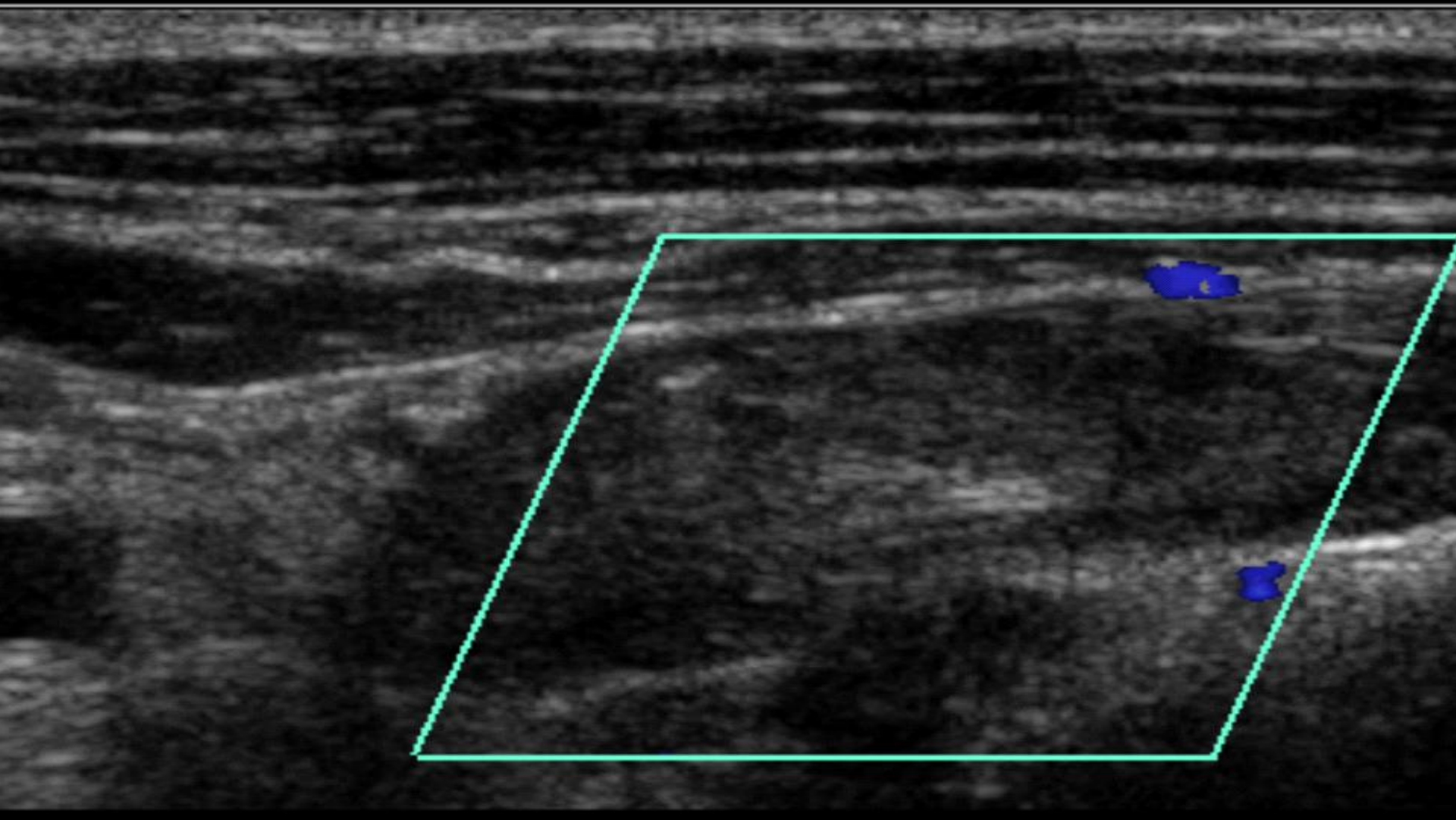
Examination Review

Junior Radiology

2012

Ultrasound Applications:
OB/GYN, Abdominal, Vascular ?

ULTRASOUND of Deep Venous Thrombosis



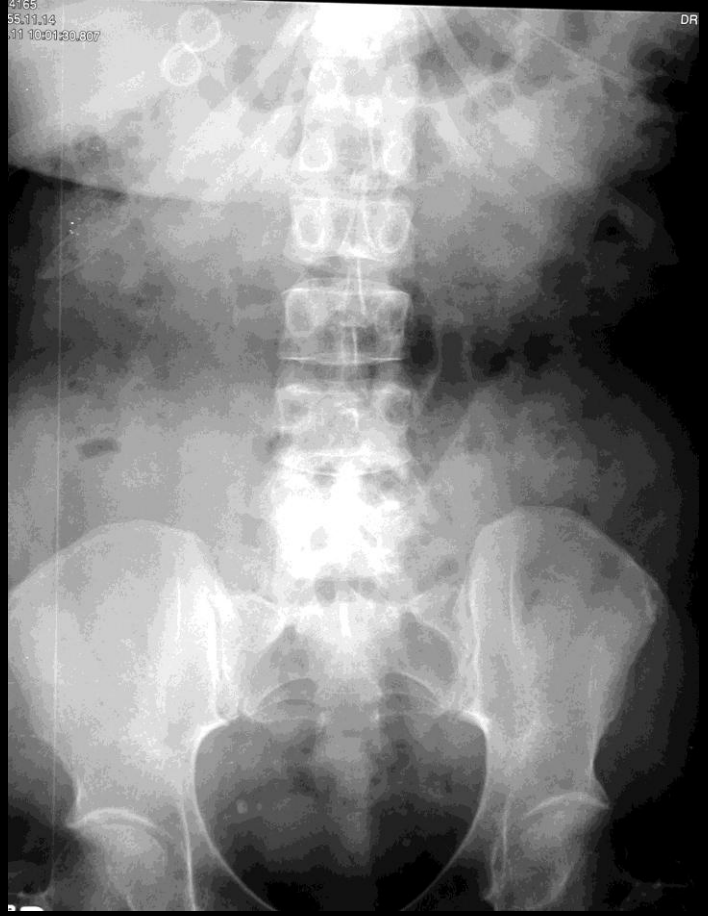

UNIVERSITY HOSPITAL
C5-2 Abd/Gen
10:33:03 pm
Fr #58
16.6cm
Map 3
170dB/C 2
Persist Off
2D Opt:FSCT
Fr Rate:Surv
SonoCT™
ATL
0
5
10
15
SAG RT LOBE


STEWART, ALTHEA
64065362
18 Jun 08
TIs 0.4
MI 1.3
UNIVERSITY HOSPITAL
C5-2 Abd/Gen
3:12:50 pm
Fr #137
11.5cm
Map 3
170dB/C 2
Persist Off
2D Opt:FSCT
Fr Rate:Surv
SonoCT™
ATL
0
5
10
SAG GB

RUQ PAIN

Gallstones

US: Cholelithiasis



Ultrasound

- **ULTRASOUND does not have the radiation exposure that CT and general XRAYS have.**
- **Although ULTRASOUND at medical levels is considered safe, future discoveries are of course not known, and it is generally recommended that ultrasound be only used when medically necessary.**

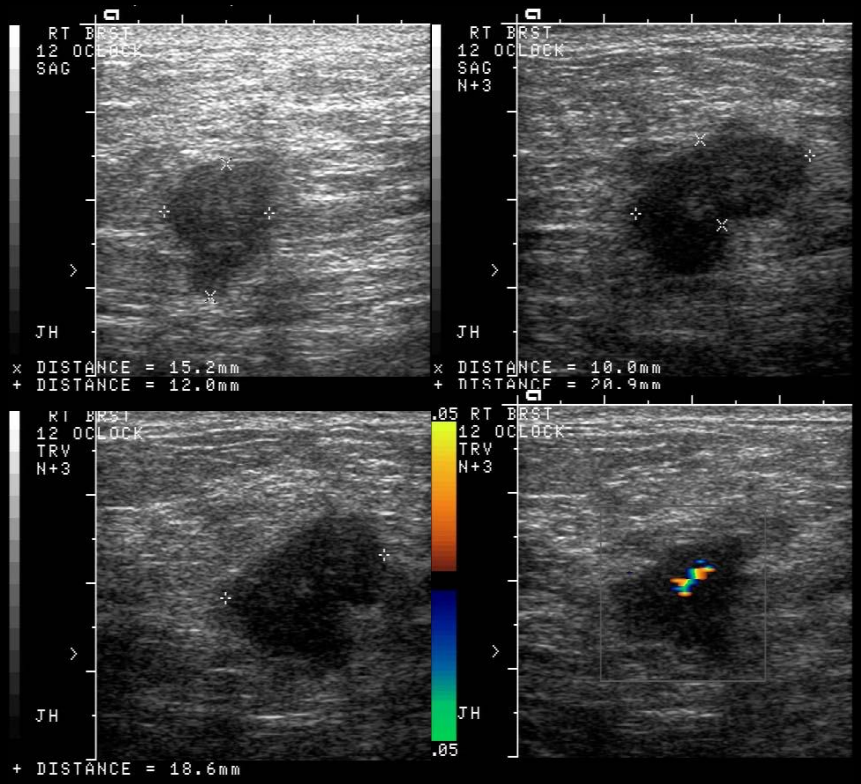
Ultrasound

- **Exploits differences in acoustic properties of adjacent organs to produce images**

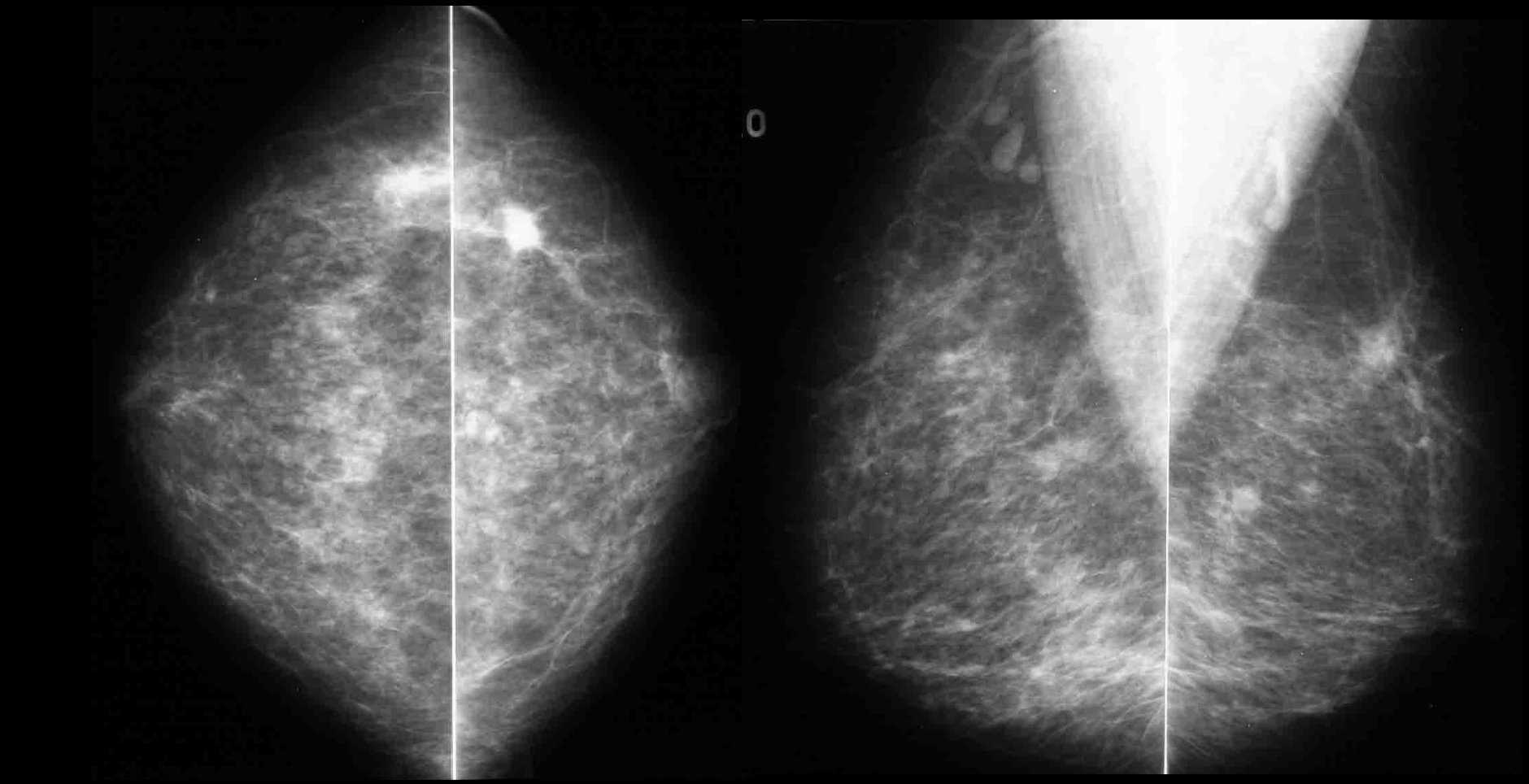
Ultrasound and MRI are Non- Ionizing

This is a Breast Malignancy at Ultrasound: True or False?

(Additional mammographic views were followed by ultrasound).



Screening mammogram includes 4 views ?
Screening begins at age 40?



True vs. False

- **True: Malignant Mass, Ultrasound**
- **True: CC and MLO views Bilaterally**
- **True:Screen starts at age 40**

BIRADS

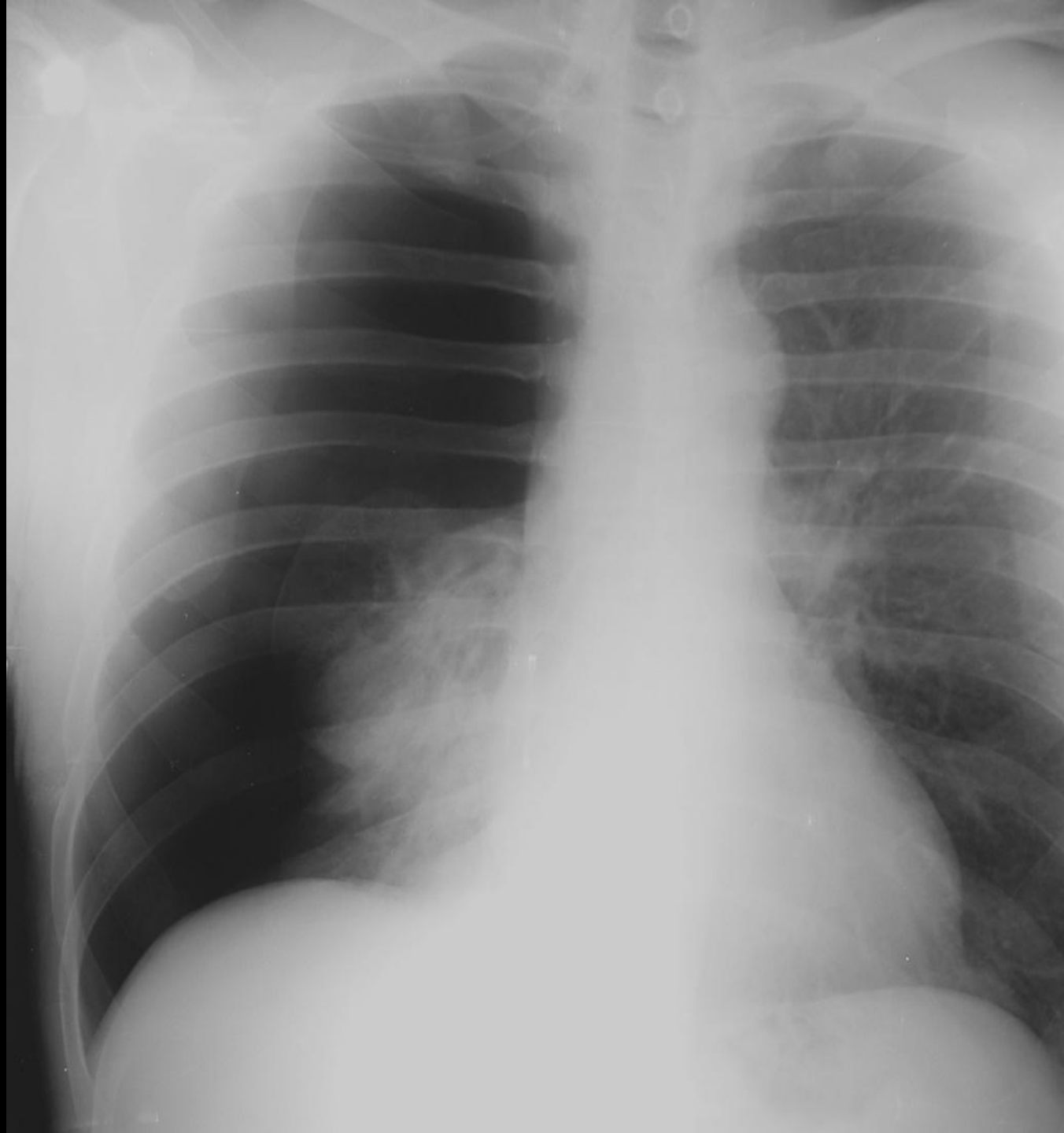
BI-RADS is an assessment scale indicating the likelihood of breast cancer for mammographic findings.

TRUE OR FALSE ?

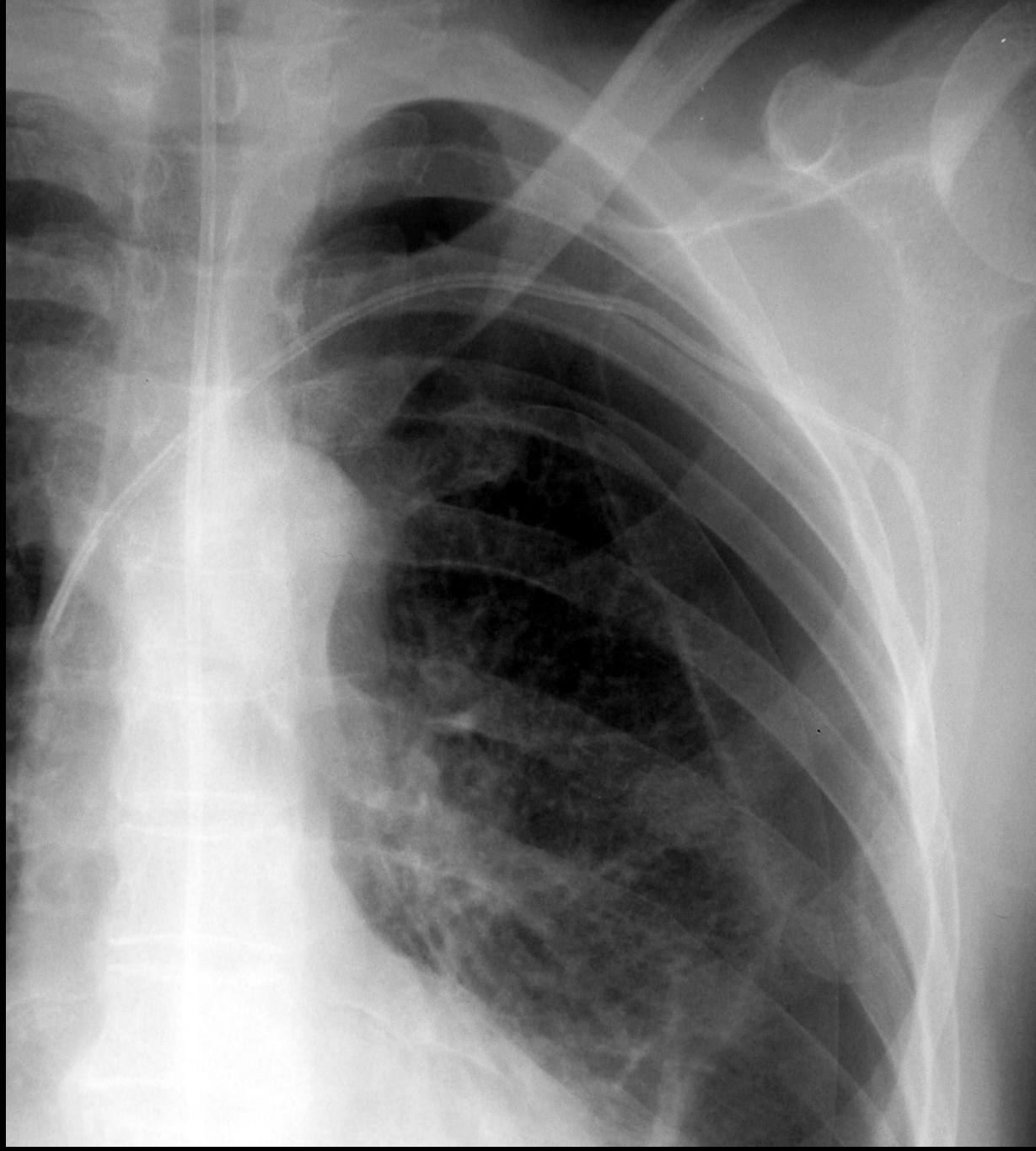
TRUE: BIRADS

- 0 Further information needed to put in assessment category
- 1 Normal
- 2 Benign finding
- 3 Probably benign-6 mo followup
- 4 Suspicious-biopsy
- 5 Malignant-biopsy

Short of breath



Central line just placed

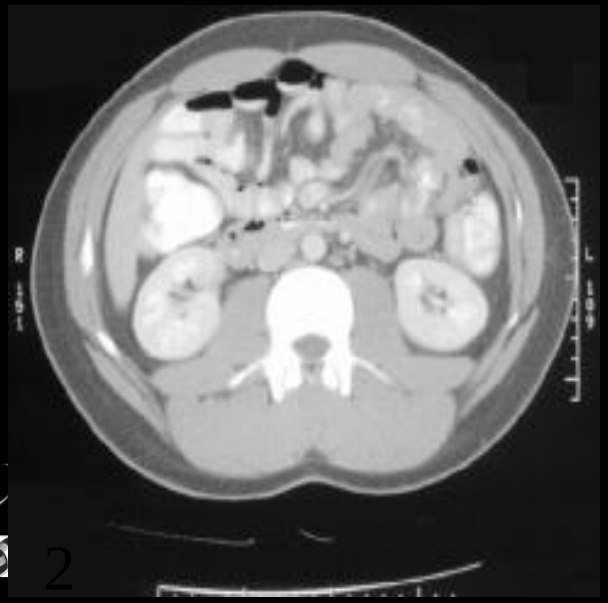


?

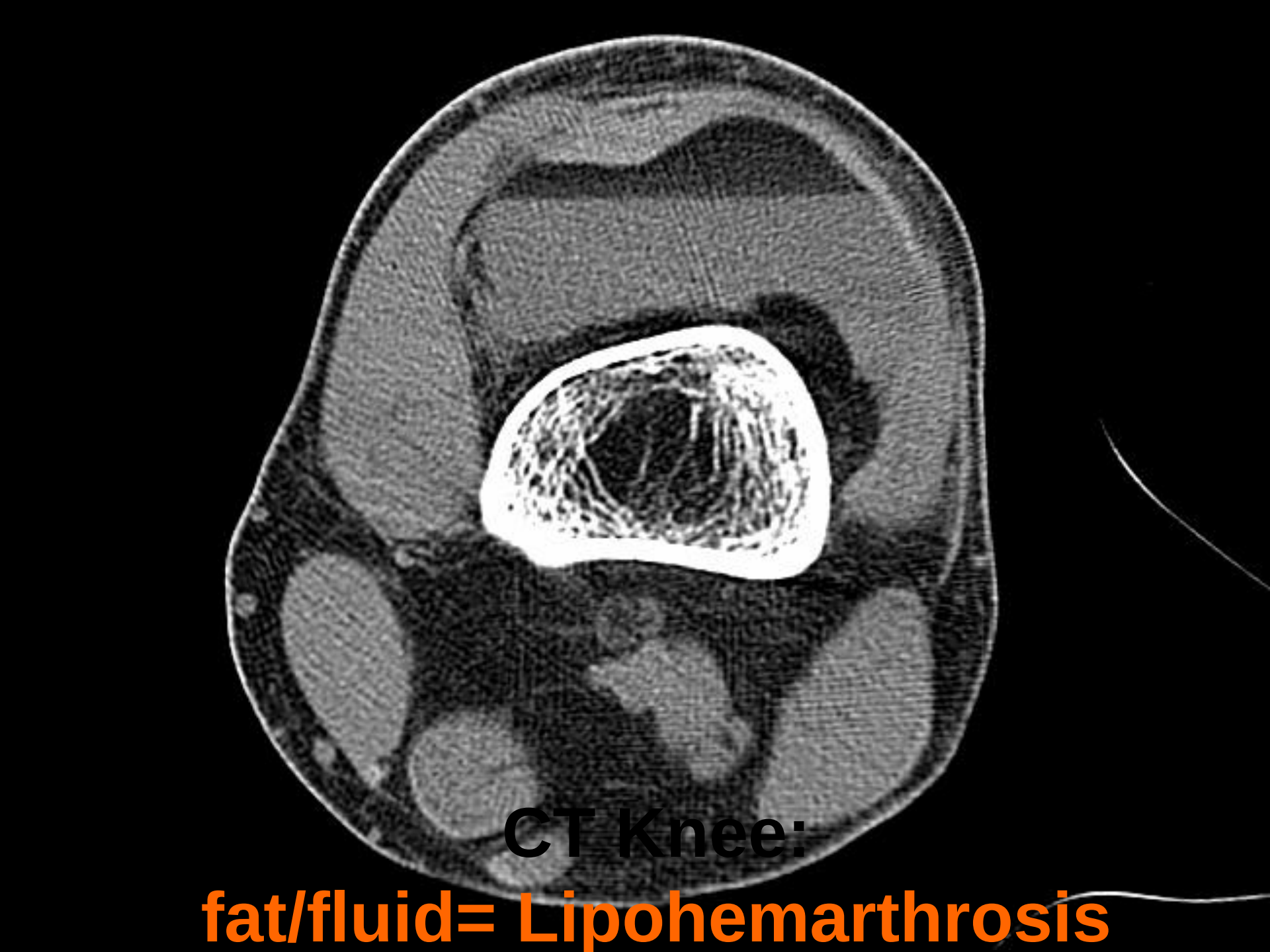
- A. Pneumothorax
- B. Expiratory CXR may accentuate the finding.
- C.CT is an effective modality in identifying this abnormality in patients too ill to undergo upright PA radiograph.
- D. All of the above

A. Gas -1000
B. Water 0
C. Bone +1000

Hounsfield units
HU



1. brigham rad.harvard.edu/…/hcache/333 /full.html
2. http://rad.usuhs.mil/rad/home/abd_CT6.jpg
3. www.netmedicine.com/xray/ctscan/img_ct/cta19b.jpg


