Introduction

Asthma is caused by inflammation in the airways. When an asthma attack occurs, the muscles surrounding the airways become tight, and the lining of the air passages swells. This reduces the amount of air that can pass through. Common symptoms include coughing, wheezing, chest tightness, and shortness of breath.

Asthma cannot be cured, but it can be kept under control so that those who are affected by it are able to live normal lives. An array of drugs can be used to open the airways, to both treat and prevent asthma. These medicines are classified as relievers and controllers.

Relievers

Relievers are sometimes called bronchodilators, as they open the airway by dilating the bronchi. They are used for the emergency relief of symptoms, but do not help the underlying inflammation of the airway. Relievers should only be used when asthma symptoms appear.

Short-acting β₂ agonists, e.g. salbutamol and terbutaline, are first-line agents in the management of asthma. They can be used when required by the patient for the relief of breathlessness and wheezing, and to prevent exercise-induced asthma. They take effect within minutes, and are active for up to six to eight hours. Tachycardia and tremor are the most common adverse effects, and are dose-related.

Numerous devices are available to deliver asthma medication by inhalation, such as metered-dose inhalers (MDIs), dry-powder inhalers (DPIs) or nebulisers. The technique used when employing an inhaler device affects how well it works (Table I).

Table I: How to use a metered-dose inhaler

- Shake the inhaler after removing the cap.
- Breathe out for one or two seconds.
- Put the inhaler in your mouth, and start to breathe in slowly, as if sipping hot soup.
- While starting to breathe in, press the top of the inhaler.
- Breathe in slowly until your lungs are full. This should take about five or six seconds.
- Hold your breath for four to six seconds.
- Breathe out, and repeat the procedure.
- If this method is too difficult, a spacer can be used, particularly for children.

Controllers

Controllers (preventers) work by reducing airway inflammation. They need to be used regularly and correctly.

Corticosteroids

Corticosteroids, e.g. beclomethasone, budesonide, and fluticasone, are given in the inhaled form to prevent asthma attacks, and improve lung function. They are available in several strength formulations, and are generally used twice a day. Side-effects are uncommon. However, the most common side-effect is a hoarse voice or oral thrush, both of which can be avoided by rinsing the mouth with water after inhalation. Spacers also reduce the risk of side-effects.

Long-acting inhaled β₂ agonists

Long-acting inhaled β₂ agonists, e.g. salmeterol and formoterol, act for 12 hours or longer. They should only be given in combination with an inhaled corticosteroid. This combination may achieve better asthma control, without having to increase the dose of steroid.

Mast-cell stabilisers

Mast-cell stabilisers, e.g. cromolyn, may be helpful for children who have asthma, and for people who develop asthma after exercising.

Leukotriene modifiers

Leukotriene modifiers, e.g. montelukast and zafirlukast, are useful for young children, and as add-on therapy for children or adults whose asthma is not adequately managed by current controller therapy.

References