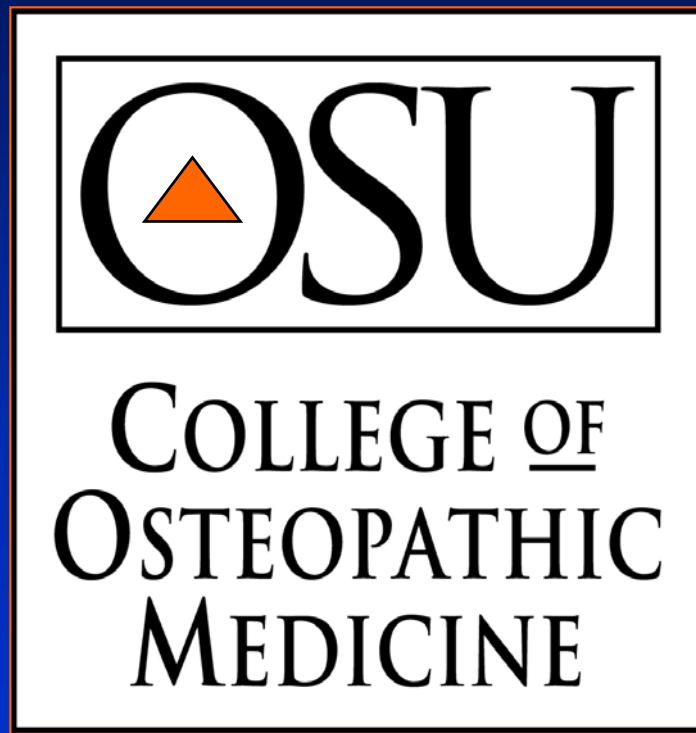


Asthma



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-----Family Practice B-----

Introduction

- Asthma affects 14 to 15 million Americans
- Most common chronic disease of childhood
- Results in more than 5,000 deaths annually.

Objectives

- Correctly diagnose asthma
- Classify severity of disease
- Treat correctly based on classification

What is asthma?

- Obstructive disease secondary to
 - Inflammation and
 - Bronchial wall muscle spasm resulting in:
 - Episodic bouts of wheezing, SOB or other related signs and symptoms

Pathophysiology

- Inflammatory cells infiltrate bronchial walls
 - Neutrophils (especially in acute, fatal attacks)
 - Eosinophils
 - Lymphocytes

Pathophysiology

- Mast cells are activated
- Airway epithelium becomes denuded
- Airways become edematous
- Collagen is deposited beneath basement membranes

Pathophysiology

- Consequences of inflammation:
 - Increased airway responsiveness
 - Airway “remodeling” with increased smooth muscle formation
 - Airway plugging with mucous, cellular debris and serum proteins

Common Associations

- Allergies
- Exposures
- Respiratory infections
- GERD
- Other triggers

Other Asthma Triggers

- Exercise
- Smoke exposure
- Weather changes
- Strong emotional expression
- Menses

Symptoms

- Wheezing
- SOB and dyspnea
- Chest tightness
- Cough (especially nighttime cough)

Signs and Associations

- Decreased FEV1 / PEF
- Wheezing
- Hypoxia
- Chest hyperinflation
- Atopic dermatitis
- Increased nasal secretions, swelling, polyps (triad asthma)

Diagnostic Criteria

- Episodic symptoms of airflow obstruction
- Airflow obstruction at least partially reversible
- Other diagnoses excluded

Severity (NAEPP guidelines)

- Four classifications based on:
 - History - frequency of symptoms, activity limiting symptoms
 - Physical exam - decreased PEF
 - Laboratory - decreased FEV1, low O2, increased CO2 if impending respiratory failure

Mild Intermittent Asthma

- Nocturnal symptoms less than 2X per month
- Symptoms less than 2X per week
- Asymptomatic and normal PEF between exacerbations
- Exacerbations brief (from a few hours to a few days)

Mild Intermittent Asthma

- FEV1 / PEF > 80% of predicted
- PEF variability < 20%
- PEF = peak expiratory flow rate.
- PEF variability = AM (no meds) to mid afternoon after a beta-2-agonist

Mild Persistent Asthma

- Nocturnal symptoms $> 2x$ / mo.
- Symptoms $> 2X$ / week but less than once daily
- Exacerbations may affect activity
- FEV1 / PEF $> 80\%$ of predicted
- PEF variability 20 – 30 %

Moderate Persistent Asthma

- Nocturnal symptoms > once / week
- Symptoms occur daily
- Beta-2-agonist used daily
- Exacerbations affect activity

Moderate Persistent Asthma

- Exacerbations more than 2 / week, may last days
- FEV1 / PEF 60% - 80% of predicted
- PEF variability > 30%

