamous cell carcinoma (SCC) of the same lymph node (LN). A 74-year-old woman with a swollen right cervix underwent computed tomography, which showed a nodule in the right lung and swollen LNs of the mediastinum and right supraclavicular fossa. She was diagnosed with LN tuberculosis; the puncture cytology of the clavicular LN was class IV. Anti-tuberculosis treatment was initiated. Her neck was compressed due to LN enlargement, and dyspnea appeared. A biopsy was performed to diagnose the SCC. We propose that malignancy should be considered if the patient has a narrowed airway due to an enlarged LN or if the response to tuberculosis treatment is poor.

### 1. Introduction

In recent years, cases of lung cancer have been increasing, and although cases of tuberculosis have been decreasing, they remain persistent. The coexistence of lung cancer and pulmonary tuberculosis has been discussed in many studies, and it has been reported that patients with tuberculosis have a greater risk of developing lung cancer [1]. Herein, we report a rare and clinically important case of coexistence of tuberculosis and metastatic squamous cell carcinoma confirmed in the same lymph node lesion.

### 2. Case presentation

The patient was a 74-year-old woman with chronic obstructive pulmonary disease. In June 20XX, she observed a lump in her right supraclavicular fossa, which increased in size over 2 months, and she consulted a local doctor in mid-September. Computed tomography (CT) images showed a nodule in the upper lobe of the right lung and enlargement of the mediastinal and right supraclavicular fossa lymph nodes, and she was referred to our department. At the first visit, she had right cervical lymphadenopathy with hard consistency. The T-SPOT® TB test result was positive, whereas the tumor marker levels were not

elevated. On chest radiography, the right mediastinal lymph node appeared to protrude into the right lung (Fig. 1). Dynamic CT revealed a significantly enlarged lymph node in the right supraclavicular fossa (Fig. 2), a small nodule (maximum diameter, 13 mm) in the upper lobe of the right lung, and an enlarged lymph node in the right supraclavicular fossa and mediastinum.

Fluorodeoxyglucose (FDG)-positron emission tomography/CT performed at the first visit showed high FDG accumulation in the longitudinal and right supraclavicular fossa lymph nodes, whereas little FDG uptake was observed in the right upper lobe lesion (Fig. 3). In late September, the patient underwent supraclavicular lymph node puncture aspiration, and cytological examination confirmed class IV suspected malignancy on cytology, but the cytological diagnosis of malignancy could not be concluded because of few viable cells. Concomitantly, the culture of *Mycobacterium tuberculosis* (*M. tuberculosis*) from the punctured lymph nodes became positive within 1 week of culture in the Mycobacterium growth indicator tube (MGIT), and the patient was diagnosed with lymph node tuberculosis. In the middle of October, anti-tuberculosis treatment was started with isoniazid, rifampicin, ethambutol, and pyrazinamide. Although experimental resistance to the drugs was not observed using the MGIT 960 SIRE kit (Nippon Becton Dickinson Company, Ltd.), the right supraclavicular fossa and mediastinal

**Abbreviations:** Squamous cell carcinoma, SCC; lymph node, LN; Computed tomography, CT; fluorodeoxyglucose, FDG; *Mycobacterium tuberculosis*, *M. tuberculosis*; Mycobacterium growth indicator tube, MGIT; positron emission tomography, PET.

