

# Recurrent Lung Cavities and Endobronchial Nodules in an Adolescent Male

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## SUMMARY

Multiple lung cavitations and endobronchial nodules are rare presentations of newly diagnosed and recurrent Hodgkin's disease. The clinical and radiological features can be confused with pulmonary tuberculosis, which can be difficult to exclude in endemic areas. However, the presence of endobronchial nodules point, towards Hodgkin's disease. Differential diagnosis is aided by the fact that these lesions usually respond promptly to specific therapy. We present a case of an adolescent male who had constitutional and pulmonary symptoms associated with pulmonary cavities and endobronchial nodules subsequently confirmed to be Hodgkin's disease.

## KEY WORDS:

Hodgkin's disease, Lung cavities, Endobronchial nodules, Pulmonary tuberculosis

## INTRODUCTION

Extranodal presentation of Hodgkin's disease (HD) is rare. Pulmonary presentation includes nodules, which cavitate in a small proportion of patients. Clinically, it is difficult to exclude pulmonary tuberculosis (TB), which is highly prevalent in our country. Sometimes, empirical treatment for TB is started if the clinical suspicion is high. We report an uncommon case of an adolescent male with HD whose

pulmonary presentation posed an initial diagnostic challenge. The diagnosis was confirmed bronchoscopically and also when his pulmonary lesions improved with lymphoma chemotherapy.

## CASE REPORT

A 17-year-old Indian student presented with a one-month history of high-grade fever, intractable cough, breathlessness, marked weight lost and anorexia. There was bilateral cervical lymphadenopathy. Chest examination revealed reduced breath sounds with coarse crackles and increased vocal resonance in the middle and lower zones of both lungs. The full blood count was normal except for an elevated white cell count ( $25 \times 10^9/L$ ; 80% neutrophils). The ESR was 110 mm/hr. Blood and sputum culture results were unremarkable. His chest radiograph (Fig. 1A) on presentation showed multiple well defined round opacities and cavitating lesions in the right middle zone as well as the left middle and lower zones of the lungs. Computed tomography (CT) of thorax showed multiple nodules of varying sizes in both lung fields and some of the lesions showed irregular thick-walled cavities containing air-fluid levels consistent with lung abscesses. There were also bilateral hilar and subcarinal lymphadenopathy. The tuberculin skin test and repeated sputum examination for bacteria, acid-fast bacilli and fungus were negative. Histopathological examination of cervical

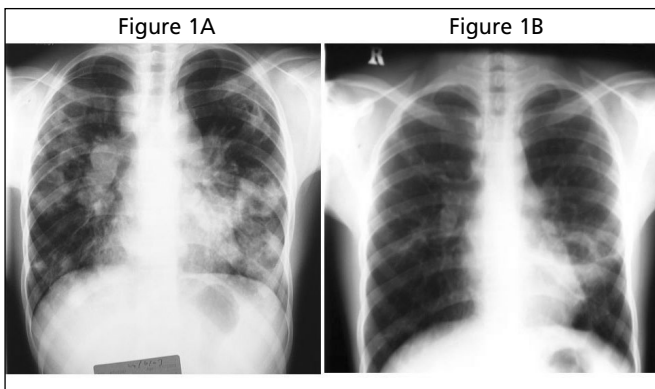


Fig. 1: 1A. Frontal chest radiograph performed at first presentation.  
1B. Subsequent chest radiograph performed one month following COPP-ABVD chemotherapy.

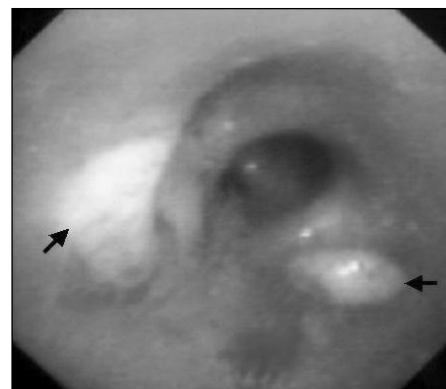


Fig. 2: Endobronchial photo at second relapse showing new nodules (arrow) in the lingular lobe bronchus, confirming disease progression.

This article was accepted: 10 October 2006

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lymph node biopsy was consistent with HD, lymphocyte predominant variety (Stage IVB). A lung biopsy was proposed but the patient declined.

