NURS 821 Gastrointestinal Disorders

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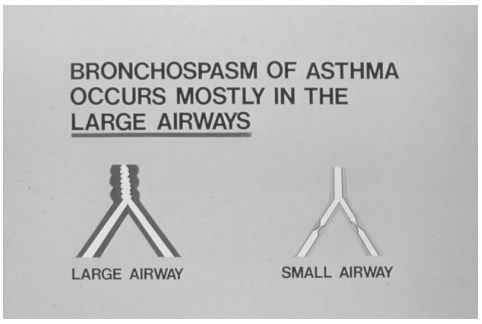
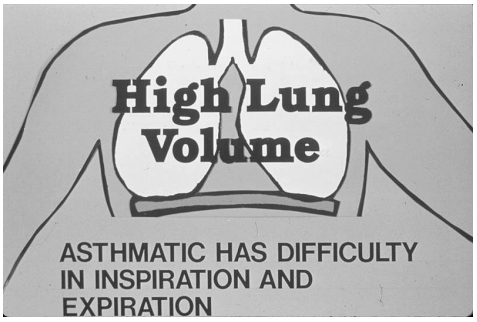
Lecture 8

Part 1 Alterations in Respiration (cont'd)





Asthma Phases

- Early response-10-20 minutes post AG contact
  - AG contact with IgE on mast cells causes immediate inflammation and release of inflammatory mediators-histamine, bradykinin, leukotrienes, prostaglandins, thrombaxanes
- Late response-occurs 4-8 or 6-10 hours post exposure
  - Infiltrates of eosinophils and neutrophils

Asthma Types

- **Extrinsic**
  - DX younger than 35
  - Allergies
    - Clasified according to hypersensitivity response
    - Type 1-classic, may outgrow
    - Type 2-allergic alveolitis-develops before 35 due to prolong irritant exposure

  Intermittent bronchospasm
  - HX of family allergies, eczema

Most people have combined forms!

Intrinsic

- DX after age 35
- NKA
- More continuous bronchospasm with attacks related to exercise, infection, emotion
- No family HX
- Also another exercise induced form!

C.O.P.D. Incidence

- 5th leading cause of death in the U.S.
- 13.5 million in U.S. with C.O.P.D.
- Greater incidence in males
- Greatest increase in COPD death rate from 1979-1989 occurred in females, especially black females
  - Directly due to cigarette smoking

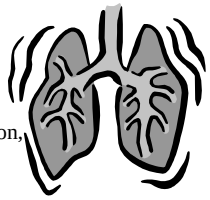
(NIH, 2000)

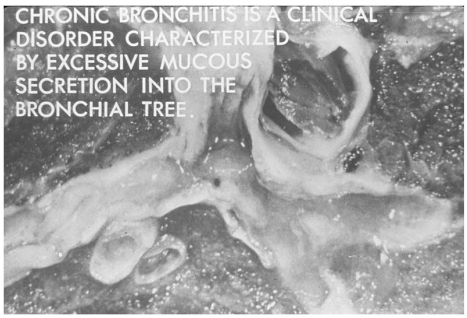
Chronic Bronchitis

- Definition:
  - Bronchial irritation and inflammation due to irritants or infection
  - Chronic mucus hypersecretion and cough for at least 3 months/year for 2 consecutive years

Chronic Bronchitis Pathophysiology

- Chronic bronchial inflammation and mucus hypersecretion
  - Bronchial tube narrowing
  - Mucus and pus impede ciliary action
  - Leads to cough, expectoration, and infection





C.O.P.D. Comparisons

- **Chronic bronchitis**
- Manifestations- chronic cough, infections; dusky
- Pathophysiology-
  - narrowed bronchi due to inflammation
  - Cilia impede by mucus and pus

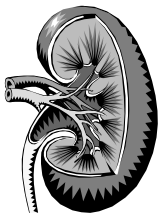
- **Emphysema**
- Manifestations-barrel shaped chest; plethoric
- Pathophysiology-
  - Alveoli coalesce due to wall damage
  - Bronchioles collapse
  - Inelastic tissue
  - Lungs enlarge due to trapping
  - Exhalation difficult

