ECRONICON OPEN ACCESS

EC PULMONOLOGY AND RESPIRATORY MEDICINE

Commentary

Incidence and Complications of Bronchiectasis Revisited

Rumi Khajotia*

Consultant Pulmonologist, Department of Internal Medicine, IMU University, Seremban, Malaysia

***Corresponding Author:** Rumi Khajotia, Consultant Pulmonologist, Department of Internal Medicine, IMU University, Seremban, Malaysia.

Received: November 11, 2025; **Published:** November 20, 2025

Bronchiectasis is a chronic respiratory condition, pathologically characterized by permanent, abnormal dilatation of the airways with destruction of their walls. This results in the development of persistent and recurrent chronic respiratory tract infections due to impaired mucociliary clearance. Bronchiectasis results in increased morbidity and poor quality of life in patients afflicted by this condition with an increasing risk of mortality seen in patients with progressive bronchiectasis which is unresponsive to treatment.

It is indeed unfortunate that bronchiectasis is often misdiagnosed in its milder forms resulting in significant lung destruction before the condition is finally diagnosed.

In bronchiectasis, the permanent damage to the bronchial walls resulting in abnormally dilated and irregular airways is predominantly due to a variety of factors which include chronic infections such as tuberculosis, chronic bacterial infections, viral infections such as influenza, autoimmune diseases, genetic disorders such as cystic fibrosis, immune deficiency disorders such as primary ciliary dyskinesis and common variable immune deficiency (CVID), smoking, environmental pollution and occupational exposure to fumes and dusts.

Studies indicate that the incidence of bronchiectasis is increasing in the developing world. This may be due to better diagnostic modalities such as high-resolution computed tomography (HRCT) chest scans which detect the condition even in its earliest and mildest forms. In the United Kingdom the total case load is believed to be approximately 120,000 cases as per data from the National Health Service (NHS) with the highest incidence in patients above the age of 50 years. Gender-wise women have a somewhat higher rate of incidence than men in the UK. In the US, the incidence too seems to be increasing over the past 20 years in people above the age of 60 years, possibly due to better diagnostic techniques available and also an increasingly aging population, as bronchiectasis is known to worsen with age (*European Respiratory Journal* 2018).

In contrast, the incidence of bronchiectasis in the less developed nations where advanced diagnostic techniques are not easily and readily available, is difficult to determine.

Since bronchiectasis is a chronic, progressive condition which worsens with time if left untreated or is poorly treated, severe complications may occur. They include:

1. **Severe respiratory tract infections** involving organisms such as *Haemophilus influenzae, Pseudomonas aeruginosa, Klebsiella* and *Staphylococcus*. Such chronic infections can lead to complete destruction of the walls of airways with increasing permanent loss of lung function. Such patients can develop severe obstructive lung impairment with increasingly poor reversibility over time.

2. **Haemoptysis:** This is a symptom commonly seen in patients with bronchiectasis. To begin with, it is usually mild but with time and progression of the bronchiectasis the haemoptysis can worsen and become severe especially if fungal infection develops in the bronchiectatic cavities resulting in a fungal ball (mycetoma). The hyphae of this fungus invade the walls of the vessels present in the bronchiectatic cavities thereby causing their rupture and consequent massive bleeding. In case of massive haemoptysis, intervention may be needed including emergency lobectomy or segmentectomy and/or selective bronchial artery embolization. Other causes of haemoptysis in patients with bronchiectasis include active tuberculous and bacterial infections in the bronchiectatic cavities.
3. **Respiratory failure:** Patients with progressive bronchiectasis who have had a large amount of the lung parenchyma destroyed by the development of cavities and consequent fibrosis can develop severe impairment of their respiratory function resulting in respiratory fatigue and failure. These patients usually present with moderate to severe hypoxemia and carbon dioxide retention on arterial blood gas analysis, due to a severe destruction of the lung parenchyma and the interstitium, resulting in a widespread impairment of gas diffusion.
4. **Pulmonary hypertension:** As the lung functions deteriorate with increasing severe obstructive impairment developing on lung function testing, the patient usually begins to develop pulmonary hypertension (PH). This can be clinically detected by the presence of a loud P2 in the pulmonary area on auscultation, and a 'P' pulmonale on the electrocardiogram.
5. **Cor pulmonale and right ventricular failure:** If the bronchiectasis continues to progress and pulmonary hypertension sets in, it can lead to a strain on the right side of the heart with the consequent development of cor-pulmonale and right-sided heart failure. This results in the development of swelling over the feet and legs, puffiness of face and increased jugular venous pressure. In severe cases, patients may also develop ascites.
6. **Hypoproteinaemia:** Patients with bronchiectasis expectorate a large amount of sputum daily on a regular basis. This sputum is rich in proteins resulting in hypoproteinaemia over time. Hence, it must be remembered that an important cause of swelling over the feet and legs in these patients is hypoproteinaemia, even before right-sided heart failure begins to manifest.
7. **Empyema:** In some instances, thin-walled cavities may rupture during a spasmodic bout of coughing, resulting in the spillage of purulent secretions into the pleural cavity leading to the development of empyema.
8. **Quality of life:** Patients with untreated or poorly treated bronchiectasis usually bear the brunt of a poor quality of life. This is due to the constant presence of purulent expectoration, repeated respiratory tract infections, need to use oral or intravenous antibiotics, need for regular chest physiotherapy and postural drainage and frequent hospital admissions. Such patients also sometimes suffer the embarrassment of chronic bad breath due to the presence of foul-smelling sputum which is the result of chronic anaerobic and gram-negative infections.
9. **Chronic obstructive pulmonary disease (COPD):** Patients with progressive bronchiectasis may develop COPD as a complication. In such a situation, the patient begins to develop increasing breathlessness on exertion and at rest and on clinical examination rhonchi are heard bilaterally over the chest with a prolonged expiratory phase.
10. **Cerebral abscess:** In rare instances, infection from the cavities may travel directly or haematogenously via the vertebral arteries to the brain resulting in the development of a cerebral abscess. Such patients usually develop high-grade fever, headache and seizures, accompanied by neurological findings, which alert the physician to the possibility of this complication.
11. **Amyloidosis:** Secondary amyloidosis is sometimes seen in patients with bronchiectasis, characterised by the deposition of amyloid A (AA) in multiple organs and tissues in the body. The persistent lung inflammation leads to the formation and subsequent deposition of amyloid A (AA) protein in various body tissues, most commonly in the kidneys. This can also result in end-stage renal disease (ESRD). Less commonly, deposition of Amyloid A in the tracheobronchial tree may lead to tracheobronchial amyloidosis, which is a rather rare condition.

In conclusion, bronchiectasis if detected early and treated vigorously can be prevented from worsening, with improvement in the quality of life and significantly reduced morbidity. However, if left undetected and allowed to progress due to delayed or incomplete treatment it can become a debilitating chronic respiratory illness with significant morbidity and consequent complications, leading to a poor quality of life and increased mortality.

Recommended Reading

- European Respiratory Society (ERS) Guidelines for the management of adult bronchiectasis 2025.
- British Thoracic Society (BTS) Guideline for bronchiectasis in adults.
- Murray and Nadel's Textbook of Respiratory Medicine.
- Harrison's Principles of Internal Medicine.
- Understanding Bronchiectasis: A Comprehensive Guide for Patients.
- The BE CLEAR Method to Living with Bronchiectasis.

Volume 14 Issue 12 December 2025