CT Knee:
fat/fluid= Lipohemarthrosis

RLQ pain

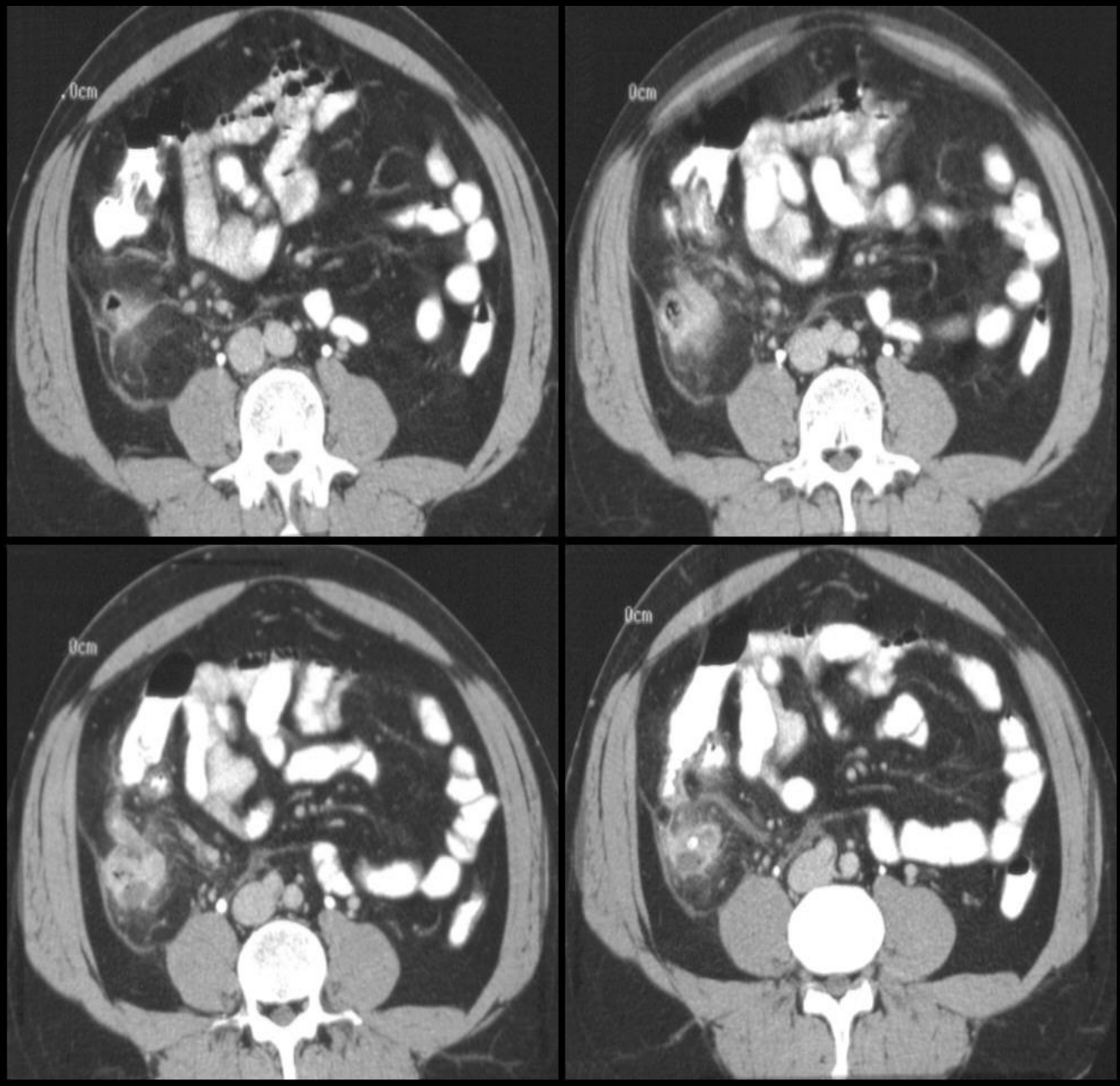
in 20 year old male

A. Small bowel obstruction

B. Ileus

C. Normal

D. Appendicitis



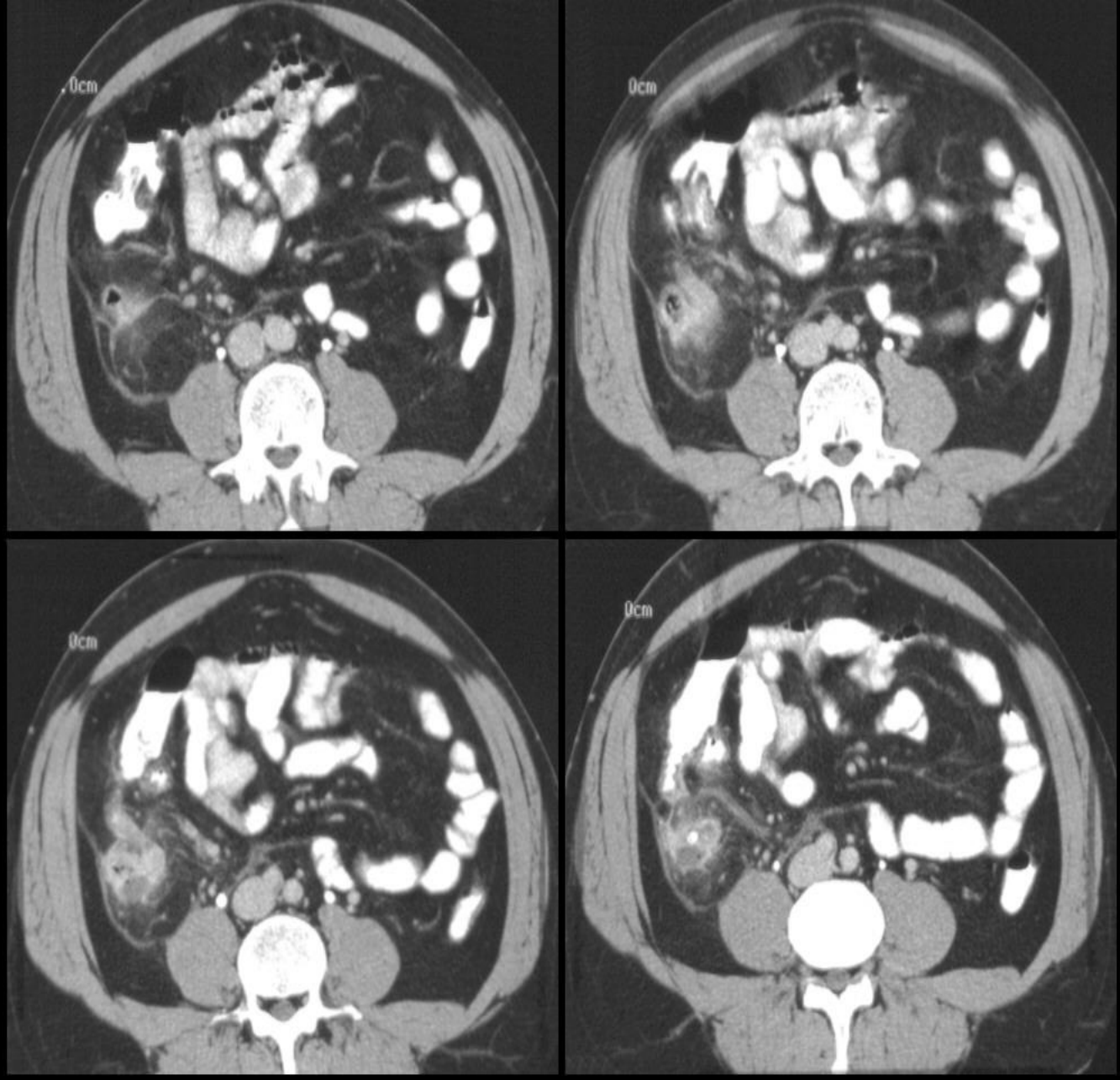
Right Lower quadrant pain in 20 year old male

A. Small bowel obstruction

B. Ileus

C. Normal

D. Appendicitis



A. Ischemic Infarct on the Left
B. MRI
C. CT
D. Epidural Hematoma
E. C & D

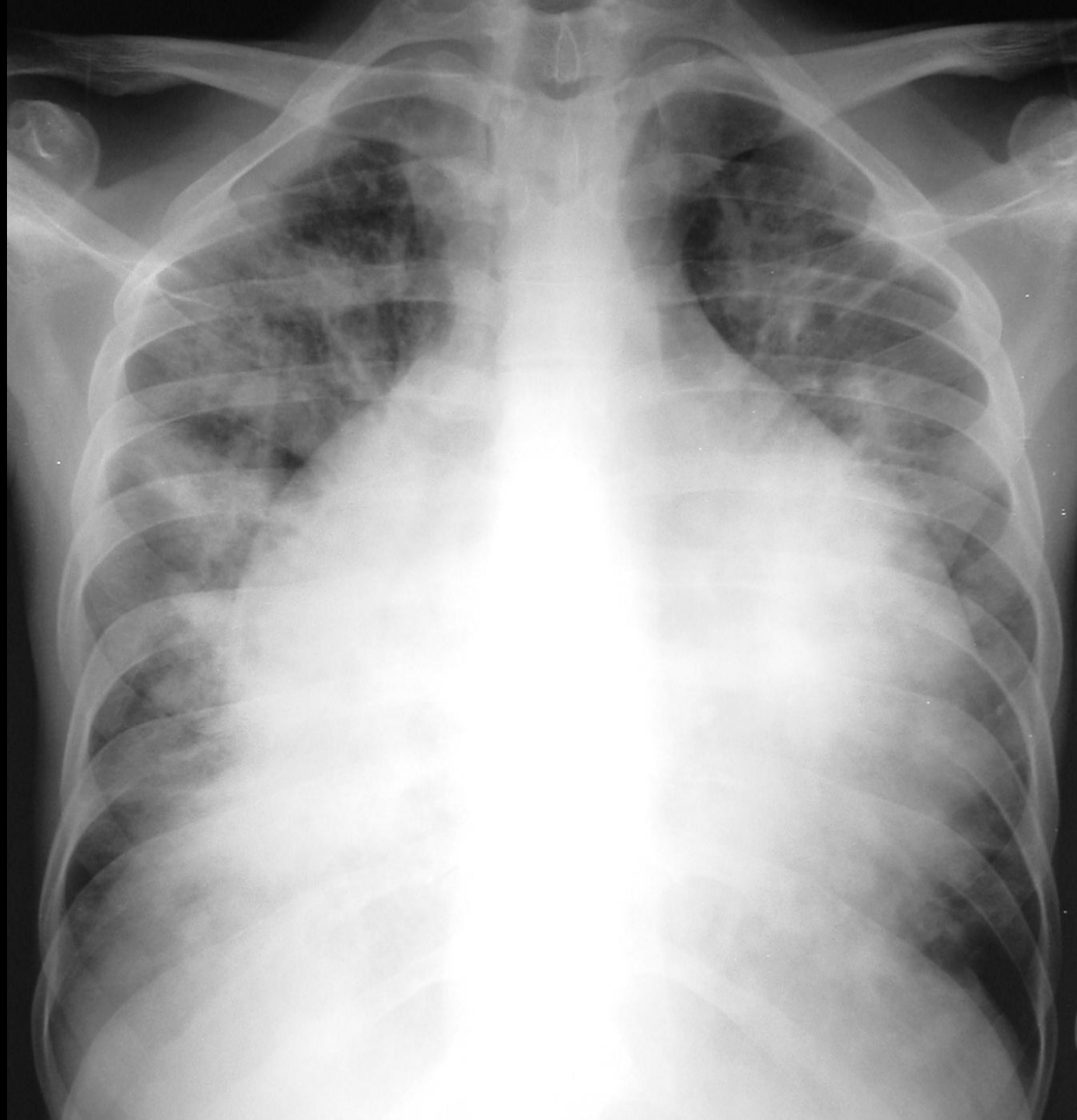
Epidural Hematoma

E. CT , Epidural Hematoma

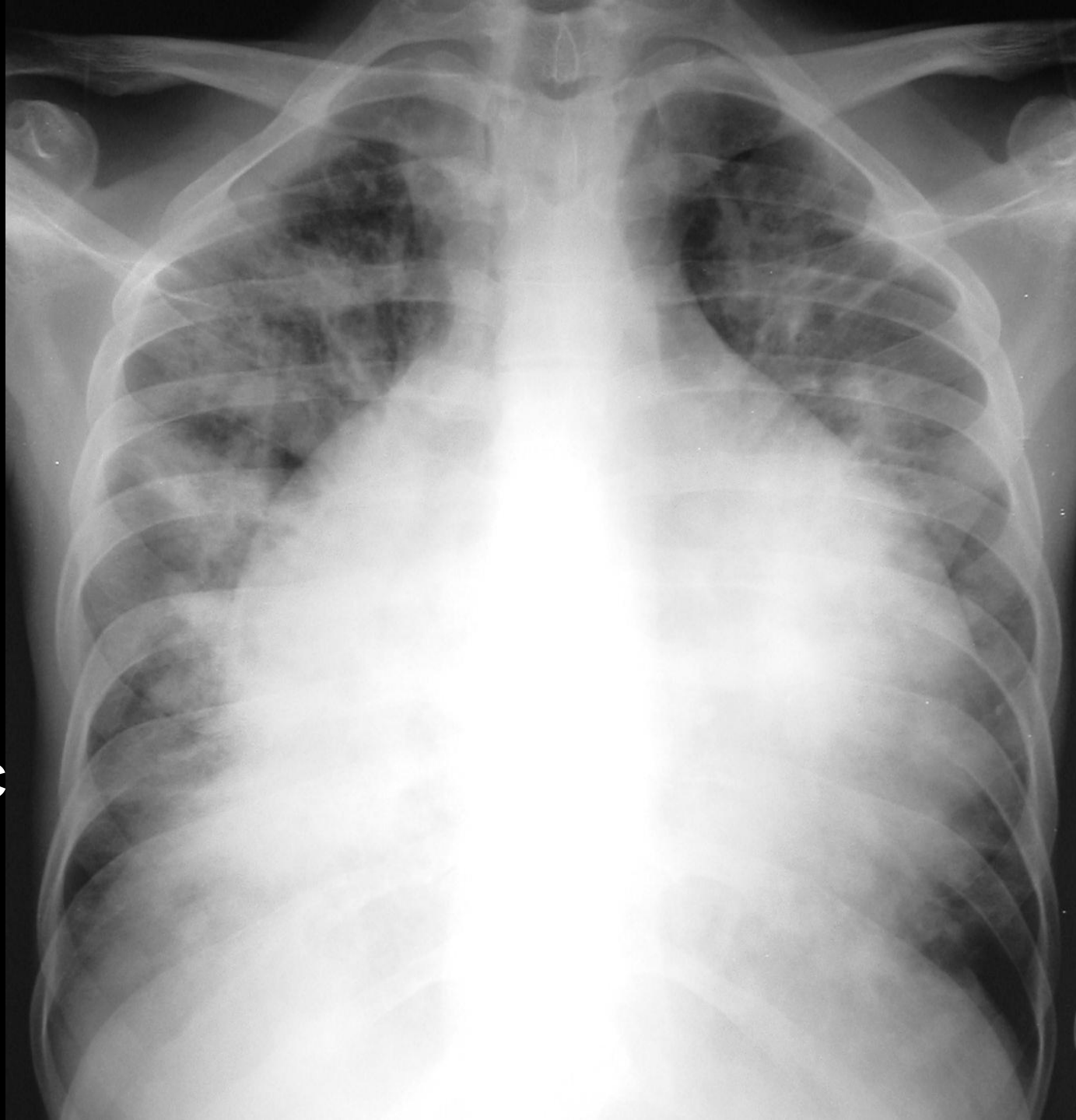
ALSO:
Middle Meningeal Artery
Associated with Fracture
DOES NOT Cross Sutures

CXR

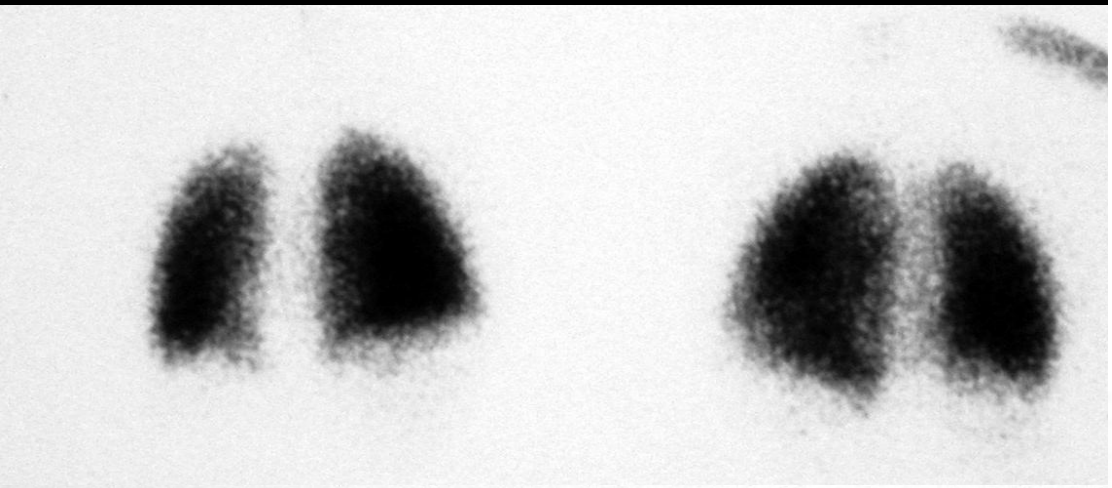
Enlarged Silhouette

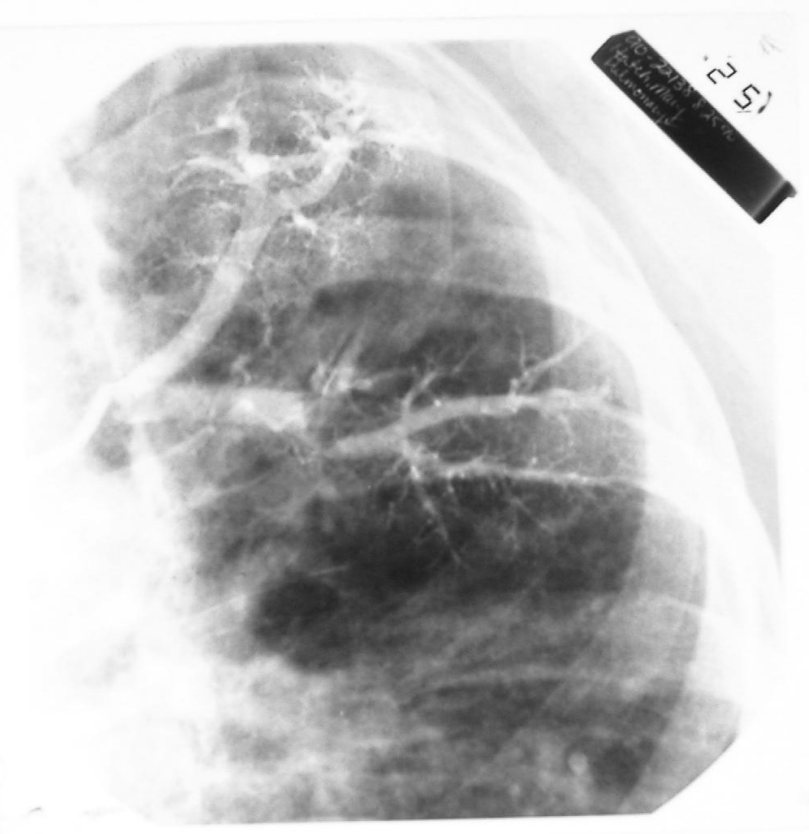


- Pericardial EFFUSION
- CARDIAC Chamber enlargement
- CARDIO-MYOPATHY
- CARDIOGENIC Pulmonary Edema
- ANY or ALL

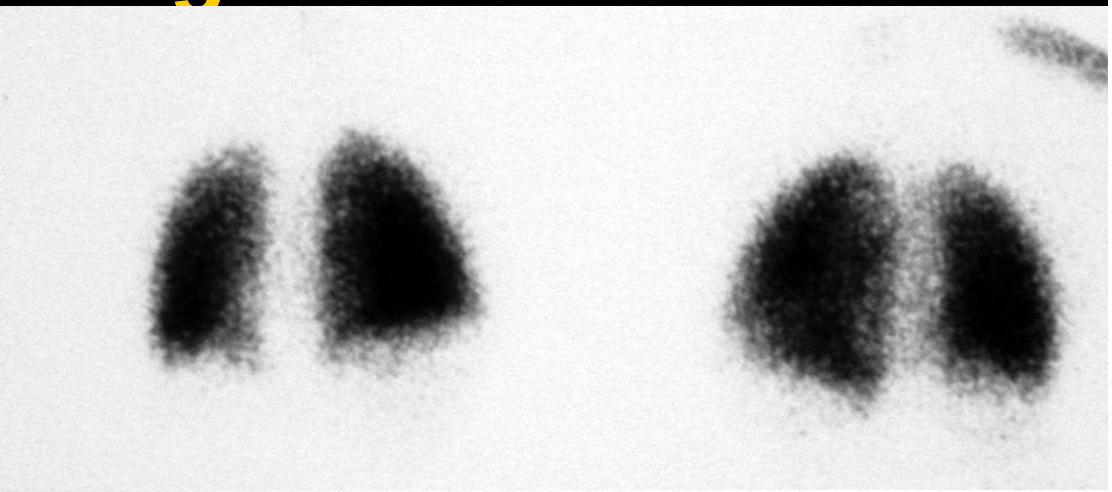


Diagnosis from which two modalities ?(one not shown)





Contrast CT or Pulmonary Angiogram to Diagnose



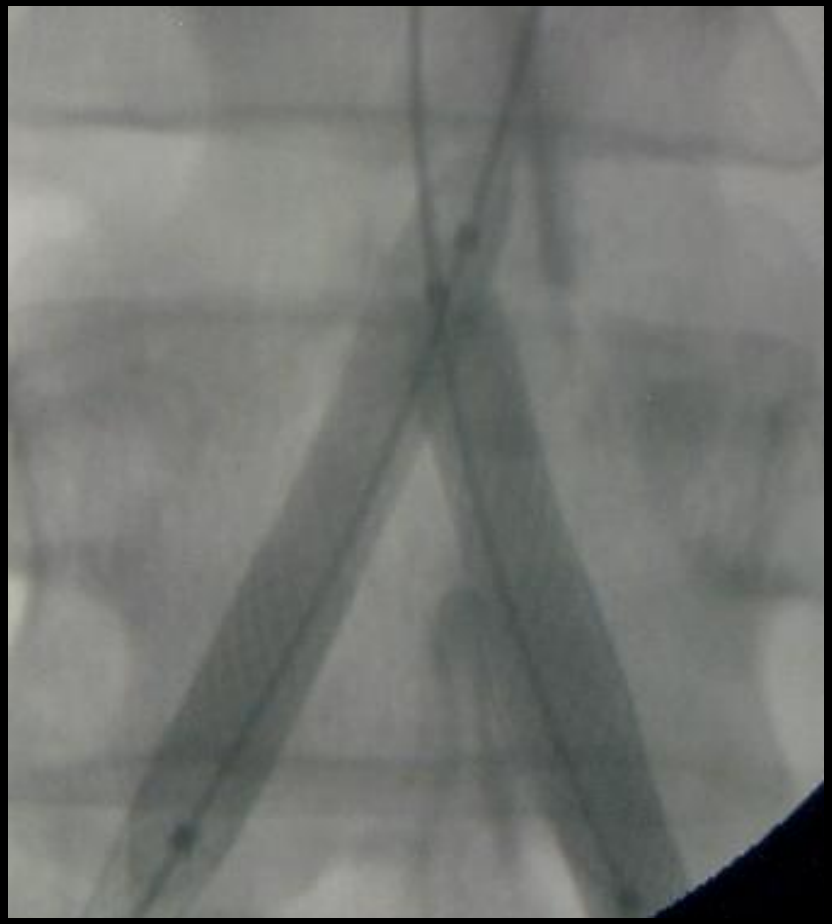
V/Q Nuc Med LUNG SCAN

Is Ionizing Radiation
TcMAA is used for Perfusion

Probability (not diagnoses)
of Pulmonary

Embolus

Angioplasty

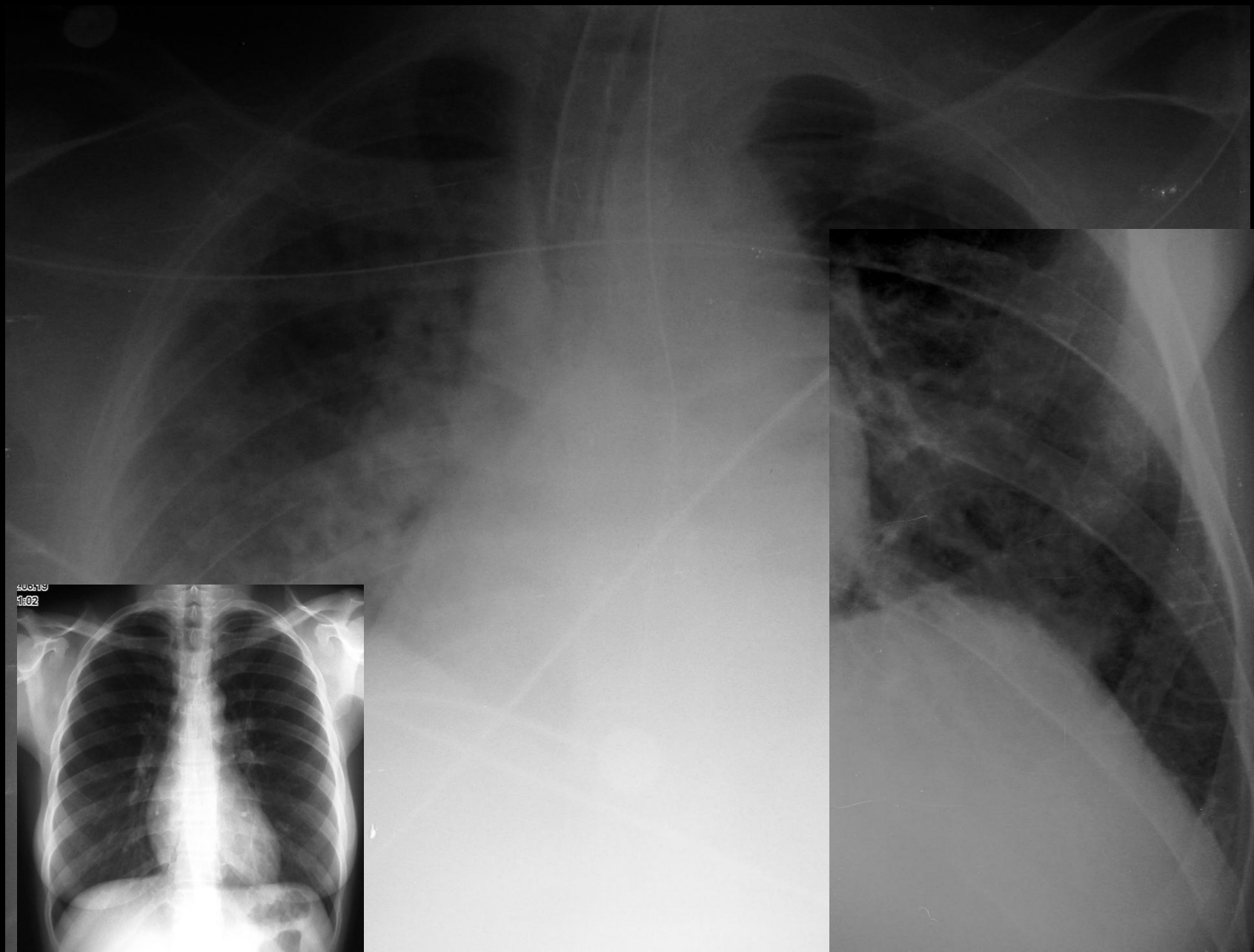


TRUE or FALSE:

- **1. Done Under Fluoroscopic Guidance?**
- **2. Done to Relieve Narrowing in a vessel (most frequently) or other tubular anatomic structure?**
- **3. Sometimes need buttressing with a Stent?**

True or False ?