He received six cycles of induction chemotherapy consisting of chlorambucil, oncovin, procarbazine and prednisolone, adriamycin, doxorubicin, bleomycin and vinblastin (COPP-ABVD) resulting in resolution of the lymphadenopathy and lung opacities, and appearance of cavities (Fig. 1B). Several months later, his symptoms recurred and chest radiograph and CT thorax showed multiple large fluid filled cavities without lymph node enlargement. In view of the high risk of contracting pulmonary TB with typical radiological appearances, empirical anti-TB chemotherapy consisting of ethambutol, isoniazid, rifampicin and pyrazinamide was initiated. He also received empirical amphotericin B and antibacterial therapy. However, two weeks after anti-TB therapy, his disease progressed with development of new nodules and thick walled cavities. Fibreoptic bronchoscopic examination revealed nodules in the anterior segment of the left lower lobe bronchus. Biopsy of these nodules showed atypical lymphoid cells that were positive for CD15 and CD30, consistent with HD. There were no granuloma or multinucleated giant cells and stains for fungus and acid-fast bacilli were negative. He received salvage chemotherapy consisting of ifosfamide, carboplatin and etoposide (ICE), resulting in partial resolution of the lung lesions. One month after the third cycle of ICE, he developed breathlessness and intractable cough associated with new lung cavities and multiple bilateral endobronchial nodules (Fig. 2). Biopsy of the endobronchial nodules confirmed HD. The patient was given a different chemotherapy regimen consisting of dexamethasone, cytarabine and cis-platinum (DHAP). This resulted in partial remission of his disease. However, he defaulted follow up and subsequent chemotherapy and was readmitted a few months later with full-blown disease and respiratory failure. After frank discussion with the family regarding the patient's very poor prognosis, we decided to treat the patient conservatively and he passed away peacefully.

## DISCUSSION

The differential diagnoses of pulmonary abnormalities in HD include infection, lung carcinoma, Wegener's granulomatosis and bronchiolitis obliterans organizing pneumonia. Differentiation of pulmonary HD from other abnormalities is important for adequate therapy but may be difficult without lung biopsy. Cytotoxic chemotherapy should only be instituted after all possibilities of lung infection have been ruled out or a good duration of empirical treatment for the infection initiated earlier in cases of doubt, as starting anticancer treatment would impair the immune status of the patient who is already immunocompromised thus giving way for opportunistic infections.

Widespread pulmonary involvement in newly diagnosed HD patients is uncommon and typically presents as nodules. Cavitations with or without air fluid level are uncommon at

presentation, occurring in less than 1% of nodules<sup>1</sup>. Lung cavities in HD are more usually found after chemotherapy or radiotherapy as a result of tumour necrosis and are signs of response. The cavities typically are irregularly marginated and thick walled as seen in our patient, though infrequently, may be thin walled like those of TB<sup>1</sup>. Lung nodules in HD are more often multiple and less spherical with irregular outline and less likely to be uniform in size in comparison to carcinomatous metastasis<sup>1</sup>.

Endobronchial involvement of HD is exceedingly rare with only 28 cases reported in the literature, manifesting characteristically in patients with advanced disease<sup>2</sup>. Radiographic features of endobronchial HD include atelectasis, discrete nodules, fibronodular infiltrations, homogenous confluent infiltrates and consolidation<sup>1</sup>.

Multiple cavities are classic radiological appearance of pulmonary TB, while endobronchial lesions manifesting as granules and ulcers have also been described<sup>3</sup>. However, endobronchial nodules due to TB has not been reported. Patients with HD can develop pulmonary TB during or after treatment due to reduced immunity. TB occurring in abnormal lung parenchyma as a result of cytotoxic chemotherapy can be difficult to differentiate from refractory or relapse HD. The association of HD and TB makes it difficult to differentiate the two conditions because of similarities in the clinical, laboratory and radiological features. Moreover, the tuberculin skin test can be negative in patients who have concomitant HD and TB as a result of impaired cellular immunity. Mediastinal lymphadenopathy and contrast-enhanced pulmonary infiltrates can be found in patients with TB without active lymphoma. Additionally, recurrent HD in the lung may occur in the absence of regrowth of the lymph nodes in patients who have been treated as seen in our patient. Differential diagnosis is aided by the fact that these lesions usually respond promptly to specific therapy, hence the role of empirical therapy. In our patient, the lung lesions did not improve with empirical anti-TB treatment but showed prompt response with chemotherapy for lymphoma.

Pulmonary HD should be considered in the differential diagnoses of multiple lung cavities and endobronchial nodules especially in young patients. Despite its uncommon occurrence, it has important implications on treatment and prognosis. Bronchoscopy and close monitoring of clinical and radiological features are recommended in cases of HD involving the lungs. Owing to its rarity, the natural history and response to treatment in patients with pulmonary HD is not well established.

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