CONDITION

Bronchiectasis

Learn how bronchiectasis damages the airways, what symptoms and flare-ups can look like, and how airway clearance, medicines, and follow-up may help.

WHAT IT IS
Long-term lung condition with widened, damaged airways

BODY SYSTEM
Lungs and breathing

MAIN SYMPTOMS
Long-lasting cough, sputum, shortness of breath, frequent chest infections

WHAT CAUSES IT
Infection, immune or inherited problems, sometimes unknown

HOW IT IS DIAGNOSED
High-resolution chest CT

MAIN TREATMENT
Airway clearance and medicines

CAN IT BE CURED?
No, airway changes are usually irreversible

IS IT AN EMERGENCY?
Sometimes, with severe breathing difficulty

LONG-TERM OUTLOOK
Variable, with possible progressive lung damage and respiratory failure

Overview

Bronchiectasis is a long-term lung condition in which parts of the breathing tubes, called bronchi, become widened and damaged. The affected airways do not clear mucus as well as healthy airways.

Mucus can collect in these widened airways. This makes it easier for bacteria and other germs to grow, which can lead to repeated infections or periods of worsening symptoms. Inflammation from infection can cause more airway damage, creating a cycle of mucus buildup, infection, and inflammation.

The airway changes usually cannot be reversed. However, treatment can help remove mucus, reduce flare-ups, improve breathing, and protect remaining lung function. Some people have mild or occasional symptoms. Others need regular airway-clearance treatment and specialist

follow-up.

Bronchiectasis is not the same as chronic bronchitis, emphysema, or asthma, although these conditions can occur together. It is also not usually contagious. A person may sometimes have a contagious respiratory infection, but the airway damage itself cannot spread to someone else.

Symptoms

The most common symptom is a long-lasting cough. Many people cough up sputum, also called phlegm. The amount and color can vary. Some people have little sputum or mainly experience a dry cough.

Other possible symptoms include:

Symptoms may be fairly stable between flare-ups. A bronchiectasis flare-up, also called an exacerbation, is a noticeable worsening that lasts beyond ordinary day-to-day variation. The cough may become more frequent, and there may be more sputum or a change in its thickness or color. Breathlessness, tiredness, wheezing, fever, or coughing up blood may also increase.

A change in sputum color alone does not always prove that there is a bacterial infection. Clinicians consider the full pattern of symptoms, examination findings, and sputum test results when deciding on treatment.

Contact a healthcare professional promptly if symptoms are getting worse, especially if there is fever, increasing breathlessness, new chest pain, or blood in the sputum. Seek emergency help for severe difficulty breathing, confusion, blue or gray lips, heavy or continuing bleeding from the airway, fainting, or severe chest pain.

- Shortness of breath, especially during activity
- Wheezing or noisy breathing
- Chest discomfort
- Tiredness
- Frequent chest infections
- Coughing up blood, known as hemoptysis
- Reduced appetite or unintended weight loss in more advanced disease

Causes and risk factors

Bronchiectasis develops after the airways are injured or their normal defenses stop working properly. In many people, more than one factor may be involved. Sometimes no cause is found even after appropriate testing. This is called idiopathic bronchiectasis.

Possible causes and associated conditions include previous severe lung infections, such as pneumonia, tuberculosis, or whooping cough. Some infections may have occurred years before bronchiectasis is discovered.

Problems with the immune system can make it difficult to fight respiratory infections. These include low levels of certain antibodies, which are proteins the immune system uses to recognize germs.

Allergic bronchopulmonary aspergillosis is an allergic lung reaction to Aspergillus , a common type of fungus. It can cause inflammation, mucus plugging, and bronchiectasis in some people, particularly those with asthma.

Cystic fibrosis is an inherited condition that produces unusually thick mucus. It is an important cause of bronchiectasis, although many adults with bronchiectasis do not have cystic fibrosis.

Primary ciliary dyskinesia is another inherited condition. It affects tiny moving structures called cilia, which normally sweep mucus and germs out of the airways. Symptoms often begin early in life and may include repeated chest, ear, or sinus infections.

Other possible contributors include:

Finding the cause matters because some underlying problems have specific treatments. It may also affect which medicines are safe and what monitoring is needed.

- Repeated aspiration, in which food, liquid, saliva, or stomach contents enter the airway
- Autoimmune or inflammatory illnesses, such as rheumatoid arthritis or inflammatory bowel disease
- Airway blockage from a foreign object, scar, or tumor
- Long-term infection with nontuberculous mycobacteria
- Chronic obstructive pulmonary disease or severe asthma
- Rare structural or genetic disorders affecting the lungs

Diagnosis

A clinician may suspect bronchiectasis based on a long-term productive cough, repeated chest infections, or abnormal lung sounds. Similar symptoms can occur with several other lung conditions, so testing is needed.

A chest computed tomography scan, usually a thin-section or high-resolution CT, is the main test used to confirm bronchiectasis. It creates detailed pictures of the lungs and can show widened airways, thickened airway walls, and areas blocked by mucus. It also shows how much of the lung is affected.

Sputum samples help identify bacteria, fungi, or mycobacteria in the airways. Samples may be collected when symptoms are stable and during flare-ups. These results help clinicians choose antibiotics and distinguish long-term colonization from a new infection. Colonization means that a germ remains in the airway without always causing an active illness.

