Common Emergency Radiology Findings

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We take our work very seriously in the dark windowless dept. of radiology

But first...
• A word about compliance and ordering
  - Due to compliance issues, we MUST perform the test that is ordered
  - Radiology can NOT change orders placed by clinicians; if there is a wrong study ordered, it must be changed by the clinician.
    • Medical Fraud
    • Preferred Radiology Order List
  - Exception – if pt. refuses part of exam, tech may be able to adjust requisition.
• Radiologists should protocol tests, but if have questions – ask ROD
Common Orders

• Brain
  - Acute events -> Noncon CT Brain
  - Questionable findings, persistent clinical suspicion, or masses -> MRI +/- contrast
  - Pacemakers

• Regarding contrast:
  - NONCON or Pre AND Post
  * (unless f/u known prior lesion)

Common Orders

• Chest
  - Pneumonia -> CXR first, then consider CT
  - PE -> ?D-Dimer, CT Pulmonary Angio vs V/Q
  - Dissection -> dissection protocol (C+ CT)
  - HRCT -> comments

• Regarding contrast:
  - Most CHEST studies do NOT need it (unless looking for PE or dissection). Helpful for evaluation of hilar lymphadenopathy.
Common Orders

• Abdomen / Pelvis
  - Usually considered as one test, even though are 2 separate body parts (U/S!)
  - Oral + IV > IV only > noncon (KUB)
  - Water as oral contrast
  - Body habitus - fat vs. skinny patients
  - Renal Insufficiency - Visipaque (Cr 1.5-2)
  - MRI studies of the Abd vs. Pelvis
    *A word about MRCPs

Critical Emergencies

• Can kill the patient if not addressed immediately or if the referring clinician is not notified immediately.
• Usually requires MD -> MD contact.

Saving Grace

• Clinicians ordering the studies will usually have an idea of the “worst case scenario”

• As a result, if they are truly concerned about the results, they *should* be pestering the technologist and the radiologist as to when the study is getting done and what the results are.
Some Examples

Plain Film Findings

- Pneumonia / Atelectasis
- Pneumothorax
- Free Intraperitoneal Air
- Bowel Obstruction

Normal CXR
PTX

Tension PTX

Free Intraperitoneal Air
Bowel Obstruction

- *Dilated* Bowel loops.
  - 3 6 9 rule
  - A word about air/fluid levels...
  - DDx: Paralytic Ileus vs. distal bowel obstruction

Dilated small bowel loops

Air / Fluid Levels

SBO  Paralytic Ileus
Other Emergencies

- Brain
  - SYMMETRY IS KEY!!
  - Bleed
    - Intraparenchymal
    - Subdural
    - Epidural
    - Subarachnoid
  - Hydrocephalus
  - Mass

Normal Brain CT

SYMMETRY IS KEY!!!
Brain CTs (and MRIs)

- A word about ordering...
  - Noncontrast
    - CVA
    - ICH
  - Pre and Postcontrast
    - Masses
    - Aneurysm (CTA)
  - Postcontrast
    - Never alone - Just don’t order this unless there is a very recent noncontrast study or unless there is a known mass and it’s for f/u size

4 things are white in the brain on noncontrast CT

- Calcium (bone)
- Chroid plexus
- Contrast
- Blood

Intracranial Intraparenchymal Hemorrhage
Subdural and Epidural Hematomas

Subarachnoid Hemorrhage

Parenchymal hemorrhage with SAH and intraventricular extension
Hydrocephalus (CT and MRI)

Masses - GBM

Spine

- CT or MRI?
  - Fractures vs. Discogenic disease
  - Cord Compression

- PLEASE SEPARATE SPINE MRI REQUISITIONS WHEN ORDERING!!!
  - C-Spine
  - T-Spine
  - L-Spine

PLEASE SEPARATE SPINE MRI REQUISITIONS WHEN ORDERING!!!
Disc Herniation

Cord Compression

Chest
- PNA
- PTX
- PE
  - ? D-Dimer
- Dissection
  - Intramural Hematoma
PE

Aortic Dissection
Intramural Hematoma

Abdomen & Pelvis

- Trauma
  - Solid organ injury
- RP Hematoma
- Aortic Aneurysm
- Stones
- Bowel Pathology
- Pelvic Pathology
- Gonads

NORMAL CT Abdomen

- Organs
- Fat planes
- Sharp lines
- Bowel wall thickness
Inflammation

• FAT IS YOUR FRIEND

• What happens?
  - Things get blurry
  - Interfaces (esp. fat) becomes edematous and indurated = lose crisp lines
  - Walls get thicker / swollen due to edema and inflammatory changes – i.e. bowel wall, gallbladder wall.

Trauma – postcontrast better

Pancreatitis – Labs for Dx, CT for complications
Bowel Pathology on CT

- Air is the best distender of bowel
  - Bowel wall should be *paper thin* normally

- Thickened bowel loops
- Surrounding inflammatory fat stranding
Testicular Trauma

Ovarian Torsion

Ectopic Pregnancy
GI Foreign Bodies

- Esophageal
- Stomach
- Bowel
- Rectum

Many cases courtesy of Douglas S. Katz, M.D.

Chicken bone

Fish bone
Swallowed dentures in two patients (esophageal/gastric)

Coin in esophagus

Esophageal FBs

- Sharp objects such as open safety pins, razors, & bones can only be safely removed endoscopically
Toothbrush & rosary beads – elongated esophageal FBs
Two toothbrushes in vivo and in vitro

“Rabbit ears” TV antenna

Pin in stomach
Dentist’s mirror separated from handle

Serial radiographs of pin

Serial radiographs of spoon
Serial radiographs of broken thermometer

Psychiatric patient who ate many, many rocks

Vibrator in rectum
Steel ball

Rubber balls and tennis ball

Saltshaker
Saltshaker caps & belt buckle

Wire wisk

Light bulb

Case courtesy
Robert Friedman, M.D.

Case courtesy
Steve Lastig, M.D.
Cold cream jar

Whiskey glass

TV or radio tube
Companion case

Complete Cardiovascular collapse

• Layering Contrast level in IVC and Hepatic (and renal!) veins
  - DDx:
    • Right (vs. generalized) heart failure
    • Overzealous power injecting
  • Blood-contrast level (esp. if in Aorta)
    - Stagnant flow
  • **CHECK ON PATIENT IMMEDIATELY!!!**
  • Be ready to call a code!

In Summary

• Plain film is a decent initial screening exam
• Many things are better seen by CT
  - Gallbladder, kidneys and female pelvis are better seen with US
  - MRI for additional troubleshooting.
• Contrast vs. Noncon
• Call us if you have questions!!!
Thanks for your attention!!!

Trophy