

Asthma:

Clues, Care and Copycats



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Asthma is a common chronic inflammatory disorder of the airways, which affects > 300 million individuals worldwide of all ages and all ethnic backgrounds. Over 10% of Canadian adults report current asthma symptoms, which is the fifth highest prevalence in the world.¹ Asthma can be challenging to diagnose in adults. Once confirmed, control is achieved by a combination of:

- identifying and avoiding triggers,
- patient education and
- pharmacologic management.

Asthma clues

A compatible clinical history and objective evidence of variable airflow obstruction are needed to diagnose asthma.² Symptoms of dyspnea, wheeze, chest tightness and cough plus or minus sputum are typically episodic, provoked by irritant or allergic triggers and worse at night or in the early morning. However, symptoms can be fairly persistent in severe cases. Since asthma is thought to be due to a combination of genetic predisposition plus environmental exposures (Table 1),³ a family history and occupational history can provide clues. A personal or family history of asthma or atopy, symptoms since childhood and absence of significant smoking history all point towards an asthma

diagnosis. Most asthma begins in childhood. Work-related asthma is an important cause of adult-onset asthma and includes asthma caused by workplace exposures (true occupational asthma) as well as aggravation of pre-existing asthma (work-aggravated asthma).⁴

Although typically normal between exacerbations, physical examination may reveal wheezes, prolonged expiratory phase, tachypnea and signs of hyperinflation. It is important to rule out other causes ("copycats" outlined below) and to look for associated features such as nasal polyps.

Objective measures of variable airflow obstruction can be obtained in the office by spirometry (12% or greater increase in forced expiratory volume in the first second [FEV₁] post bronchodilator) or peak flow recordings (20% change post bronchodilator or over time). Bronchial challenge testing is indicated to confirm airway hyperresponsiveness if spirometry and peak expiratory flows are normal.

Asthma copycats

All that wheezes is not asthma! Common differential diagnoses of asthma in adults are:

- Chronic obstructive pulmonary disease (COPD)
- Vocal cord dysfunction

Table 1

Risk factors for asthma development (“causes”)

Host factors

- Genetic predisposition
- Atopy
- Airway responsiveness
- Sex
- Obesity

Environment factors

- Indoor allergens
- Outdoor allergens
- Occupational sensitizers
- Tobacco smoke
- Air pollution
- Respiratory infections
- Socioeconomic factors
- Family size
- Diet and drugs

Table 2

Clinical features of controlled asthma

- Daytime symptoms < 4 days per week
- Nighttime awakenings < 1 night per week
- Normal physical activity
- Mild or infrequent exacerbations
- No work or school absenteeism
- Need for reliever < 4 doses per week (excluding for prevention of exercise-induced symptoms)
- Forced expiratory volume in 1 second (FEV1) or peak expiratory flow (PEF > 85% of personal best)
- Diurnal variation in FEV1 or PEF < 15%

- Gastroesophageal reflux disease (GERD) causing cough
- Allergic rhinitis with post-nasal drip syndrome
- “Cardiac asthma” (congestive heart failure)
- Central airway tumour
- Aspiration
- Cystic fibrosis

Clues that suggest COPD include:

- onset of symptoms after age 40,
- greater than 10 pack/year smoking history,
- persistent symptoms,
- sputum production,
- failure of airflow rates to normalize with a bronchodilator and
- frequent exacerbations, which lead to a progressive decline in clinical and functional status.⁵

Vocal cord dysfunction causes intermittent dyspnea and wheeze, which mimic asthma. This can be particularly hard to diagnose as it typically occurs in individuals who also have asthma. It is more common in females and healthcare workers and is associated with emotional stress. Other clues include:

- localization of symptoms to the throat,
- absence of expiratory airflow obstruction during attacks,
- poor response to asthma treatment and
- truncation of the inspiratory limb of a flow-volume loop on spirometry during symptoms.

Asthma care

The main goal of asthma care is to achieve acceptable disease control (Table 3).² This is accomplished by:

- Control of exposure to environmental triggers

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- Guided self-management education, including provision of a written asthma action plan
- Ensuring all patients have access to a fast-acting bronchodilator for use on demand (*i.e.*, as needed)
- Ensuring all patients with more than very mild, intermittent asthma use a regular anti-inflammatory controller medication, in a dose appropriate to their disease severity and current asthma control
- Prescribing additional therapy (such as long-acting β -adrenergic agonists and/or leukotriene receptor antagonists) when control cannot be achieved with a low-dose of an inhaled corticosteroid

Maintenance therapy should be modified based upon regular assessment of control, trigger exposure/avoidance, inhaler device technique, adherence to medication and comorbid conditions that mimic or aggravate asthma (such as post-nasal drip syndrome, GERD and sleep disordered breathing). Severe exacerbations may require prednisone. Referral to a specialist should be considered for diagnostic and management challenges such as difficult, severe or poorly-controlled asthma and to determine whether patients with poorly controlled allergic asthma should receive anti-IgE therapy.


Conclusion

The burden of asthma on patients and the healthcare system is substantial. A careful history and objective assessment of lung function are important to rule out conditions that mimic asthma. Although most asthma is mild, patients and healthcare professionals must respect the

Table 3

Five most important aspects of management (“care”)

- Main goal: achieve acceptable disease control
- Control the environment
- Asthma education
- Guided self-management and use of an action plan
- Inhaled glucocorticosteroids
- First-line anti-inflammatory therapy
- Additional therapy
- Long-acting β -agonists, anti-leukotrienes

fact that asthma can be life-threatening. Control is best achieved with a combination of comprehensive self-management education and appropriate pharmacologic management. 

References

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