X-ray Findings Of Common Diseases

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Is Imaging Bad For You?

<table>
<thead>
<tr>
<th>X-ray examinations</th>
<th>Typical dose (mSv)</th>
<th>Equivalent period of natural background radiation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limbs or Joints (Hands, Knees etc)</td>
<td>&lt;0.01</td>
<td>&lt; 1.5 days</td>
</tr>
<tr>
<td>Teeth (bitewing)</td>
<td>&lt;0.01</td>
<td>&lt;1.5 days</td>
</tr>
<tr>
<td>PA Chest</td>
<td>0.02</td>
<td>3 days</td>
</tr>
<tr>
<td>Neck (Cervical Spine)</td>
<td>0.08</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Hip</td>
<td>0.3</td>
<td>7 weeks</td>
</tr>
<tr>
<td>Thoracic Spine, Abdomen or Pelvis</td>
<td>0.7</td>
<td>4 months</td>
</tr>
<tr>
<td>Lumbar Spine</td>
<td>1.3</td>
<td>7 months</td>
</tr>
<tr>
<td><strong>Procedures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intra Venous Urethrogram</td>
<td>2.5</td>
<td>14 months</td>
</tr>
<tr>
<td>Barium Meal</td>
<td>3</td>
<td>16 months</td>
</tr>
<tr>
<td>Barium Enema</td>
<td>7</td>
<td>3.2 years</td>
</tr>
<tr>
<td>CT Head scan</td>
<td>2</td>
<td>1 year</td>
</tr>
<tr>
<td>CT Chest scan</td>
<td>8</td>
<td>3.6 years</td>
</tr>
<tr>
<td>CT Abdomen or Pelvis scan</td>
<td>10</td>
<td>4.5 years</td>
</tr>
</tbody>
</table>
I’m Not A Radiologist!

- ER: No reads past 5pm, Promptness of treatment
- Surgery/Trauma: Immediate medical decisions. Comorbid conditions. Risk stratifying. Post surgical
- Cardiology: Risk stratifying, Cardiomegaly, Effusions, Pulmonary HTN
- Pulmonologist: Pneumonia, Fibrosis, Intersitial Lung Disease
- Rheumatology: SLE, Wegners ect ect
- GI: Obstruction series
- Family Medicine/UC: Everything!
- Ortho: Self Explanatory
"Your x-ray showed a broken rib, but we fixed it with Photoshop."
Case #1

• 4 y.o M coming to the FP office brought by mother due to a persistent cough.
• Rhinorrhea, non productive cough, sore throat.
• Low grade fever.
• Worse at night.
• Inspiratory stridor.
Croup / Steeple Sign
Case #2

- 4 y.o M brought to the ED by his mother due to increased cough and difficulty breathing.
- Sore throat, odynophagia, muffled voice, URI symptoms.
- Drooling at times, tripod position
Epiglottis / Thumbprint Sign
Case #3

• 75 y.o F recent fall down steps because she tripped over her 15 cats.
• Tried to break her fall but unable to. Extended her neck.
• Mild neck tenderness / midline around C2
• No focal neurologic deficits
Hangman Fracture

- Fracture involving the pars interarticularis on both sides from hyperextension injuries.
- Unstable fracture.
Case #4

• 19 y.o M dove into a pool and struck the top portion of his head onto the pool floor.
• Headache, upper neck tenderness.
• Strange sensation of inability to detect between temperatures and pain.
Jefferson Fracture

• Compression fracture of ring C1.
• Displacement of the lateral masses of vertebrae C1 beyond the margins of the body of C2 vertebrae.
Case #5

- 16 y.o M with right shoulder pain after being tackled at football practice.
- Right shoulder appears shortened and drooping.
- Tenting of skin on affected side.
- No respiratory distress.
Clavicle Fracture

- Allman Classification
  - Group I: Middle Third
  - Group II: Distal Third
  - Group III: Proximal Third

- Always be concerned about a pneumothorax.
Case #6

• 18 month old M with complaint of right arm pain after falling out of bed.
• With his mother
• Significant pain and deformity of right mid humerus.
• Bruises noted to all extremities.
Spiral Fracture

• Fractures in pediatrics account for 8-15% of all injuries.
• Abuse is 12-20% of fractures in infants and toddlers.
• 80% of child abuse fractures occur in children < 18 months.
Case #7

• 13 y.o F falls while playing field hockey at school.
• Fell onto her elbow.
• Ability to flex and extend but with pain.
• Mild/Moderate swelling.
Occult Supracondylar Fracture

- Sail Sign
- Posterior Fat Pad

- Fx of distal humerus
  - Rare in adults, common in children
  - Can lead to immobility if undiagnosed.
Case #8

- 82 yo male from local nursing home with cough and shortness of breath
- No fever
CHF

• 1. enlarged heart
• 2. upper zone vessel enlargement
• 3. pulmonary edema
  – b/l increased lung markings
• 4. kerley B lines
• 5. pleural effusions
Kerley B Lines
Case #9

• 82 yo female from nursing home with change in mental status and fever.
• Poor inspiratory effort.
• History of dementia.
Pneumonia
Case #10

