Webstercare

CONTINUING EDUCATION

Consultant Pharmacist Continuing Education Series

October 2022

Acute and chronic bronchitis

Pharmacological approaches and treatments for chronic bronchitis

Bronchitis is an inflammation of the larger airways in the lungs, with cough and sometimes sputum production, chest pain and fever. Inflammation in the lungs narrows the airways, and these irritated airways secrete mucus. Cough is a reflexive way of trying to clear these secretions for easier breathing.

Acute bronchitis

Acute bronchitis is a self-limiting lower respiratory tract infection, usually caused by a viral infection. In people with chronic respiratory conditions such as chronic obstructive pulmonary disease (COPD) or bronchiectasis, acute bronchitis may be a sign of an acute exacerbation of the condition.

The most common symptom of acute bronchitis is a cough. The cough may be productive or non-productive and may last 2 to 3 weeks. In over 90% of people the cough resolves within 4 weeks. In a small number of people, the cough can last up to 8 weeks.

Other symptoms include purulent or coloured sputum, shortness of breath (dyspnoea), wheeze, chest discomfort or pain from coughing, nasal congestion, headache or fever. In acute bronchitis, purulent or coloured sputum is not predictive of a bacterial infection, and therefore does not indicate the need for antibiotics. Unnecessary use of antibiotics for acute bronchitis can contribute to antimicrobial resistance and adverse effects. Antibiotics may be indicated in people at risk of developing pneumonia.

Management of acute bronchitis involves supportive therapy with rest and plenty of fluids. If fever is present, paracetamol and/or ibuprofen may be administered.

There is no evidence to support to use of short-acting beta2-agoinsts such as salbutamol (*Ventolin, Asmol*) or terbutaline (*Bricanyl*) inhalers for acute cough in people who do not have asthma or COPD. However, use of these bronchodilators may reduce wheezing or chest tightness if present in some people. Overuse can lead to tremor and palpitations.

Chronic bronchitis

Chronic bronchitis is daily sputum production for at least three months of two or more consecutive years. Chronic bronchitis within COPD is defined by the presence of chronic cough with sputum production. However, chronic bronchitis can occur without evidence of airflow obstruction due to COPD or asthma.

COPD encompasses chronic bronchitis and emphysema. COPD is defined as a lung disease characterised by chronic obstruction of lung airflow that interferes with normal breathing and is not fully reversible. Symptoms of COPD include shortness of breath (dyspnoea), chronic cough or sputum production. Chronic bronchitis increases the risk of COPD exacerbations or flare-ups.

Risk factors

The primary risk factor for chronic bronchitis is cigarette smoking. Other potential risk factors include inhalation of biomass fuels, dust and chemical fumes. Another possible risk factors is the presence of gastro-oesophageal reflux disease (GORD), where pulmonary aspiration of gastric contents can cause bronchoconstriction, secondary to irritation of oesophageal mucosa.

Treatment

For chronic bronchitis associated with COPD or asthma, the goal is to optimally treat the underlying condition. For adults with asthma, inhaled corticosteroid (ICS) with or without long-acting beta-agonists (LABA) (indacaterol, salmeterol or formoterol) are the cornerstone of treatment. For COPD, long-acting muscarinic antagonists (tiotropium, glycopyrronium, umeclidinium, aclidinium) (LAMAs) or LABA may improve lung function, symptoms, quality of life, and exacerbation frequency. Combination therapy (LAMA/LABA) is better than either monotherapy. The addition of ICS to bronchodilators may reduce exacerbation frequency, but also increase the risk of pneumonia.

Treatment options for chronic bronchitis include:

- Reduce overproduction of mucus
- Decrease mucus hypersecretion by controlling inflammation
- Modify cough

Smoking cessation can improve cough in patients with chronic bronchitis and should be actively supported regardless of age. Airway clearance techniques supported by physiotherapists may be of value.

Vaccination with pneumococcal vaccine and annual flu vaccine is important.

Mucolytics may loosen sputum, making it easier to cough up. They may also have some benefit on lung inflammation and may reduce the number of exacerbations that people with COPD and chronic bronchitis have. Approximately eight people would need to take a mucolytic for nine months for one extra person to avoid having a flare-up or exacerbation. Mucolytics have not been shown to have an important impact on quality of life or lung function.

Bromhexine (*Bisolvon*) is an oral mucolytic, available in tablet or oral liquid and administered three times daily. Bromhexine has been associated with a low risk of severe skin reactions including erythema multiforme, Stevens-Johnson syndrome, acute generalised exanthematous pustulosis. If a rash occurs, the medicine should be stopped immediately, and medical attention sought.

Expectorants

Expectorants such as guaifenesin, ammonium salts, senega and sodium citrate promote expectoration of bronchial secretions. Although they may have some benefit in treating symptoms of the common cold, long-term use has not been shown to be of benefit in chronic bronchitis or COPD.

Many cough and cold products contain a combination of bromhexine and guaifenesin (*Duro-Tuss Chesty Cough, Robitussin Chesty Cough*).

Inhaled medicines

Inhaled medicines are sometimes used for chronic bronchitis in people without COPD, although the evidence is lacking.

Short-acting beta2-agonists (SABAs) such as salbutamol and terbutaline, promote relaxation of bronchial smooth muscle and mucus clearance by decreasing mucus viscosity, allowing for easier clearance.

LABAs also reduce hyperinflation and increase peak expiratory flow, which are essential components of effective cough. Formoterol is fast-acting and has been shown to significantly improve mucus clearance compared with placebo in people with bronchitis.

Anticholinergics, such as inhaled ipratropium (*Atrovent*) may help mucus clearance. However, they can make secretions more difficult to expectorate. Studies have shown an improvement in symptoms of cough and sputum with inhaled long-acting muscarinic agents in patients without airflow obstruction.

Inhaled corticosteroids reduce inflammation and mucus production.

Antibiotics

Chronic antibiotic therapy is generally not indicated for people with emphysema or chronic bronchitis. Macrolide antibiotics have anti-inflammatory properties and may have a role in the treatment of chronic bronchitis. Azithromycin for 12 weeks has been shown to improve symptoms of cough and excessive sputum.

Summary

Chronic bronchitis is a common condition among smokers and in those with COPD. It is caused by excess mucus production, hypersecretion, and mucociliary dysfunction resulting from persistent airway inflammation. Smoking cessation and optimising treatment for COPD with guideline-based inhaled therapy is the most effective strategy. Mucolytics may be helpful in but are largely unhelpful in chronic bronchitis associated with COPD.

References

Cochrane Database of Systematic Reviews 2017, Issue 6.
Cochrane Database of Systematic Reviews 2019, Issue 5.
Cochrane Database of Systematic Reviews 2015, Issue 9.
Am J Respir Crit Care Med 2013; 187(3): 228–237.

↘ ***The Webstercare Consultant Pharmacist Continuing Education Series*** comes to you each month from your pharmacist. If you would like extra copies please visit **www.webstercare.com.au** or ask your pharmacist.

© Webstercare (ABN 29 974 510 173) – 2022. Webstercare and W Device are Registered Trademarks of Webstercare.