

## *Rhodococcus equi* endobronchial mass with lung abscess in a patient with AIDS

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### Abstract

**An endobronchial lesion with lung abscess in a patient with AIDS was due to *Rhodococcus equi*. The patient responded to triple chemotherapy.**

*Rhodococcus equi*, formerly known as *Corynebacterium equi*, is an unusual cause of pulmonary infection that has been reported in immunocompromised patients,<sup>1</sup> including several patients with the acquired immunodeficiency syndrome.<sup>2-7</sup> We report a patient with AIDS in whom an endobronchial mass and lung abscess were caused by *R equi*.

### Case report

A 25 year old bisexual man with AIDS presented with chest pain and shortness of breath. He was born in a rural area of the Dominican Republic and moved to New York City in 1985. In May 1990 AIDS was diagnosed when he had cryptococcal meningitis and salmonella bacteraemia. Bronchoscopy performed to investigate cough showed no abnormality. Cultures of bronchoalveolar lavage fluid were negative.

In July 1990 cough recurred and chest pain developed. Chest radiography showed a 2 cm left lower lobe nodule. The patient was lost to follow up but returned in September 1990, when the chest radiograph showed enlarge-

ment and cavitation of the left lower lobe mass and left hilar and mediastinal adenopathy. Bronchoscopy again showed normal airways. Bronchoalveolar lavage fluid and blood cultures were positive for *Rhodococcus equi*. The patient received a four week course of intravenous erythromycin and clindamycin. The chest radiograph was unchanged and he was discharged taking oral antibiotics. The cough and chest pain worsened during the next month. In December 1990 the chest radiograph showed progression of the cavitary process in the left lower lobe with a pleural effusion (fig 1A). Bronchoscopy showed a broad based, lobulated lesion arising from the superior aspect of the left mainstem bronchus, 2 cm distal to the carina and occluding three quarters of the lumen. There was pronounced inflammation of the superior segmental bronchus of the left lower lobe, which was filled with purulent secretions. Cultures of bronchial aspirate grew *R equi*, as did blood cultures. A biopsy specimen of the endobronchial lesion contained a submucosal infiltrate composed of sheets of epithelioid histiocytes, with scattered lymphocytes and plasma cells. Gram staining showed clusters of Gram positive cocci, which were not acid fast, in the cytoplasm of many of the histiocytes (fig 2). Computed tomography of the chest showed an extensive left lower lobe abscess, which appeared to be in the left hilum and adjacent mediastinum, with an endobronchial component within the left main bronchus (fig 1B). The patient received intravenous vancomycin and clindamycin and oral rifampicin. Over the next five weeks he showed gradual clinical and radiographic improvement and subsequent blood and sputum cultures were negative. After discharge he received a prolonged course of the three antibiotics.

### Discussion

*Rhodococcus equi*, an aerobic, Gram positive, pleomorphic bacillus, is a recognised pulmonary pathogen in horses, cattle, and swine.<sup>1</sup> Over 20 cases of infection have been reported in immunocompromised patients, several infected with the human immunodeficiency virus.<sup>2-8</sup>

Many patients report exposure to farm animals. Onset is usually subacute with fever, cough, pleuritic chest pain, and dyspnoea.

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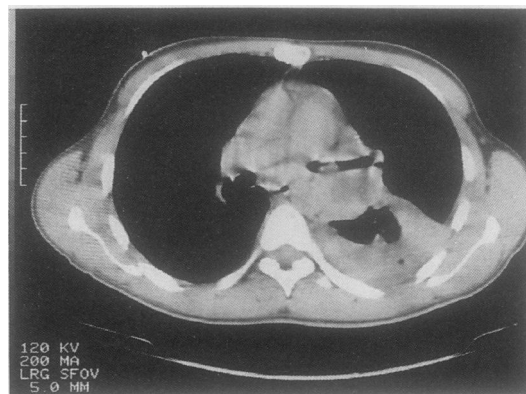
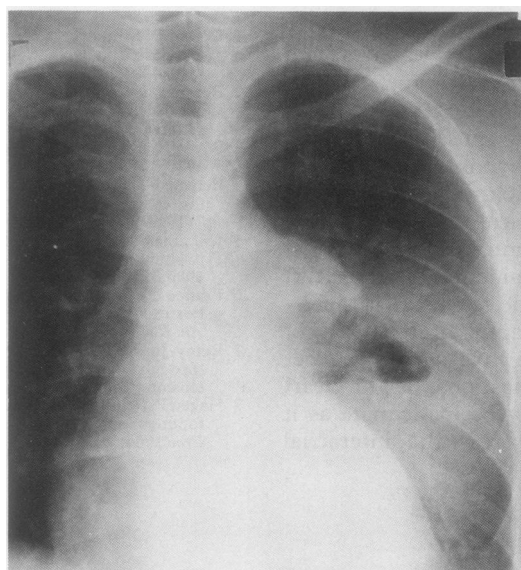
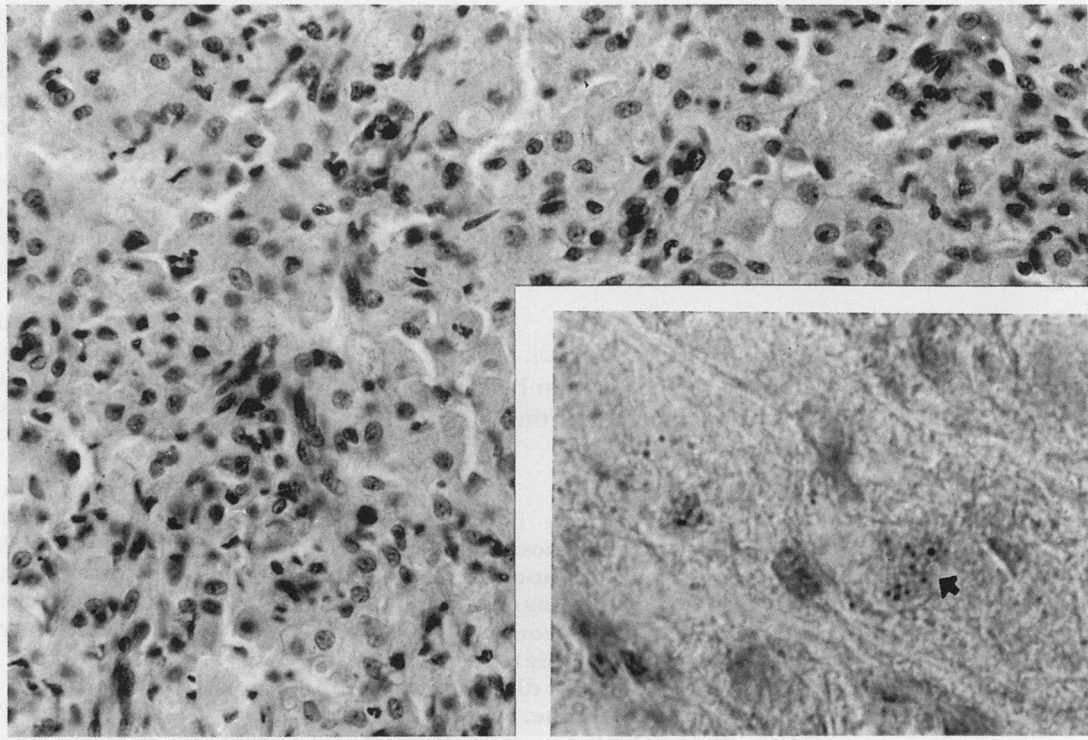