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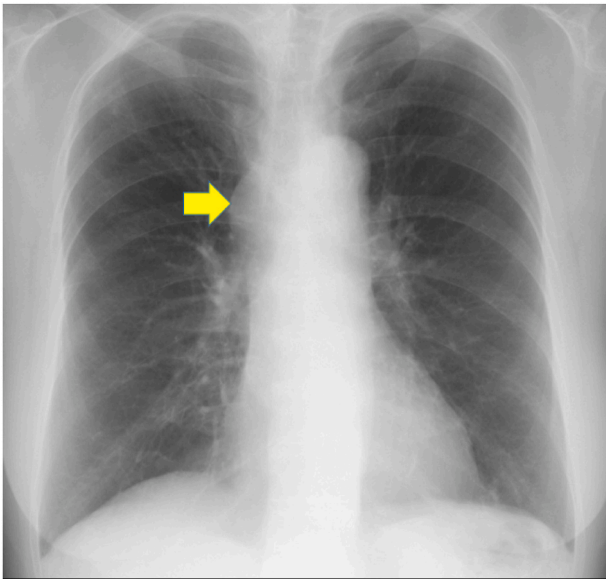
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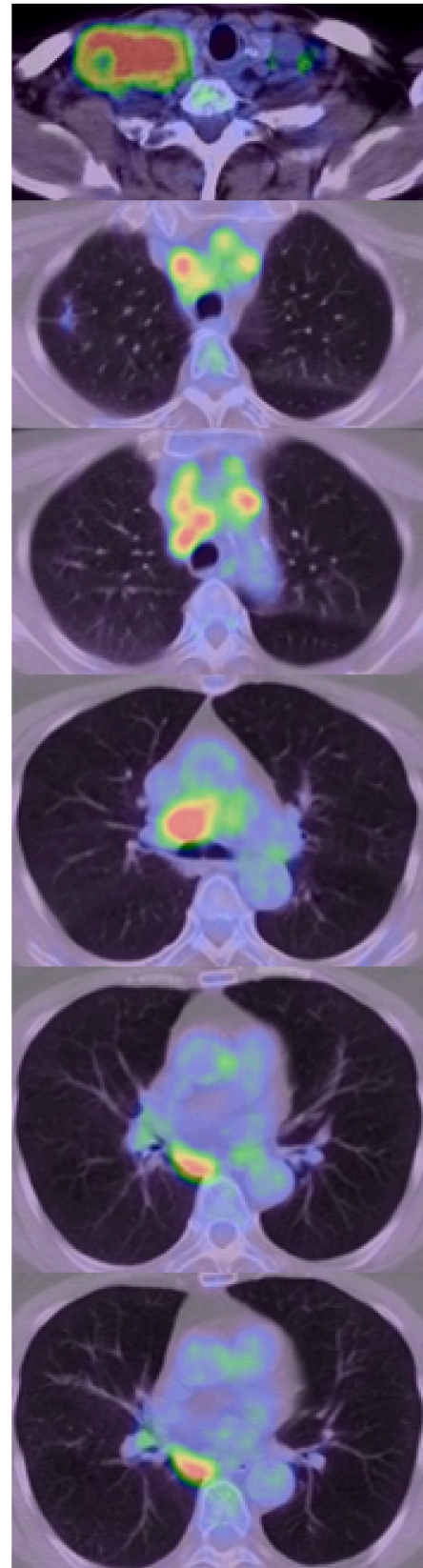
**Fig. 1.** Chest radiograph at the first visit. Chest radiograph showing the right mediastinal lymph node protruding into the right lung (arrow).



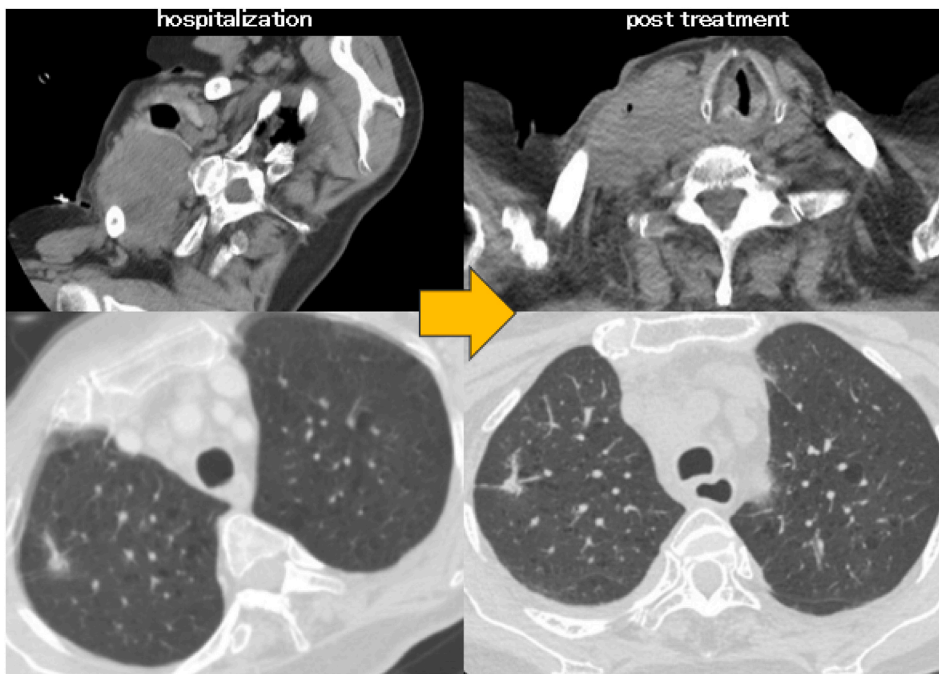
**Fig. 2.** Chest contrast computed tomography (CT) at the first visit. Dynamic CT reveals a significantly enlarged lymph node in the right supraclavicular fossa.

lymph nodes continued to increase in size. Moreover, the patient's pain increased, and airway compression was noted. Incision and drainage of the enlarged lymph nodes were scheduled, but in mid-December, the patient's dyspnea worsened, and she was transported to our hospital via ambulance for respiratory failure. Wheezing was observed, and blood examination showed elevated levels of SCC (5.4 ng/mL), CYFRA (10.19 ng/mL), and NSE (28.13 mg/dL). CT showed further enlargement of the right supraclavicular fossa lymph nodes and airway displacement (Fig. 4).

Airway displacement by the tumor was considered to cause an



**Fig. 3.** Fluorodeoxyglucose (FDG)-positron emission tomography (PET)/CT performed over time. FDG-PET/CT shows high FDG accumulation in the longitudinal and right supraclavicular fossa lymph nodes, whereas no FDG uptake is observed in the right upper lobe lesion.