Breathing tests, including spirometry, measure how much air a person can breathe out and how quickly. Results may be normal, show airflow blockage, or reveal another pattern. Repeat testing can help monitor lung function over time.

Blood tests may look for immune-system problems, inflammation, or allergic bronchopulmonary aspergillosis. Testing for cystic fibrosis, primary ciliary dyskinesia, autoimmune disease, aspiration, or other causes is guided by medical history, age, symptoms, and CT findings.

Bronchoscopy is not needed for everyone. During this procedure, a clinician passes a thin camera into the airways. It may be considered if disease is limited to one area, an obstruction is suspected, bleeding needs investigation, or suitable sputum samples cannot be obtained.

Treatment and management

Treatment is tailored to symptoms, CT findings, lung function, infection history, and the underlying cause. A respiratory specialist, primary care clinician, respiratory physiotherapist, nurse, pharmacist, and other professionals may share care.

Airway clearance is a central part of treatment. These techniques help move mucus toward the larger airways so it can be coughed out. A respiratory physiotherapist can teach a method suited to the person's health, strength, and daily routine. Techniques may involve controlled breathing, specific positions, huff coughing, or a handheld device that creates pressure or vibration during exhalation.

Airway-clearance routines may need to be performed more often during a flare-up. The technique should be reviewed if it causes pain, worsens reflux, produces significant bleeding, or is not clearing mucus effectively.

Regular physical activity can improve endurance and help move secretions. Pulmonary rehabilitation is a supervised program combining exercise, education, and breathing support. It may be helpful for people limited by breathlessness or reduced exercise capacity.

Antibiotics like amoxicillin or doxycycline are used for bacterial flare-ups. When practical, a sputum sample is collected before treatment, but care should not be delayed when a person is significantly unwell. The antibiotic choice and length of treatment depend on previous culture results, allergies, illness severity, and local clinical guidance. Hospital treatment and antibiotics given through a vein may be needed for a severe flare-up or infection that does not respond to oral treatment.

Some people with repeated flare-ups may be considered for long-term antibiotics. Options can include a macrolide antibiotic taken by mouth or an antibiotic inhaled directly into the lungs. These treatments require specialist assessment because they can cause side effects and encourage antibiotic resistance. Testing for nontuberculous mycobacteria is particularly important before starting long-term macrolide treatment.

Bronchodilators like albuterol or salmeterol relax muscles around the airways. They may help people who have troublesome breathlessness, airflow obstruction, asthma, or chronic obstructive pulmonary disease. Inhaled corticosteroids like budesonide or fluticasone reduce airway inflammation in certain conditions, but they are not a routine treatment for bronchiectasis alone. They may still be appropriate when asthma or another clear indication is present.

Some people benefit from inhaled saline or another mucus-loosening treatment before airway clearance. A supervised first dose may be used because inhaled treatments can sometimes narrow the airways. Recombinant human DNase, a mucus treatment used in cystic fibrosis, is not routinely used for bronchiectasis unrelated to cystic fibrosis.

Treatment may also address the underlying cause. Examples include immunoglobulin replacement for certain antibody deficiencies, treatment for allergic bronchopulmonary aspergillosis, or measures to reduce aspiration. Surgery is uncommon but may be considered for carefully selected people with severe disease limited to one lung area despite appropriate medical care.

Avoiding tobacco smoke and other inhaled irritants can protect lung health. Recommended respiratory vaccinations and good nutrition are also important parts of preventive care.

Complications

Repeated flare-ups can reduce quality of life and may gradually damage more lung tissue. Some bacteria, including Pseudomonas aeruginosa , can remain in the airways and may be associated with more frequent or difficult-to-treat infections.

Coughing up small streaks of blood can happen when inflamed airway blood vessels break.

Larger or persistent bleeding needs urgent assessment and may require a procedure to block the bleeding vessel.

Advanced bronchiectasis can sometimes lead to low blood oxygen, respiratory failure, or increased pressure in the blood vessels of the lungs. These complications are not inevitable and are more likely when disease is extensive or another serious lung condition is present.

Frequent coughing, fatigue, disrupted sleep, and concern about flare-ups can also affect work, activity, relationships, and emotional health. These effects are appropriate topics for routine medical follow-up.

Follow up

Regular follow-up helps identify changes before they become severe. The schedule depends on symptom burden, flare-up frequency, lung function, organisms found in sputum, and other health conditions.

Follow-up may include a review of cough and sputum, the number of flare-ups, antibiotic use, breathing symptoms, weight, oxygen level, and airway-clearance technique. Clinicians may repeat spirometry and request sputum cultures, including cultures when the person is clinically stable. CT scans are not usually repeated at every visit but may be needed when symptoms change or another problem is suspected.

Keep a record of flare-ups, sputum test results, and previous antibiotics if possible. A written plan can explain what changes to watch for, when to provide a sputum sample, and whom to contact. Do not start leftover antibiotics unless a clinician has provided a specific plan for doing so.

Arrange routine review if the daily cough is becoming harder to manage, activity tolerance is declining, weight is falling, or flare-ups are becoming more frequent. Seek prompt medical advice for a clear flare-up, fever with worsening respiratory symptoms, new blood in the sputum, or breathlessness that is more severe than usual.

Call emergency services for severe breathing difficulty, heavy or continuing airway bleeding, confusion, fainting, blue or gray discoloration, or severe chest pain.

Sources

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