Asthma

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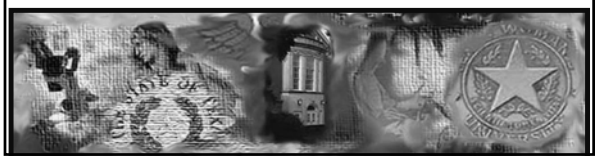
NURS 5415 - Women's Health Nursing III



Asthma Definition

- **Disease of the airways characterized by 2 components of airway obstruction:**
- **Airway inflammation**
- **Bronchospasm and increased mucus production**
  - Inflammation is a natural response of the body in an attempt to defend itself
  - Bronchospasm is a normal response to inhaling irritants
  - During an asthma attach, mucus plugging occurs

Epidemiology

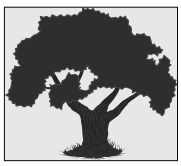
- **4-5% general population affected**
- **50% of asthma develops before age 10**
- **50% of children symptomatic before age 2**
- **Incidence boys/girls below age 10, 2:1**
- **More women than men after ages 12-14**
- **Mortality uncommon in US: 3.2/100,000**
- **Early onset = more severe course**

ETIOLOGY

- Extrinsic: also called "allergic" and is associated with family history of asthma, allergies, rhinitis, eczema; 50% improve with age
- Intrinsic: "idiosyncratic"; no family history or allergies; tends to persist as client ages
- Mixed: client with features of both groups

PATHOPHYSIOLOGY

- Asthma is triggered by allergens, medication, the environment, occupational factors, infection, exercise, and stress.
- Within 10-20 minutes an antigen binds to a IgE surface of a mast cell.



PATHOPHYSIOLOGY

- Then cell mediators such as histamine are released causing bronchospasm.
- There can also be a late phase response resulting from the cellular phase of inflammation which peaks about 4-8 hours after contact with the offending agent.
- This results in increased airway resistance, decreased flow rates and exp. flow volumes.

Phases of Asthma

- **Initial**
  - **Reaction to antigen**
  - **10-20 minutes, spasm**
  - **Neutrophilia, eosinophilia**
- **Late**
  - **With frequent or chronic episodes**
  - **Peaks at 8-10 hours**
  - **Bilateral hyperinflation may be on x-ray**

Common Triggers 1

- **Cigarette smoke; stress**
- **Viral infections; respiratory infections**
  - **<5 y/o -syncytial and parainfluenza**
  - **Older child/adult-rhinovirus and influenza**
- **Rigorous exercise evokes bronchospasm**
  - **Older child/adolescent**
  - **Worse in cold weather sports**

Common Triggers 2

- **Indoor airborne antigens; dust, mites**
- **Sudden changes in weather: Oct./Nov.**
- **Occupational factors**
  - **Working adults; chemicals, plastics**
  - **Industrial chemicals/plastic**
  - **Wood ,vegetable , animal, insect dust**
  - **Meds: ABX, Cimetidine, ASA,**
- **Obesity: 3x more likely; airway compression**

SIGNS AND SYMPTOMS

- Symptoms: dyspnea, chest tightness, cough (especially nocturnal), wheezing (absence of wheezing does not RO diagnosis)
- Tachycardia, tachypnea, and mild systolic HTN may occur.
- Adventitious breath sounds; high pitched wheezing; at end of attack, cough with thick stringy mucus

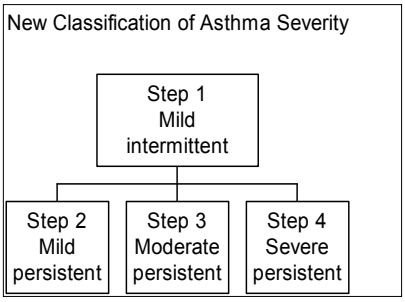
DIFFERENTIAL DIAGNOSIS

- **ADULTS**
  - COPD, CHF, cough secondary to drugs (e.g. ace inhibitors), laryngeal dysfunction, pulmonary embolism, carcinoid tumors

DIAGNOSIS

- Demonstrating the complete response of symptoms, or spirometric measurement of airway obstruction, to an inhaled beta-2 agonist and/or a 5 to 10 day course of high dose oral corticosteroids
- Peak expiratory flow rate that increases 15-20% after the use of a bronchodilator (10-15 minute wait before retesting)

CLASSIFICATION



GOALS OF TREATMENT

- **Prevent chronic and troublesome symptoms**
- **Maintain (near) "normal" pulmonary function**
- **Maintain normal activity levels**
- **Prevent recurrent exacerbations ; ER visits**
- **Client satisfaction with care**
- **Follow stepwise approach from Expert Panel II: Guidelines for Diagnosis & Management, 1997**

Mild Intermittent Asthma

- **Infrequent PRN B2 agonist MDI with spacer**
- **Identify and avoid triggers**
- **No daily medication needed**
- **Patient education: asthma facts, spacers, self management plan, peak flow meters**

Mild Persistent Asthma

- **PRN B2 agonist MDI with spacer for symptoms**
- **Daily medication:**
  - Inhaled anti-inflammatory cromolyn vs corticosteroid (low doses)
  - Alternative: theophylline or zafirlukast for client >12 years; pt. educated on home management

Moderate Asthma

- **Daily medication of either:**
  - Medium dose anti-inflammatory inhaled corticosteroid
  - Inhaled corticosteroid (low medium dose)
- **Add long acting B2 agonist, i.e. Salmeterol or sustained release theophylline**
- **Maximize identification and avoid triggers**
- **Bursts of systemic corticosteroids**
- **Consider consult with subspecialist**

Severe Persistent Asthma

- **Management by subspecialist**
- **Daily anti-inflammatory inhaled corticosteroids (high dose)**
- **Regular systemic steroids**
- **Long acting bronchodilators**
- **Consider allergy immunotherapy**
- **Intensity of treatment R/T severity**

Nebulized Albuterol

- **Adult dose**
  - **Ventolin 2.5mg (0.5ml of 0.5% solution.) in 3cc NS, TID or QID**

Theophylline

- **Mild to moderate bronchodilator, best used with B2 agonist**
- **Therapeutic serum level of 10-20 mcg/ml; periodic blood levels**
- **Decreased clearance; not recommended under 12 years or 35 kg**
  - **Contraindications: active PUD, untreated seizure disorder; caution CHF, elderly**
  - **Medications: erythromycin, allopurinol, cimetidine potentiate**

Theophylline 2

- **Increased metabolism with smoking**
  - **Antagonized by phenobarbital, phenytoin**
  - **Avoid beta blockers**
- **Side effects**
  - **Nervousness, n/v, anorexia, HA,**
  - **Plasma level >30 mcg/ml at risk for seizures and cardiac arrhythmia**

Follow up

- **Adult with acute exacerbation evaluate in office within 24 hours, then in 3-4 days.**
- **Routine visits every 1-3 months**

Conclusion

- Prognosis is good for clients who develop asthma in childhood or have a mild case
- About 26%-78% of diagnosed children will still have the disease 7-10 years later
- As one ages, asthma is not progressive like COPD; spontaneous remission occurs in 20% of clients who develop asthma as an adult