Respiratory System (Ch. 7)

“breathe”, hal/o also = “breathe” and -pnea

I. Overview
A. Collection of organs designed to deliver O₂ to blood and remove CO₂ from blood

B. Works with cardiovascular system

C. Specialists include “ENT” = Otorhinolaryngologist

II. Anatomy
A. Nose

1. Nasal cavity separated from oral cavity by hard & soft palate

2. Lined with ciliated mucous membrane (line cavities exposed to outside)

3. Abundant blood vessels

Rhinorrhea = “runny nose”

vs.

Rhinorrhagia = “bloody nose’
or

Epistaxis

4. Nasal sinuses (cavities within cranial bones) also lined with mucous membrane

B. pharynx = “throat”

1. Common passageway for food/air

2. 3 divisions named after what they’re “behind” [Fig. 7-1 poor]

3. “Tonsils” are masses of lymphatic tissue

T & A = tonsillectomy & adenoidectomy

C. larynx = “throat” (voicebox)

1. Contains vocal cords (2 sets)

2. Opening is glottis

3. Composed of cartilage

- epiglottis - prevents food entry

- thyroid - ADD “shield-shaped” → “Adam’s apple”
D. trachea = “windpipe”
   1. stacks of C-shaped cartilaginous rings
   2. ciliated mucous membrane

E. bronchus = “windpipe”
   1. series of sequentially branching cartilaginous tubes within lung
      --collectively = bronchial tree (with trachea)
   2. lose cartilage, called bronchioles
   3. end in alveoli = “little pits”
      -only site of gas exchange
      -jacketed with capillaries → Fig. 7.1, but colors wrong

F. lungs
   1. separated by mediastinum
   2. surrounded by pleura → two layers of serous membrane → line cavities not exposed to outside

pleurisy (pleuritis)– inflammation
pleural effusion (Fig. 7-6, 7-14) – accumulation of fluid between layers
   (don’t confuse with pulmonary edema: fluid within and around alveoli)

3. divided into lobes
   2 on left, 3 on right
III. Respiration
   A. diaphragm (phren/o) is major muscle involved
      - chest injury allows alternate path, so lungs collapse rather than inflate

      Pneumothorax (Fig 7.8) vs. hemothorax vs. pneumohemothorax
      ↓
      “Air” in this context, not “lung”

   B. pulmonary function testing
      - volumes measured with spirometer (Fig. 7-11)
         tidal volume (TV or V_T) = normal, quiet breathing
         vital capacity (VC) = after a maximum inspiration
         peak flow [PF] (peak expiratory flow rate [PEFR]) = maximum rate of exhalation after a maximum inspiration

      • breathing patterns → Know Fig. 7.2

IV. Clinical
   Note: add “-ptysis = spitting” to list

   A. Lung sounds → listen at http://www.wilkes.med.ucla.edu/lungintro.htm
      1. crackles (rales) – during inspiration
      2. wheezes (ronchi) – during expiration
      3. stridor – “crowing” - obstruction

   B. Obstructive vs. restrictive diseases → Fig. 7-3
      ↓
      decrease in inspiration (total air held by lungs) due restrictions
      decrease in exhaled air due to narrowing or blockage
      Ex.: pneumoconiosis, incl. asbestosis & silicosis
      ↓
      Ex.: emphysema, asthma
      “dust”

   C. Asthma → Fig. 7-4
      3 hallmark signs
      ① bronchospasm
      ② edema
      ③ mucous plug

   D. Procedures
      1. lung resections = excisions, usually partial
         ↓
         “cut”
         Lobectomy vs Pneumonectomy

      2. thoracentesis (thoracocentesis) Fig. 7.14
         vs.
         thoracostomy