- 1. TRUE
- 2. TRUE
- 3. TRUE



Most likely

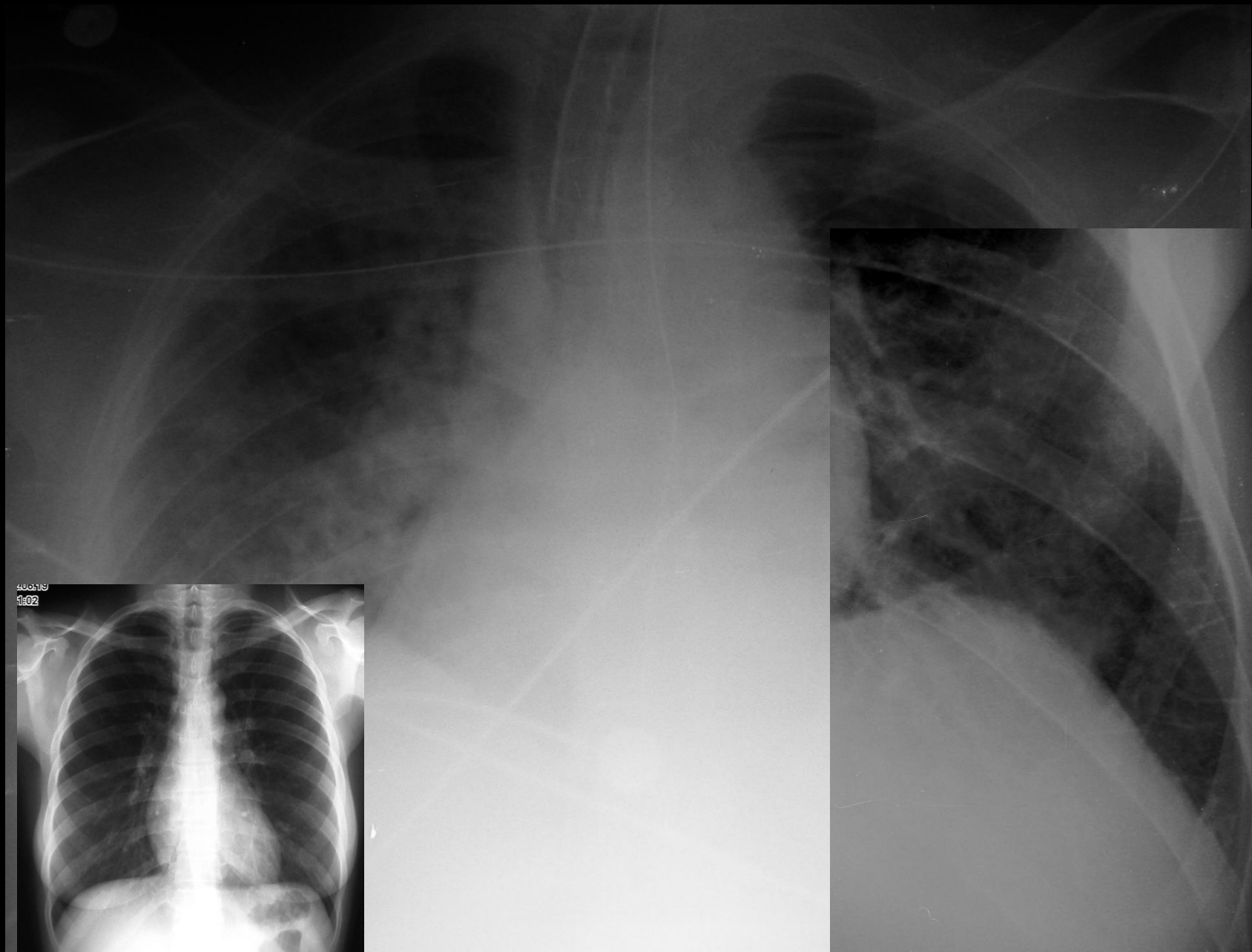
A. Pulmonary Edema (fluid) in the interlobular septae

B. Normal

C. Kerley B lines

D. A and C

Kerley B lines



CXR

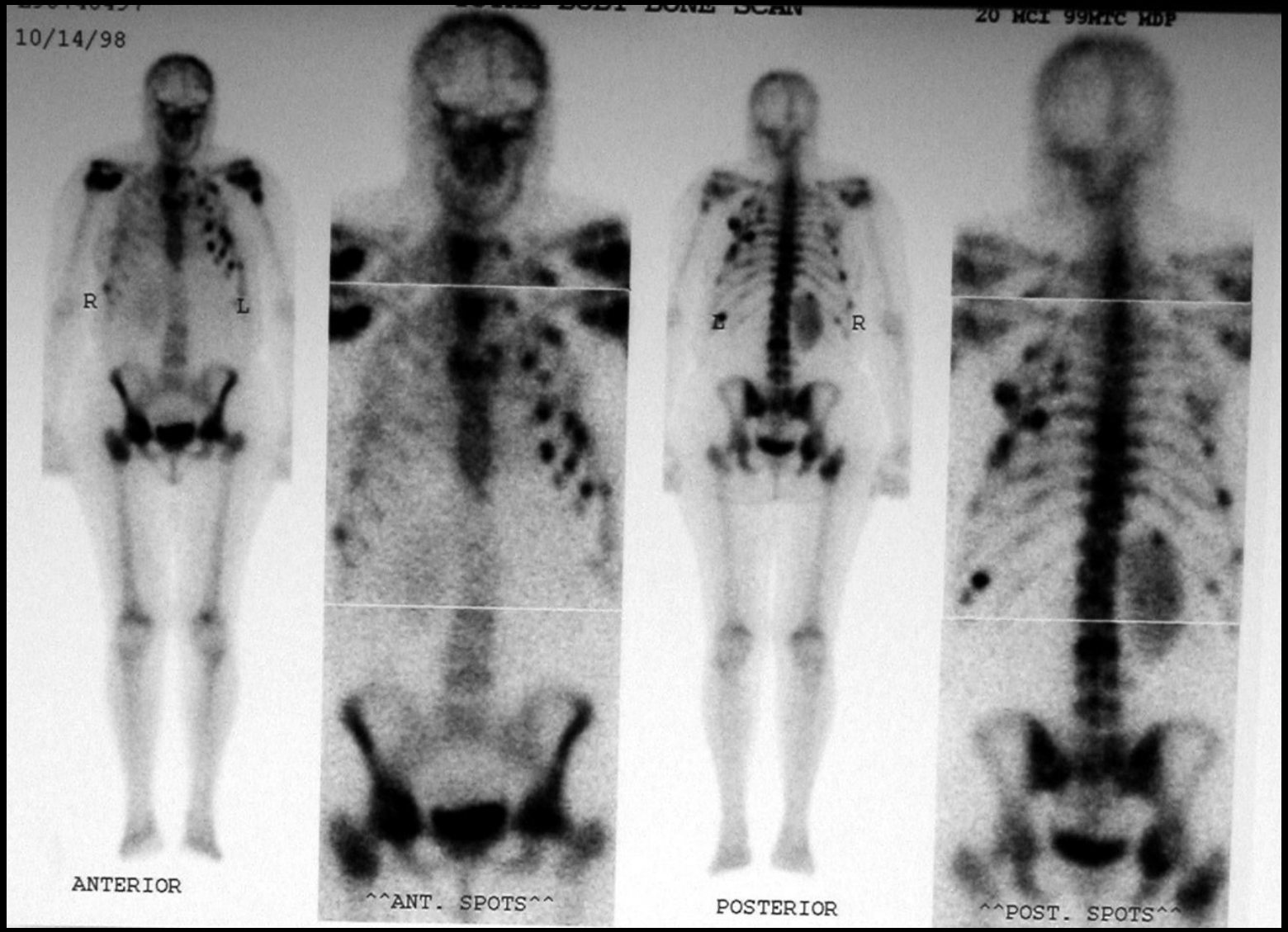
A. Fluid in septae

B.

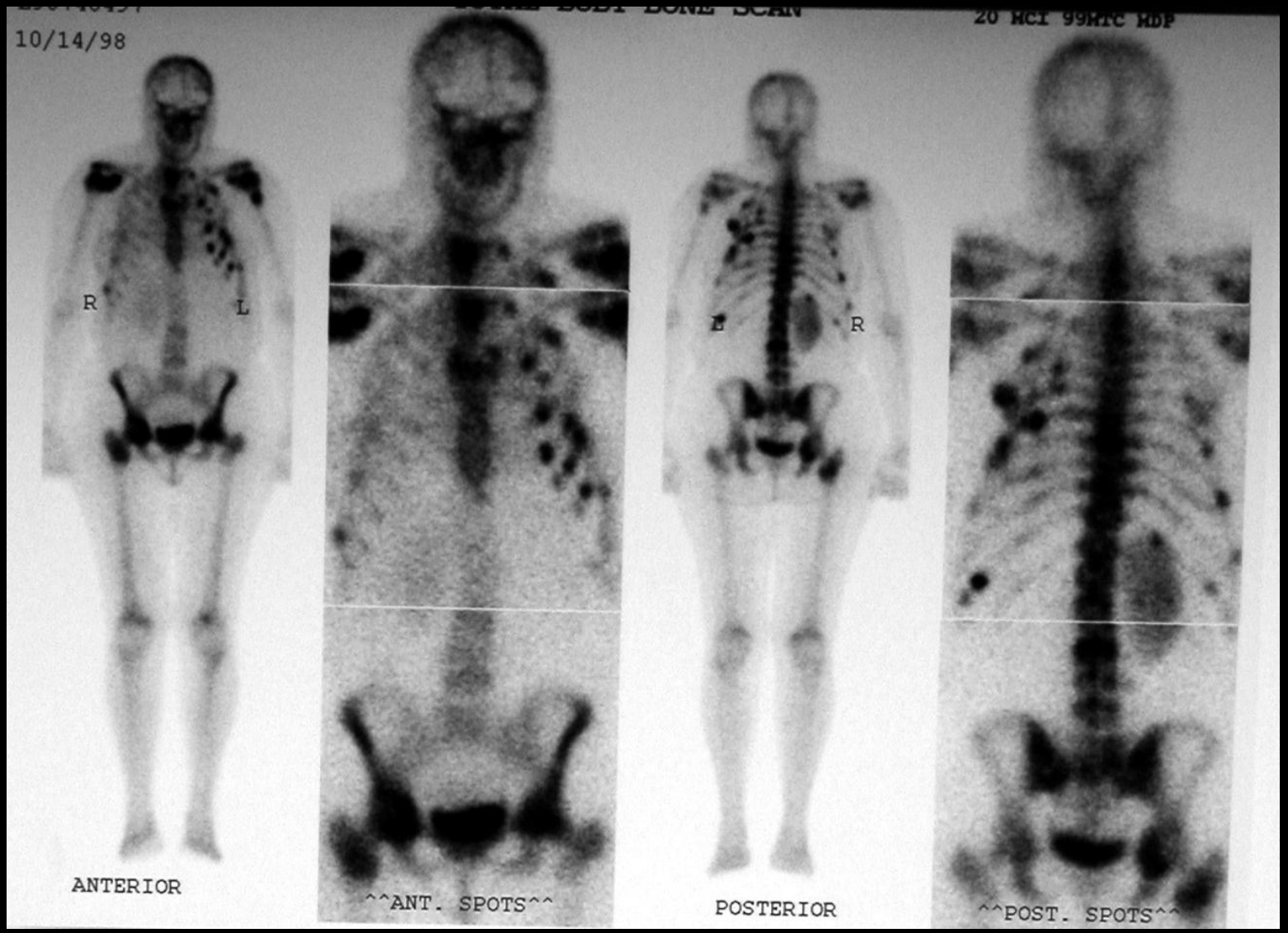
C. Kerley B lines left Costophrenic angle

D. A and C. A is the definition of Kerley lines

Modality, ionizing , normal?



Nuclear Medicine , Yes , Bone Mets



Pelvic XRAY
Bone Metastases

IONIZING RADIATION ?

History of weight loss.
Diagnosis:

A. Mets or Multiple myeloma

B. Normal

C. Rickets

D. Post traumatic changes

- PNEUMOPERITONEUM
- NORMAL

- PNEUMONIA

ABDOMINAL EMERGENCIES

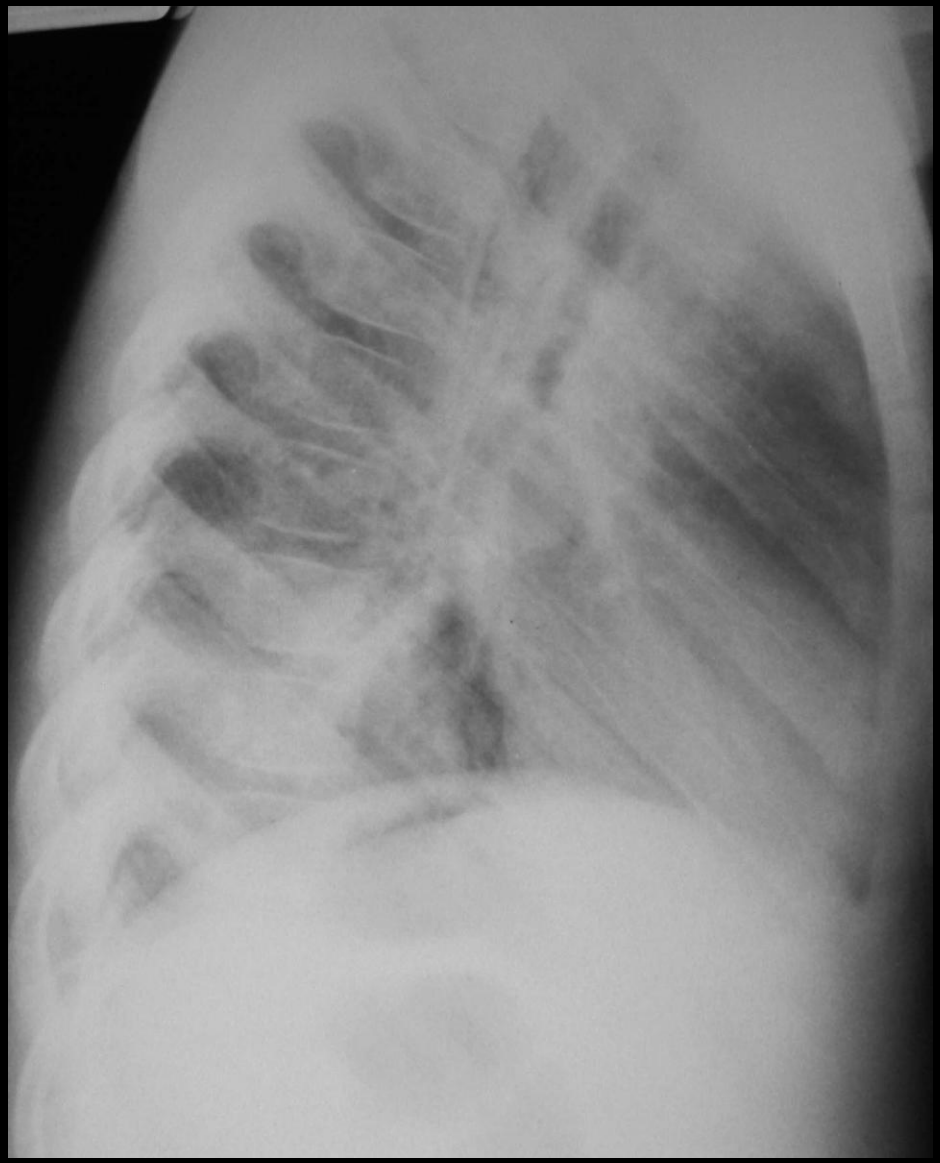
- Pneumoperitoneum
- Appendicitis (CT preferred)
- Diverticulitis
- Ischemic Colitis can get pneumotosis coli/ PV intrahep air
- Hemorrhage= Leaking aneurysm, laceration spleen/liver/renal

DIAGNOSIS:

PNEUMO-PERITONEUM

What is the SIGN ?

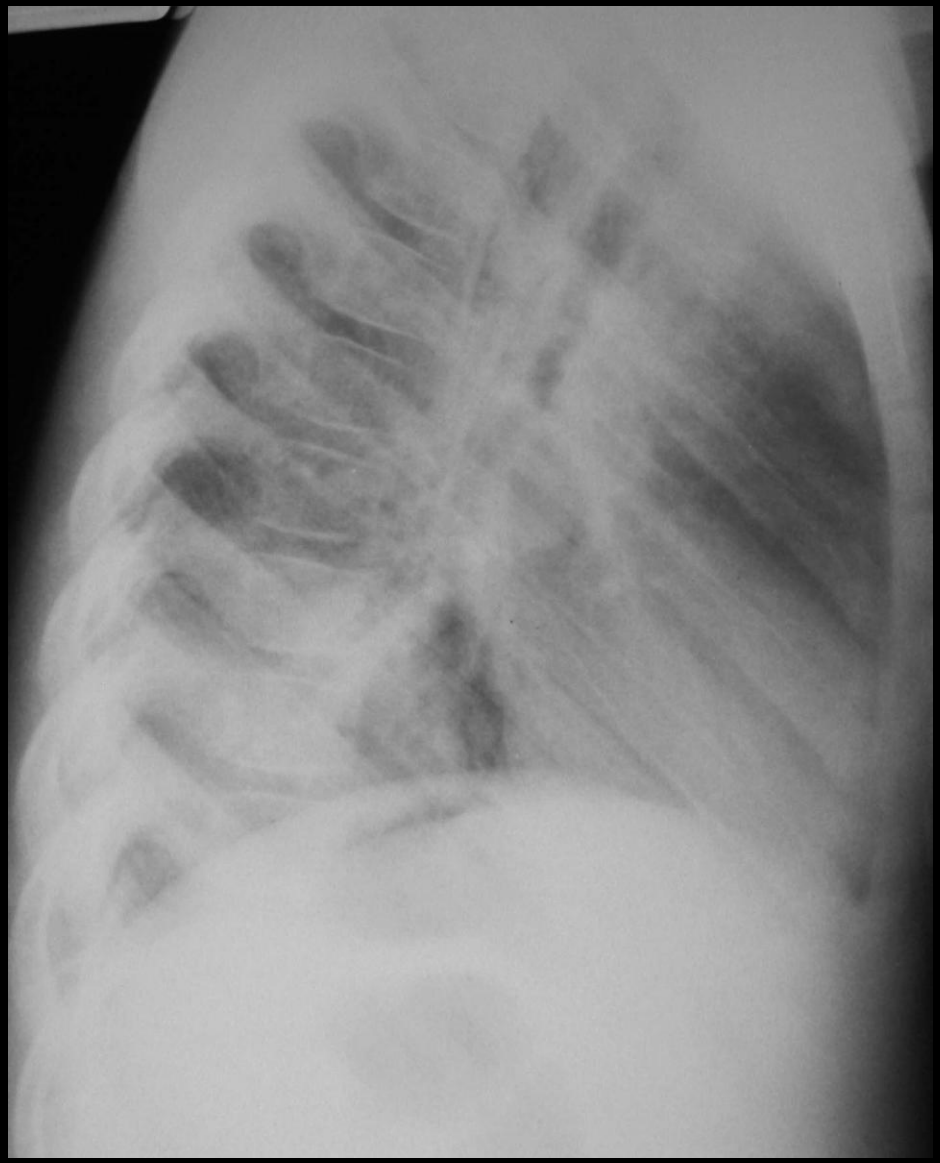
History: FEVER



What is the SIGN and what does it mean?

- **SPINE SIGN =**
- **AIRSPACE DISEASE**: Pulmonary Edema or Pneumonia

Diagnosis: PNEUMONIA



History: Fever Diagnosis?

A. Pneumo-thorax

B. Normal

C. CHF

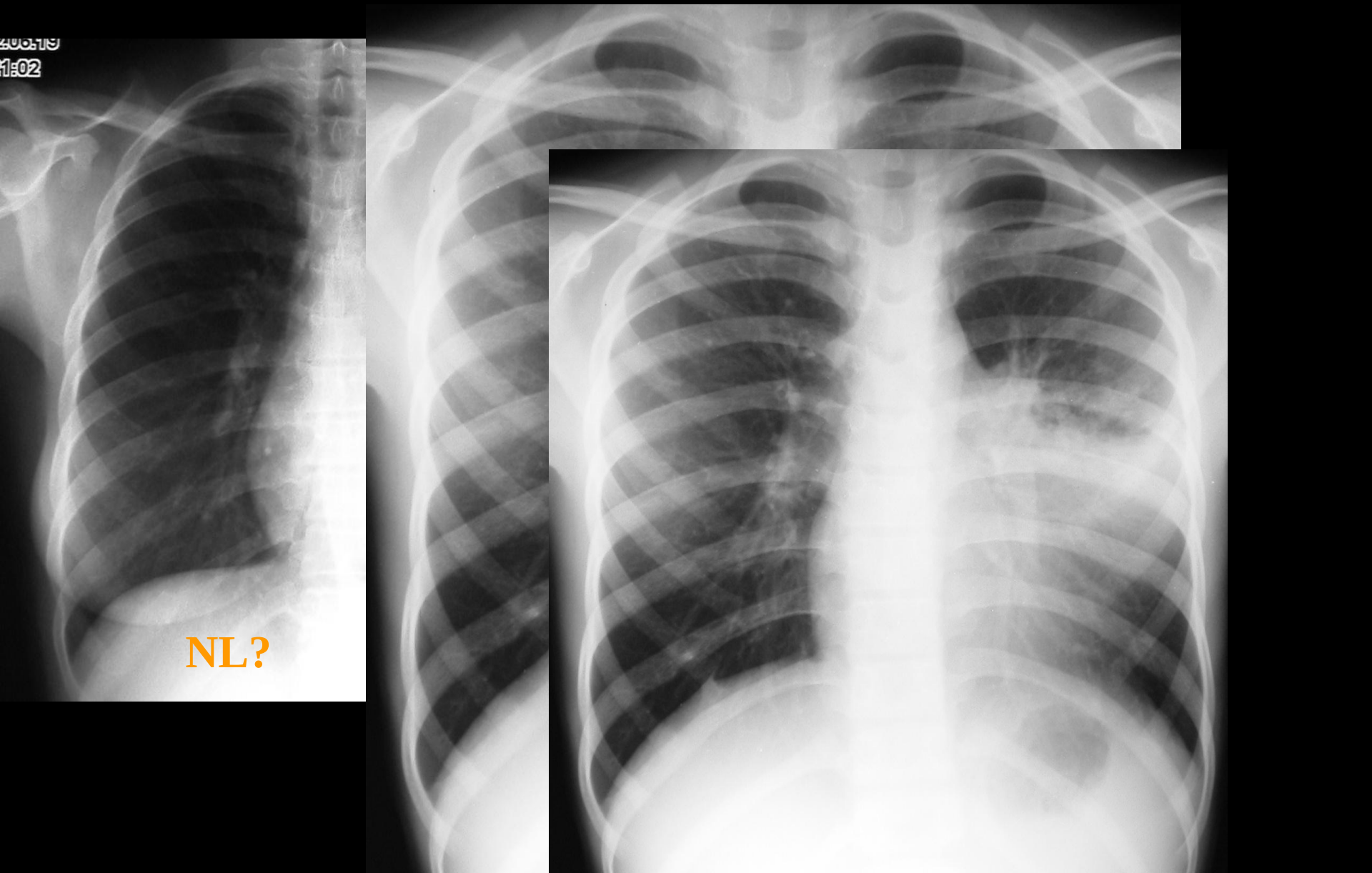
D. Pneumonia

SIGN?

Pneumonia

- SILHOUETTE SIGN LEFT HEART BORDER

Lingular Pneumonia

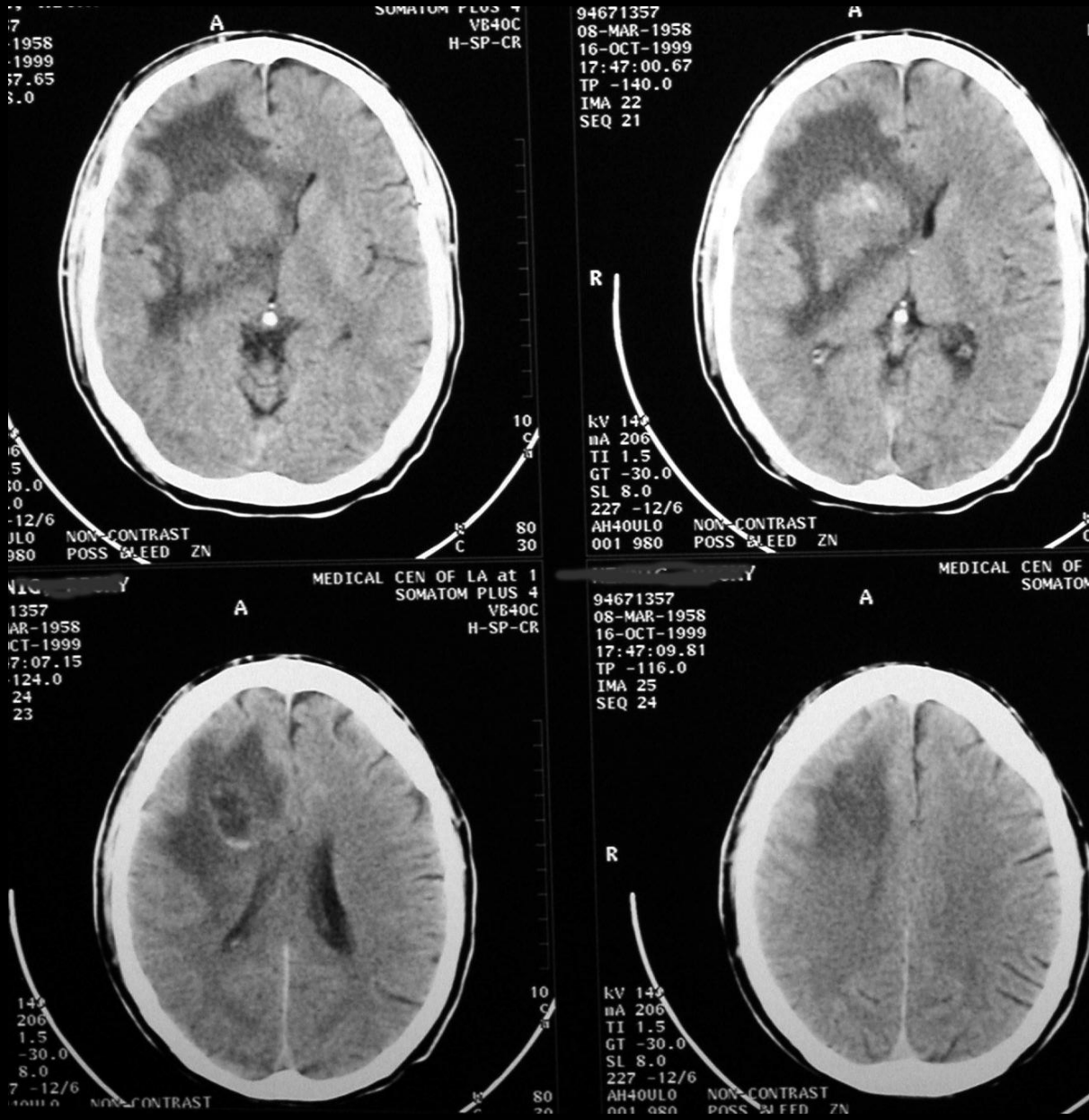


Cerebral Edema

- CYTOTOXIC = stroke (CVA), wedge-shaped/ vascular territory
- VASOGENIC CEREBRAL EDEMA: Tumor, infection.
  - Metastatic from tumor may account for **Multiple ring enhancing lesions**

CNS Lymphoma (Unenhanced CT)

What type cerebral edema?

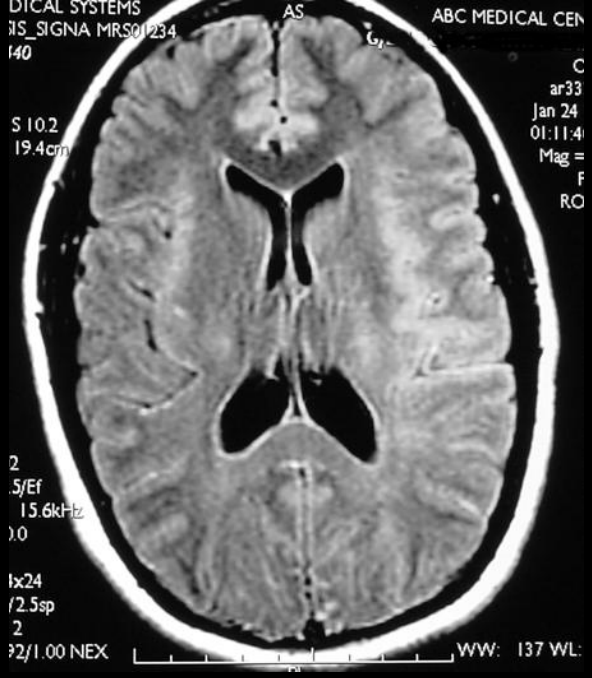


Brain Mets(CECT)

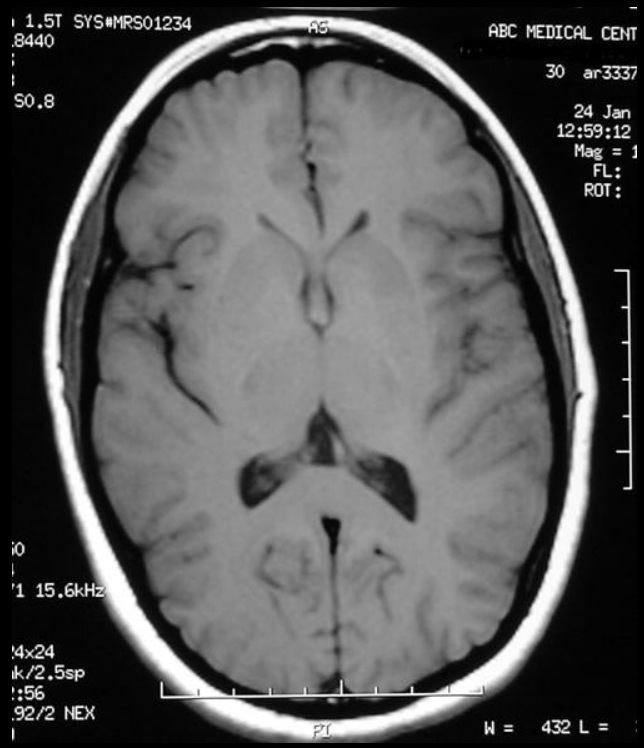
Type of edema?

Modality.

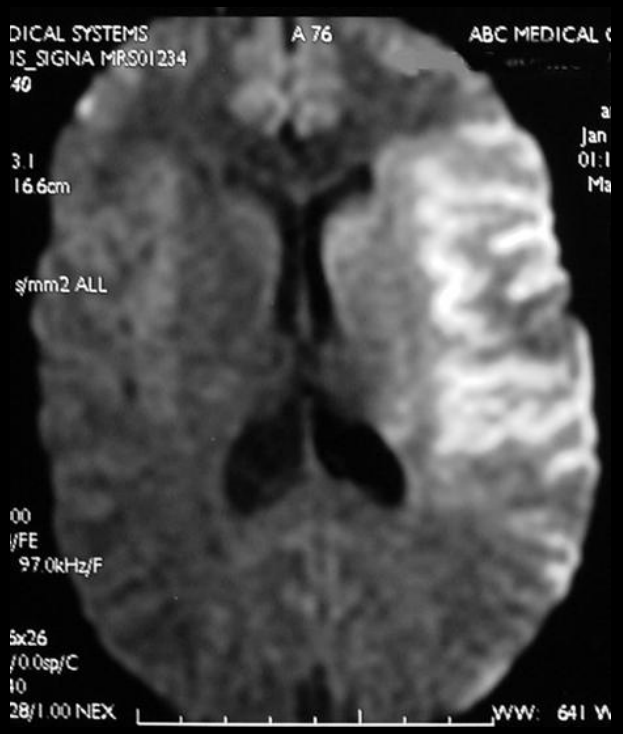
Diagnosis

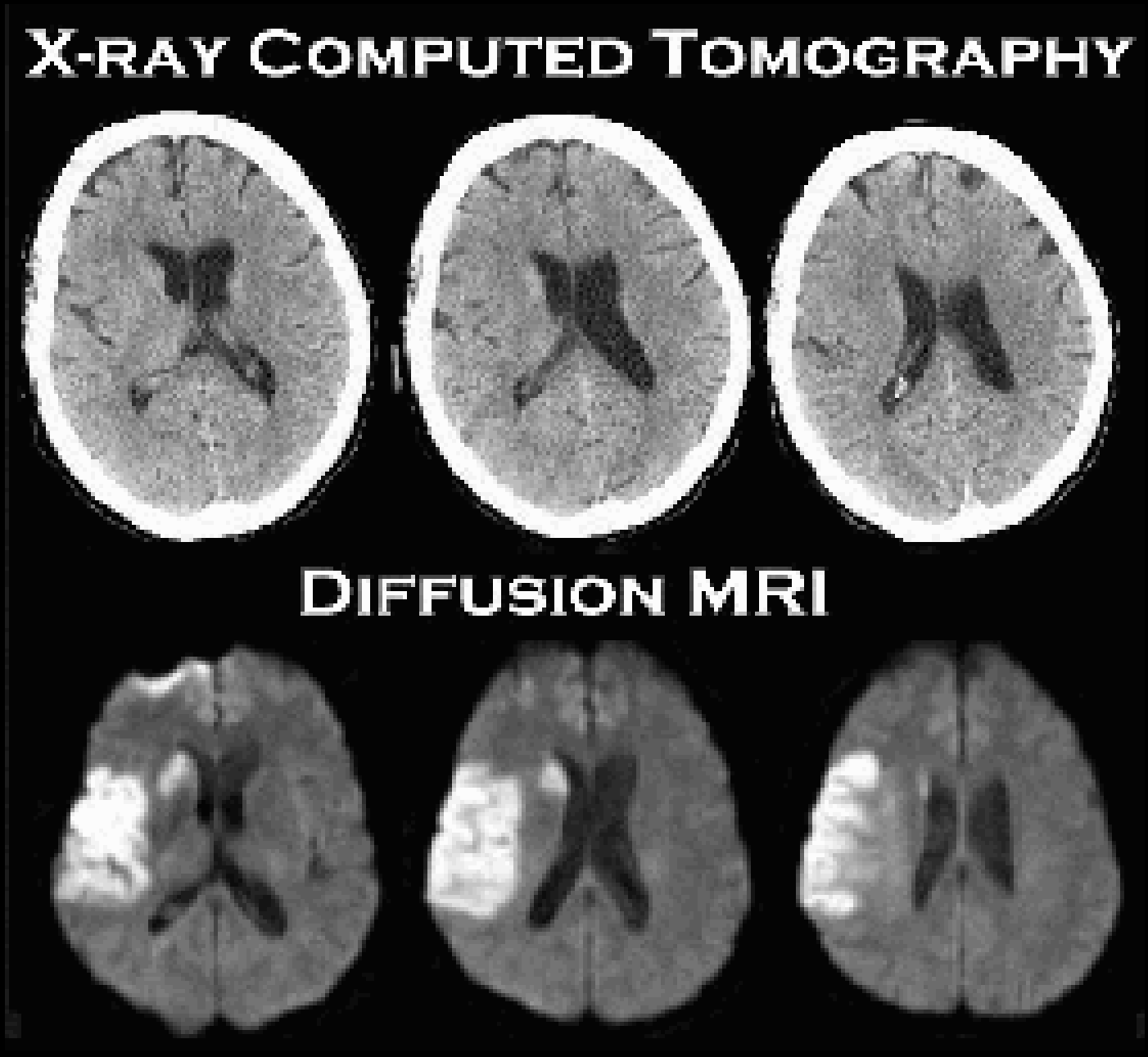


FLAIR



DIFFUSION

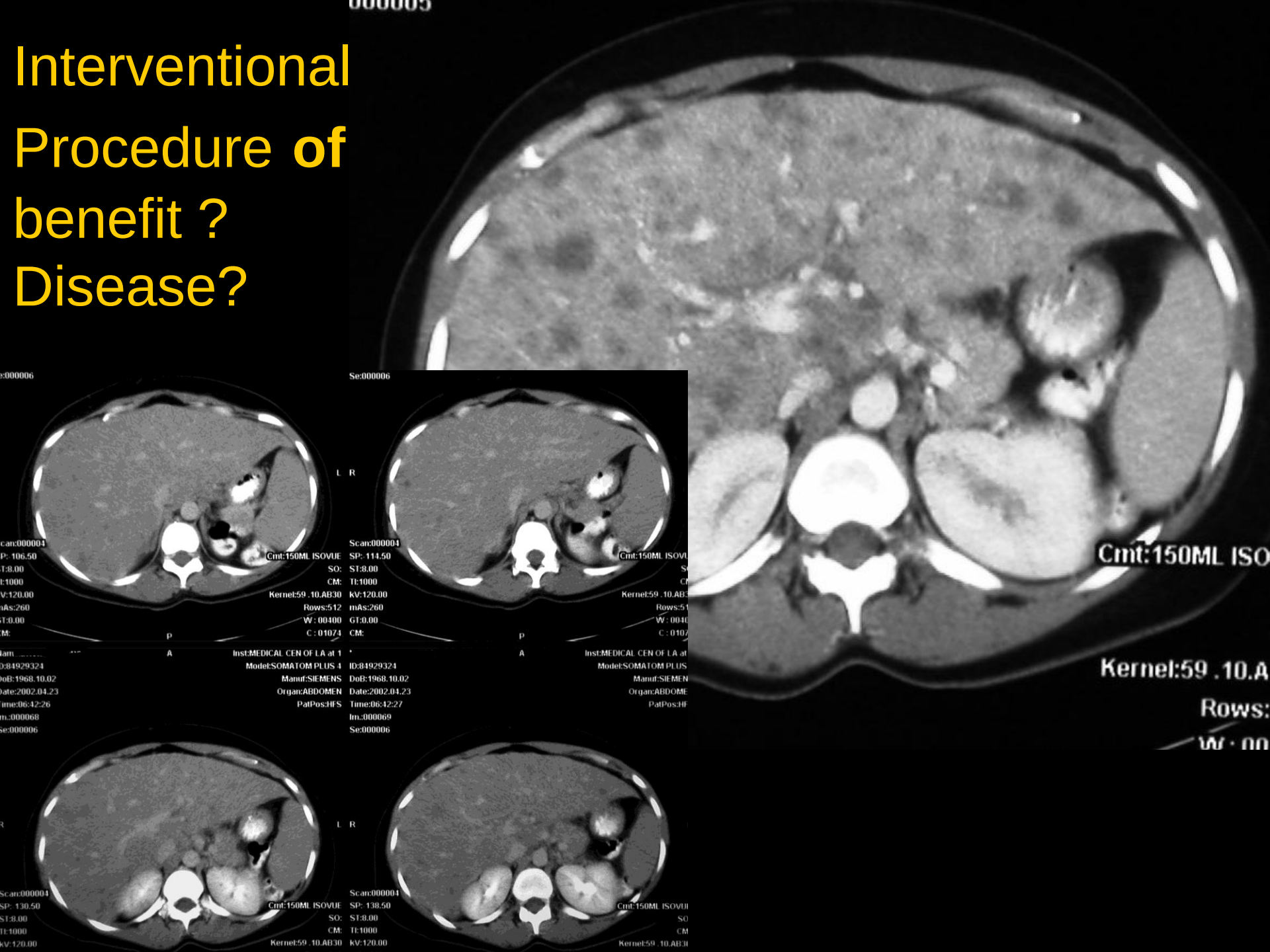



X-ray Computed Tomography
Diffusion MRI

CYTOTOXIC Cerebral Edema, MRI diffusion weighted sequence, **CVA/stroke**

- CYTOTOXIC = stroke (CVA), wedge-shaped/ vascular territory

Interventional Procedure **of** benefit ? Disease?

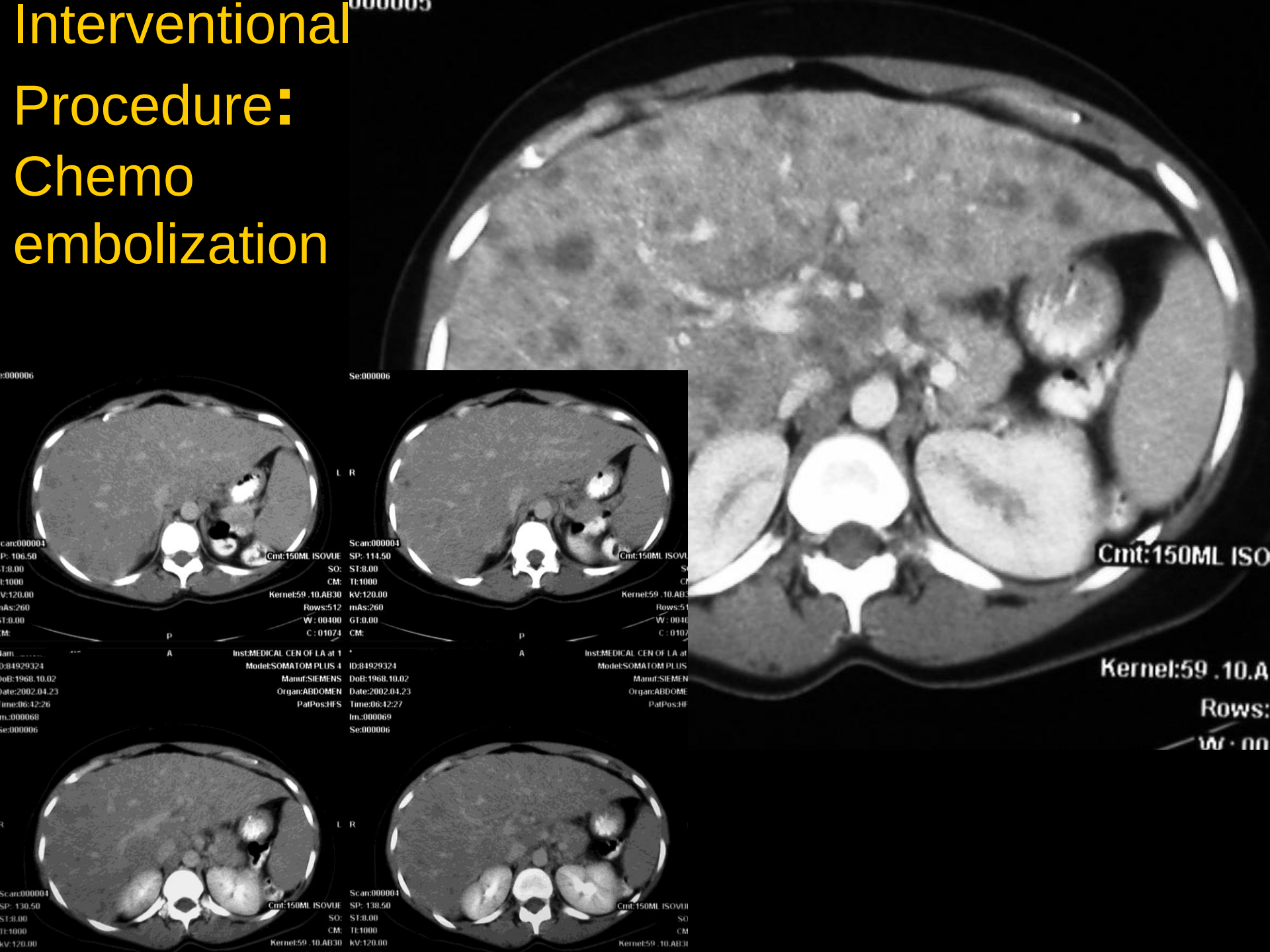


CONTRAST Abdominal CT

HYPERvascular liver metastases

Chemoembolization by Interventional

Interventional Procedure: Chemo embolization

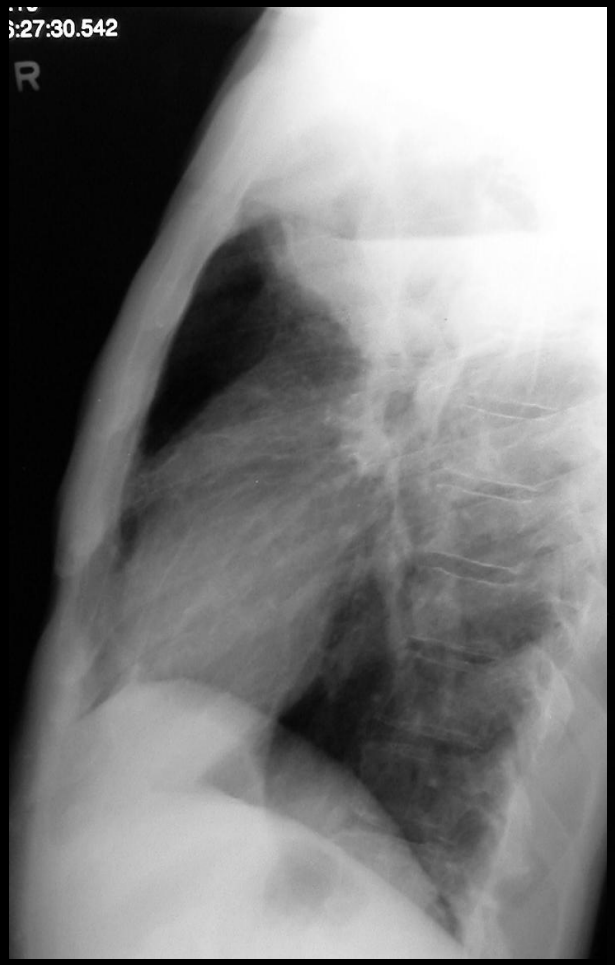


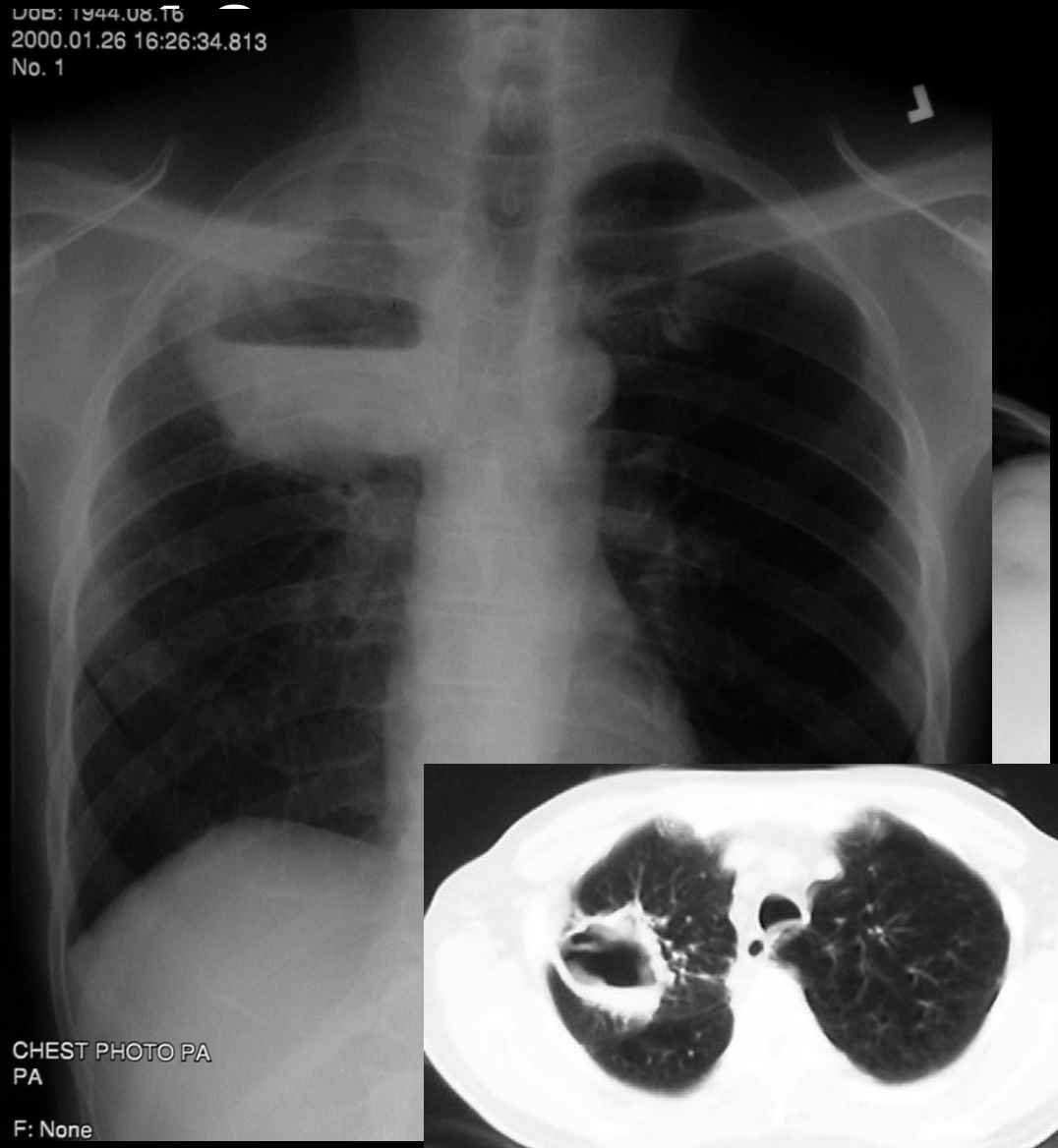
Common Indications for IV Contrast in CT

- **To visualize blood vessels**

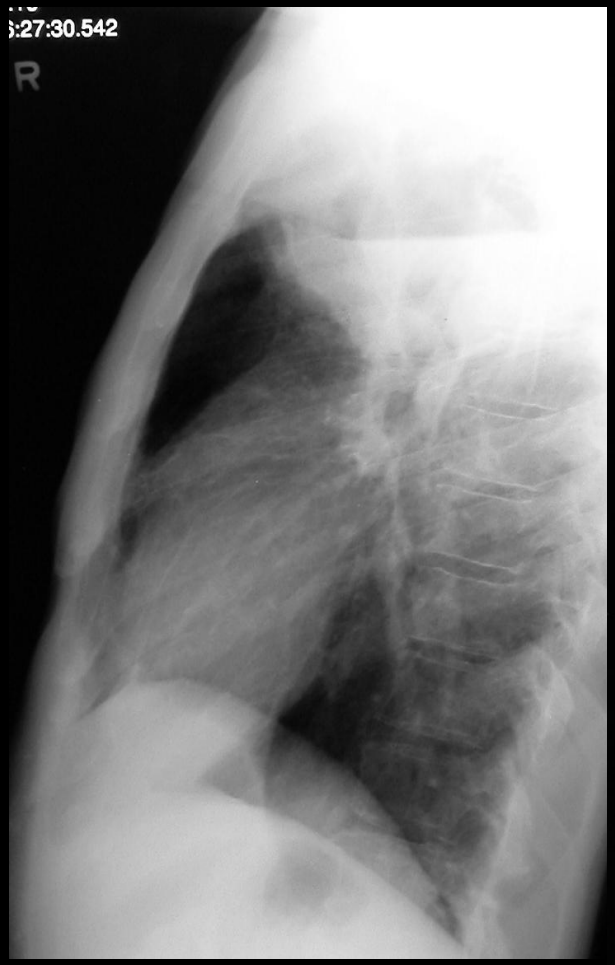
  (Aortic injury, Abdominal Aortic Aneurysm, Pulmonary Embolus)
- **To evaluate for primary or metastatic tumor**
- **To evaluate for infection or inflammatory processes**
- **To evaluate for traumatic injury**

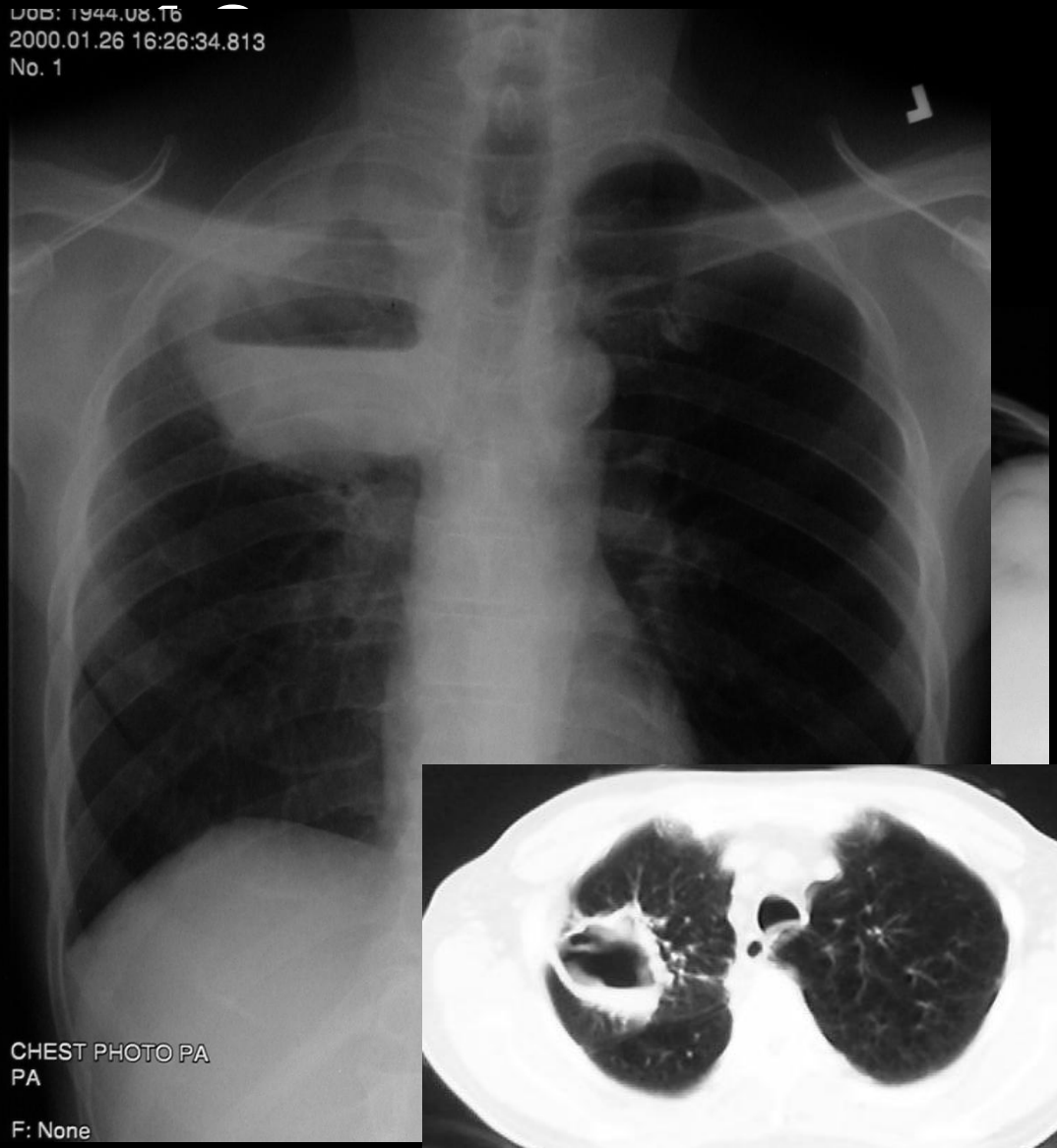
INFECTION or CANCER Possible?





YES!
TB Cavity w Fungus Ball
CT





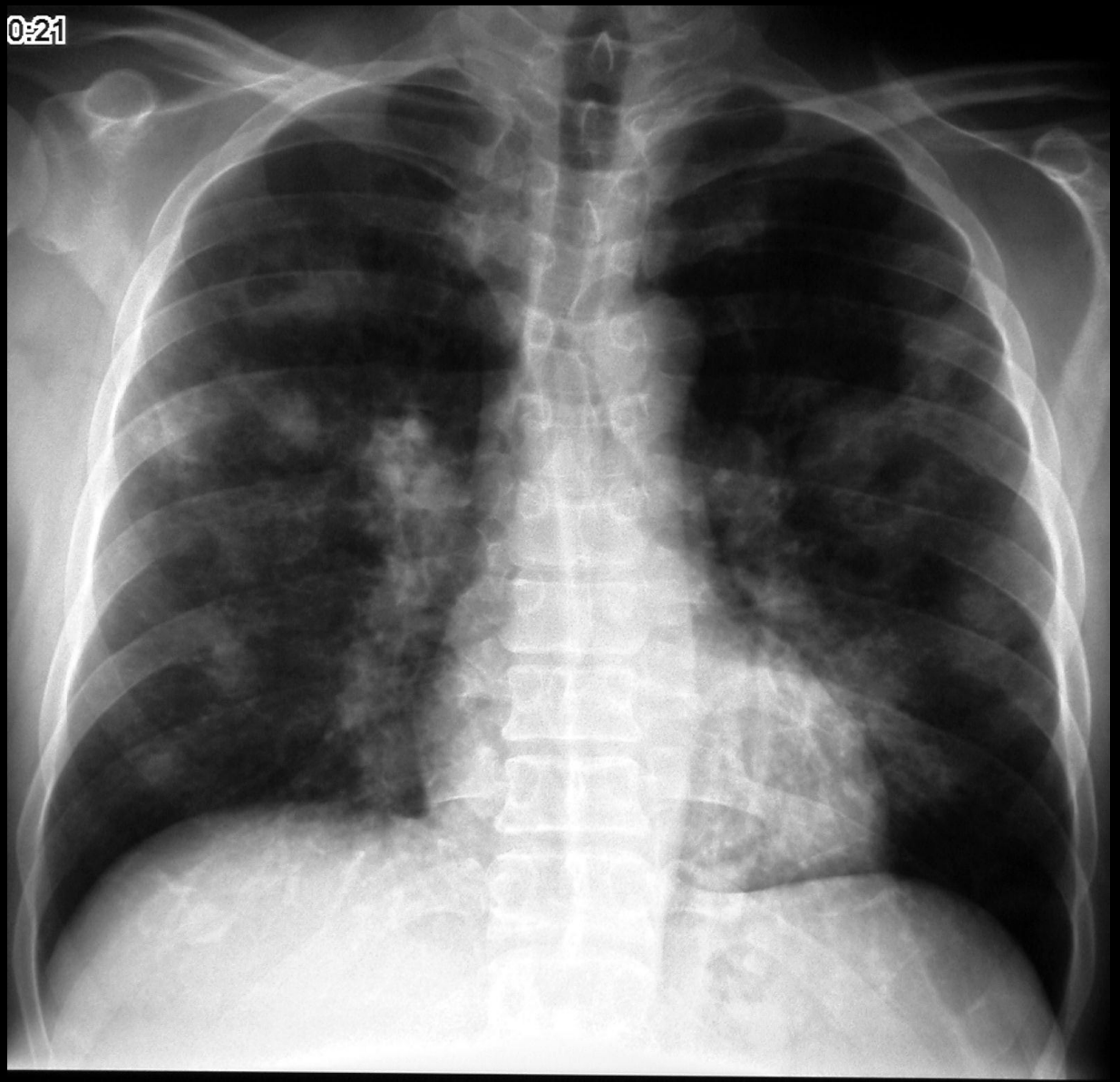
History:

chronic FEVER and heart murmur

A. NORMAL

B. SEPTIC EMBOLI- endocarditis

C. PNEUMO-THORAX



Multiple Pulmonary Nodules LUNG

Neoplastic :Metastases, Kaposi's,,Primary LungCA

Infection

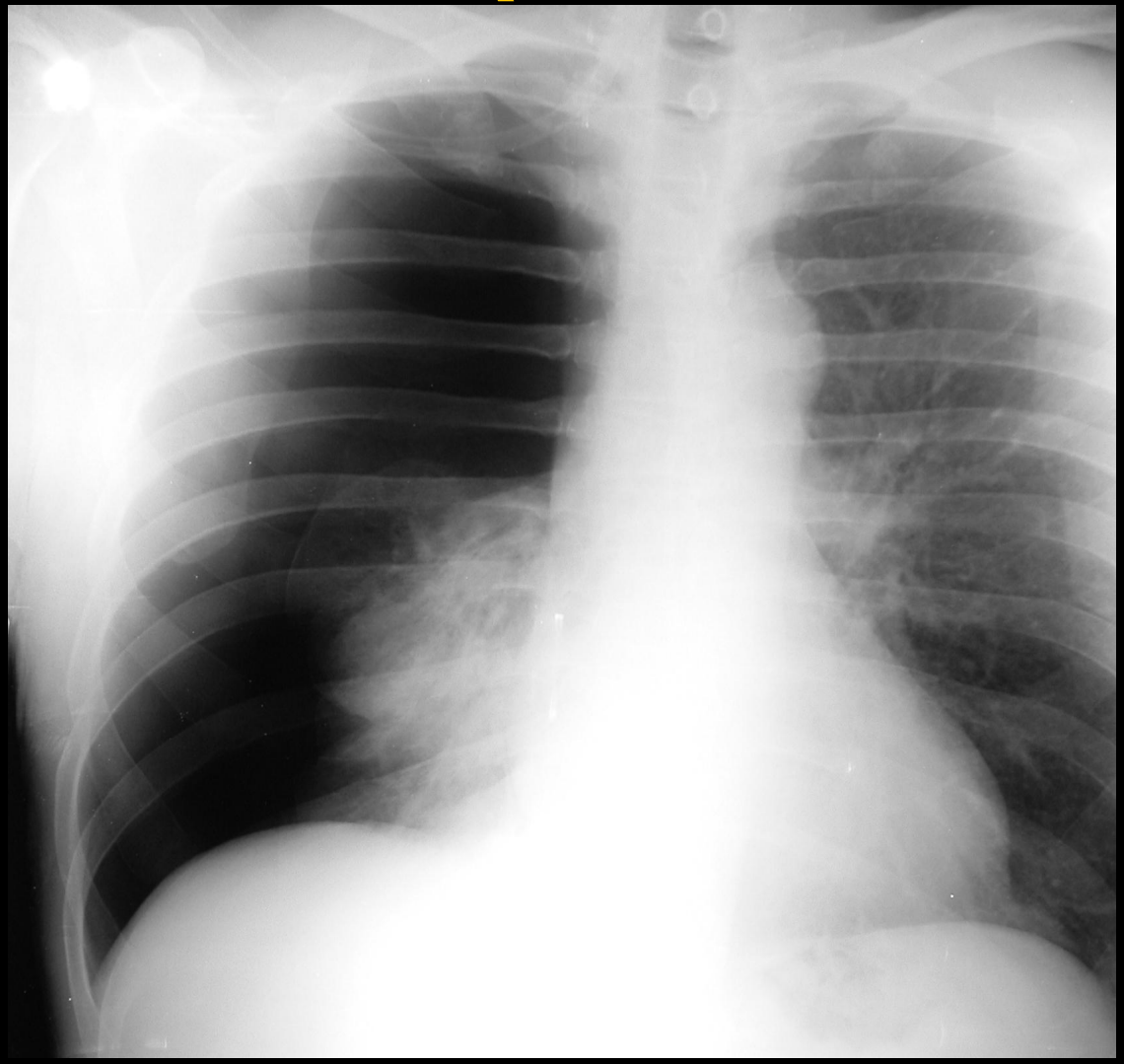
Septic Emboli

CT Lung windows

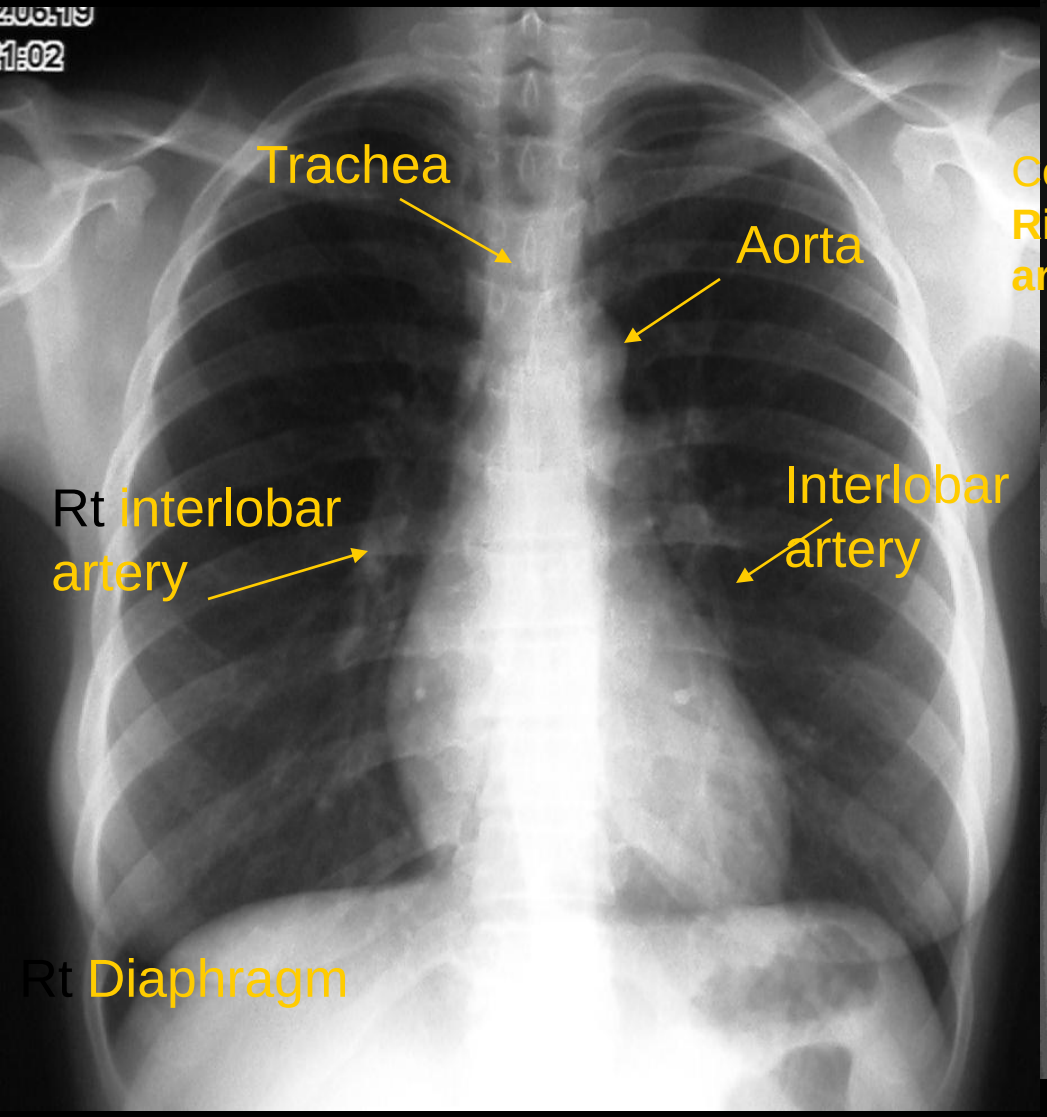
Air -1000 HU

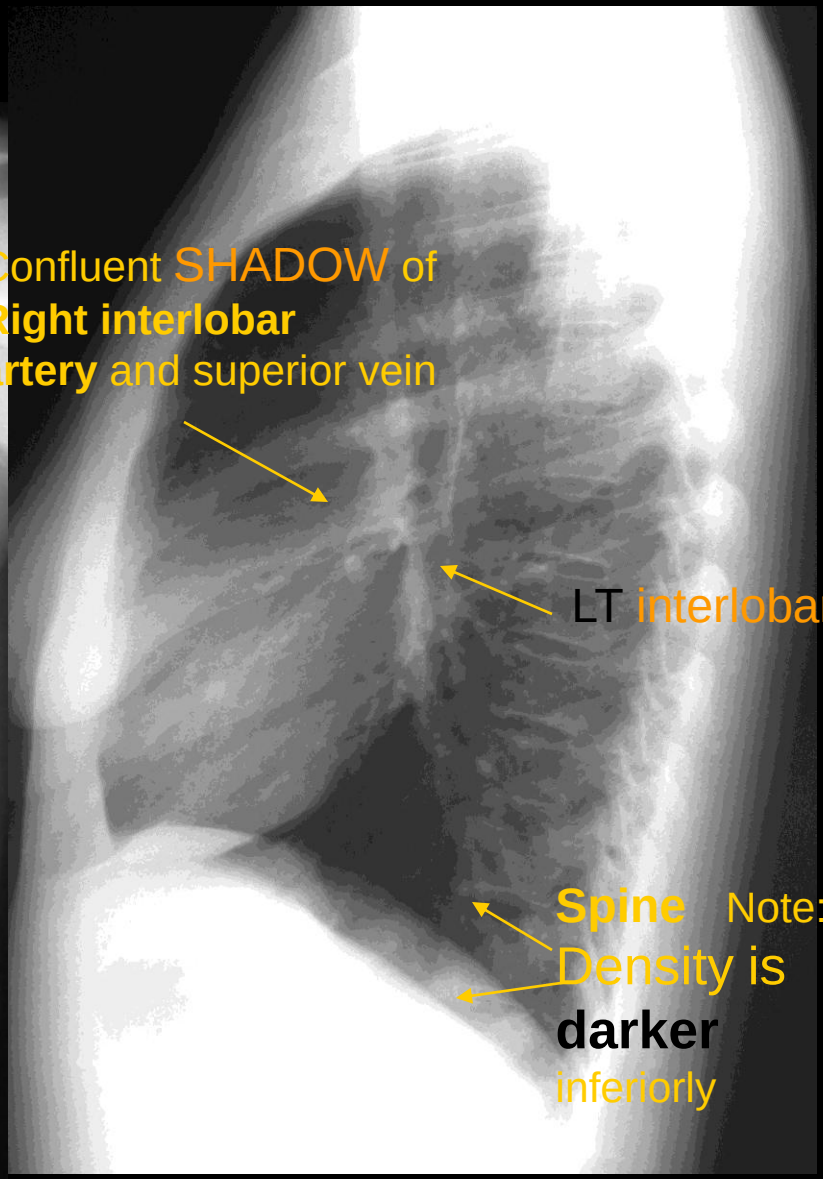

PIZZA
& PASTA
PATIO
Coca-Cola

PneumoTX (Short of Breath)



1 Normal

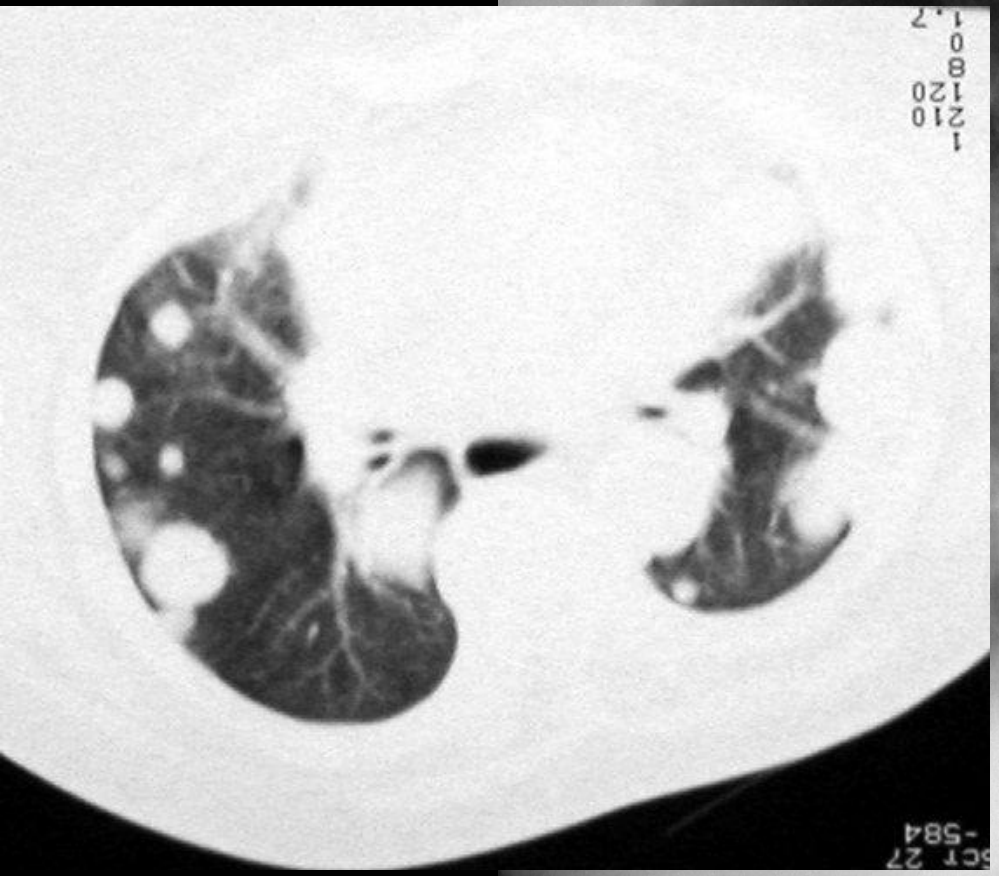

Trachea
Aorta
Rt interlobar artery
Interlobar artery
Rt Diaphragm


Confluent SHADOW of **Right interlobar artery** and superior vein
LT interlobar a.
Spine Note: Density is **darker** inferiorly

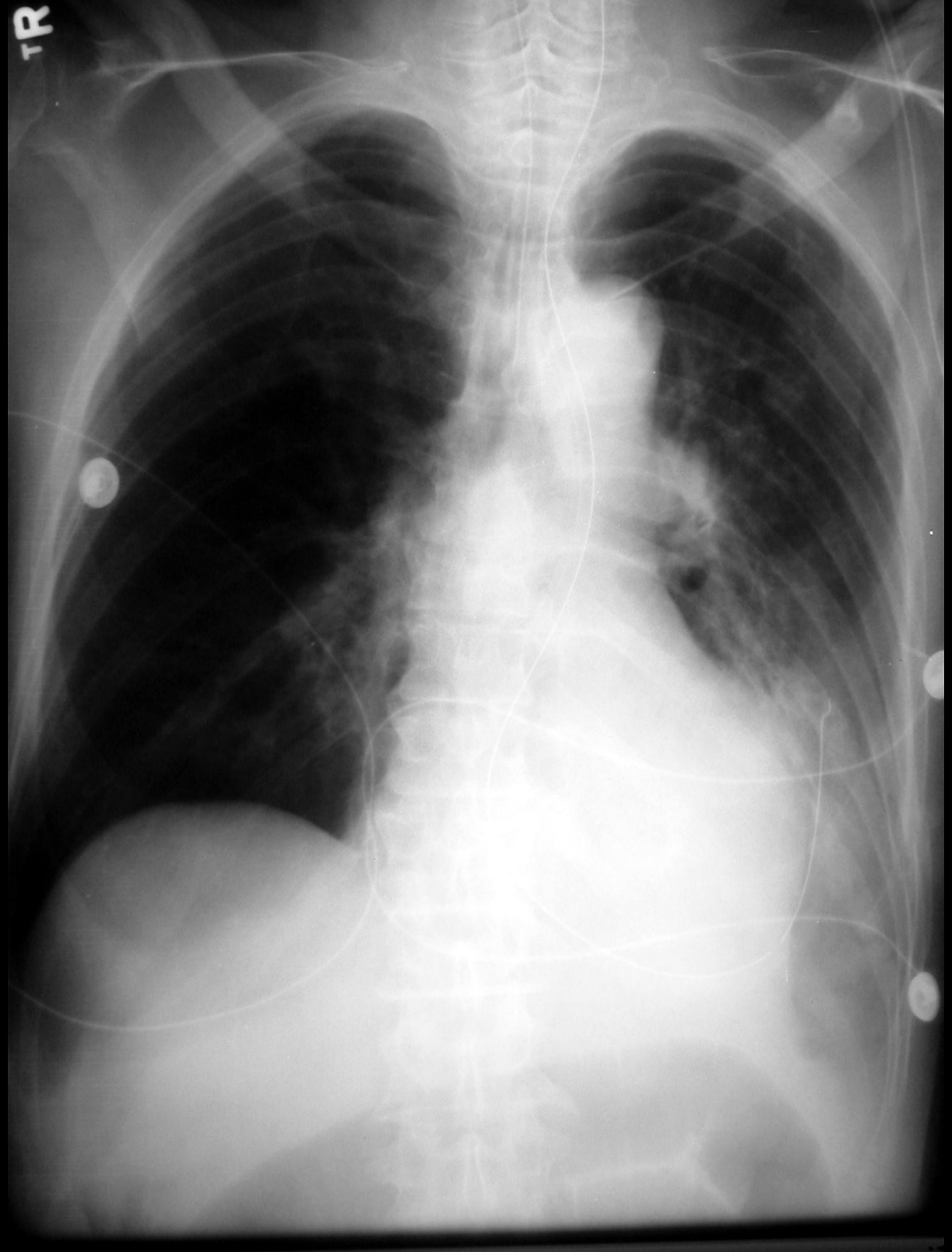
Malignant Neoplasm

- Metastatic = Multiple vs. Primary
- CT or MRI shows Contrast Enhancement (Administered Intravenously)
- Look at other organs
- Spread is Hematogenous (to bone,liver),Lymphangitic (Kerley/lung), Direct invasion(erode bone)

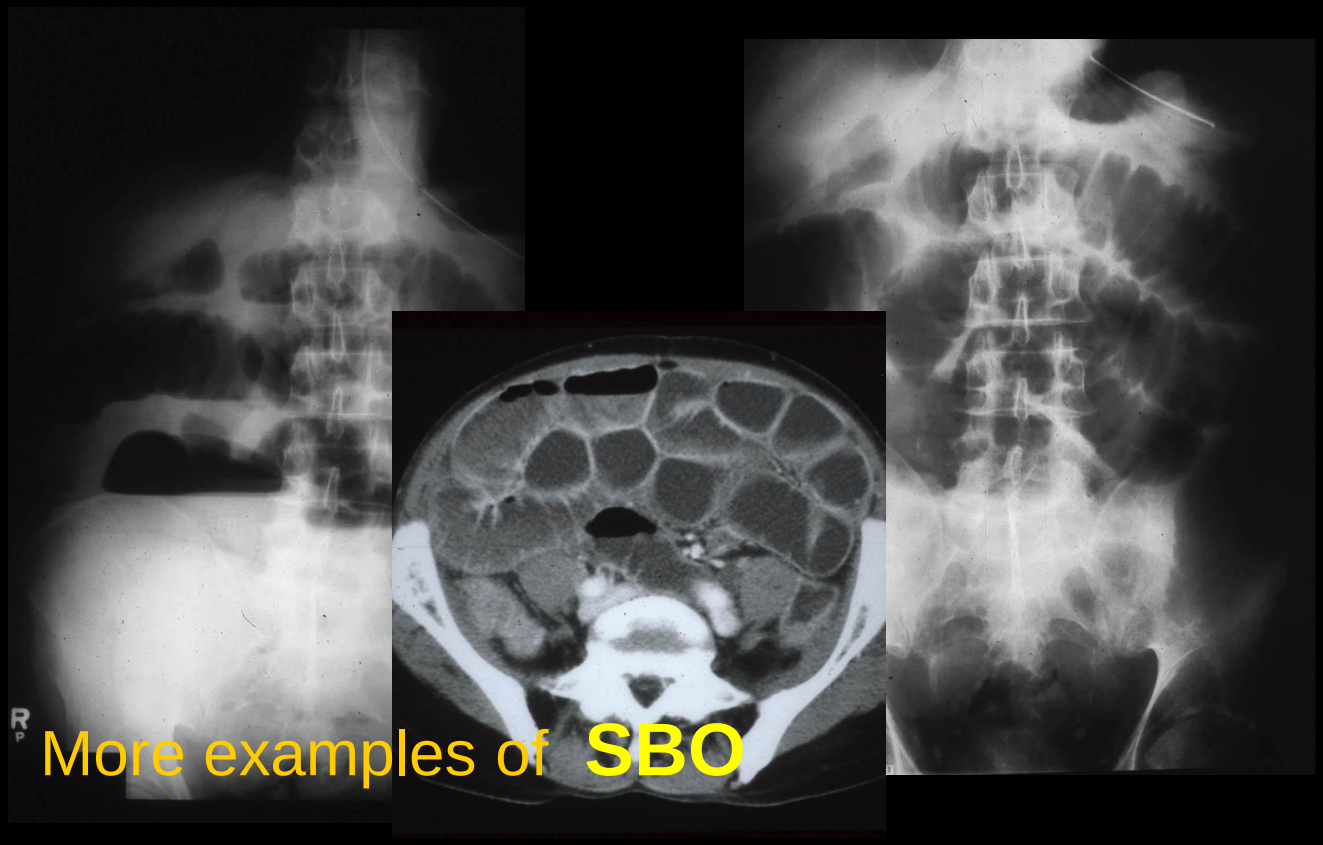
Lung METS



NG tube punctured Stomach & Diaphragm



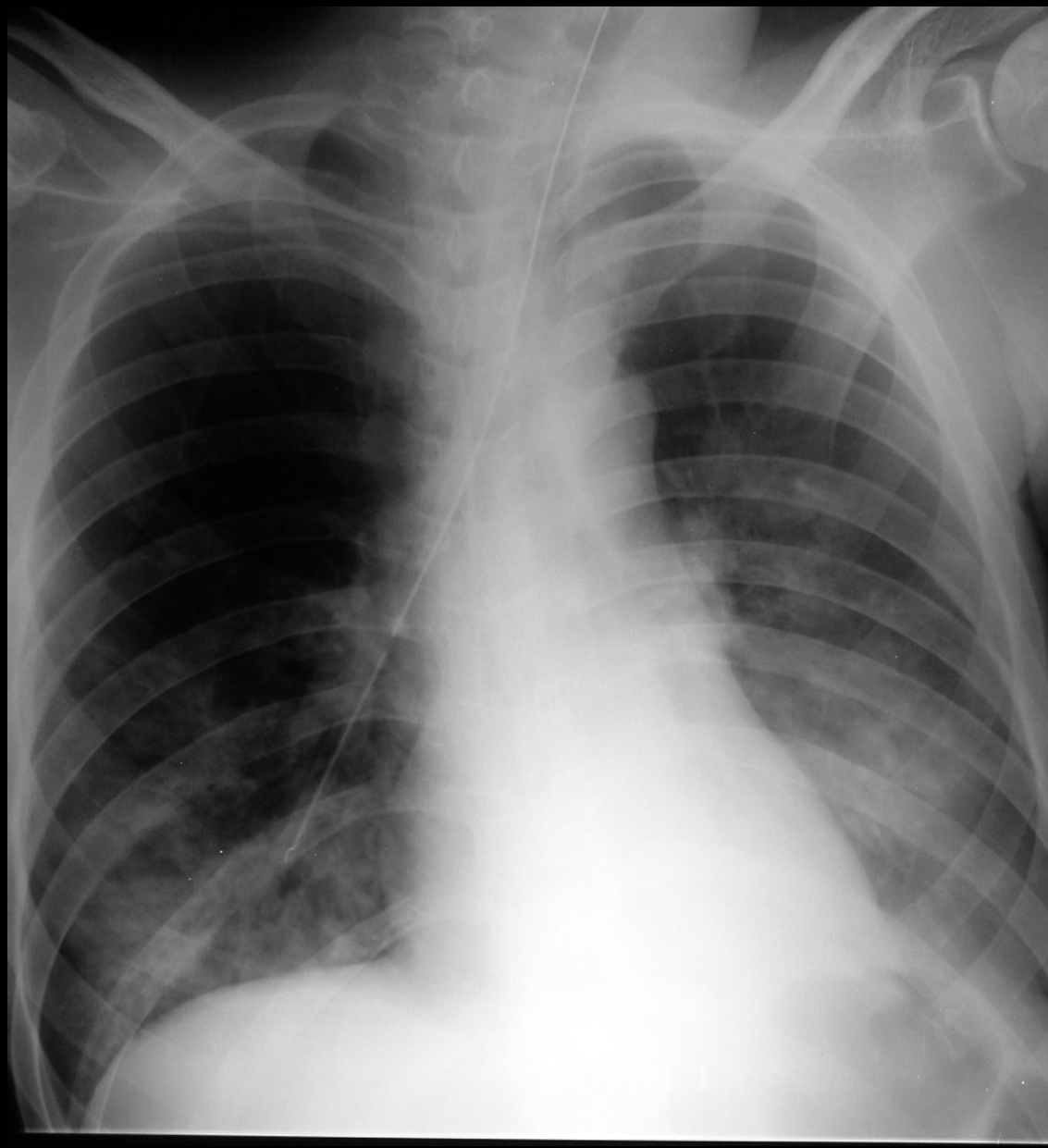
Small bowel obstruction (KUB,CT)



