

Management of Asthma

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How to cite this article:

Mayank, Ritu, Lucky et. al./Management of Asthma/Journal of Global Public Health. 2022; 4(1):15-17.

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Received on: 25.04.2022

Accepted on: 30.05.2022

Abstract

Estimates show that nearly 17 million Americans have asthma, and more than 5,000 die from this disease annually. In 1998, asthma accounted for over 13.9 million outpatient visits to physician offices or hospital clinics and over 2.0 million emergency room visits.

Keywords: Americans, Asthma, Disease, Emergency Room

Introduction

Asthma can occur at any age and is the most common chronic disease of childhood. Despite increased knowledge regarding the pathology of asthma and the development of better medications and management plans, the death rate from asthma continues to increase. For most patients it is a disruptive disease, affecting school and work attendance, occupational choices, physical activity, and general quality of life.

Asthma differs from the other obstructive lung diseases in that it is largely reversible, either spontaneously or with treatment. Patients with asthma may experience symptom free periods alternating with acute exacerbations, which last

from minutes to hours or days.

Asthma is a chronic inflammatory disease of the airways that causes airway hyperresponsiveness, mucosal edema, and mucus production. This inflammation ultimately leads to recurrent episodes of asthma symptoms: cough, chest tightness, wheezing, and dyspnea.

Causes

Allergy is the strongest predisposing factor for asthma. Chronic exposure to airway irritants or allergens also increases the risk for developing asthma.

Common allergens can be seasonal (eg, grass, tree, and weed pollens) or perennial (eg, mold,

dust, roaches, or animal dander).

Common triggers for asthma symptoms and exacerbations in patients with asthma include airway irritants (eg, air pollutants, cold, heat, weather changes, strong odors or perfumes, smoke), exercise, stress or emotional upsets, sinusitis with postnasal drip, medications, viral respiratory tract infections, and gastroesophageal reflux.

Most people who have asthma are sensitive to a variety of triggers. A patient's asthma condition will change depending upon the environment, activities, management practices, and other factors.

Diagnosis

A positive family history and environmental factors, including seasonal changes, high pollen counts, mold, climate changes (particularly cold air), and air pollution, are primarily associated with asthma.

Serum levels of immunoglobulin E may be elevated if allergy is present.

Arterial blood gas analysis and pulse oximetry reveal hypoxemia during acute attacks.

Initially, hypocapnia and respiratory alkalosis are present. As the condition worsens and the patient becomes more fatigued, the PaCO₂ may rise.

During an exacerbation, the FEV₁ and FVC are markedly decreased but improve with bronchodilator administration (demonstrating reversibility).

Types

- **Allergic**
Allergic asthma is the most common type, affecting around 60% of people with asthma in the U.S.
- **Nonallergic, or intrinsic**
asthma does not require an allergen to trigger an attack.
It is less common than allergic asthma.
- **Seasonal**
seasonal asthma, symptoms flare up in certain conditions or at particular times of the year.
- **Occupational**
People with occupational asthma may find that their symptoms are worse while working, or that they improve with time off work.
- **Exercise-induced asthma**

occurs when symptoms flare up during or immediately after exercise or another form of strenuous activity. This may happen around 5–20 minutes after the exercise.

Medical management

- **Medical Management** Immediate intervention is necessary because the continuing and progressive dyspnea leads to increased anxiety, aggravating the situation. **Pharmacologic Therapy** Two general classes of asthma medications are long-acting medications to achieve and maintain control of persistent asthma and quick-relief medications for immediate treatment of asthma symptoms and exacerbations. Because the underlying pathology of asthma is inflammation, control of persistent asthma is accomplished primarily with regular use of antiinflammatory medications.
- These medications have systemic side effects when used long term. The route of choice for administration of these medications is the MDI because it allows for topical administration. Critical to the success of inhaled therapy is the proper use of the MDI. If the patient has difficulty with this procedure, the use of a spacer device is indicated. presents a stepwise approach for managing asthma (Expert Panel Report II, 1997). Information on use of the MDI and spacer device is given in the previous section on COPD.
- **Long-Acting Control Medications.** Corticosteroids are the most potent and effective anti-inflammatory medications currently available. They are broadly effective in alleviating symptoms, improving airway function, and decreasing peak flow variability. Initially, the inhaled form is used. A spacer should be used with inhaled corticosteroids and the patient should rinse the mouth after administration to prevent thrush, a common complication of inhaled corticosteroid use.
- A systemic preparation may be used to gain rapid control of the disease; to manage severe, persistent asthma; to treat moderate to severe exacerbations; to accelerate recovery; and to prevent recurrence (Dhand, 2000). Cromolyn sodium (Intal) and nedocromil (Tilade) are mild to moderate anti-inflammatory agents that are used more commonly in children. They also are effective on a prophylactic

basis to prevent exercise-induced asthma or in unavoidable exposure to known triggers. These medications are contraindicated in acute asthma exacerbations. Long-acting beta2-adrenergic agonists are used with antiinflammatory medications to control asthma symptoms, particularly those that occur during the night. These agents are also effective for preventing exercise-induced asthma. Long-acting beta2-adrenergic

agonists are not indicated for immediate relief of symptoms.

References

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