Medical Imaging

Tips for interpreting medical images
Objectives

1. Develop a repeatable pattern for interpretation
2. Where to start / What to look for
3. Recognizing normal
4. Recognizing abnormal
Case 1

1. Dens
2. Foramen transversarium
3. Anterior arch of C1
4. Lateral mass of C1

Recognizing normal: learn the names

Metal
Mineral
Soft tissue
Fat
Air
4 considerations when faced with a medical image

1. Is the **size** of the structure normal?
2. Is the **shape** of the structure normal?
3. Is the **position** of the structure normal?
4. What is the **density**? (x-ray or CT)

SIZE SHAPE POSITION DENSITY
A. C5 vertebral body
B. Hyoid bone
C. Spinous process C4
D. Dens
E. Occiput

Hard and Soft palate
What is wrong?

a. The vertebral body heights are abnormal
b. There is a fracture
c. There is malalignment
d. Nothing, this is normal
Grade 1 is 0–25%
Grade 2 is 25–50%
Grade 3 is 50–75%
Grade 4 is 75–100%
Over 100% is Spondyloptosis, when the vertebra completely falls off the supporting vertebra.
Oblique lumbar x-ray

Spondylolysis
Normal “Scotty dog”
Soft tissue swelling is an important sign in cervical trauma.

What are the normal measurements of the pre-cervical soft tissues at C2 and C6?

“6 mm at 2, 22 mm at 6”
MRI

Signal not density
T1 – fluid is black
T2 – fluid is white
Is there a problem with the size, shape, position or density of this structure?
Fracture description

1. Complete
2. Transverse
3. Mildly distracted (or separated)
4. Mid diaphysis
5. Left humerus
6. Not intra articular
7. Not open
8. Not angulated
9. Not comminuted
How would you describe these fractures?
How would you describe this lesion? Benign versus malignant
Which of these images is normal?
Torn ACL
anterior cruciate ligament

Normal ACL
Knee pain and weakness after a slip and near fall injury
Test your knowledge

The next cases have something wrong with size, shape, position and/or density

Abnormal size
Abnormal shape
Abnormal position
Abnormal density
Which bone is abnormal?
How is it abnormal?
What is abnormal?
1. Size
2. Shape
3. Position
4. Density
Which AP wrist x-ray is abnormal?
What is abnormal here??
1. Size
2. Shape
3. Position
4. Density
Do you see an abnormality here?
What to remember

• You must learn the names of anatomic structures.
• Be able to recite the 5 basic radiographic densities.
• When looking at any structure, normal or abnormal, consider size, shape, position and density