

## A Surgical Case of Primary Lung Cancer with Peripheral Intrapulmonary Lymph Node Metastasis

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**We report on a case of a patient with lung adenocarcinoma and peripheral intrapulmonary lymph node (IPLN) metastasis who was misdiagnosed as having intrapulmonary metastasis. A subpleural nodular shadow visualized by radiography was diagnosed as an intrapulmonary metastasis originating from primary lung cancer. Preoperative evaluation indicated that this case was a clinical T4N1 lung adenocarcinoma with metastasis in the same lobe. However, postoperative evaluation showed that it was a peripheral IPLN metastasis, and this was actually a case of pathologic T2N1 adenocarcinoma. It may have been possible to treat this case non-surgically with the possibility of radical cure. This case suggests that a nodule is present in the same lobe with lung cancer, and it must be borne in mind that IPLN metastasis may be misdiagnosed as intrapulmonary metastasis. (Ann Thorac Cardiovasc Surg 2007; 13: 53–5)**

**Key words:** lung cancer, intrapulmonary metastasis, intrapulmonary lymph node

### Introduction

We describe a patient with pathologic T2N1 lung adenocarcinoma (peripheral intrapulmonary lymph node (IPLN) metastasis) who was misdiagnosed as having clinical T4N1 (intrapulmonary metastasis) disease. As the medical treatment plan may differ considerably according to stage, it is important to make a correct diagnosis of a nodular shadow accompanied by primary lung cancer, even though this may sometimes be difficult.

### Case Report

A 65-year-old man was found to have abnormal shadows at an annual chest radiographic examination. There was a 30-mm mass with a 20-mm nodular shadow in the right lower lung field, and a 30-mm hilar lymph node in diam-

eter (Fig. 1). Chest CT demonstrated a 33×28-mm mass shadow and a 20×18-mm nodular shadow in the posterior basal segment of right lung (Fig. 2A), with right hilar lymph adenopathy (Fig. 2B). The main tumor was diagnosed as an adenocarcinoma by transbronchial lung biopsy, and classified as c-stage IIIB T4N1 with pulmonary metastasis in the same lobe. Concurrent chemoradiotherapy was performed using 2 cycles of paclitaxel (180 mg/m<sup>2</sup>) and carboplatin (6 AUC) with 50 Gy (2 Gy/day, 25 times). The radiation therapy field included the main tumor and subpleural tumor with the ipsilateral hilar and mediastinal lymph nodes. This led to a partial tumor response (60% reduction). As the hilar lymph node metastasis was obviously reduced, surgery was performed. A right pneumonectomy (ND2a) was necessary to complete the resection because it was difficult to separate the interlobar pulmonary artery from the hilar lymph node metastasis.

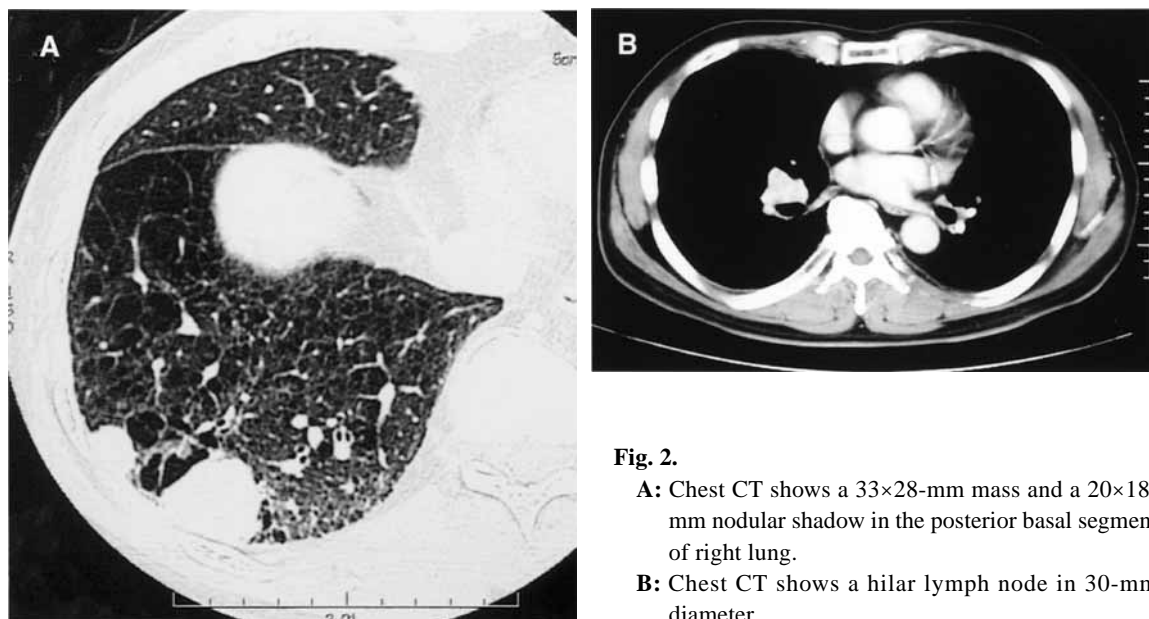
The postoperative pathological examination showed that the main tumor measured 25×20×15 mm and was mostly necrotic. The cancer cells in part of the tumor periphery showed nuclear condensation, vacuole-like denaturation, and blurring of the cell boundary as a result of the induction therapy. However, some viable cancer cells were also present. The subpleural lesion that had

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**Fig. 1.** Chest X-ray on admission shows 2 mass shadows in the right lower lung field, and a hilar lymph adenopathy.