Severe Persistent Asthma

- Nocturnal symptoms frequent
- Continual symptoms
- Limited physical activity
- Frequent exacerbations
- FEV1/PEF less than 60% of predicted
- PEF variability > 30%

When To Refer

- Uncertain Dx
- Poor response to Tx
- Complicating conditions are present
- Patient under age three
- Any other problem that interferes with your ability to appropriately treat

Treatment Goals

- Prevent acute / chronic symptoms
- Maximize pulmonary function
- Rx with fewest possible side effects
- Keep pt. Functioning well

Treatment Methods

- Patient education and monitoring important!
- Acute (rescue) medications
- Chronic and anti-inflammatory medications

Education and Monitoring

- Peak flow monitoring in office
- Avoidance of triggers, allergens
- Peak flow monitoring at home to anticipate flair-ups
- Proper use of medications

Acute Attack - Treatment

- Oxygen
- Steroids
 - IV methylprednisolone (Solumedrol)
 - 1mg / kg IV or 150-250 mg q6
 - P.O. methylprednisolone (Medrol)
 - 4-48 mg p.o., use lowest effective dose.
- Chronic use is different

Acute Attack - Treatment

- Beta-2-Agonists
 - first line, patient can use at home
 - Albuterol (Proventil)
 - 2 puffs qid or 0.1 mg/kg up to 2 mg tid
 - Terbutaline (Brethine)
 - 2 puffs Q 4-6 h for adults

Acute Attack Treatment

- Things to consider:
 - Obtain pulse oximetry, blood gases and other lab as indicated (e.g. CBC if signs & symptoms of infection)
 - Intravenous fluids
 - Racemic epinephrine

Chronic Treatment

- Inhaled corticosteroids
- Inhaled steroid with long-acting Beta-2 agonists
- Others

Long Acting Beta-2-Agonists

- Oral albuterol (Proventil) sustained release
- Advair
 - One inhalation, BID

Inhaled Corticosteroids

- Beclamethasone (Vanceril)
 - 2-4 puffs bid-qid
- Fluticasone (Flovent)
 - 1-2 puffs bid
 - 3 strengths (44, 110, 220 mcg/puff)
- Others

Other Medications

- Ipratropium
- Theophylline
- Zafirlukast
- Zileuton

Stepped Therapy

- Aggressive initial treatment followed by careful “stepping down” to achieve control with the least possible medication.
- Step one for mild intermittent asthma, to step four for severe asthma.

Step One

- Short acting beta-2-agonist as needed
- Using meds more than 2X per week may indicate need for step 2

Step Two

- Daily Medications
 - Low dose inhaled steroid or
 - Cromolyn or nedocromil in children
- Quick relief medications
 - Short acting beta-2-agonist
 - use of beta-2-agonist daily may indicate need for step three

Step Three

- Daily Medications
 - Medium-high dose inhaled steroids or
 - Low-medium dose inhaled steroids with long-acting beta-2-agonist or theophylline or Advair
- Quick Relief
 - Beta-2-agonist

Step Four

- Daily Medications
 - High dose inhaled steroids
 - Long acting beta-2-agonist or theophylline
- Corticosteroids orally
- Quick Relief - same as before

Summary

- Asthma = inflammation (dictates therapy)
- Dx includes **intermittent** & **persistent** types
 - Mild intermittent
 - Mild, moderate, severe persistent
- Treatment involves “rescue” and daily medications with pt. education on use, spacer education, peak flow home / office monitoring

References

- NIH Guidelines for the Diagnosis and Management of Asthma Expert Panel Report 2 (July 1997)

COPD

- No change over time
- Significant overlap with emphysema, asthma and chronic bronchitis
- Asthma changes with time

The Problem

- Fifth leading cause of death in USA
- 75,000 deaths a year

DDX of Chronic Cough

- Postnasal drip
- Asthma
- COPD
- Chronic bronchitis
- GERD

Physical Findings

- Cough
- Dyspnea
- Severe findings
 - Tachypnea
 - Accessory muscle use
 - Pursed lip breathing
 - Cyanosis and agitation

Physical Findings

- Barrel chest
- Sputum production
- Wheezes, rales, rhonchi
- Heart tones distant, gallop
- Cyanosis and/or clubbing of nailbeds

Diagnosis

- Primarily clinical
- Lab and x-ray support
 - PFTs – obstruction
 - ABG's – considering hospitalization
 - CBC – infection, polycythmia, anemia
 - CXR (not always needed)

Treatment

- Climate control
 - Wind, dust, pollen, temperature extremes, etc.
 - Immunotherapy (?)
 - Education
 - Exercise
 - Family Involvement

Medications

- Beta agonists (short and long)
- Anticholinergic (atrovent)
- Corticosteroids
- Theophylline
- Antibiotics
- Oxygen

Terminal COPD

- Keep patient involved (depression)
- Living will
- Where to die?
- House calls