

## Hodgkin's Lymphoma Mimicking Necrotizing Pneumonia: Case Report<sup>1</sup>

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This study describes a case of pulmonary Hodgkin's lymphoma of the nodular sclerosing type presenting as a large cavitory mass with air-fluid levels. We also conduct a review of the previous articles on pulmonary Hodgkin's lymphoma.

**Index words :** Hodgkin disease  
Lung neoplasms, CT

Pulmonary involvement of Hodgkin's disease is not uncommon, but there are few case reports of cavitory pulmonary Hodgkin's disease mimicking as lung abscess or necrotizing pneumonia. In this report, we describe a case of pulmonary Hodgkin's lymphoma presenting as a large cavitory lesion with air-fluid levels in the right lower lobe mimicking as lung abscess or necrotizing pneumonia. The patient showed right lower tracheal and right hilar lymphadenopathy at the initial presentation. The involvement of Hodgkin's lymphoma in the lung parenchyma and mediastinal nodes was confirmed by histologic diagnosis.

### Case Report

A 31-year-old man presented with cough and blood tinged sputum. The initial chest radiography was done outside our hospital, and it had revealed airspace consolidation in the right upper lobe. The chest CT demonstrated airspace consolidation in the right upper lobe and centrilobular nodules in the right middle lobe. Right lower paratracheal and hilar lymphadenopathy were also seen. Although the sputum AFB was negative, active

pulmonary tuberculosis had been clinically suspected; thus, he had been previously treated with anti-Tb medication at another hospital for 8 months. However, there had been no improvement, and so he was then transferred to our hospital.

The cough and blood-tinged sputum continued and a fever developed. The follow-up chest CT showed a newly appeared airspace consolidation in the right lower lobe. He was hospitalized for further evaluation and underwent bronchoscopic examination. No endobronchial lesions were visualized. Transbronchial lung biopsy revealed nonspecific inflammation. No malignant cells were seen on cytologic examination of the bronchial washing, and bacterial organisms and fungi were not found in subsequent cultures.

One month later, the follow-up contrast-enhanced CT demonstrated a 5 cm sized cavitory mass containing an air-fluid level and small cavitory nodules in the right lower lobe. A small amount of pleural effusion in the right side was newly noted. The right paratracheal lymph nodes were increased in size (Figs. 1A - D). Drainage of the abscess pocket by bronchoscopy was tried; however, this was ineffective. Repeated bronchoscopic washing and cultures revealed no diagnosis. He was empirically treated with antibiotics for about 2 months. However, the blood tinged sputum was more aggravated and the high fever waxed and waned. The follow-up chest simple radiography and chest CT revealed the decreased size of cavity, but persistent exten-

