Osteology of the Back

At the end of this lecture and dry lab, students should be able to master the following:

1) Osteology of the back

   a) Identify components of the skull including:

      i) External occipital protuberance
      ii) Nuchal lines (superior and inferior)
      iii) Mastoid process

   b) Identify components of the posterior scapula including:

      i) Spine
      ii) Acromion
      iii) Superior angle
      iv) Inferior angle
      v) Margins (medial and lateral)

   c) Understand the vertebral column in regards to:

      i) Curvatures
         (1) Primary
         (2) Secondary
      ii) Abnormal Curvatures
         (1) Lordosis
         (2) Kyphosis
         (3) Scoliosis
d) **Identify features of the typical vertebrae including:**

   i) Processes  
      (1) Spinous process  
      (2) Transverse process  
      (3) Articular processes (superior and inferior)  

   ii) Vertebral foramen  
      (1) Pedicle  
      (2) Lamina  
      (3) Vertebral body  

e) **Unique features of Cervical Vertebrae including:**

   i) Atlas  
   ii) Axis  
   iii) Foramen transversarium  
   iv) Bifid spinous processes  

f) **Unique features of Thoracic Vertebrae including:**

   i) Costal facets  
   ii) Spinous processes point inferiorly  

g) **Unique features of the Lumbar Vertebrae including:**

   i) Large vertebral bodies  
   ii) Stout spinous processes  

h) **Identify the anatomical location of a Lumbar Puncture:**
i) Understand the basic anatomical locations of dermatomes:

j) Joints, Ligaments and Discs including:
   i) Zygapophysial
   ii) Ligamentum nuchae
   iii) Supraspinous ligament
   iv) Longitudinal ligaments (Anterior and Posterior)
   v) Ligamenta flava
   vi) Anulus fibrosus and nucleus pulposus
Osteology of the Thorax and Introduction to Medical Imaging

At the end of this lecture and dry lab, students should be able to master the following:

1) Osteology of the Thorax

   a) Identify the types of Ribs including:
      i) True versus false ribs
      ii) Typical and atypical ribs
         (1) 1st rib
         (2) 2nd rib
         (3) 10th-12th rib

   b) Identify Joints of the Ribs including:
      i) Sternocostal
      ii) Costochondral
      iii) Interchondral

   c) Identify components of the Sternum and Sternal Joints including:
      i) Manubrium, Body, Xiphoid process
      ii) Manubriosternal and Xiphersternal joints

   d) Identify critical components of the Anterior Scapula including:
      i) Coracoid process

   e) Identify the Clavicle
2) Basic Diagnostic Imaging Techniques

a) Understand Basic Principles and Nomenclature of Radiography including:
   i) Basic Principles
      (1) Air (Black, radiolucent)
      (2) Bone (White, radiodense)
   ii) Basic Radiologic Nomenclature
      (1) PA view
      (2) AP view
   iii) Types of Contrast Radiography
      (1) Barium (bowel)
      (2) Iodine derivatives (arterial and venous circulation)

b) Understand Basic Principles of Computed Tomography (CT) including:
   i) Basic Principles
      (1) Obtain image slices
      (2) CT image relates well to classic radiography
      (3) CT scans are always displayed as if the viewer was standing at a supine patient’s feet

c) Understand Basic Principle of Ultrasound including:
   i) Ultrasound, Doppler Ultrasound
      (1) Measures reflection of ultrasonic waves

d) Understand Principles and Nomenclature of Magnetic Resonance Imaging (MRI) including:
   i) Basic Principle
      (1) Dependent on free protons in hydrogen molecules
      (2) Hydrogen protons serve as a magnet
      (3) Patient is placed in a strong magnetic field and radiowaves are pulsed
      (4) Strength, frequency, and time of protons return to pre-excited state is measured
   ii) T1 versus T2 weighted images

e) Understand Basic Principles of Positive Emission Tomography (PET) including:
   i) Basic Principles
      (1) Measures positron emitting radionuclides
      (2) FDG is most commonly used PET radionuclide
      (3) Used more for detecting cancer
At the end of this dry lab, students should be able to master the following:

1) Understand the lines of the thoracic wall and their relationships to:
   a) Underlying bony structures:
      i) Anterior (sternum, clavicle, ribs, intercostal spaces)
      ii) Posterior (Vertebrae, Scapulae)
   b) Pleural Cavities and Lungs:
      i) Left lung
      ii) Right lung

2) Understand where to listen for lung sounds
   i) Right lung
      (1) Apex
      (2) Superior lobe
      (3) Middle lobe
      (4) Inferior lobe
   ii) Left lung
      (1) Apex
      (2) Superior lobe
      (3) Inferior lobe

3) Understand the transverse thoracic plane and its relationship to:
   i) Sternal angle and thoracic vertebrae
   ii) Costal cartilage of rib II
   iii) Superior versus inferior mediastinum
   iv) Aorta
   v) Trachea bifurcation

4) Understand the margins of the heart and heart valve sounds: