Bronchiectasis and COPD Overlap Syndrome

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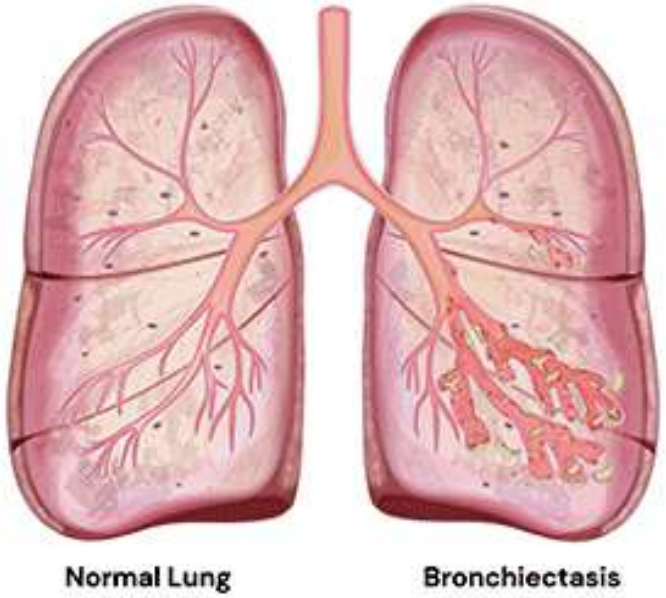
Objective

- What is the difference between bronchiectasis and COPD?
- What is Bronchiectasis and COPD Overlap Syndrome (BCOS)?
- How is BCOS diagnosed?
- Why early detection matters
- Testing, management, and lifestyle changes of BCOS

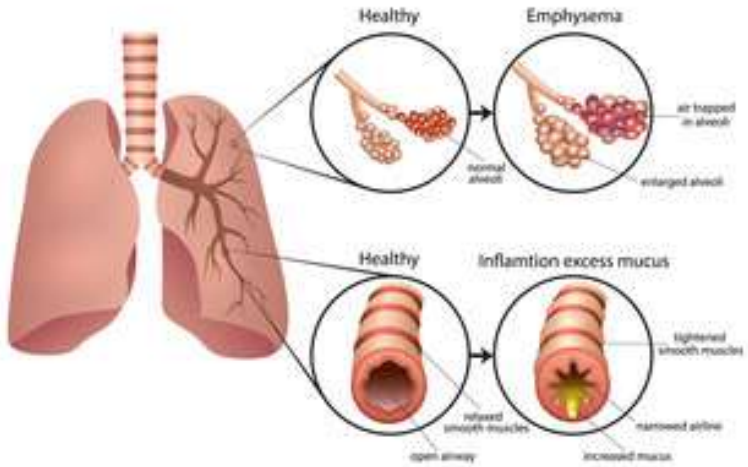


How is Bronchiectasis Different from COPD?

COPD

Involves narrowing of the air ways and damage to the alveoli/air sacs in the lung, resulting in reduced lung function and airflow obstruction.

- Causes:
  - Smoking
  - Secondhand smoke,
  - Air pollution
  - Chemical fumes, dust
  - lung infections
  - Genetic condition alpha-1 antitrypsin deficiency

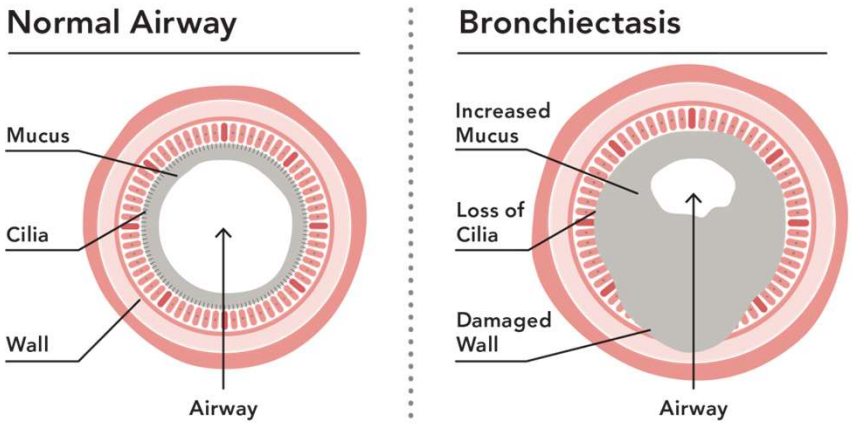


How is Bronchiectasis Different from COPD?

Bronchiectasis

Defined as permanent dilation of the bronchi, excess mucus production and scaring. This causes reduced airflow and increases chances of recurrent/serious lung infections such as PNA and Non-tuberculosis mycobacteria.

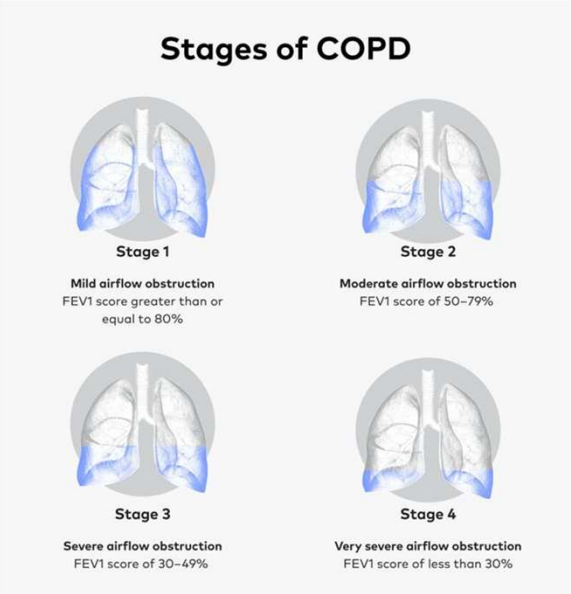
- Causes:
  - Immune system disorders
  - Aspiration –Food or liquids enter the lungs
  - Respiratory infections
  - Gastroesophageal Reflux Disease (GERD)- Stomach contents flows back up into the throat and into the lungs

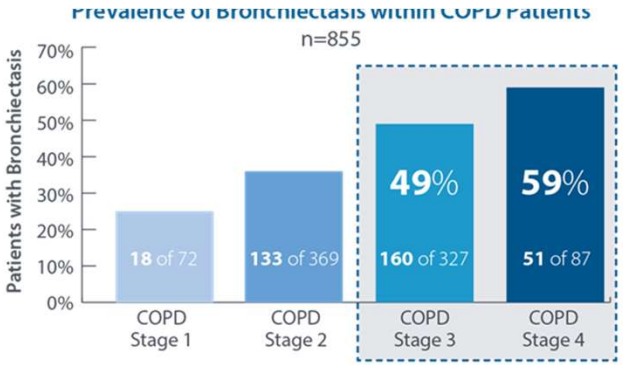


Understanding Overlap Syndrome

Overlap Syndrome:

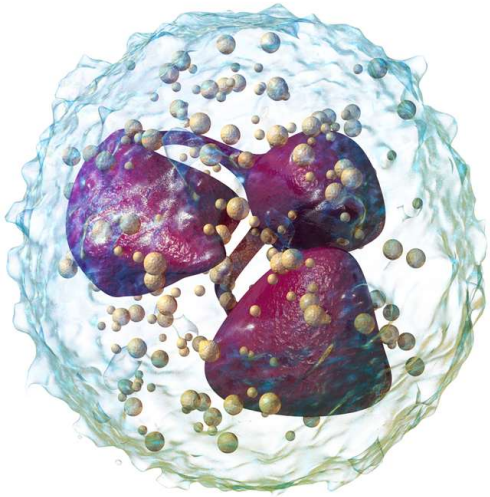
- Bronchiectasis and COPD are two separate disease requiring different treatment but when a person is diagnosed with both simultaneously
- Percentage of overlap syndrome ranges from 20-69%. Mean range 54.3%

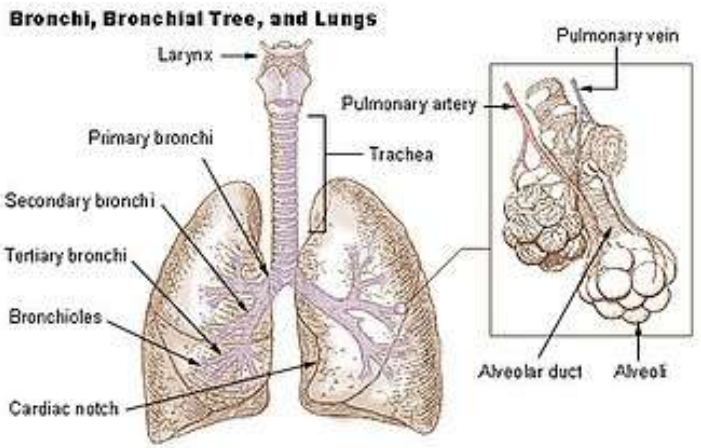




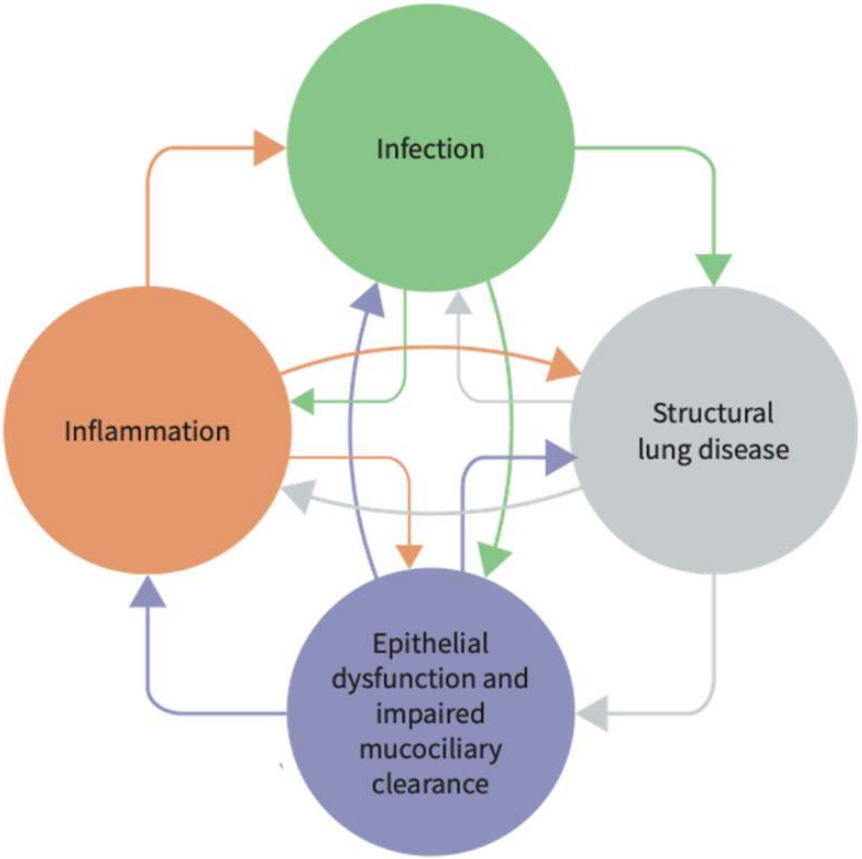
Reasons for BCOS

- Increased use of low-dose CT scan
- Alpha- 1 antitrypsin deficiency
- Hypoxia influences neutrophilic function and behavior
- Flare-ups or exacerbation