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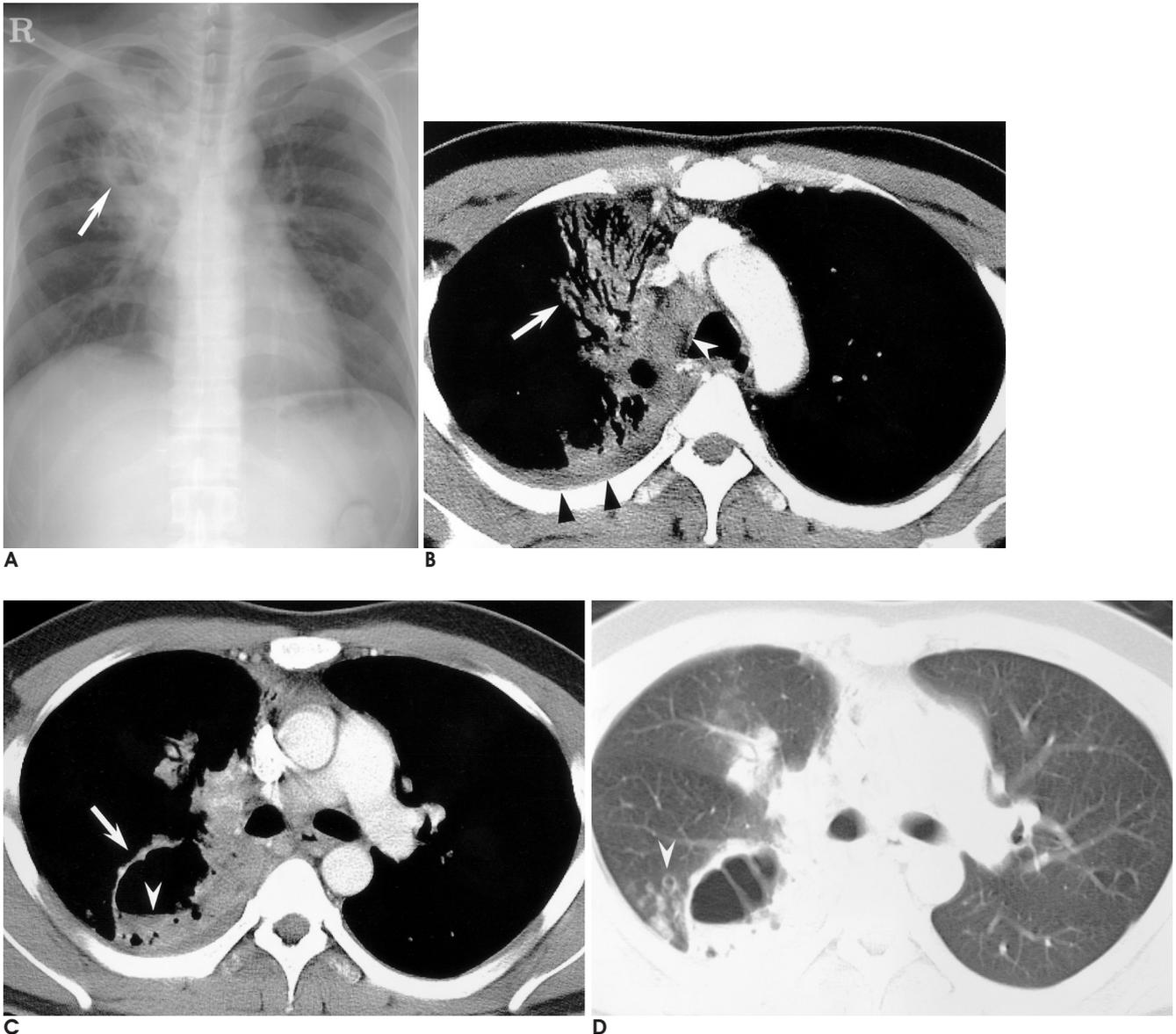
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sive consolidation was observed that mainly involved the right upper lobe and right lower lobe (Fig. 1E). Due to the lack of definitive tissue diagnosis and uncontrolled lung abscess, thoracotomy was advised. He underwent right upper lobectomy and right lower lobe superior segmentectomy (Fig. 1F). Additional right lower paratracheal and subcarinal lymph node dissection was also performed. On the operative field, volume loss and

poor expansion due to diffuse consolidation of the right upper lobe were noted. Consolidation was found in the right lower lobe's superior segment and basal segments. The right middle lobe was relatively spared. On microscopic examination of the surgical specimens including the right upper lobectomy and right lower lobe superior segmentectomy specimens, Reed-Sternberg cells characteristic of Hodgkin's disease were found (Fig. 1G).



