NURS 821 Alterations in Respiration and Ventilation

Lecture 7

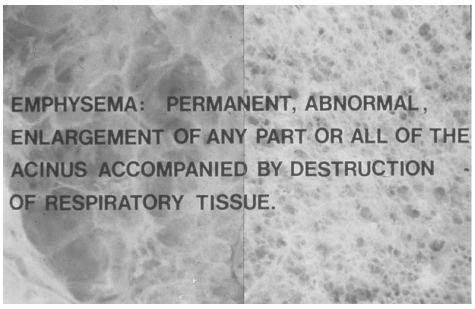
Part 5 Complex Pulmonary Disorders (cont'd)

Emphysema

- Definition-Abnormal permanent enlargement of the gas exchange airways (acini) accompanied by destruction of alveolar walls
- Etiology
  - **Primary**-Inherited deficiency of alpha 1 antitrypsin which inhibits proteolytic enzymes in lung parenchyma resulting in alveolar septa destruction; early severe onset
  - **Secondary**-smoking +/or bronchitis

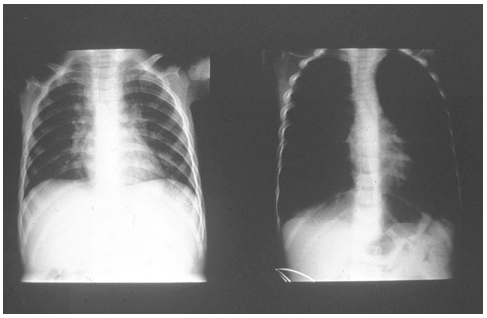
Emphysema Pathophysiology

- Alveolar wall destruction decreases capillary bed
- Decreased elastic recoil causes air trapping and increased breathing work
- Hyperinflated alveoli result in bullae and blebs
- Destruction of alveolar support causes airway collapse



Emphysema Clinical Manifestations

- "Pink Puffer"-able to maintain relatively normal PaO_2 until late in disease
- Air trapping-loss of elastic recoil of alveolus and narrowed bronchiole
- Increased WOB
- Increased AP chest diameter
- Flattened diaphragm
- Intercostal use, tripod position
- PND
- DOE and at rest



Types of Emphysema

- **Panacinar**
  - Affects:
    - Bronchioles
    - Alveoli
- **Centrilobular**
  - Affects
    - bronchioles

Diet and Lung Cancer

- Class of nutrients, isothiocyanates, found only in cruciferous vegetables was protective against lung cancer in 18,244 males, aged 45-64 in China
- Subjects genetically deficient in enzyme, GSTM1, that quickly eliminatesITCs from the body benefited most
- Validated in U.S.

(NIEH, 2000)

Marijuana Promotes Tumor Growth, Impairs Anti-tumor Defenses

- THC can promote tumor growth by impairing body's anti-tumor immunity system-increases IL-10 and TGF-B
- Marijuana-tar of smoke contains higher hydrocarbons than tobacco smoke

- Marijuana smoke deposits 4x as much tar in respiratory tract than comparable tobacco dose

(NIH, 2000)

Manifestations of Acidosis

- *CNS*: decreased activity-lethargy, confusion, stupor, coma
- *Neuromuscular:* hyporeflexia, weakness, flaccid paralysis
- *Cardiac:* delayed electrical conduction, hypotension, thready pulse
- *Respiratory*: Kussmaul's respirations, variable respirations

Respiratory Alkalosis

- **Pathology**-Excess CO_2 loss
- **Etiology**
  - hyperventilation
  - central chemoreceptor stimulation
  - peripheral chemoreceptor stimulation
    - hypoxemia
    - asphyxiation
    - high altitudes
    - shock