Cystic Fibrosis (CF)

- Definition-Autosomal recessive disease caused by mutations on long arm of chromosome 7. Etiology-Cystic fibrosis transmembrane regulator (CFTR) defect
- CFTR-regulates and participates in electrolyte transportation across epithelial cell membranes and probably intracellular membranes

Cystic Fibrosis Inheritance

- Autosomal Recessive Inheritance
  - 2 carriers mate
    - Produce 1 normal
    - 2 carriers
    - 1 CF



Cystic Fibrosis

- ***Incidence***-
  - 30,000 Americans
  - 3,000 Canadians
  - 20,000 Europeans
- Afflicts predominantly Caucasians of Northern European heritage
  - Low incidence in African, Native, and Asian Americans

CF

- 2,500 babies born in U.S. each year
- 1/20 Americans (12 million) is an ***unaffected (and unaware) carrier***
- **Over 500 gene mutations, only 70 tested!**
- Many variations in clinical manifestations! Manifestations due to exocrine gland dysfunction causing abnormal mucus secretion and obstruction
- (NIH, 2000)

CF Pathophysiology

- Defective CFTR results in disturbed chloride transport across secretory epithelium
  - Compensatory sodium retention
  - Increased cell water retention
  - Cell surface dehydration
  - Mechanical obstruction
  - Chronic inflammation

CF Manifestations

- **Respiratory**
  - Infections- pseudomonas, staph pneumonia, persistent pneumonia
  - Pansinusitis or nasal polyps
  - Recurrent bronchiolitis
- **GI**
  - malabsorption
  - Steatorrhea
  - Failure to thrive-any age; distended abdomen, thin extremities
  - Distal intestinal obstruction, meconium ileus
  - Rectal prolapse
  - Intussusception
  - Unexplained cirrhosis, cholelithiasis, or pancreatitis before age 30
  - Vits. A,D,E, K deficiency

CF Manifestations

- Miscellaneous
  - Salty skin-sweat testing for chloride concentration
  - anemia
  - Hypoproteinemia or anasarca
  - Hyponatremic dehydration
  - Metabolic alkalosis
  - Clubbing
  - Azoospermia or infertility

CF and Sinusitis

- 14% suffer from chronic sinusitis
- Common in CF
- DNA of 147 w/ sinusitis compared to 123 without
- 10 of study group had CF mutations in CFTR gene, but not CF
- Concluded: sinusitis sufferers 5X more likely to carry CFTR mutation
- Wang, X. et al. (2000). JAMA 284(14):1814-1819.

Atypical CF

- DX late childhood or adulthood
- Lack classic manifestations
- DX usually due to pancreatitis, congenital absence of vas deferens with azoospermia, or nasal polyps
  - Embryologic development of vas deferens requires higher levels of CFTR than other organs

Lung Cancer Manifestations

- Progressive cough
- Constant chest pain
- Hemoptysis
- S.o.b., wheezing, hoarseness
- Recurrent pneumonia or bronchitis
- Neck or facial edema
- Constitutional symptoms-anorexia, wt. loss, fatigue

Lung Cancer Risk Factors

- Air pollution
- Heredity
- Tobacco
  - Cigarettes-ppd, length, inhalation techniques
  - Cigars and pipes-same variables. If no inhalation-mouth cancer risk
  - Environmental tobacco smoke (secondhand smoke)

Lung Cancer Types

- Nonsmall cell lung cancer
  - More common than small cell
  - Grows and spreads more slowly
  - Types:
    - Squamous cell (epidermoid) carcinoma-45-60%
    - Adenocarcinoma-30%; slow; smokers and non
    - Large cell carcinoma-15%; poor prognosis
    - (NIH, 2000)

Lung Cancer Types (cont'd)

- Small cell lung cancer
  - Less common
  - Grows more quickly
  - Metastasizes more quickly
  - (NIH, 2000)

Adenocarcinoma of Lung