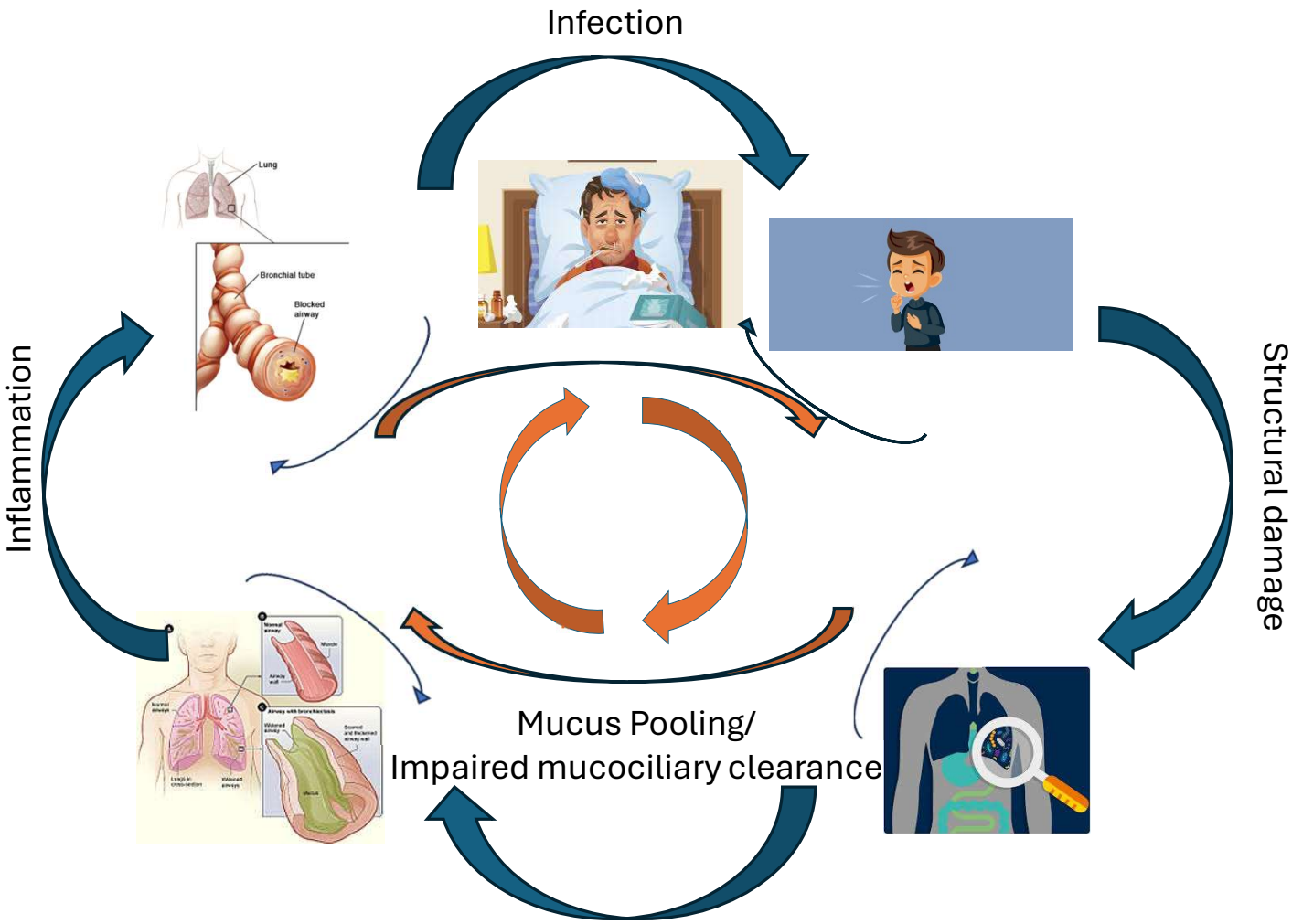


Bronchiectasis Pathophysiology and Treatment Goals

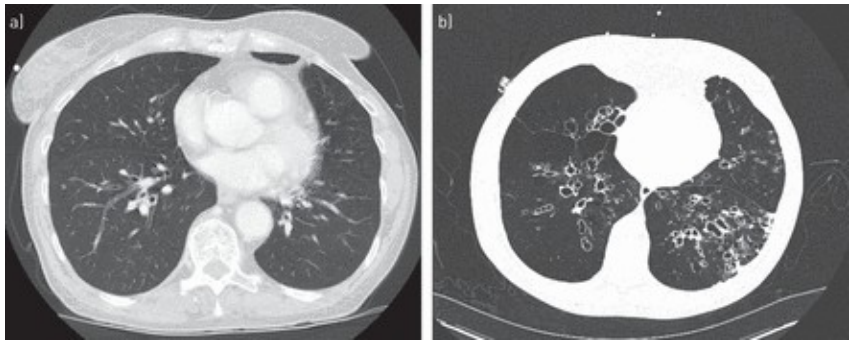


Johnson E, et al. Eur Respir Rev. 2024;33:230234.