**Fig. 2.**  
**A:** Chest CT shows a 33×28-mm mass and a 20×18-mm nodular shadow in the posterior basal segment of right lung.  
**B:** Chest CT shows a hilar lymph node in 30-mm diameter.

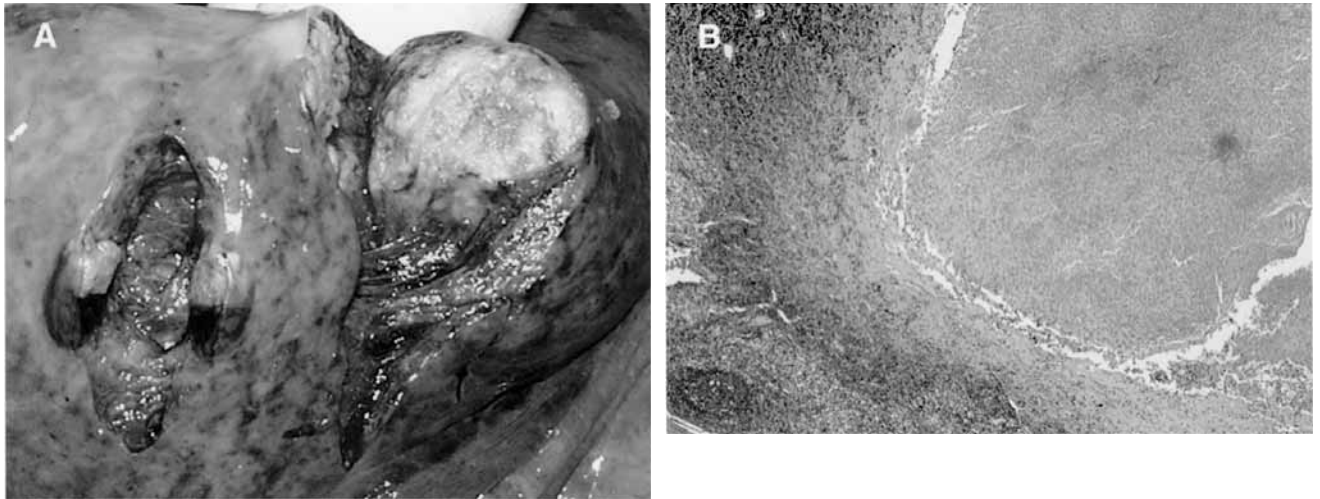
been diagnosed as an intrapulmonary metastasis before surgery was found to consist of lymph follicles and anthracosis, with denaturation or necrosis of the cancer cells. Therefore, this lesion was diagnosed as a peripheral IPLN metastasis (Fig. 3). No viable cancer cells were detected in the hilar and peripheral IPLNs.

The patient is currently doing well without recurrence

a year after surgery.

## Discussion

It has been generally believed that pulmonary lymph nodes existed in the vicinity of the hilar region of the lung and the central bronchi, but not after the fourth



**Fig. 3.**

- A:** Macroscopic appearance of the resected specimen shows a main tumor and a metastasis to the peripheral intrapulmonary lymph node.
- B:** Pathological examination reveals that cancer cells metastasized to the peripheral intrapulmonary lymph node, and had necrosed. (HE stain:  $\times 20$ )

branching point.<sup>1,2</sup> Nevertheless, it has been known for a long time that IPLNs sometimes showed up on chest radiographs as solitary nodular shadows, and that differential diagnosis between them and lung cancers is important. Yokomise et al.<sup>3</sup> reported that among 26 patients with pulmonary nodular shadows less than 10-mm in diameter that could not be diagnosed before surgery, the lymph nodes were found to be intrapulmonary in 12 (46.2%). Clinically, these IPLNs were found more frequently in men and smokers, in the lower lobe near the pleura.<sup>3,4</sup> In the present surgical case, a peripheral IPLN metastasis originating from primary lung cancer was misdiagnosed as an intrapulmonary metastasis before surgery. Although the main tumor was diagnosed as an adenocarcinoma by transbronchial lung biopsy, a subpleural shadow near the main tumor was not diagnosed. It was difficult to diagnose the metastasis to IPLN only by radiography, moreover, double primary lung cancer was ruled out according to the criteria of Martini.<sup>5</sup> So, we classified this case as c-stage IIIB intrapulmonary metastasis from primary lung cancer by radiography. After surgery, the subpleural shadow near the main tumor was diagnosed pathologically as metastasis to a peripheral IPLN.

Generally, the 5-year survival of patients with stage IIIB lung cancer is about 20%,<sup>6</sup> whereas that of N1 cases is about 50%. If a patient is suspected to have intrapulmonary metastasis, then the clinical staging will be IIIB

disease. In such a case, primary surgical treatment will not be considered, regardless of whether the cancer is curable. Cases of lung cancer accompanied by a small nodular lesion in the same lobe are difficult to be classified correctly before surgery. However, differentiation of IPLN metastasis from intrapulmonary metastasis is clinically important to ensure that an appropriate treatment strategy is instituted.

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