More examples of **SBO**

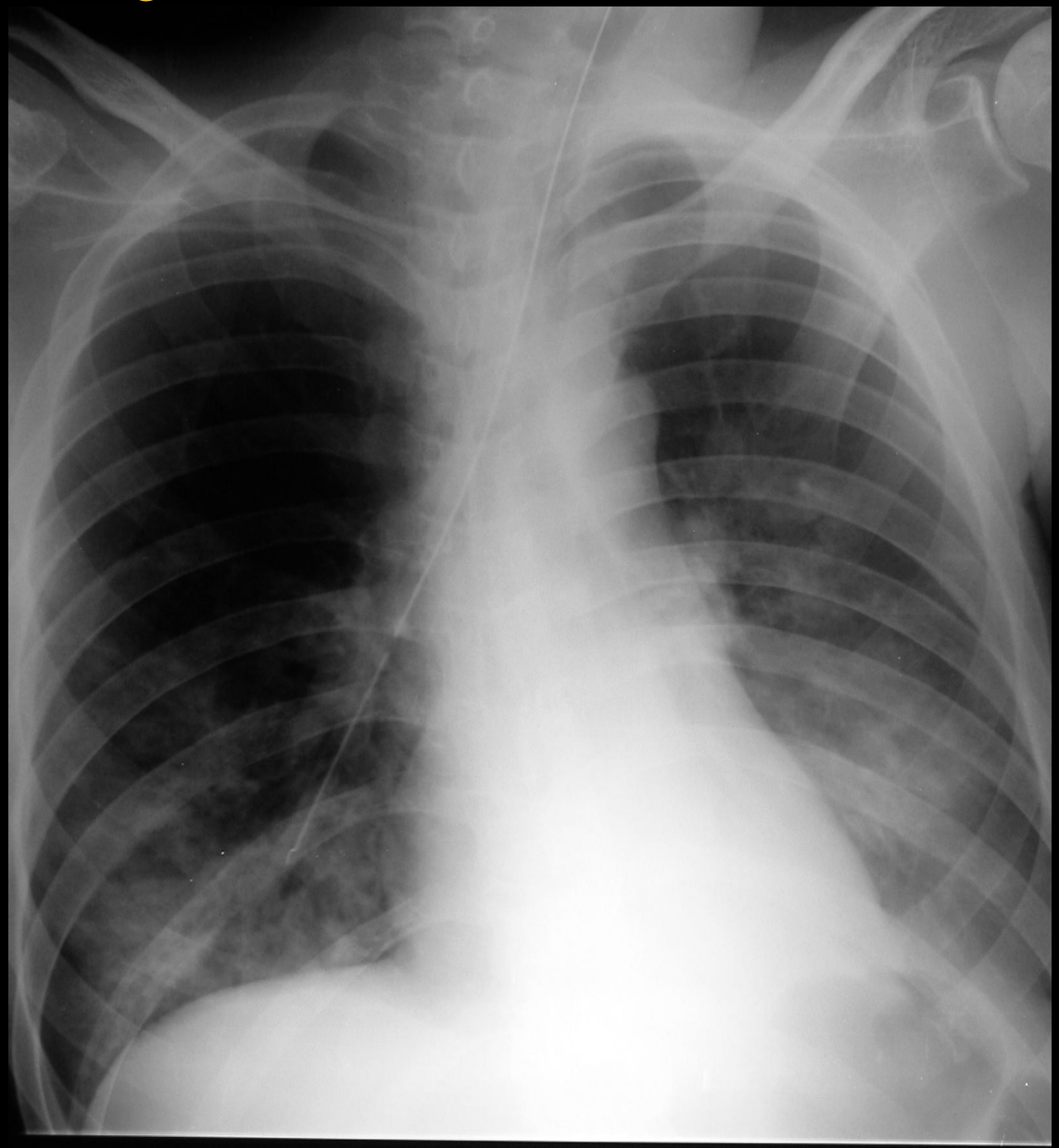
This patient

A. May develop atelectasis of the right lung
B. Should not be fed through this tube
C. Demonstrates the silhouette sign in the left lung base
D. All of the above.



NG tube in bronchus

Silhouette sign LLL



Nausea/Vomiting

History of Surgery years ago

Diagnosis

A. Normal gas pattern

B. Small bowel obstruction

C. Ileus

PNEUMOPERITONEUM

Can’t Miss (AUR) = ABDOMINAL EMERGENCY

- Air outside of viscus
- Air = Lucent (HU = -1000)
- Paucity of Air
- Dilated Bowel
- Peritonitis 6hrs.

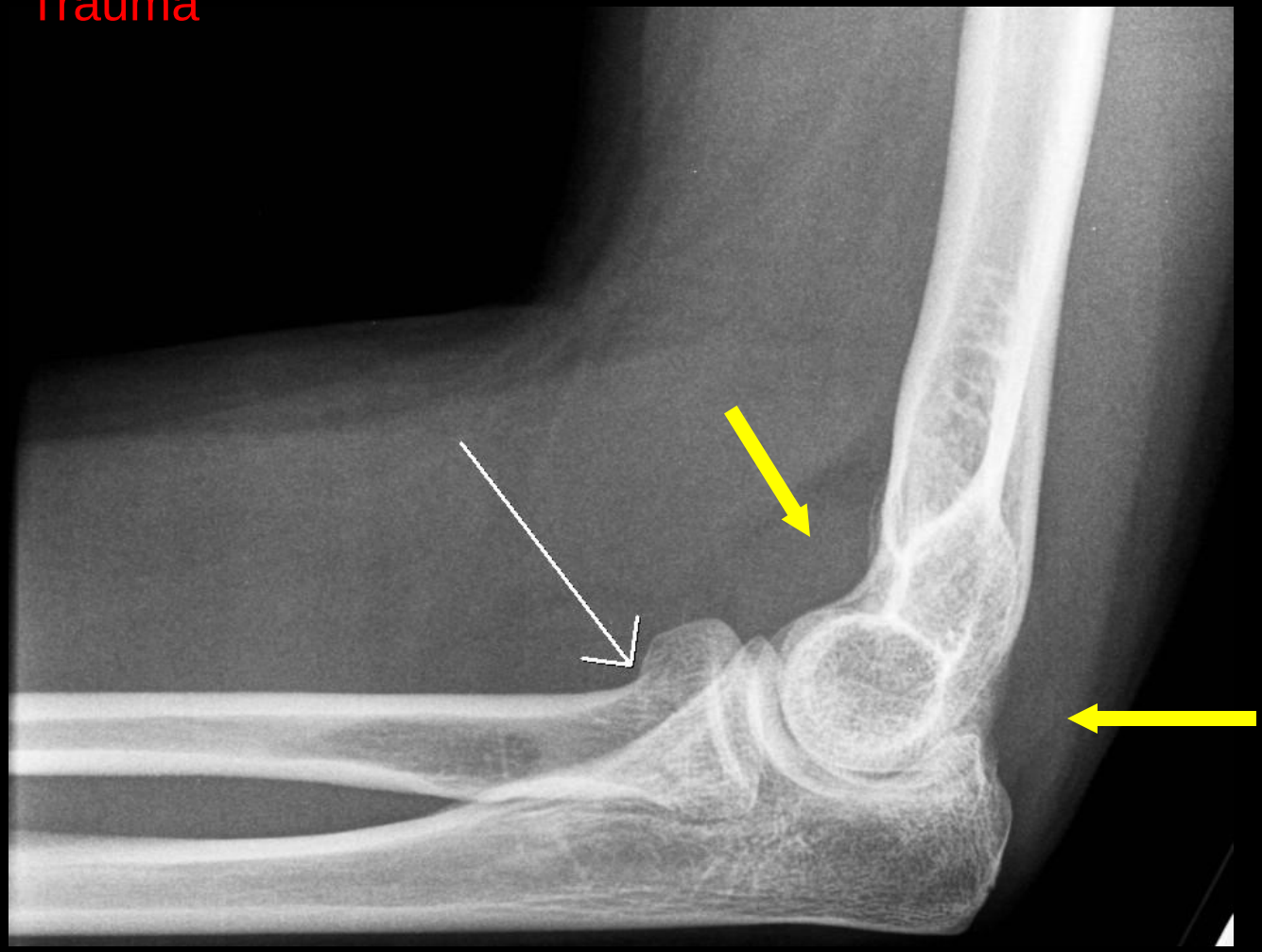
80 year-old female with a recent fall

27. The Bones can be described as:
    A. Normal
    B. Sclerotic
    C. Osteopenic

80 year-old female with a recent fall

28. The main radiographic finding(s):
    A. Fracture
    B. Fracture & Anterior shoulder dislocation
    C. Sclerotic metastasis

History: Trauma



29. White & Yellow arrows demonstrate:

A. Elbow joint effusion & radial neck fracture

B. Subluxation of the elbow joint

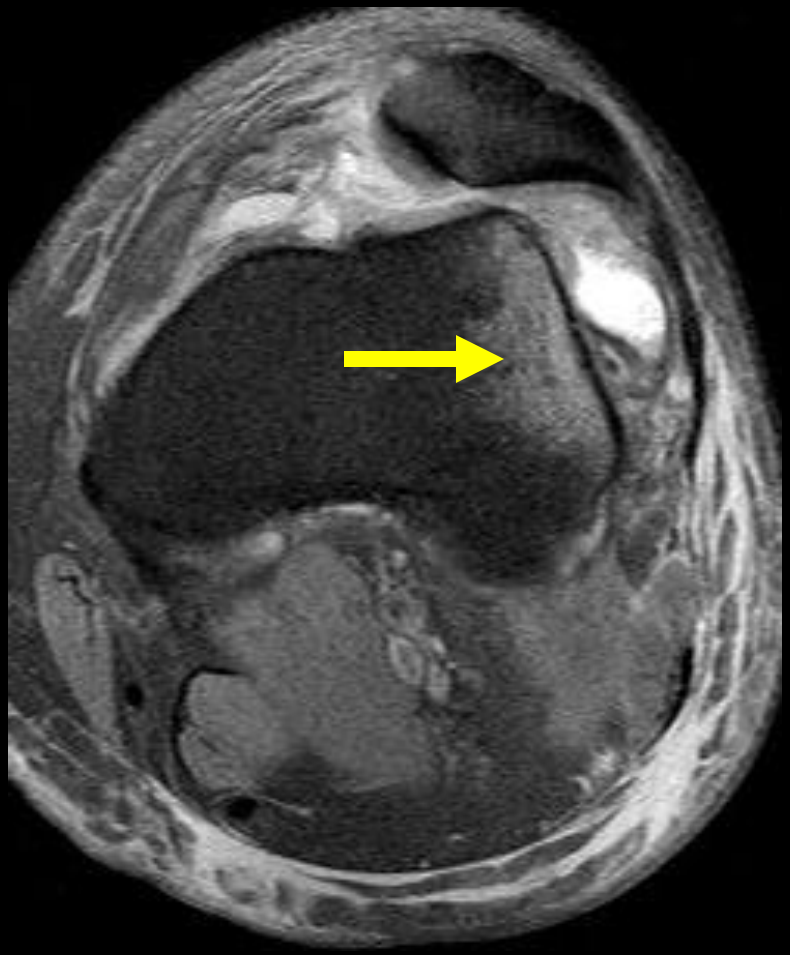
C. Triceps tendon rupture & radial head fracture

32.

The finding in the image (arrow) demonstrates what?

A. Intra-articular body
B. Joint effusion with fluid-fluid level
C. Bone tumor
D. Osteomyelitis

33.

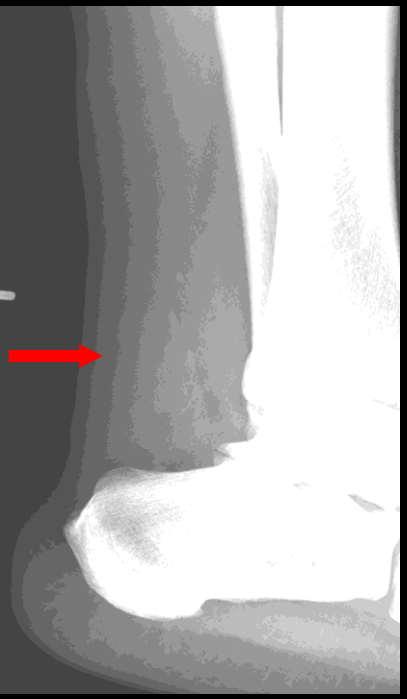


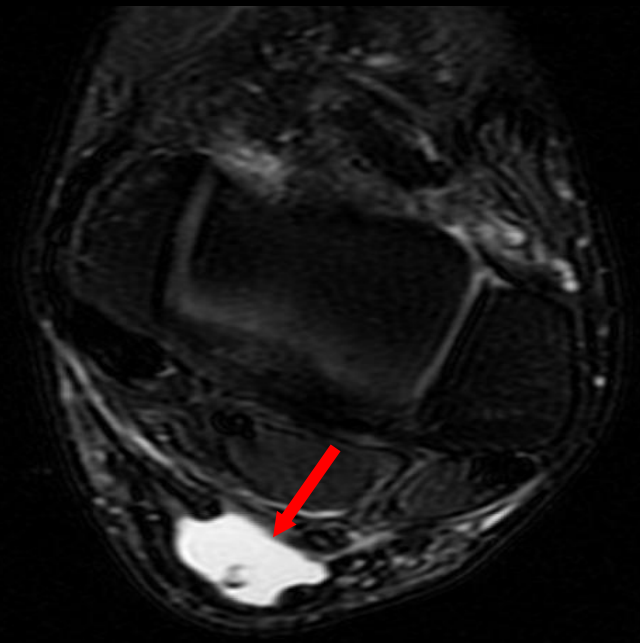
45yo male with traumatic knee injury. MRI Knee with multiple abnormal findings.

The arrow is pointing to what particular finding:

A. Bone marrow contusion
B. Infection
C. Tumor
D. Osteoarthrosis

67 yo male with new onset ataxia, abnormal gait & difficulty walking





HINT: **#1 Principle of MSK ANATOMY**

What structure normally lives there & is not identified?

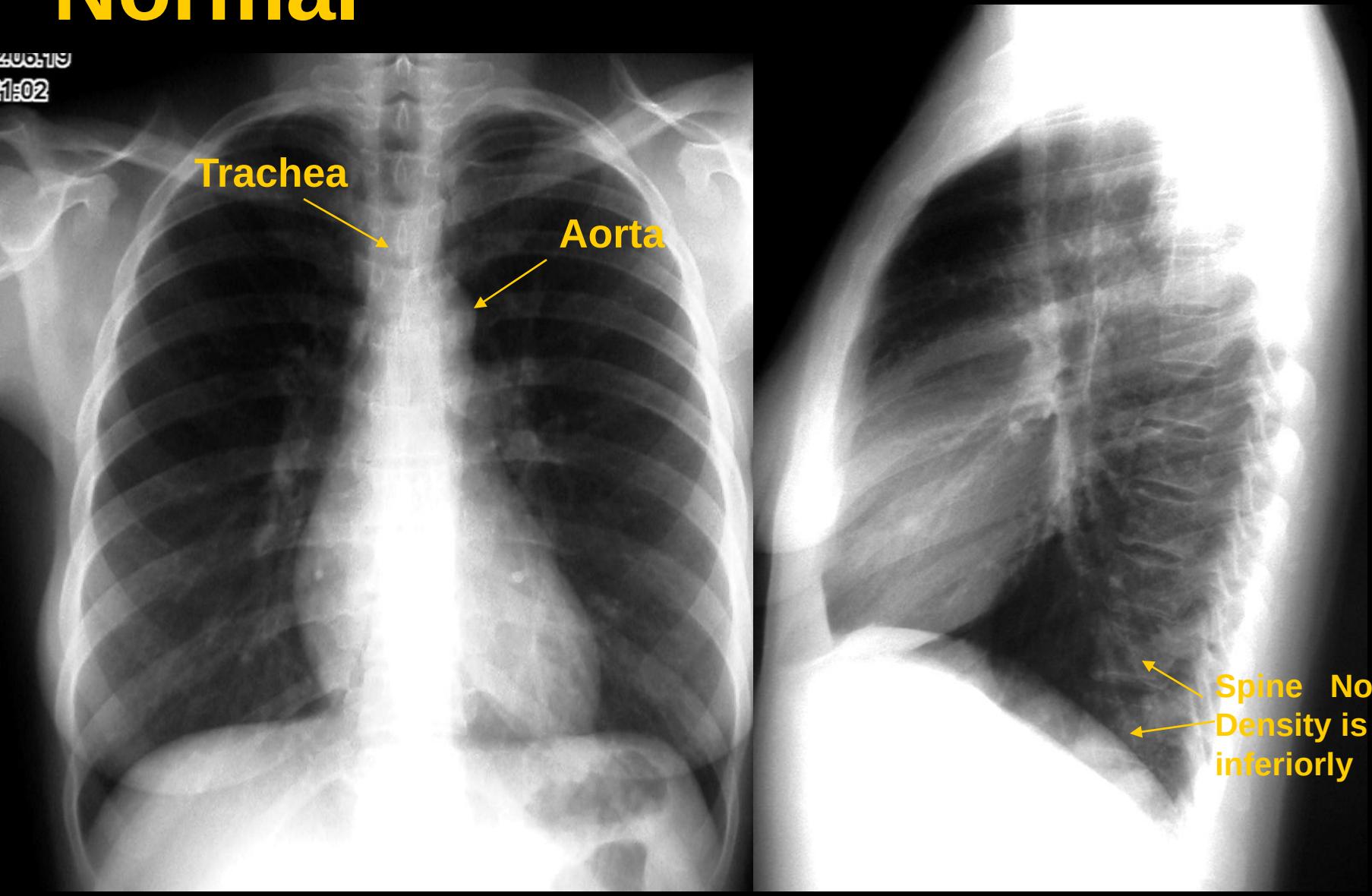
36. Diagnosis?

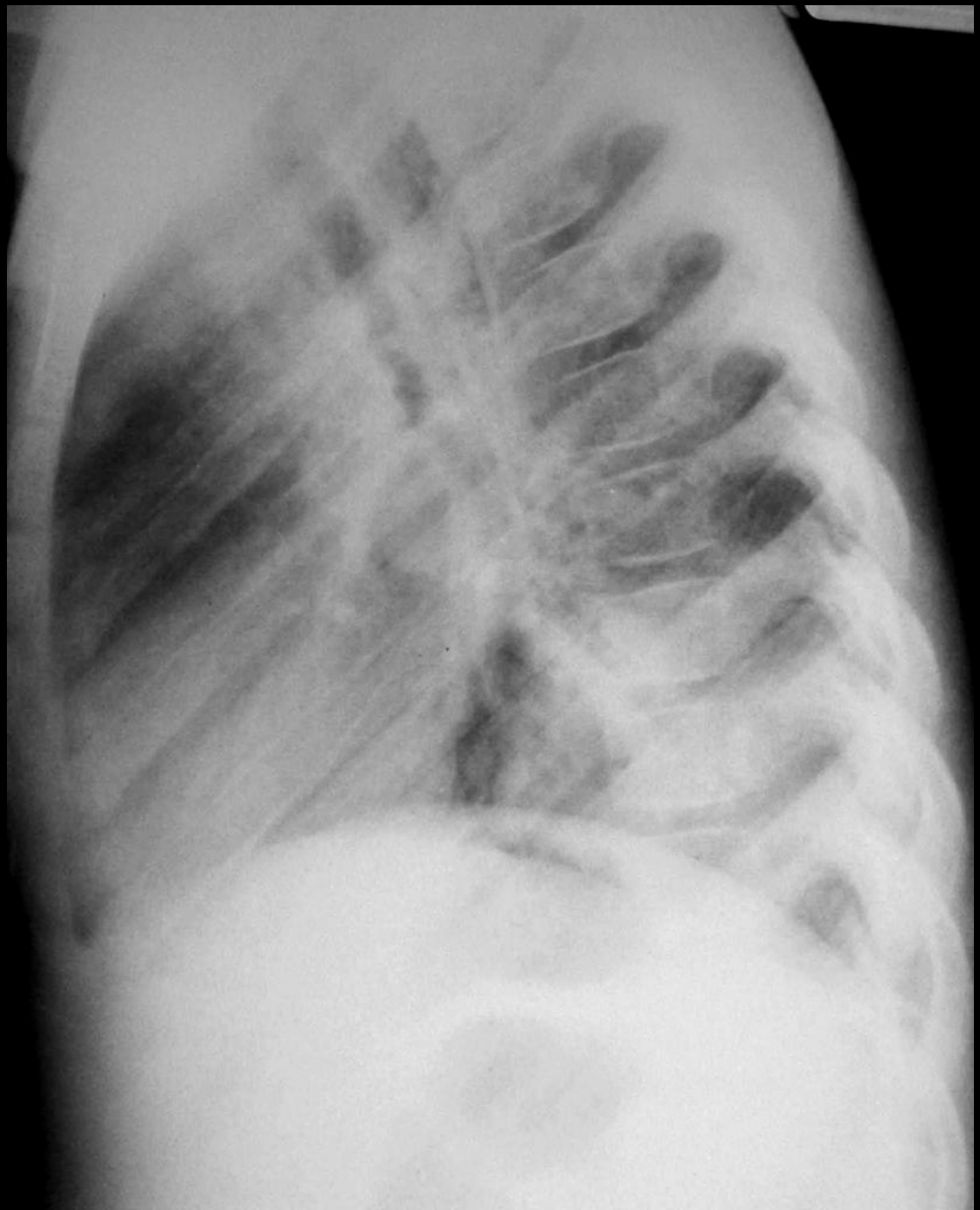
A. Achilles tendon tear

B. Rotator cuff tear

C. None of the above –
this is an MRI of the brain showing an acute cerebral infarction in the cerebellum.

Normal

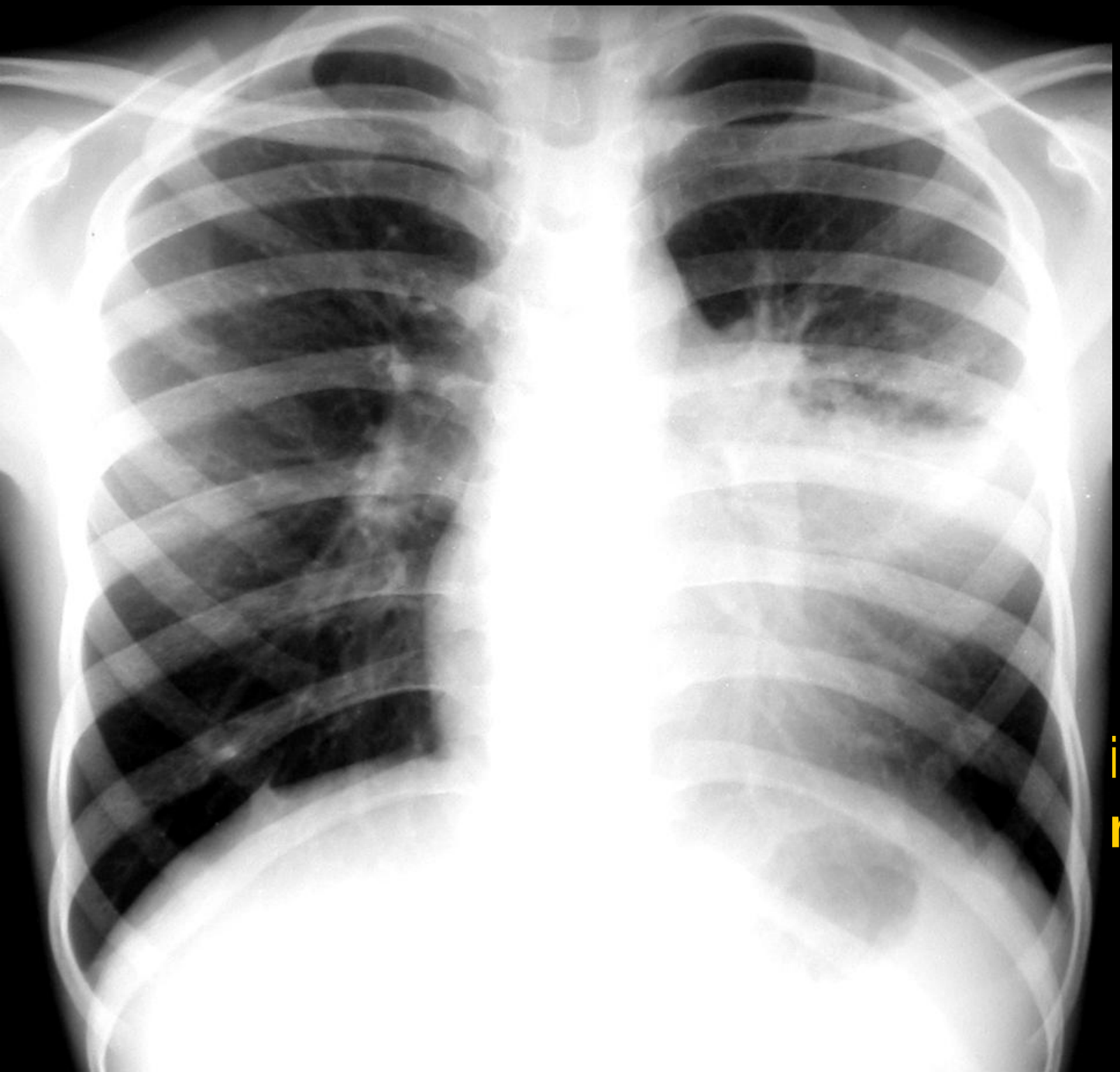




“SPINE SIGN”

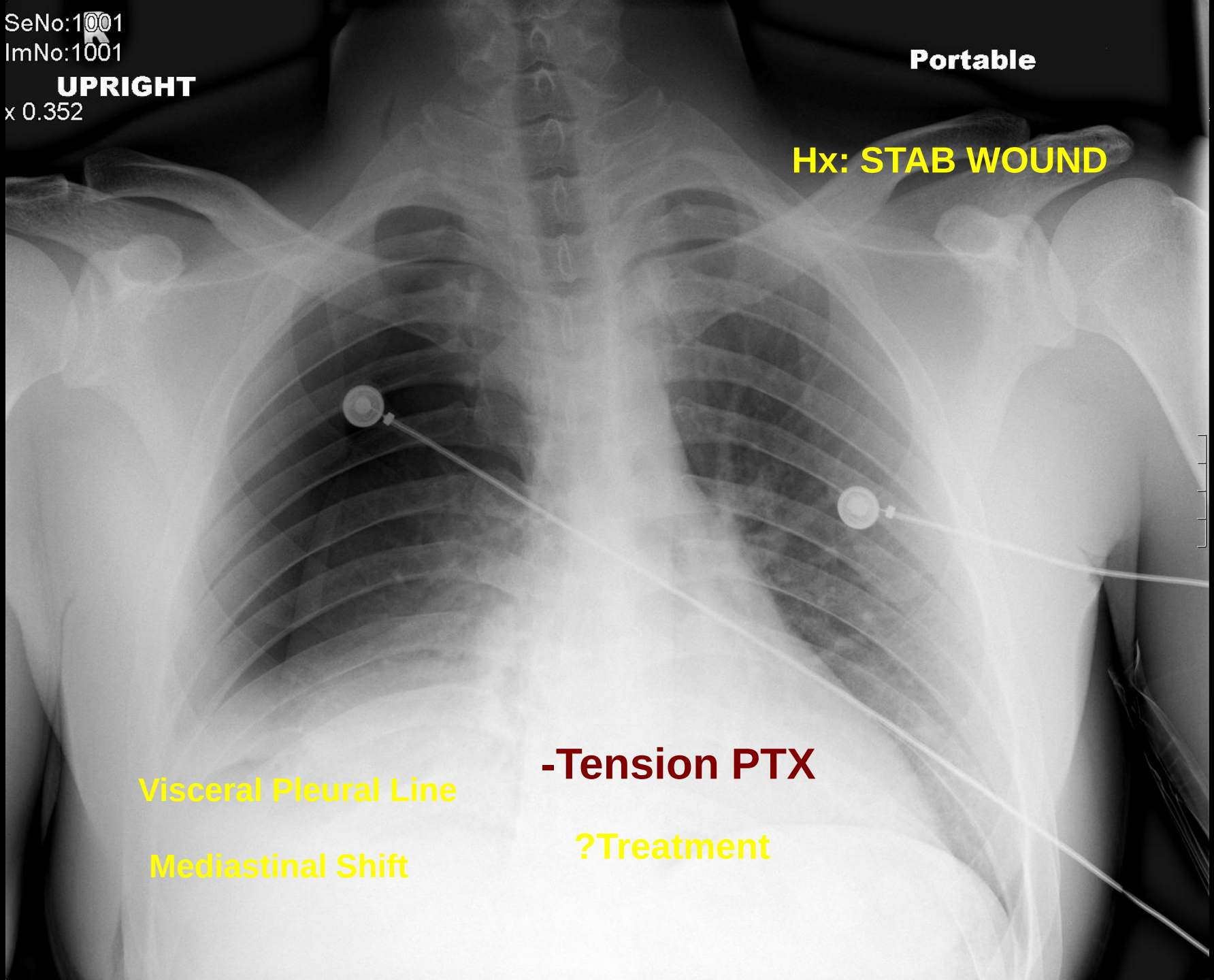
DIAGNOSIS?

