

Bronchiectasis

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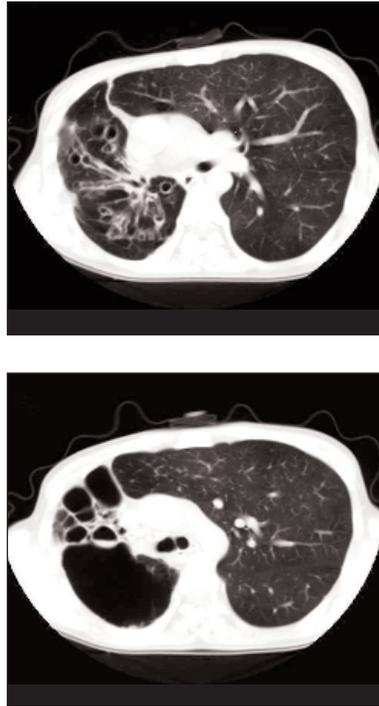
A 43 year-old Chinese woman who immigrated to the United States in 1994 was seen because of several years of chronic, intermittent coughing that was productive of voluminous, thick, green sputum with occasional blood streaking. The cough was accompanied by right anterior pleuritic chest pain. She had no fevers, chills, or night sweats. Her medical history included childhood pneumonia at the age of 18 months, a prior right pneumothorax that required chest tube placement, and a positive PPD. She was a nonsmoker. Despite her symptoms, she was fully functional with activities of daily living but unable to tolerate exercise. She worked as a part-time seamstress and had no environmental exposures. Review of systems was significant only for a 20lb weight loss in the past 2 years.

On exam, she was a thin Asian female weighing 94 lbs in no acute distress and with no labored breathing. On lung auscultation, crackles were heard diffusely and, at the right upper lobe, adventitial sounds and a pleural friction rub were also appreciated. She had no lymphadenopathy and physical exam was unremarkable otherwise.

Bronchoscopy and sputum analysis were performed. Bronchial brushings showed mucopurulent secretions in the right upper lobe, but both bronchial samples and sputum samples were negative for acid fast bacilli (AFB). Heavy growth of *Pseudomonas aeruginosa* was seen in both sputum and bronchoscopy specimens. CT scans of the thorax were obtained and are shown above.

The patient's CT scans showed extensive dilatation of the bronchi throughout the entire right lung with thickening of the bronchial walls. Air fluid levels can also be seen, suggesting mucous secretion entrapment in the dilated airways. The lung parenchyma is fibrosed and collapsed with large bullae occupying the lung base.

Bronchiectasis is a disease defined by its morphology; the irreversible dilatation of bronchi damaged from a



primary insult such as infection (MAI, pneumonia, pertussis), hypersensitivity reaction (ABPA), cystic fibrosis, primary ciliary dyskinesia, or congenital airway obstruction. The primary disease promotes infiltration of the area with neutrophils and T-lymphocytes, with increased release of elastase, IL-8, TNF- α , and prostanooids. The resulting inflammation leads to further obstruction and damage of the bronchial airways, thereby initiating a new cycle of inflammation and bronchial wall injury. Symptoms include chronic cough, hemoptysis, foul-smelling sputum, and dyspnea.

Management consists of antibiotics to control acute infections; *P. aeruginosa*, *H. influenza*, *S.*

pneumonia, and MAI are common pathogens. Inhaled corticosteroids and bronchodilators can help relieve symptoms by reducing airway inflammation. Chest PT and postural drainage help address the issues of mucous overproduction. There are reports of successful surgical outcomes if bronchiectasis is unilateral, where removal of the diseased lung can be curative in some patients. The use of inhaled tobramycin in bronchiectasis is also currently being studied. Initial studies have shown a decrease in sputum *P. aeruginosa* in approximately 2/3 of patients with minimal side effects; however, more studies are needed to better assess its efficacy and long term outcome.

References

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