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Aspects of Human Disease

This series outlines, briefly, the clinical presentation, diagnosis and management of the 31 chronic medical problems which are most common and important in the developed countries, but space also precludes coverage of acute infections and most malignant disease.

8. Asthma

Asthma is a common condition and is caused by bronchial hyper-reactivity. It results in reversible airway obstruction secondary to excessive bronchial smooth muscle tone (bronchospasm), mucosal oedema, and hypersecretion of mucus.

The prevalence of asthma is increasing. It is more common in males and usually begins in childhood or early adult life. Asthma has traditionally been classified into extrinsic (atopic) and intrinsic (non-atopic) disease (Table 1). However, it is now recognized that almost all asthmatic patients have an allergic component to their disease.

Clinical features

In well-controlled patients, clinical features may be absent. During an asthmatic episode, symptoms may include dyspnoea, cough and paroxysmal expiratory wheeziness with laboured expiration. On examination, patients may be distressed, anxious, tachycardic, have reduced chest expansion and be using accessory respiratory muscles to increase their ventilatory effort.

A prolonged asthmatic attack, which is refractory to treatment, may lead to life-threatening status asthmaticus.

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Type of asthma	Extrinsic	Intrinsic
Frequency	Common	Less common
Associations	Atopic disease (eczema, allergic rhinitis)	
Pathogenesis	IgE-mediated mast cell degranulation	Intrinsic mast cell instability
Age of onset	Early onset Child- or early adulthood	Late onset
Precipitating factors	Allergens identified by positive skin-prick Animal hairs House-dust mite Pollen and moulds	Air pollutants Cold air Drugs (NSAIDs) Emotional stress Exercise

Table 1. Traditional classification of asthma.

Class of drug	Examples	Comments
Beta-2 agonists	Salbutamol	Safe and effective
	Terbutaline	Effect lasts 3–6 hours
	Salmeterol	Effect lasts 12 hours
	Eformoterol	
Anticholinergics	Ipratropium bromide Oxipropium bromide	Effect lasts up to 8 hours
Methylxanthines	Theophylline	Prolonged duration of action
Corticosteroids	Beclometasone dipropionate Fluticasone propionate	Multiple anti-inflammatory actions
Mast cell stabilizers	Sodium cromoglicate	For prophylactic therapy
Leukotriene receptor antagonist (LTRA)	Montelukast Zafirlukast	Given orally May impair liver function

Table 2. Pharmacotherapy used in the management of asthma.

Failure of the patient to complete a sentence, indrawing of the intercostal muscles, a silent chest and signs of exhaustion are suggestive of an impending respiratory arrest.

Diagnosis

Diagnosis of asthma is based on:

- Clinical history and presentation;
- Serial peak expiratory flow rates (PEFR);
- Lung function tests to assess airway reversibility;
- Full blood count: may demonstrate an eosinophilia;

- Serum total and specific IgE levels: raised in atopic disease;
- Chest radiograph (CXR): usually normal. Important to exclude other diagnoses such as a pneumothorax which may mimic an acute asthma attack.

Management

Management of asthma includes:

- Patient education;
- PEFR diary;
- Smoking cessation advice;
- Avoidance of identifiable precipitants;
- Pharmacotherapy (Table 2).