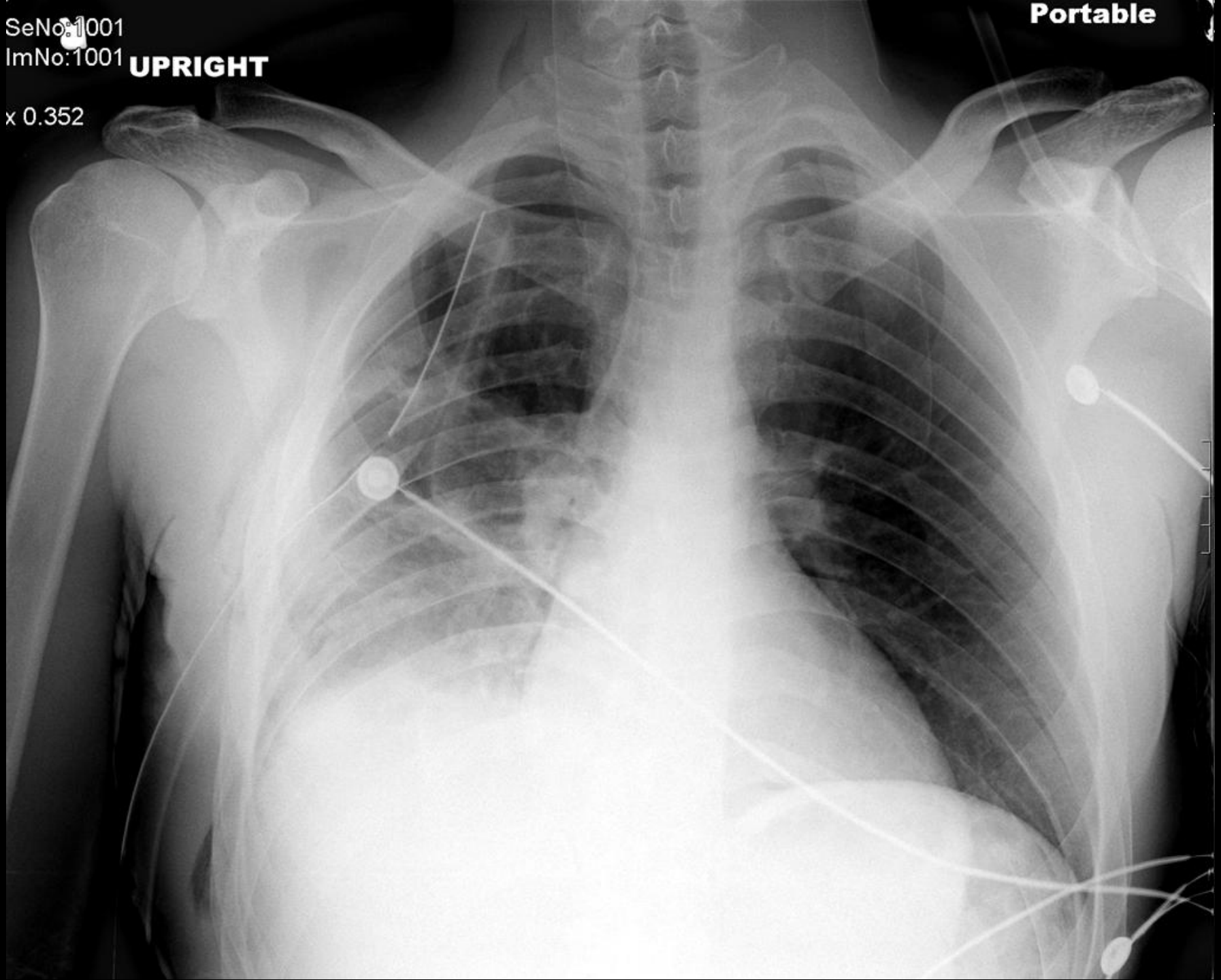
- **Pneumonia**



Hx: FEVER

ingula
neumonia


SeNo:1001
ImNo:1001
UPRIGHT
x 0.352
Portable
Hx: STAB WOUND
-Tension PTX
Visceral Pleural Line
Mediastinal Shift
?Treatment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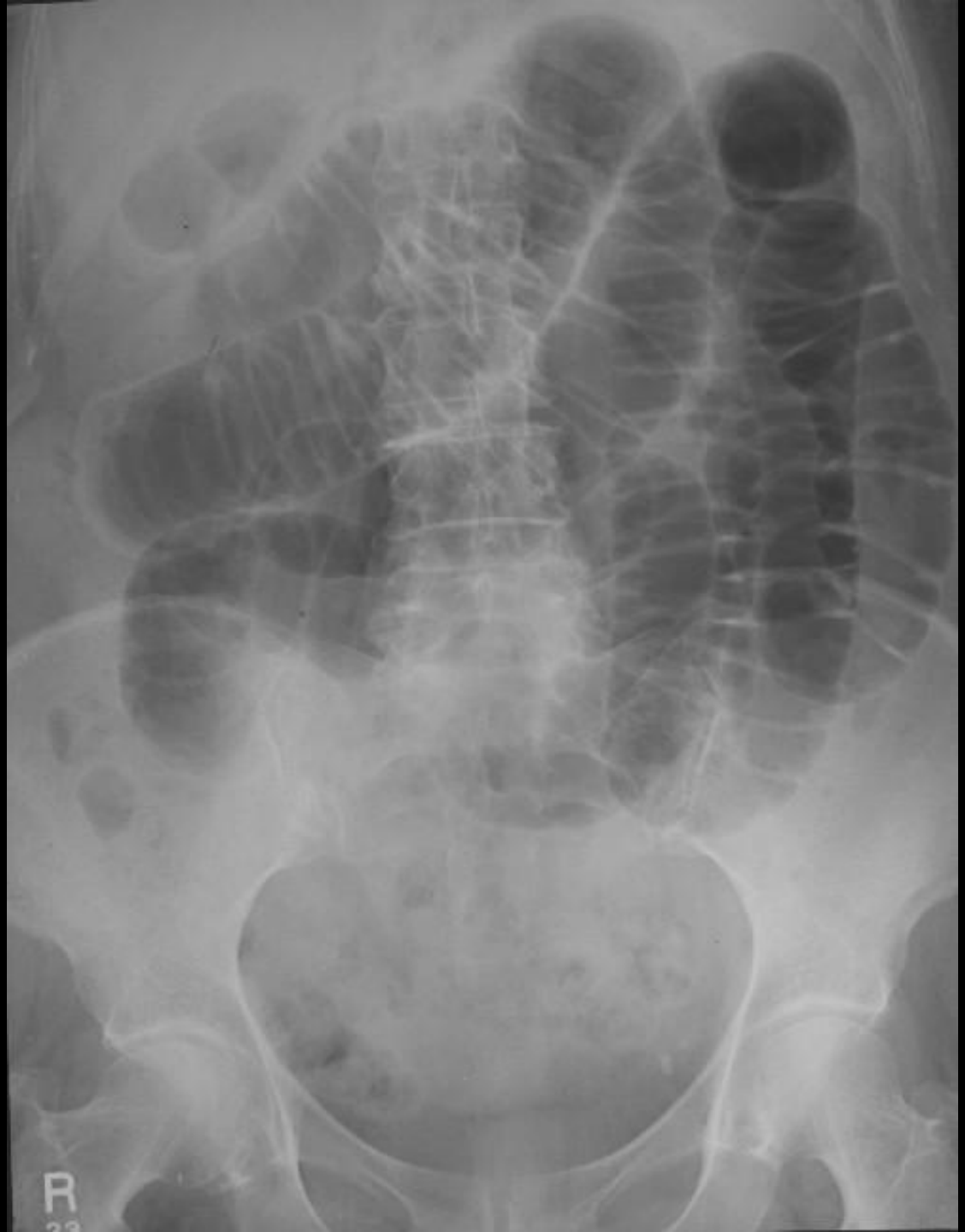
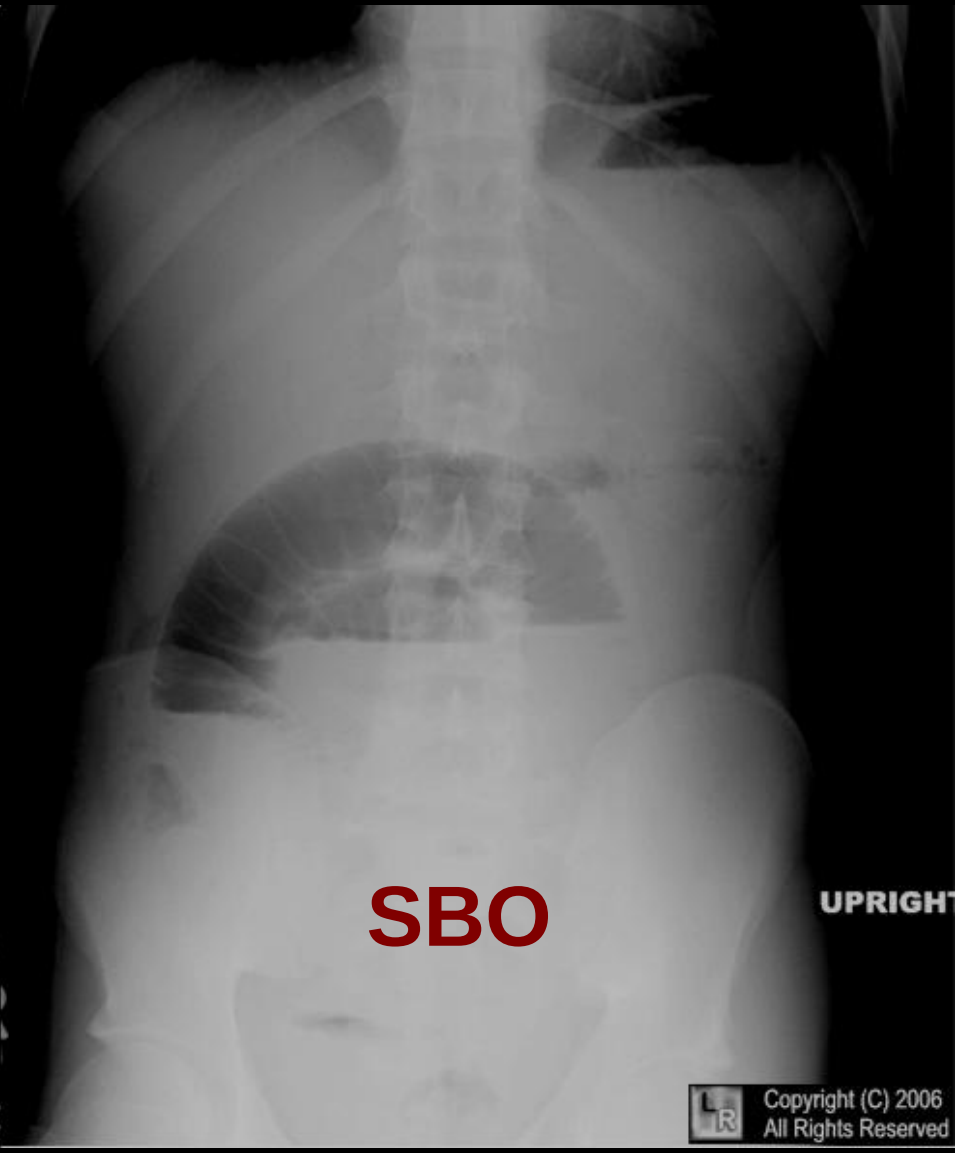
ImNo:1001
UPRIGHT
x 0.352
Portable

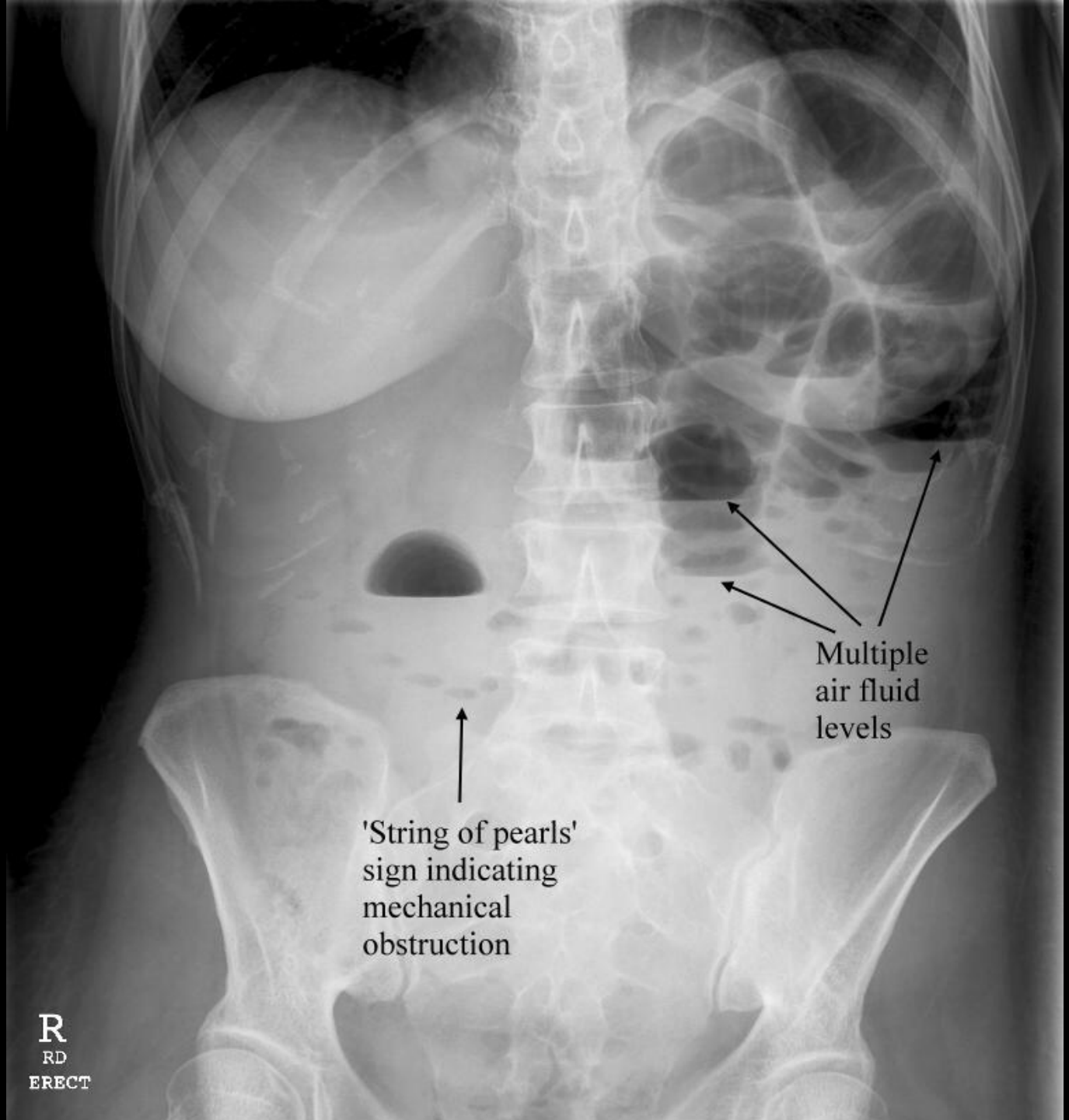
TENSION PNEUMOTHORAX



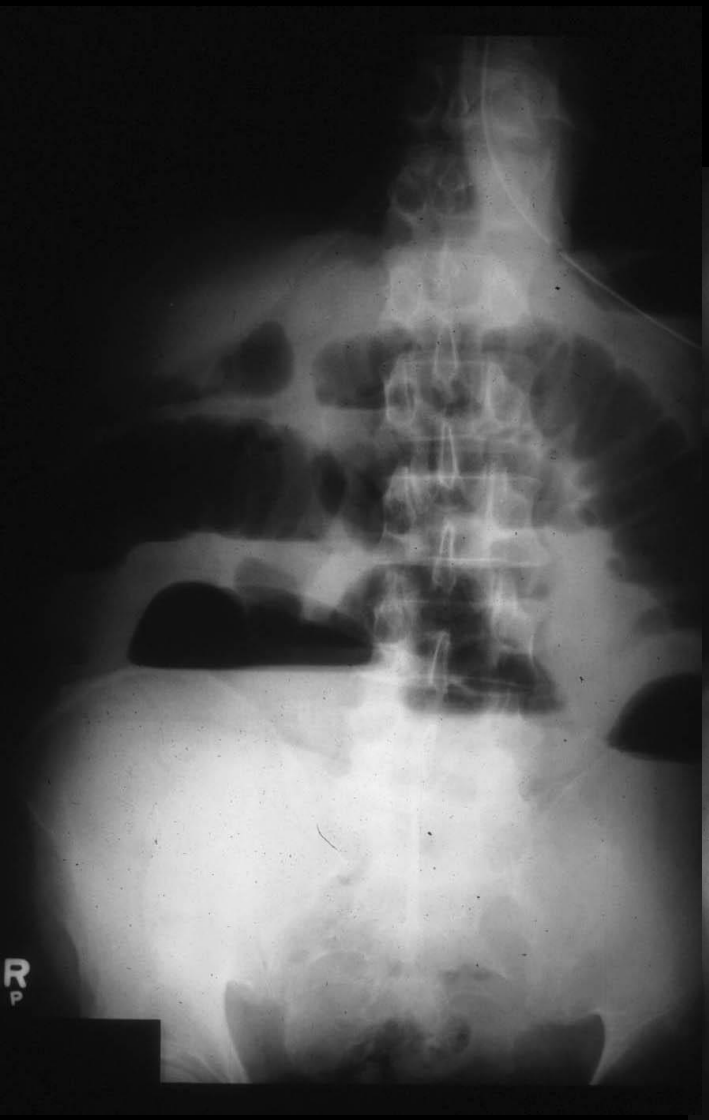
SBO

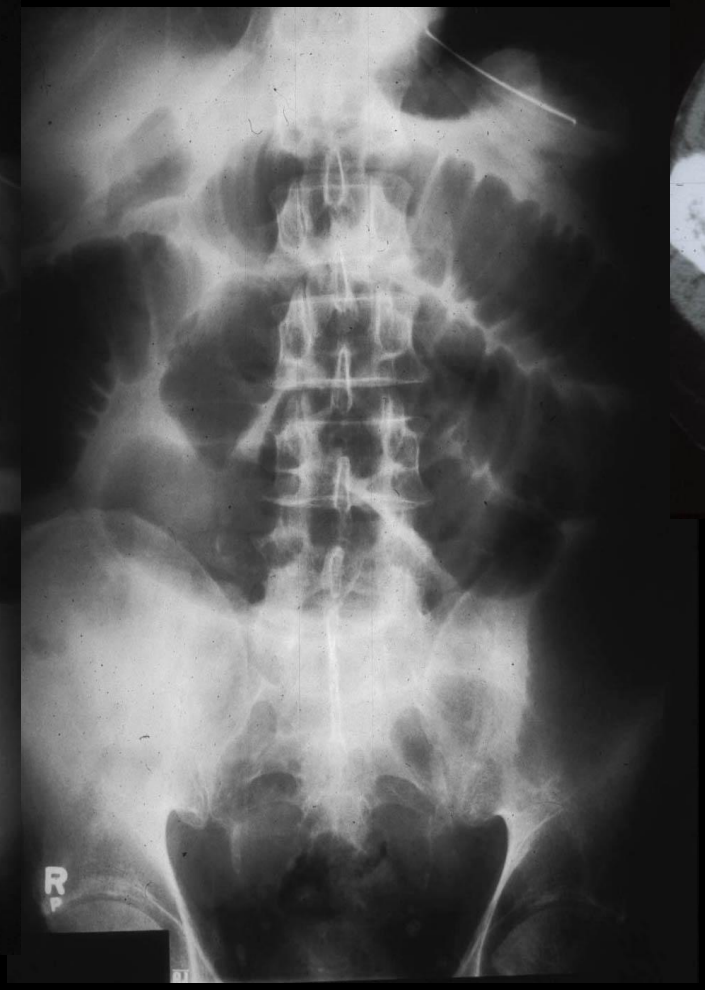

SUPINE
R
Copyright (C) 2006
All Rights Reserved

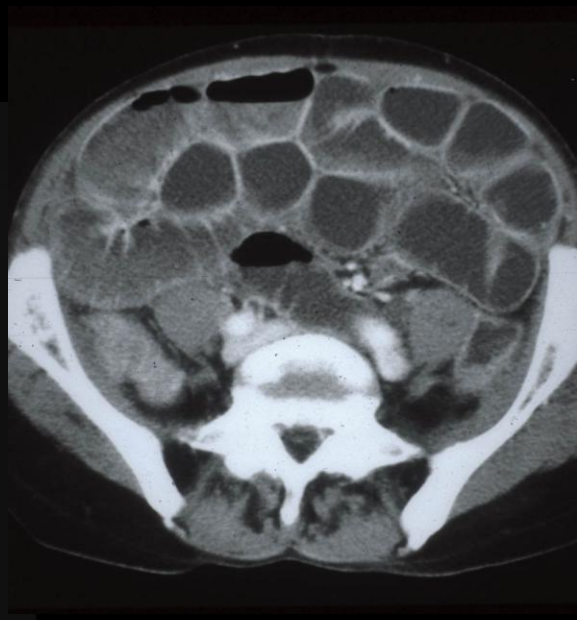

SBO
UPRIGHT
Copyright (C) 2006
All Rights Reserved


Multiple
air fluid
levels
'String of pearls'
sign indicating
mechanical
obstruction
R
RD
ERECT

