CLINICAL PICTURE OF BRONCHIAL ASTHMA

Definition
- It is a syndrome characterized by AIRFLOW OBSTRUCTION that varies markedly, both spontaneously and with treatment.
- Narrowing of the airways is usually reversible, but in some patients with chronic asthma there may be an element of irreversible airflow obstruction.

What is bronchial asthma?
- Asthma is a CHRONIC INFLAMMATORY disorder of the airways.
- Chronically inflamed airways are hyper responsive:
  1. they become obstructed
  2. airflow is limited by bronchoconstriction & mucus plugs
  3. increased inflammation when airways are exposed to various risk factors.

What is bronchial asthma?
- It is characterized by:
  1. Pathologically: bronchial inflammation with prominent eosinophil infiltration
  2. Physiologically: bronchial hype-reactivity, and
  3. Clinically: variable cough, chest tightness and wheeze

Types of asthma
1. Allergic (extrinsic) asthma
2. Non-allergic (intrinsic) asthma
3. Occupational asthma
4. Aspirin induced asthma
5. Asthma of infancy (<2 yr of age)

<table>
<thead>
<tr>
<th>Allergic asthma</th>
<th>Intrinsic asthma</th>
<th>Occupational asthma</th>
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<tbody>
<tr>
<td>Onset usually in childhood</td>
<td>Onset in adults</td>
<td>Due to exposure to chemical sensitizers at work</td>
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<tr>
<td>May persist into adulthood</td>
<td>No external inciter is recognized</td>
<td>Unrelated to atopic status</td>
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<tr>
<td>Remission in adolescence is common</td>
<td>Often associated with perennial non-allergic rhinitis</td>
<td>Some occur in atopics due to allergen exposure at work</td>
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<tr>
<td>Associated with allergic rhinitis and atopic dermatitis in variable combination</td>
<td>Accounts for approx. 10% of adult asthma</td>
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Triggers of asthma (not causes)
1. Exposure to allergens: such as home dust, fungal spores, gases, fumes or wood dusts.
2. Cold exposure (cold air).
3. Exercise.
4. Smoking:
   o Smoking during pregnancy increases the risk of developing atopic asthma in infancy.
   o Passive exposure to cigarettes smoke immediately following birth increase the risk of developing asthma.
5. Drugs: B-blockers (even when used topically or eye drops), aspirin (and other NSAID)
6. about 10% of asthmatic patients develop bronchospasm when given aspirin.
7. Infection: viral & bacterial infection of respiratory tract (viral more than bacterial).
8. Anxiety & psychological factors:
   9. Sever anxiety or stress can exacerbate asthma.

Clinical Manifestations
1. Unpredictable and variable
2. Recurrent episodes of wheezing, breathlessness, cough, and tight chest
3. The classic symptoms of asthma are wheezing, cough & shortness of breath (with chest tightness).
4. During periods of relatively normal lung function, patients are likely to have no physical findings
5. Expiration may be prolonged from inspiration-expiration ratio of 1:2 to 1:3 or 1:4
6. Between attacks may be asymptomatic with normal/near-normal lung function
7. Examination of the patient during an acute attack usually reveals signs of hypoxemia
   o Restlessness
   o Increased anxiety
   o Inappropriate behavior
   o Increased pulse and blood pressure
   o Pulsus paradoxus (drop in systolic BP during insp cycle >10)

Classic Symptoms
1. Wheezing
   • the most common finding during acute airway obstruction
   • chest may be hyperresonant on percussion.
   • unreliable sign to gauge severity of attack
   Severe attacks can have no audible wheezing due to reduction in airflow
   “Silent chest” is ominous sign of impending respiratory failure
2. Shortness of breath
   Dyspnea tends to vary greatly over time, depending on the severity of airflow obstruction.
3. Cough
   • can be nonproductive/raise copious amounts of sputum (particularly in the presence of infection)
   • Eosinophils & their debris may cause a yellow discoloration of sputum, even when infection is absent
   • cough is the only manifestation of asthma.
4. Chest tightness
   commonly occurs with dyspnea & may confused with angina pectoris. Most patients associate their chest tightness with the sensation of being unable to take in a full & satisfying breath.
Physical signs of asthma: (in the chest)

- During an attack the chest in held near position of full inspiration & percussion note may be hyperresonant.
- Breath sound are vesicular with prolong expiratory phase.
- Bilateral expiratory & may be inspiratory ronchi.
- In very sever asthma the chest may be silent, because of insufficient air flow.
- No physical signs between attack except in patients with chronic asthma which there is usually expiratory rhonchi.
- Sever asthma starting from childhood may cause pigeon chest deformity (pectus carinatum).

According to the clinical features we can divide asthma into the following:

1- Episodic asthma (usually atopic).
2- Chronic asthma (non atopic).
3- Acute sever asthma (status asthmatics).

- History of allergy is very important.
- An extremely common feature of asthma is nocturnal awakening with dyspnea & wheezing.

<table>
<thead>
<tr>
<th>Episodic asthma (atopic)</th>
<th>Chronic asthma (non atopic)</th>
<th>Acute sever asthma (status asthmaticus)</th>
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</thead>
<tbody>
<tr>
<td>No respiratory symptoms between episodes.</td>
<td></td>
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<tr>
<td>Paroxysms of dyspnoea &amp; wheeze may occur at any time, may be sudden onset.</td>
<td></td>
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<tr>
<td>Paroxysms may last hours, days or weeks, may be mild, moderate or severe.</td>
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<tr>
<td>wheeze, cough, dyspnea &amp; chest tightness.</td>
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<tr>
<td>• cough &amp; wheeze at night (an extremely common feature of asthma is nocturnal awakening with dyspnoea and/ or wheezing).</td>
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<tr>
<td>• Episodes of sever acute asthma.</td>
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<tr>
<td>• Recurrent episodes of chest infection with productive cough are common (It may be difficult to differentiate from chronic bronchitis).</td>
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<td>Life threatening attack of asthma .</td>
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<td>• usually extremely distressed, adopts an upright position, fixing his shoulder girdle to assist the accessory muscle of respiration .</td>
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<tr>
<td>• usually have dyspnoea, tachypnoea ,wheeze , dry cough, sweating , tachycardia &amp; pulses paradoxes (a large fall in blood pressure during inspiration &amp; the pulse may be impalpable due to reduced cardiac return as a consequence of sever hyperinflation).</td>
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<td>• In sever cases: central cyanosis, silent chest (no wheeze) &amp; bradycardia may occur.</td>
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Triggers are : allergens, cold, exercise & respiratory infections (specially viral).

What are your objectives in caring for bronchial asthma patient?

- Prevent troublesome symptoms night and day
- Prevent serious attacks
- Require little or no reliever medication
- Have productive, physical, psychological, and social active lives

Challenges in severe asthma
Why do patients get hospitalized?

1. Patient non-adherence to medication.
2. Continued exposure to triggers (pets etc) or exposure to second-hand smoke.
3. Incomplete assessment of co-morbidities like sleep apnea or GERD.
4. Inadequate follow-up
5. Pharmacogenomics and individualized patient responses to medication.

Risk Factors Associated with Higher Mortality in Acute Asthma

- Previous severe exacerbation (e.g., ICU admission).
- Two or more hospitalizations for asthma.
- Three or more ED visits for asthma in the past year.
- Using >2 canisters of SABA per month.
- Difficulty perceiving asthma symptoms or severity of exacerbations.

Other risk factors:

- sensitivity to Alternaria
- low socioeconomic status or inner-city residence
- illicit drug use
- major psychosocial problems
- comorbidities like cardiovascular disease, etc.