23 yo male falls while skiing in the Poconos
No head injury.
Complains of isolated hand pain.
Gamekeeper Thumb

- [http://radiopaedia.org/articles/gamekeeper-thumb](http://radiopaedia.org/articles/gamekeeper-thumb)
- Aka “Skier Thumb”
- Injury to the ulnar collateral ligament (UCL) at the first MCP joint
- Not always associated with a fracture but if there is a fracture will see an avulsion fracture on the ulnar side of the proximal phalanx
- Hyperextension of the thumb
- Management: thumb spica splint
- Refer to ortho.
  - WHY?
    - Complete ruptures get internal fixation
    - Incomplete ruptures get 4 weeks of immobilization
Case #11

• 19 yo male is skateboarding when he falls onto an outstretched hand causing pain at his wrist.
• No other injuries
Name of Fracture?

• Need a hint?

  – Is this a Smith fx or a Colle’s fx.
  – How do you know the difference?
Colle’s Fracture

- **Extrarticular** fracture of the distal radius
- **DORSAL** angulation
- Results from FOOSH
- **Most common type of distal radius fractures** and are seen in all age groups
- **Pearl**: can be associated with osteoporosis. This should prompt PCP’s to order a DXA scan in the applicable population
- **Management**: closed reduction, cast (may sometimes require ORIF depending on features)

http://radiopaedia.org/articles/collers-fracture
So what is Smith’s Fracture?

• Distal radius fracture with VOLAR angulation
• “reverse colle’s fracture”
• Only 3% of all distal radius fractures
• Bimodal distribution
  – Young males
  – Elderly females
Colles vs Smith’s
Case #12

- 64 yo alcoholic female presents to the office after falling down a flight of steps and complains of right sided chest pain
- No other complaints
Pneumothorax

• Presence of gas in the pleural space
• Traumatic vs spontaneous
• Radiographic features:
  – No lung markings beyond white line (visceral pleura)
  – Peripheral space is radiolucent
  – May see lung collapse
  – Subcutaneous air may be seen
  – If mediastinum is shifted $\rightarrow$ tension PTX
  – Deep sulcus sign

• Management: feature dependent
  – Chest tube
  – Management
Case #13

29 yo female riding on the crowded train. Passengers began to become angry and the patient was subsequently pushed to the ground landing on her arm. She presents to the office one day later with significant shoulder pain and restriction in motion.
AC Joint Separation

• AC joint space is normally less than 5 mm
• PEARL: can order “stress view” which helps if the separation is subtle
• Management: depends on grade
  – Monitor, surgery, RICE, sling
Case #14

- 22 yo male in fist fight with another male at the local bar.
- Presents to office 2 days later with swollen and painful hand.
- Pain is most prominent on ulnar side of hand
Boxer’s Fracture

- Fracture of the fifth metacarpal neck
- Management: usually surgical
Case #15

• 20 yo volleyball player presents with knee pain for several weeks.
• No falls or other direct injury
• Pain worsens when she climbs stairs
Trick!

- Normal Xray
- This is patellar tendonitis
  - Aka “jumper’s knee”
- TTP over patellar tendon
- Xrays normal
  - May show hyperostosis at upper and lower ends of patellsa
- Management: RICE, NSAIDs, quad-strengthening exercises/PT
Case #16

• 17 yo male presents with foot pain after jumping off a high wall to escape the police officer who was chasing him.

• Pain is mostly on his heels.
Calcaneus Fracture

- Severe axial load
- Bohler’s angle
- Management: posterior splint, non-weight bearing, orthopedic referral
- PEARL: must consider associated lumbar vertebrae fractures; high rate of compartment syndrome
Case 17

• 3 y.o M with intermittent coughing, refusal to eat food, chest pain and intermittent stridor.
• Mother initially thinks its related to his asthma history.
Coin vs Button?
Button Battery Tx

1. History of Disc Battery Ingestion
   - Is Resuscitation Necessary
     - Yes: Resuscitate as Needed
     - No: Radiographic Localization

2. Radiographic Localization
   - Battery in Esophagus
     - Endoscopy Immediately Available: Yes
       - No: Endoscopic Removal
         - Reliable HX of Ingestion ≤ 2 hours: Yes
           - Consider Foley Balloon Catheter Technique
             - Failure: Yes
               - Repeat Radiographs Weekly
                 - Continue Home Observation
               - No: Symptoms Develop
     - No: Endoscopic Removal

3. Battery Past Esophagus
   - Symptomatic
     - Yes: Surgical Consult for Removal
     - No: Repeat Radiographs Weekly
       - Continue Home Observation
       - Symptoms Develop: No
Case 18

• 75 y.o M with complaint of nausea/vomiting and constipation.
• Hx of abdominal surgeries.
• Takes Percocet for history of low back pain.
Large vs. Small Bowel Obstruction

**Large Bowel**
- Peripheral
- Max diameter approx 8cm
- Colon with “bubbly” appearance
- Air fluid levels are large

**Small Bowel**
- Central
- Max diameter approx 5cm
- Many air fluid levels
- Air fluid levels are small
Quiz