Figure 1 Chest radiograph (A) and computed tomogram (B) at admission showing the endobronchial lesion and left lung abscess.

Figure 2 Biopsy specimen of the endobronchial lesion showing the histiocytic infiltrate (haematoxylin and eosin). Inset: Gram positive cocci within histiocytes, indicated by arrow (Gram stain).



Pulmonary infection is almost universal; mass like consolidation progresses to cavitation and is frequently associated with pleural effusion. Extrapulmonary infection, with or without intrathoracic disease, may occur.<sup>18</sup> Pulmonary infection is diagnosed by cultures of sputum, bronchoscopic lavage fluid, pleural fluid, or surgical biopsy specimens. Positive blood cultures are found in about half the patients. The pathological findings include a necrotising granulomatous reaction dominated by macrophages containing Gram positive pleomorphic coccobacilli. Previous reports have described similarities between this appearance and that of two unusual disorders, Whipple's disease and malacoplakia.<sup>4,7</sup> Defective processing of microorganisms by histiocytes is postulated in both disorders and possibly a similar mechanism plays a part in the pathogenesis of *R equi* infection. Management requires a prolonged course of at least two antibiotics. Clinical and radiographic progression often occurs and surgical resection has been performed in some cases.

Our patient typifies many of the clinical, radiographic, and pathological findings of *R equi* infection. The previously unreported feature is a lobulated central endobronchial lesion, which was identified by bronchoscopic examination and computed tomography. The

endobronchial lesion may have developed by direct extension of the left lower lobe parenchymal process to the mediastinum with erosion into the left main bronchus, by bronchial erosion by adjacent infected lymph nodes, or by the establishment of a secondary bronchial focus from bronchogenic spread of secretions. We believe that clinicians and radiologists should be aware of this unusual manifestation of intrathoracic *Rhodococcus equi* infection.

- 1 Van Etta LL, Filice GA, Gerguson RM, Gerding DN. *Corynebacterium equi*: a review of 12 cases of human infection. *Rev Infect Dis* 1983;5:1012-18.
- 2 Samies JH, Hathaway BN, Echols RM, Veazey JM, Pilon VA. Lung abscess due to *Corynebacterium equi*. Report of the first case in a patient with acquired immune deficiency syndrome. *Am J Med* 1986;80:685-8.
- 3 Sane DC. Infection with *Rhodococcus equi* in AIDS. *N Engl J Med* 1986;314:56-7.
- 4 Wang HH, Tollerud D, Danar D, Hanff P, Gottesdiener K, Rosen S. Another Whipple-like disease in AIDS? *N Engl J Med* 1986;314:1577-8.
- 5 MacGregor JH, Samuelson WM, Sane DC, Godwin JD. Opportunistic lung infection caused by *Rhodococcus (Corynebacterium) equi*. *Radiology* 1986;160:83-4.
- 6 Weingarten JS, Huang DY, Jackman JD. *Rhodococcus equi* pneumonia. An unusual early manifestation of the acquired immunodeficiency syndrome (AIDS). *Chest* 1988;94:195-6.
- 7 Scannell KA, Portoni EJ, Finkle HI, Rice M. Pulmonary malacoplakia and *Rhodococcus equi* infection in a patient with AIDS. *Chest* 1990;97:1000-1.
- 8 Fierer J, Wolf P, Seed L, Gay T, Noonan K, Haghghi P. Non-pulmonary *Rhodococcus equi* infections in patients with acquired immune deficiency syndrome (AIDS). *J Clin Pathol* 1987;40:556-8.