**Fig. 4.** Image changes from hospitalization to post-treatment. CT images taken after radiotherapy and chemotherapy show a reduction in the enlarged right supraclavicular lymph nodes. This is well recognized by comparing the anterior and posterior diameters of the tumors. The tumor volume has decreased and the patient is in the supine position, which results in a lateral tumor pushing the orbit laterally, and a sheath-shaped airway is captured on CT. The nodule in the right lung field has not changed after treatment.

aggravation of dyspnea. After admission, we performed a partial resection of the right supraclavicular lymph node, in which we initially conducted puncture aspiration to alleviate the airway displacement, as well as a tissue biopsy. No pus was observed, and the specimen was pathologically diagnosed as squamous cell carcinoma. Radiation therapy was initiated to relieve the symptoms, and tumor reduction was observed. Endoscopic examinations were performed in the otolaryngology and gastroenterology departments, but no primary lesions could be identified. A small nodule in the right lung was suspected to be the primary site. Chemotherapy with carboplatin and nab-paclitaxel was administered for stage IIIC squamous cell carcinoma of the lung. CT images acquired after radio- and chemotherapy showed resolution of the airway displacement due to the enlarged right supraclavicular lymph node (Fig. 4).

### 3. Discussion

Our patient had comorbid squamous cell carcinoma in the same lymph node. The lesion increased in size and caused airway compression. In this case, the possibility of a paradoxical response due to the start of treatment for lymph node tuberculosis was listed at the top of the differential diagnosis. A previous report indicated that 20 % of patients with lymph node tuberculosis experience a paradoxical response after initiation of anti-tuberculosis treatment, with this response most commonly developing 3 weeks to 4 months after treatment initiation [2]. Airway narrowing due to enlarged tuberculous lymph nodes is rare. Lymph node tuberculosis with airway constriction due to immune reconstitution syndrome caused by acquired immune deficiency syndrome treatment has been reported [3], although in such cases the airway constriction was not exclusively due to lymph node tuberculosis. In contrast, airway constriction due to neoplastic disease is not uncommon, and patients with airway constriction due to lymph node tuberculosis should be evaluated for neoplastic disease. Although the CT imaging findings of lymph node tuberculosis in the acute phase are characterized by a homogeneous enhancing effect, both lymph node tuberculosis in the subacute phase and lymph node metastasis have low central absorption and thick and irregular enhancement of the edges. In this case, it was difficult to distinguish between lymph node tuberculosis and lymph node metastasis on imaging, but the lymph node margins

becoming unclear due to the surrounding infiltration and the surrounding fatty tissue becoming cloudy in lymph node metastasis may provide a clue to differentiate this condition from tuberculous lymphadenitis.

After reviewing the literature, we were able to find only two reports describing cases of concomitant *M. tuberculosis* and metastatic squamous cell carcinoma in the same cervical lymph node [4,5]. In both cases, the primary lesion was suspected to be head and neck cancer. Primary head and neck tumors rarely cause mediastinal lymph node swelling; therefore, in our case, primary tumors of the lungs and esophagus were the likely candidates. However, upper gastrointestinal endoscopy showed no abnormalities, whereas a CT scan showed a 13-mm solid nodule in the lung. The case was thus suspected to be squamous cell carcinoma of the lung with increased metastatic lesions without an increase in the primary lesion.

In this case, the intrapulmonary lesion was more likely to be lung cancer than tuberculosis because of the absence of satellite lesions and a single nodule on CT images, although we could not be certain. Clinicians must note that lung cancer and tuberculosis are two diseases that can complicate each other, and even if a patient is being treated for one condition, as in this case, the patient should be alert to the onset of the other. Although the possibility of malignant metastasis cannot be ruled out, when lymph node tuberculosis is diagnosed, as in this case, it is necessary to treat the patient with antituberculosis medication while searching for a possible primary lesion. If a paradoxical response is observed, a biopsy of the same area should be performed aggressively to determine if it is associated with malignant disease. Although the number of newly diagnosed patients with tuberculosis has been declining, tuberculosis should be considered in patients with malignant tumors.

### 4. Conclusion

We encountered a rare case of cervical lymph node tuberculosis and metastatic squamous cell carcinoma in the same lymph node. We propose that malignancy should be considered if the patient has a narrowed airway due to an enlarged lymph node from the initial diagnosis or if the patient responds poorly during the course of treatment for tuberculosis, such as an exacerbation that differs from the initial exacerbation.

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**Author contributions**

Y.U. and S.K. examined the patient; Y-U, S-K, and T.O. analyzed the clinical data; Y.U. and S.K. wrote the manuscript, which was reviewed and edited by all coauthors.

**Patient consent for publication**

Informed consent was obtained from the patient.

**Ethical statement**

All medical procedures performed adhered to the tenets of the Declaration of Helsinki.

**Declaration of competing interest**

The authors have no conflicts of interest to disclose.

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