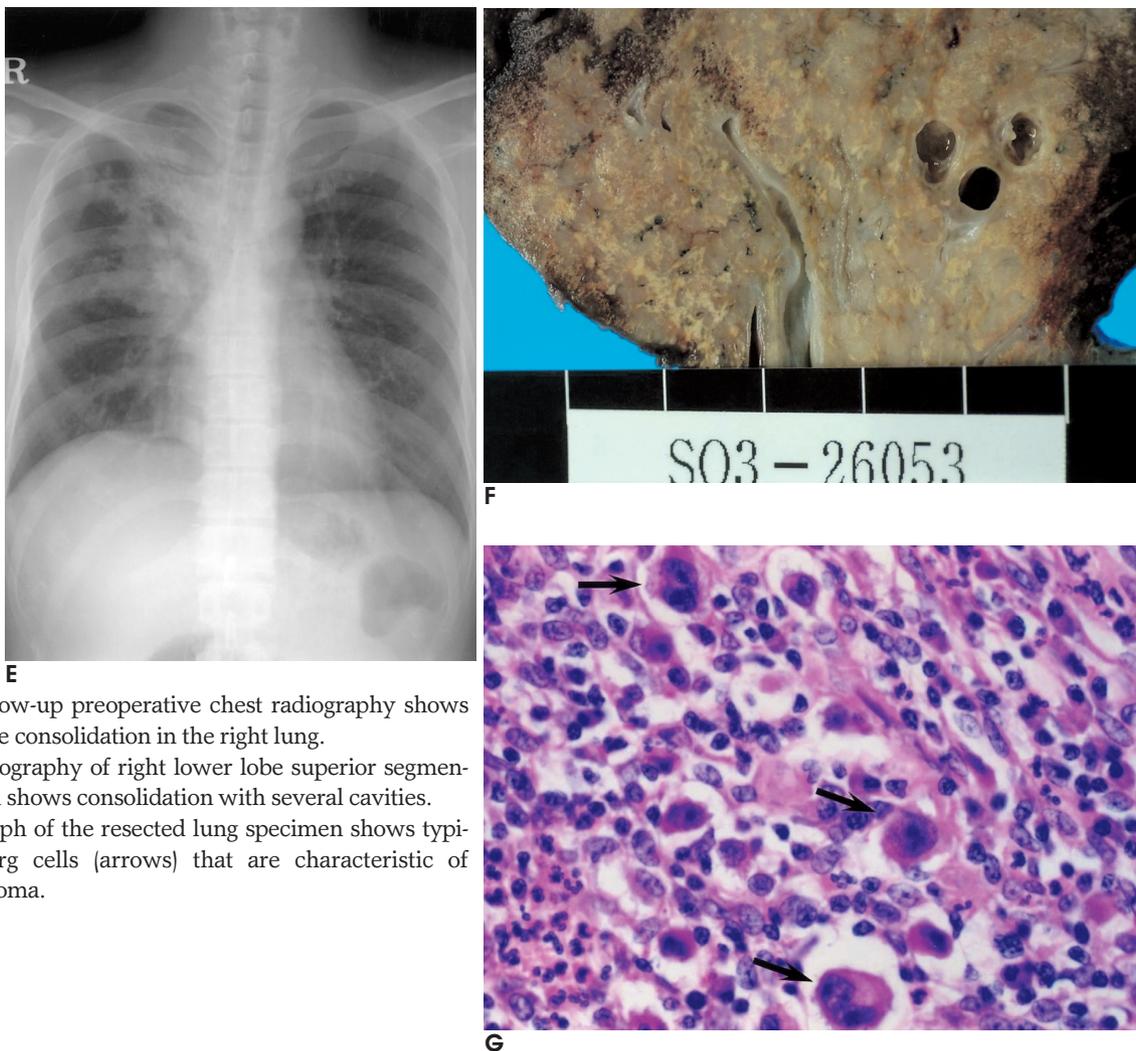
**Fig. 1.** A 31-year-old man presented with cough and blood tinged sputum.

**A.** Chest simple radiograph shows a large cavitary mass in the right upper lung zone (arrow).

**B.** Chest CT scan with the mediastinal window setting shows consolidation containing air-bronchograms (arrow) in the right upper lobe. A small amount of pleural effusion in the right side is also seen (black arrowheads). Note the enlarged right lower paratracheal lymph node (white arrowhead).

**C.** Chest CT scan with the mediastinal window setting shows a 5 cm sized cavitary mass in the right lower lobe superior segment (arrow). The air-fluid level in the mass is seen (arrowhead).

**D.** Chest CT scan with the lung window setting shows multiple satellite nodules adjacent to the main cavitary mass. Several satellite nodules had cavitation (arrowhead).