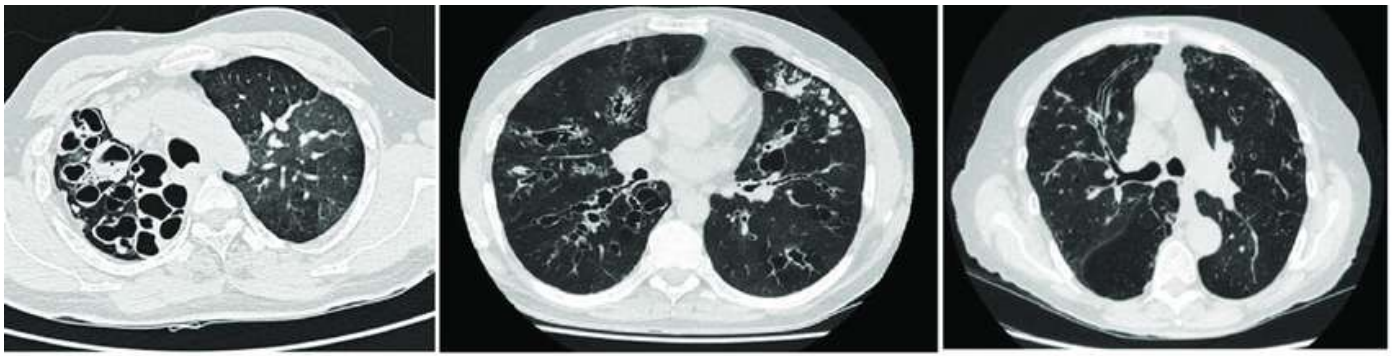
Vicious Vortex



CT Evaluation COPD vs Bronchiectasis



- The imaging features of bronchiectasis in COPD were consistent from different studies, mostly cylindrical and varicose in appearance, mild to moderate in severity, while cystic changes are uncommon.



Cystic Bronchiectasis | Varicose Bronchiectasis | Cylindrical Bronchiectasis

Symptoms Needing Further Investigation

How Do Health Care Providers Diagnosis BCOS?

History: Series of questions to understand current symptoms, family history, work history, living conditions, and potential risks.

Pulmonary function test (PFT): Series of breathing tests that measure how well the lungs are working.

High resolution chest CT: Imaging that diagnosis and monitors diseases of the lung tissue and airways.

Treatment Options

- Treat underlying cause
- Medication
- Airway clearance techniques
- Pulmonary rehab

Treatment Options

Medication

Inhaled corticosteroids: Not recommended in most patients

Bronchodilators: As needed

Mucolytic: 7% hypertonic Reduces the bacterial load. Inhaling saltwater essentially make a hostile environment. Not recommended to mix with albuterol because it changes the concentrations

- Mucomyst- No data to support use

Inhaled antibiotics: 14-day course of antibiotics according to the Bronchiectasis Guidelines

- In the United States, common bacteria that cause pulmonary infections in patients with bronchiectasis include nontuberculous mycobacteria (NTM), Pseudomonas aeruginosa, Staphylococcus aureus, Haemophilus influenzae, and Moraxella catarrhalis. Fungal pathogens may also be present in cultures, such as Aspergillus species and Scedosporium apiospermum.

Releasing in 2025: Brensocatib

Treatment Options

Breathing techniques

Techniques designed to help move mucus from deep in the lungs to a location easier to cough out.

- Autogenic drainage: Involves inhaling at different lung volumes and adjusting exhalation to move mucus
- Active cycle of breathing: Combines breathing control, thoracic expansion exercises and a forced expiration
- Huff Cough: Helps move mucus from the lower airways to the upper airways using quick forced exhales

- Adherence for prevention

Lifestyle Changes

- **Stay Active:** Regular exercise, especially aerobic exercises, can improve lung function, enhance mucus clearance, and boost energy levels.
- **Infection prevention:** It's important to avoid places or situation where infections can spread to minimize exposure.
  - Handwashing
  - Vaccinations
  - Avoiding sick contact
- **Healthy Diet:** A diet high in fruits, vegetables, lean proteins, and whole grains helps the body fight infections and inflammation.
- **Quit Smoking:** Smoke, secondhand smoke, vaping
- **Avoid Irritants:** Air pollution, chemical fumes, or dust can worsen symptoms
- **Maintaining a healthy weight:** Achieve a healthy weight to reduce the strain on the lungs.
- **Prioritize Sleep:** Sleep is essential for our physical and mental health

Other Overlapping diseases

- **Interstitial Lung Disease (ILD):** Various forms of ILD can cause inflammation and scarring of lung tissue, potentially resulting in bronchiectasis as a secondary complication.
- **Bronchial Hyperreactivity:** Conditions like allergic bronchopulmonary aspergillosis can lead to airway inflammation and structural changes consistent with bronchiectasis.
- **Non-tuberculous Macrobacterium (NTM):** Bacteria such as Mycobacterium Avium Complex (MAC) found in the environment invade the lungs and cause infection. The infection causes inflammation and worsened lung function overtime

Take Away

- Overlap syndrome affects 20-69% or people with COPD
- Mostly seen in severe to very severe COPD (stage 3-4)
- Early detection helps slow progression of lung damage and reduce flair ups
- High resolution computed tomography of chest (Gold standard)
- Inhaled corticosteroids is not standard treatment
- No proven benefit of mucomyst
- Mortality rate for COPD patients who have bronchiectasis are 1.77 higher with in 5 years then compared to each chronic disease independently

Questions?