

Bronchiectasis



Brian T. Kelly, MD, MA^a, Alan P. Knutsen, MD^b, and John M. Routes, MD^c

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Overall Purpose/Goal: To provide excellent case-based reviews on key aspects of allergic disease to those who research, treat, or manage allergic disease.

Target Audience: Physicians and researchers within the field of allergic disease.

Accreditation/Provider Statements and Credit Designation: The American Academy of Allergy, Asthma & Immunology (AAAAI) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The AAAAI designates this journal-based CME activity for 1.00 AMA PRA Category 1 Credit™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

List of Design Committee Members: Brian T. Kelly, MD, MA, Alan P. Knutsen, MD, and John M. Routes, MD (authors); Michael Schatz, MD, MS (editor)

Learning objectives:

1. To understand the definition of bronchiectasis
2. To identify a differential diagnosis of bronchiectasis by location in lungs
3. To effectively treat bronchiectasis

Recognition of Commercial Support: This CME has not received external commercial support.

Disclosure of Relevant Financial Relationships with Commercial Interests: The authors declare that they have no relevant conflicts of interest. M. Schatz disclosed no relevant financial relationships.

The Difficult Cases Feature is based on the *Difficult Cases* Course presented at the AAAAI Annual Meeting and coordinated by the AAAAI New Allergist-Immunologist Assembly (NAIA). View the entire presentation and obtain CME or MOC credit by visiting the *JACI: In Practice* homepage www.jaci-inpractice.org.

Key words: Bronchiectasis; Allergic bronchopulmonary aspergillosis

CASE REPORT

A 56-year-old white woman presented to a tertiary care academic medical center for the second opinion of an elevated IgE (4823 kU/L) and steroid-dependent asthma. For 32 years she complained of severe productive cough, wheezing responsive to bronchodilators, shortness of breath, and many comorbid conditions associated with chronic prednisone use including

osteoporosis and hypertension. Relevant medical history includes recent admission for *Pseudomonas* pneumonia, allergic rhinoconjunctivitis, chronic sinusitis without nasal polyps, atopic dermatitis, reflux, and eosinophilic esophagitis (EoE) requiring esophageal dilation on 4 occasions. She was admitted 6 times per year during her teenage years for asthma until placed on chronic

^aSt. Paul Allergy and Asthma, PA, St. Paul, Minn

^bDepartment of Pediatrics, Saint Louis University, St. Louis, Miss

^cDepartment of Pediatrics, Medical College of Wisconsin, Milwaukee, Wis

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Corresponding author: Brian T. Kelly, MD, MA, St. Paul Allergy and Asthma, PA, 565 Snelling Avenue South, St. Paul, MN 55116. E-mail: briankelly23@gmail.com.

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prednisone. There is an extensive family history of severe asthma, including a brother with severe asthma and bronchiectasis, and an asthma-related death in another brother. Additionally, her paternal cousin was diagnosed with allergic bronchopulmonary aspergillosis (ABPA). Physical examination was remarkable for increased anterior/posterior chest wall diameter and diffuse expiratory wheezing. She did not exhibit clubbing. *Aspergillus* IgE, IgG, and precipitins were all markedly positive. Sweat chloride, genetic testing for cystic fibrosis (CF), serum alpha-1 antitrypsin, quantitative immunoglobulins, and a ciliary biopsy were normal. Spirometry revealed moderate obstruction with forced expiratory volume in 1 second (FEV₁) of 57% predicted. A chest computed tomography (CT) scan revealed extensive bilateral central and lower lobe varicose bronchiectasis. She was diagnosed with ABPA and itraconazole was added as a steroid sparing agent. Additionally, aggressive pulmonary hygiene was initiated with vest therapy 3 times per day, flutter device, albuterol/atrovent nebs, and increased inhaled corticosteroid dose. Over time, her IgE decreased to 1709 kU/L, FEV₁ slowly improved to 74% predicted, and oral steroid dose slowly reduced (see this article's Online Repository at www.jaci-inpractice.org for complete laboratory and imaging evaluation along with discussion of ABPA).

DISCUSSION

Bronchiectasis is defined as an abnormal widening, thickening, and destruction of the bronchial tubes due to infection and/or inflammation.¹ The prevalence of bronchiectasis has increased over time. However, it is unclear whether this represents a true increase in prevalence or increased recognition.²

Characteristic symptoms include chronic productive cough, dyspnea, pleuritic chest pain, occasional hemoptysis, fatigue, and digital clubbing. High-resolution CT scan of the lungs is the gold standard imaging modality to visualize bronchiectasis. The differential diagnosis for the etiology of bronchiectasis can be narrowed based on its location in the lungs. For example, central bronchiectasis is common in CF and ABPA. Lower lobe bronchiectasis, as seen in our case, can be found in patients with humoral immunodeficiency, aspiration, and postinfection. Our patient's lower lobe bronchiectasis is thought to be due to aspiration related to reflux and EoE.³

Mainstay therapies for bronchiectasis include aggressive treatment of underlying disease (eg, corticosteroids, bronchodilators), bronchial hygiene (eg, chest physiotherapy, vest therapy, flutter valve), antibiotics, and antiinflammatories.⁴

Our case symbolizes the importance of recognizing and making a diagnosis early as she has developed significant bronchiectasis requiring multiple treatments. Treatment of the disease is important to prevent the development or mitigate the progression of bronchiectasis. When bronchiectasis is observed, aggressive management should be undertaken.

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