**Fig. 1. E.** Last follow-up preoperative chest radiography shows persistent air space consolidation in the right lung. **F.** Magnified photography of right lower lobe superior segmentectomy specimen shows consolidation with several cavities. **G.** Photomicrograph of the resected lung specimen shows typical Reed-Sternberg cells (arrows) that are characteristic of Hodgkin's lymphoma.

Pathologic examination of the mediastinal nodes revealed the same findings. The final histopathologic diagnosis was Hodgkin's lymphoma of the nodular sclerosing type. Subsequent staging procedures including a thorough physical examination, white blood cell count and bone marrow biopsy and a contrast-enhanced CT of the abdomen and pelvis were performed; the results were all negative. The patient underwent subsequent chemotherapy.

### Discussion

Hodgkin's disease usually presents as a localized disease and it subsequently spreads to the contiguous lymphoid structures. Ultimately, it disseminates to nonlymphoid tissues with a potentially fatal outcome. Approximately half of patients with Hodgkin's disease present with adenopathy in the neck or supracalvicular area, and over 70 percent of patients present with super-

ficial lymph node enlargement. Approximately 60 percent of the patients present with mediastinal adenopathy. In Hodgkin's disease, axial lymph node involvement is common in contrast to non-Hodgkin's lymphoma (1).

Mediastinal Hodgkin's disease is common, and it is well known to infiltrate the lung secondarily (2). Of all the cases with Hodgkin's disease, lung involvement has been diagnosed in up to 20% at the initial diagnosis, 40% during the clinical course of the disease and 60% at autopsy due to relapsing disease (3). Diederich et al (3) has reviewed the CT findings of pulmonary parenchymal lymphoma in 37 patients with recurrent or secondary Hodgkin's disease. In that study, the most common CT findings were nodules or masses with the size ranging from 2 to 100 mm. Consolidation (27%) and direct extension from the mediastinum (27%) were less frequently observed.

Primary pulmonary Hodgkin's lymphomas are extremely rare, and there have been only 61 cases report-

ed since 1990 (4). The vast majority of primary pulmonary lymphomas are low grade B-cell non-Hodgkin's lymphomas (2). Primary pulmonary Hodgkin's disease shows a bimodal age distribution, with the peak occurrence at 21 to 30 years and 60 to 80 years, and this disease affects women more often than men by a ratio of 1.4 to 1 (2). The majority of patients are symptomatic at presentation; common pulmonary symptoms include a persistent dry cough, dyspnea and hemoptysis (4). Radin et al (4) reviewed the findings on the chest radiographs of 61 cases of primary pulmonary Hodgkin's disease reported in the literature prior to 1990. They found nodules or masses in 45 (74%) cases and pneumonic consolidation in 13 cases (22%). The chest radiographs were normal in two cases (3%) and the radiologic finding were not reported in one case. It is interesting that upper lobe involvement was twice as common as lower lobe disease.

Hodgkin's disease manifesting as a large cavitary lung lesion makes it difficult to distinguish it from the concurrent infection due to anaerobic bacteria, mycobacterium tuberculosis or fungi. Because cavitary change in Hodgkin's disease is very rare, the definite diagnosis could be delayed and resection surgery is ultimately required, as in our case. Furthermore, Hodgkin's disease manifesting as cavitary lesions appears to be particularly resistant to radiotherapy and it shows a poorer prognosis (4). According to previous reports, the cavitation in Hodgkin's lymphoma is probably due to central ischemic necrosis; this is presumably due to the rapid tumor growth and it tends to occur in large nodules and masses. A cavity with air-fluid levels may be apparent

when there is communication between an adjacent bronchus and a necrotic tumor mass (5, 6). The incidence of cavitation was less than 10% in secondary Hodgkin's lymphoma and cavitation was found in a third of primary Hodgkin's lymphoma (3, 5, 7). Because the pulmonary parenchymal lesion is more predominant than mediastinal lymphadenopathy, our case could be regarded as primary pulmonary Hodgkin lymphoma. However, the possibility that the mediastinal Hodgkin lymphoma infiltrated into the pulmonary parenchyma cannot be completely excluded.

In summary, we report here on a very rare case of pulmonary Hodgkin's lymphoma presenting as a large cavitary consolidation.

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