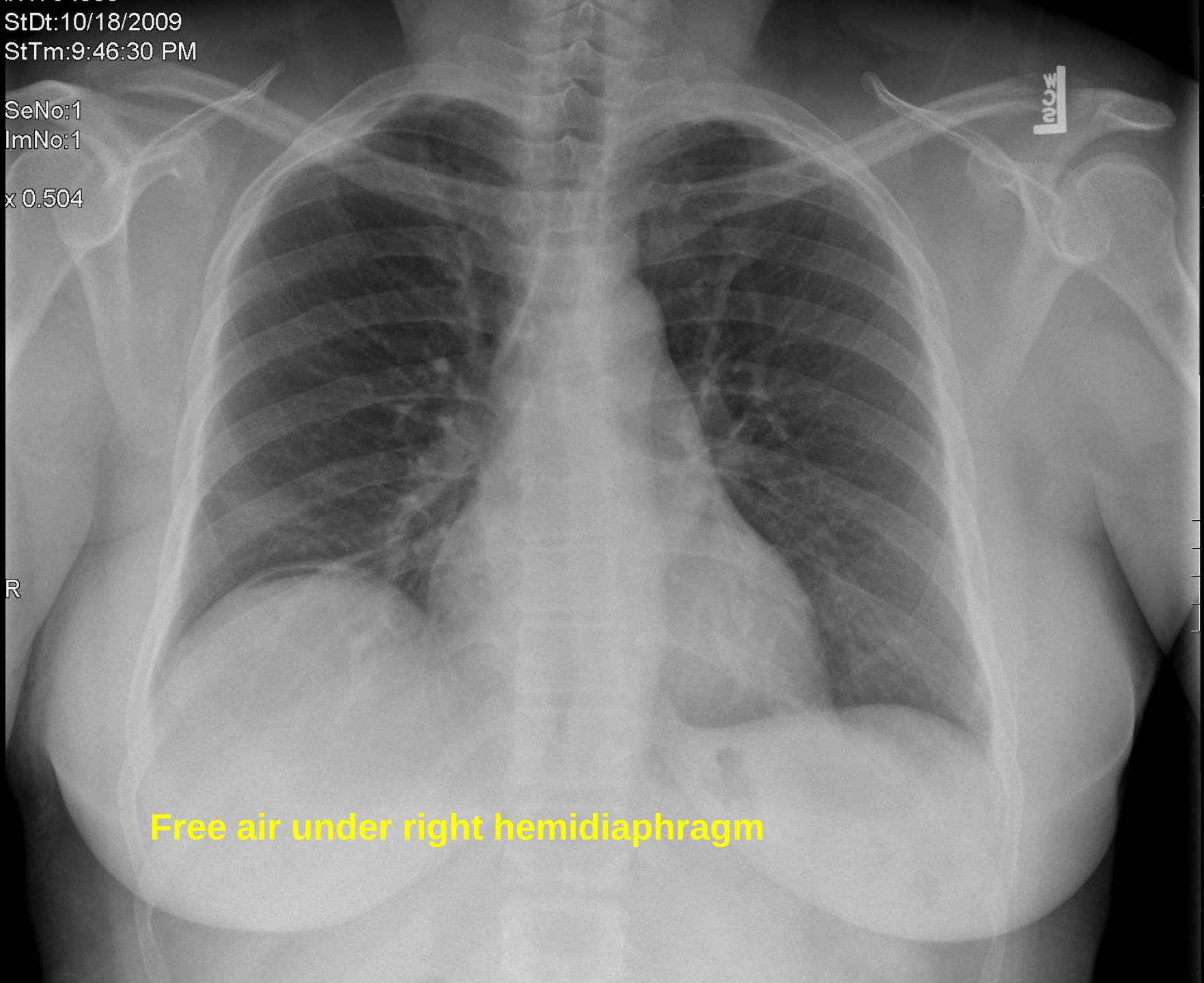
SBO







SBO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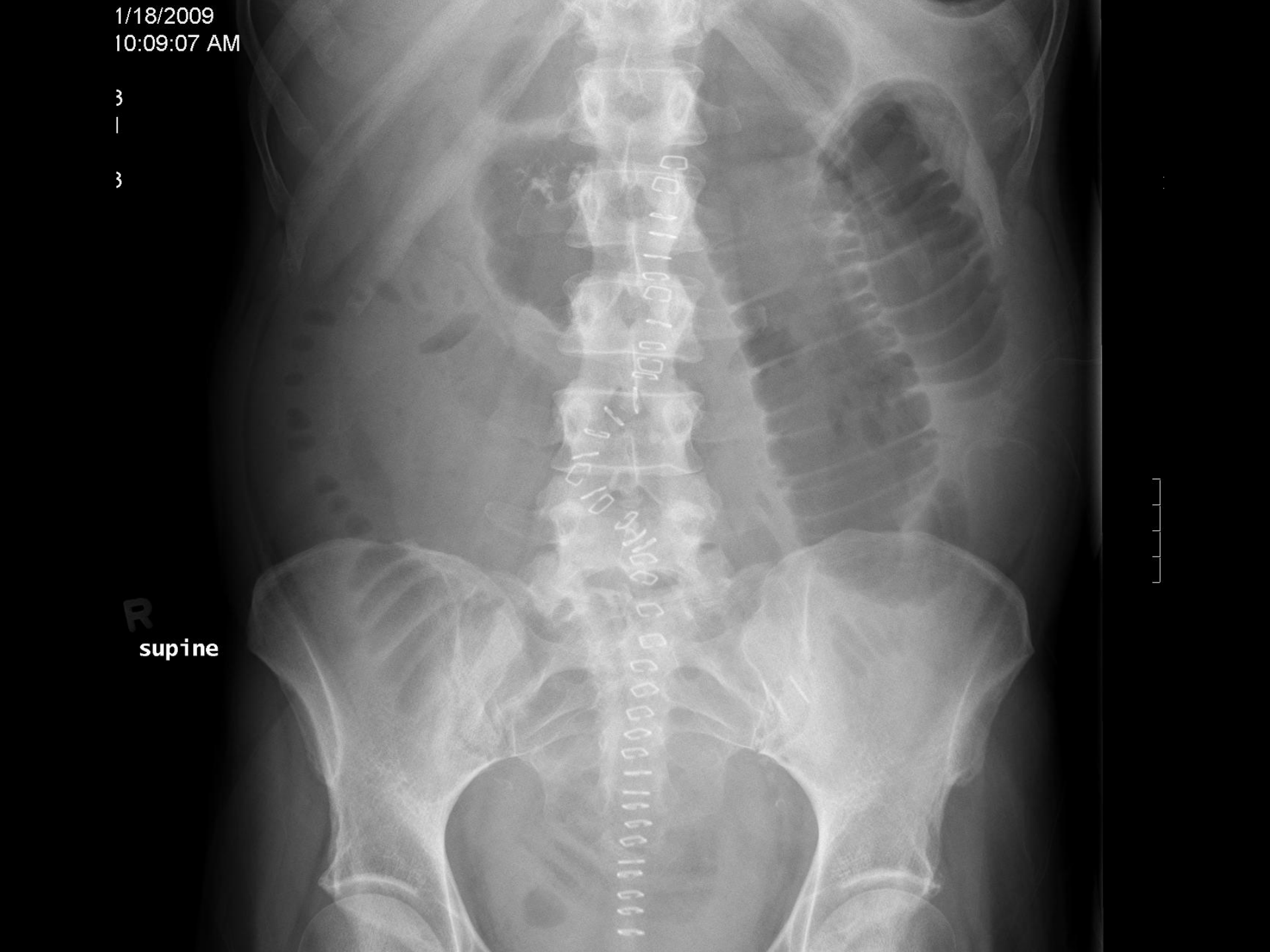
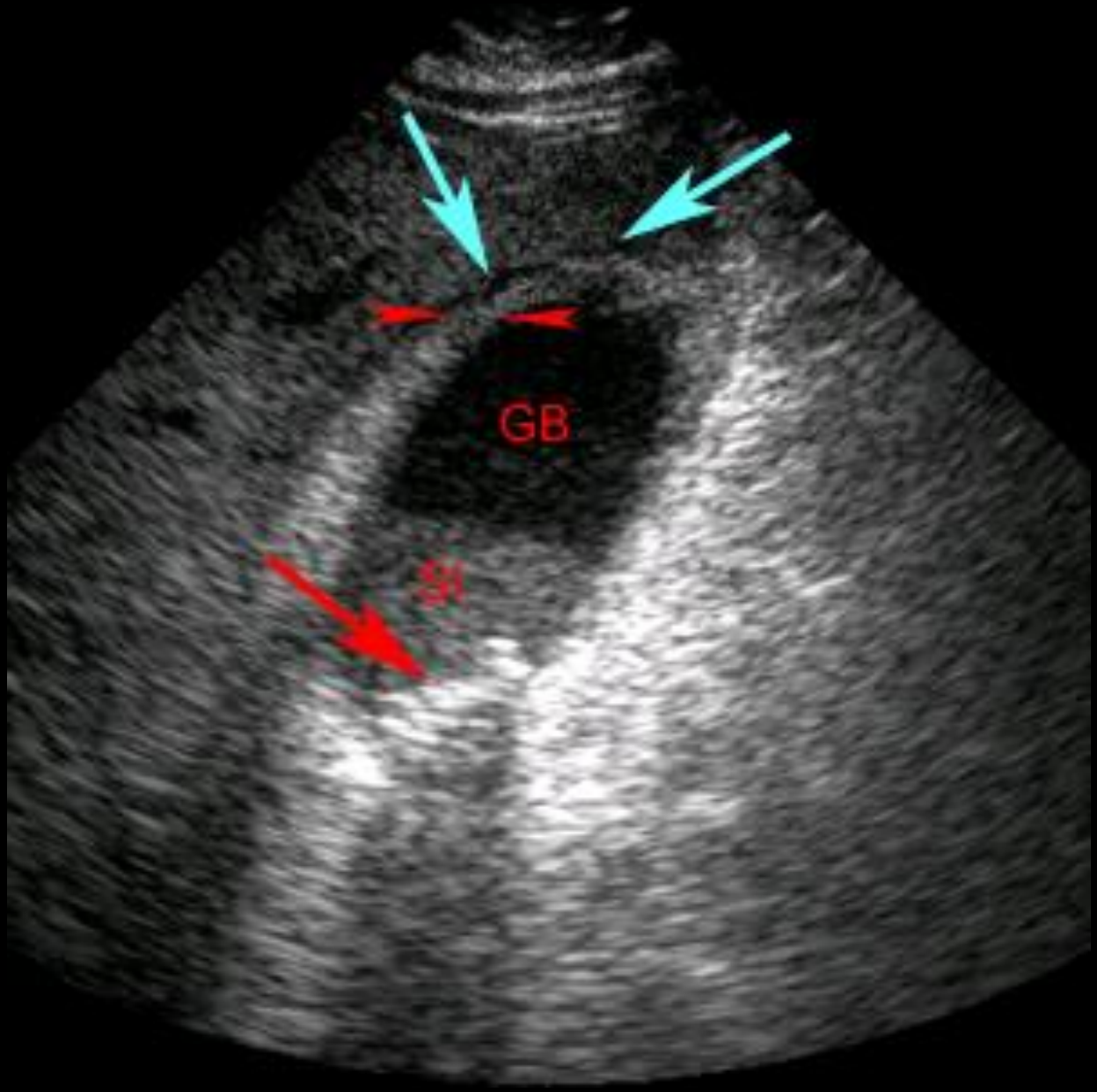
ImNo:1
x 0.504
R
Free air under right hemidiaphragm


1/18/2009
10:09:07 AM
supine


2178
1/18/2009
10:09:07 AM
2
1
6
upright
SBO
R

Rigler's Sign: free air

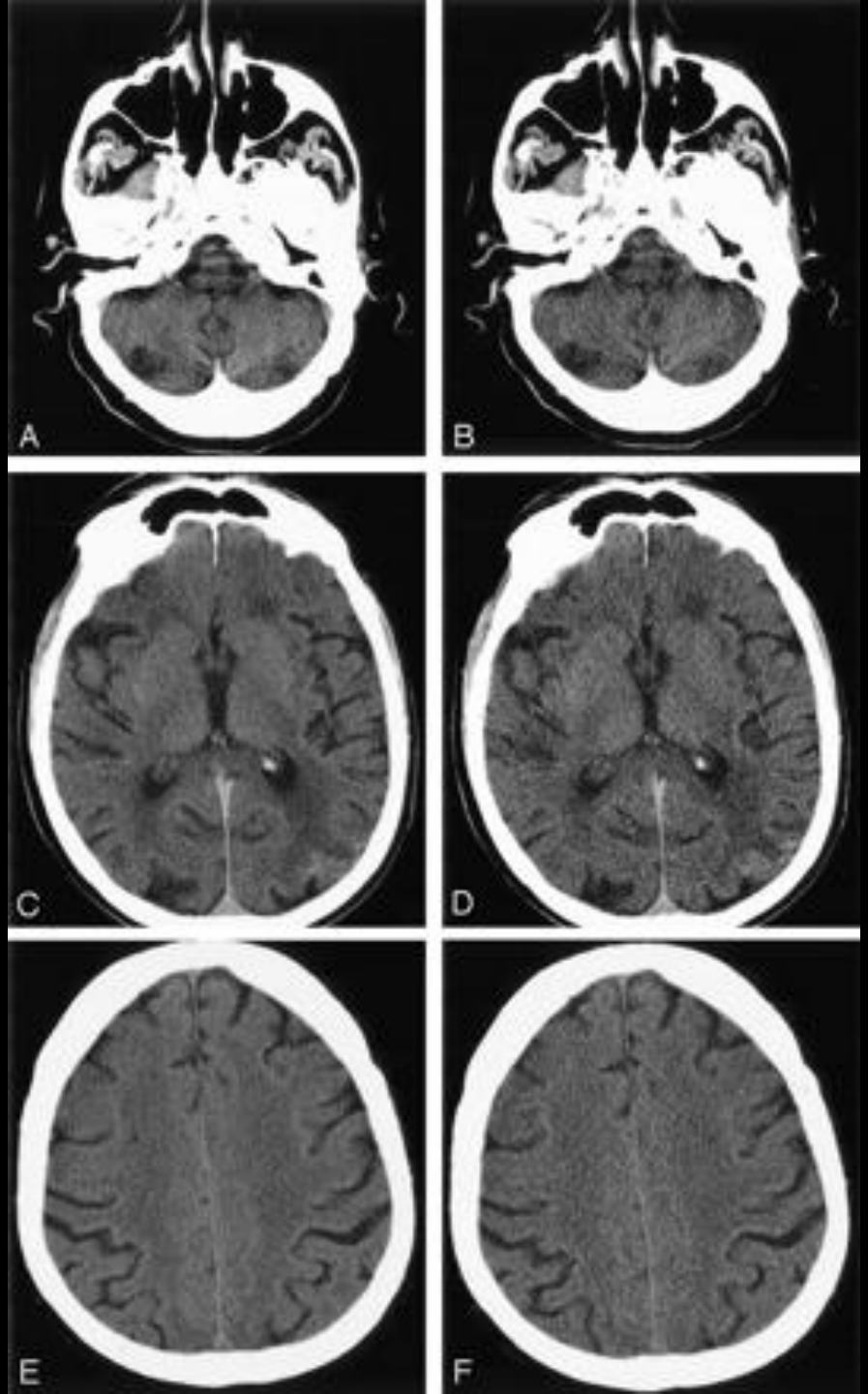
Rigler's Sign: free air



Positive Sonographic Murphy's Sign

Acute Cholecystitis

TRAUMA - NEURORADIOLOGY



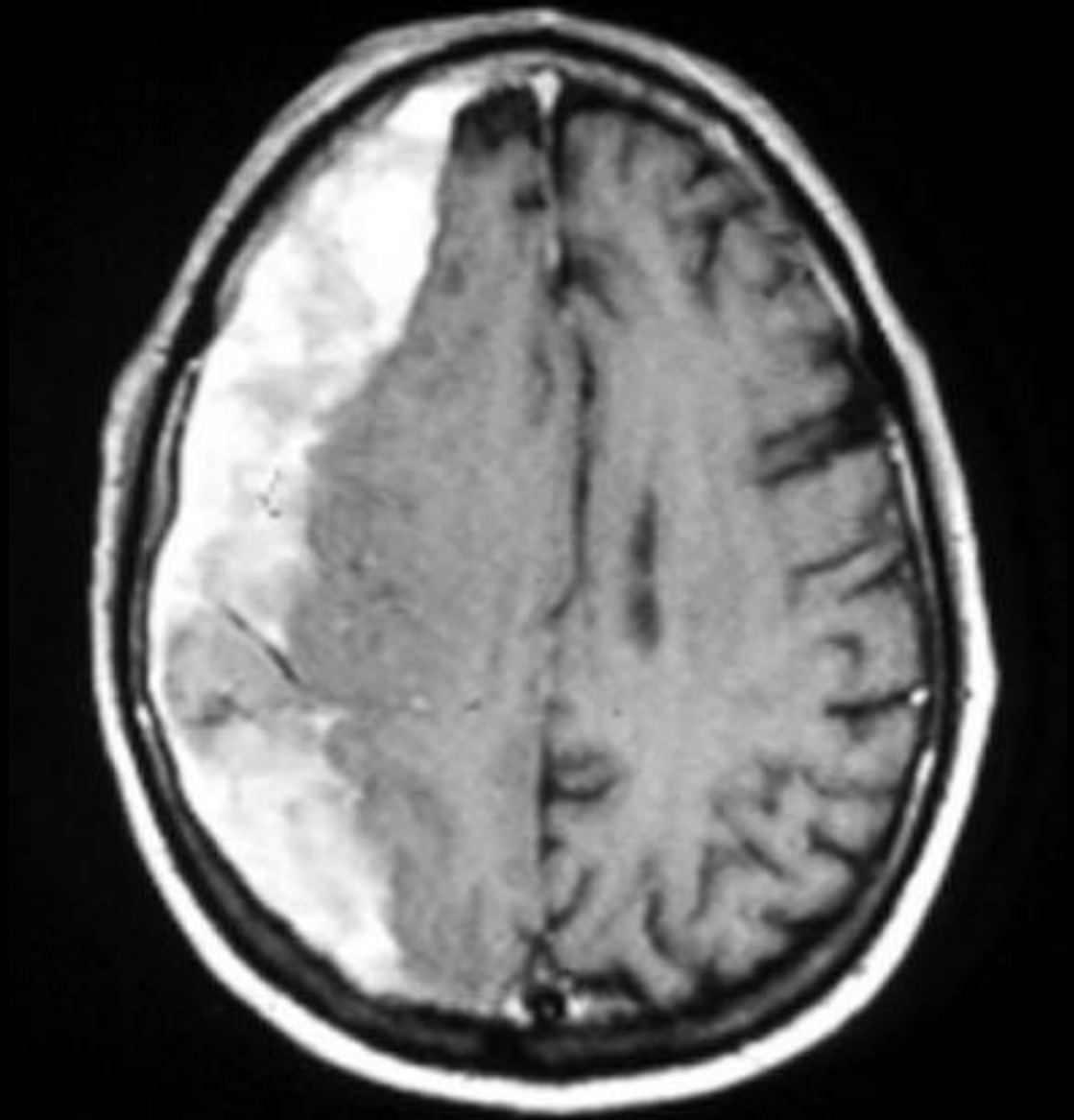
Normal head CT

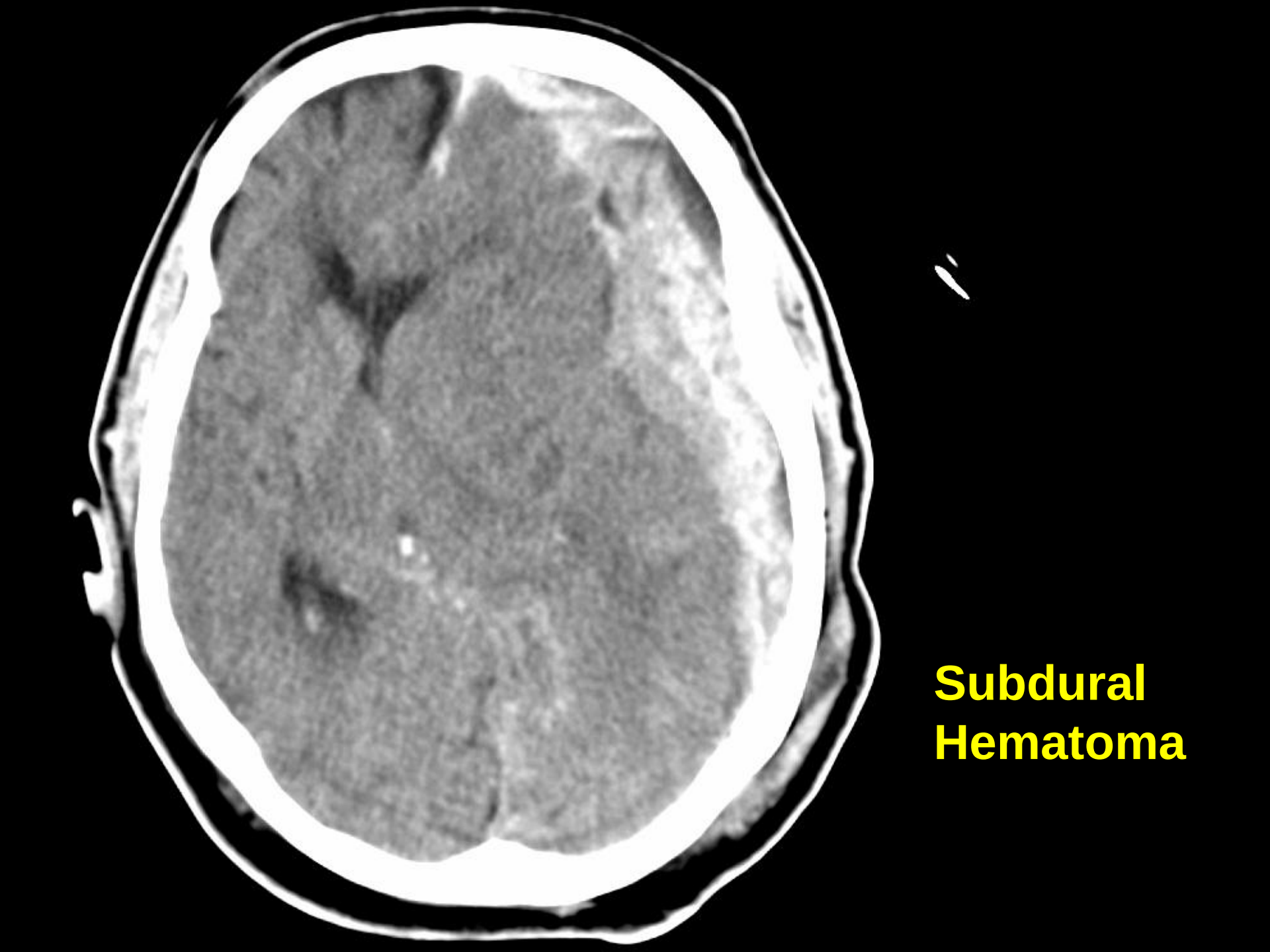
Hx: trauma

Subdural Hematoma

Hx: trauma

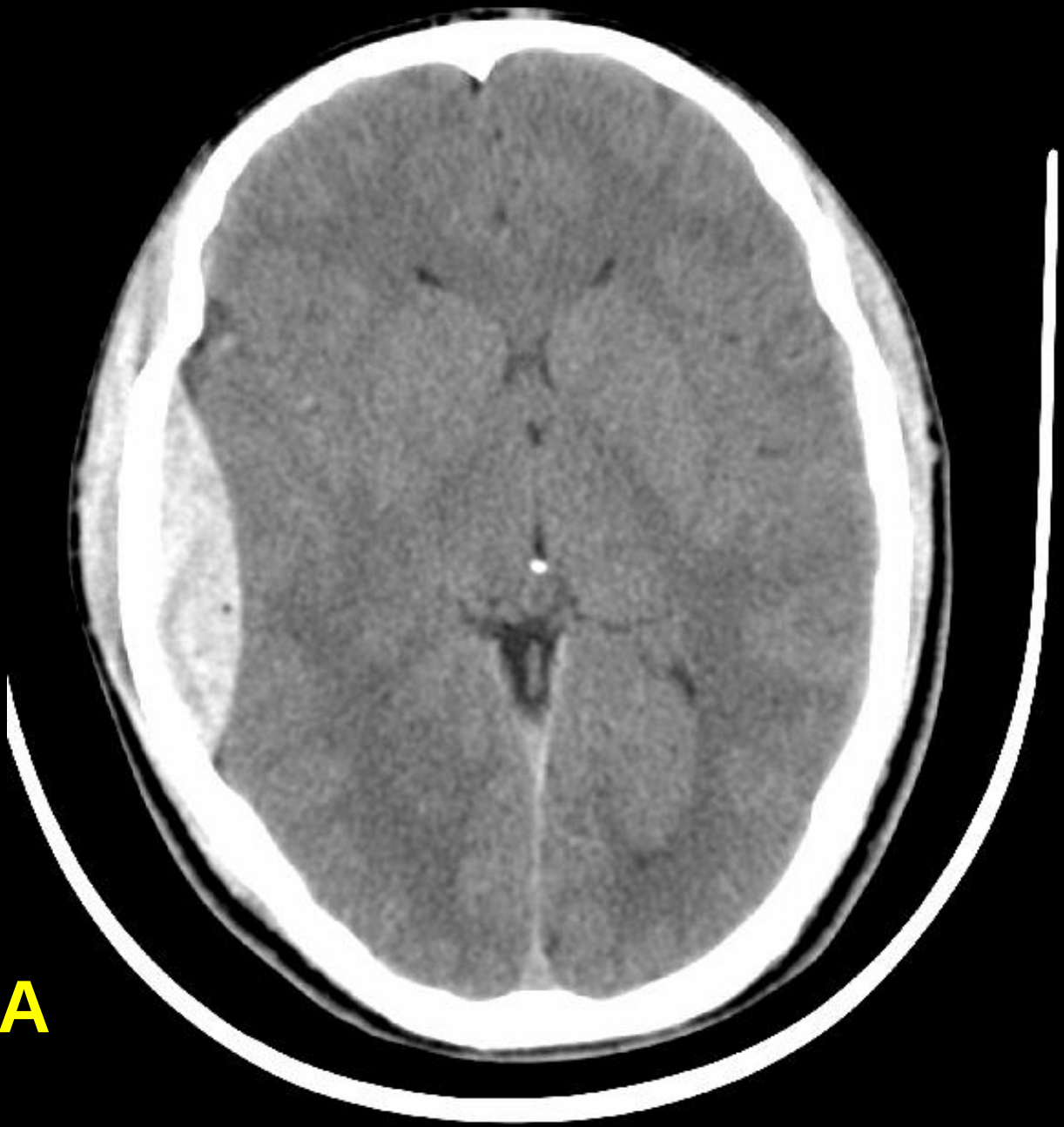
Subdural Hematoma



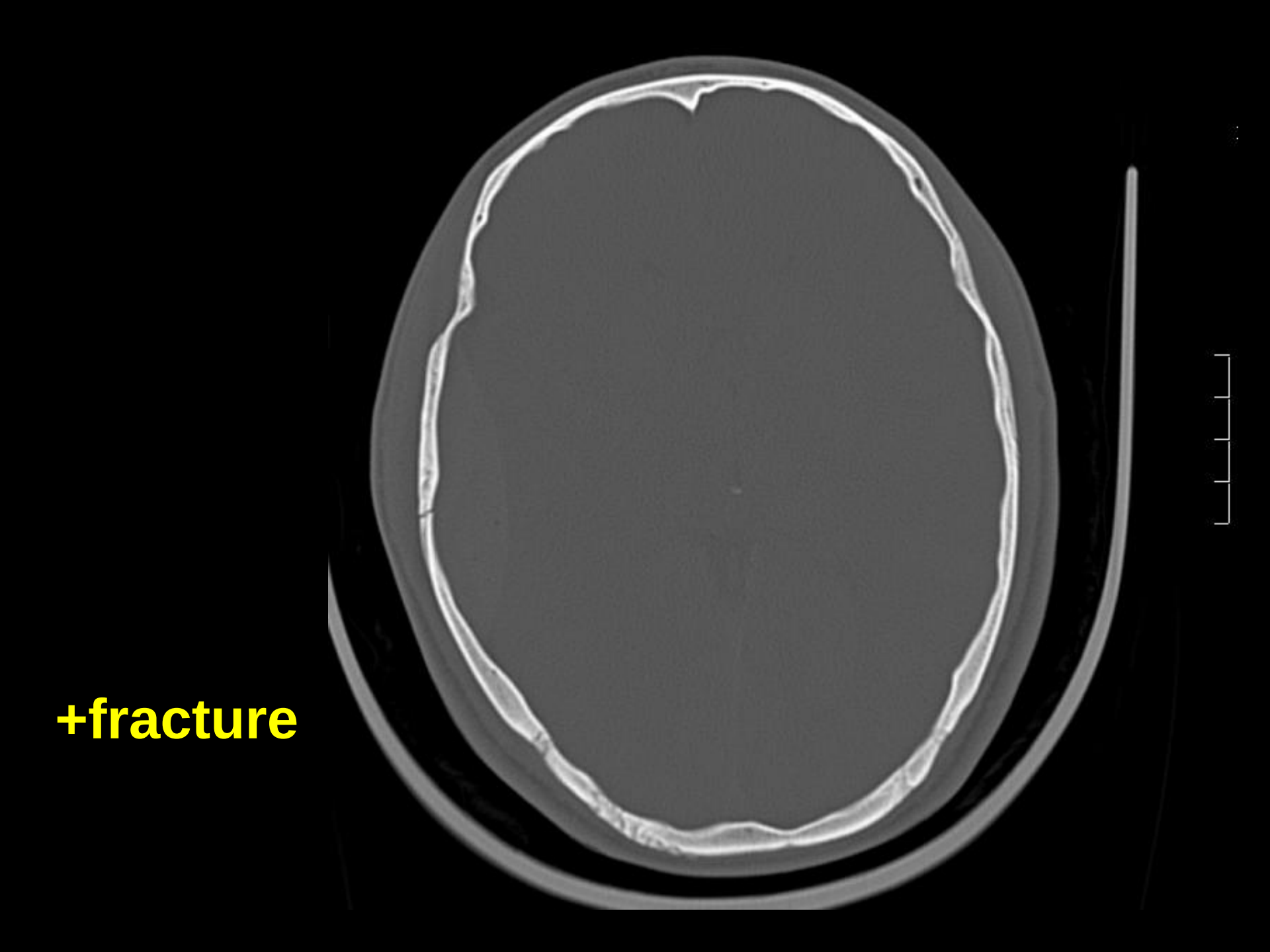

Subdural
Hematoma

Does not cross suture lines

EPIDURAL HEMATOMA



EPIDURAL HEMATOMA


+fracture

NEURORADIOLOGY

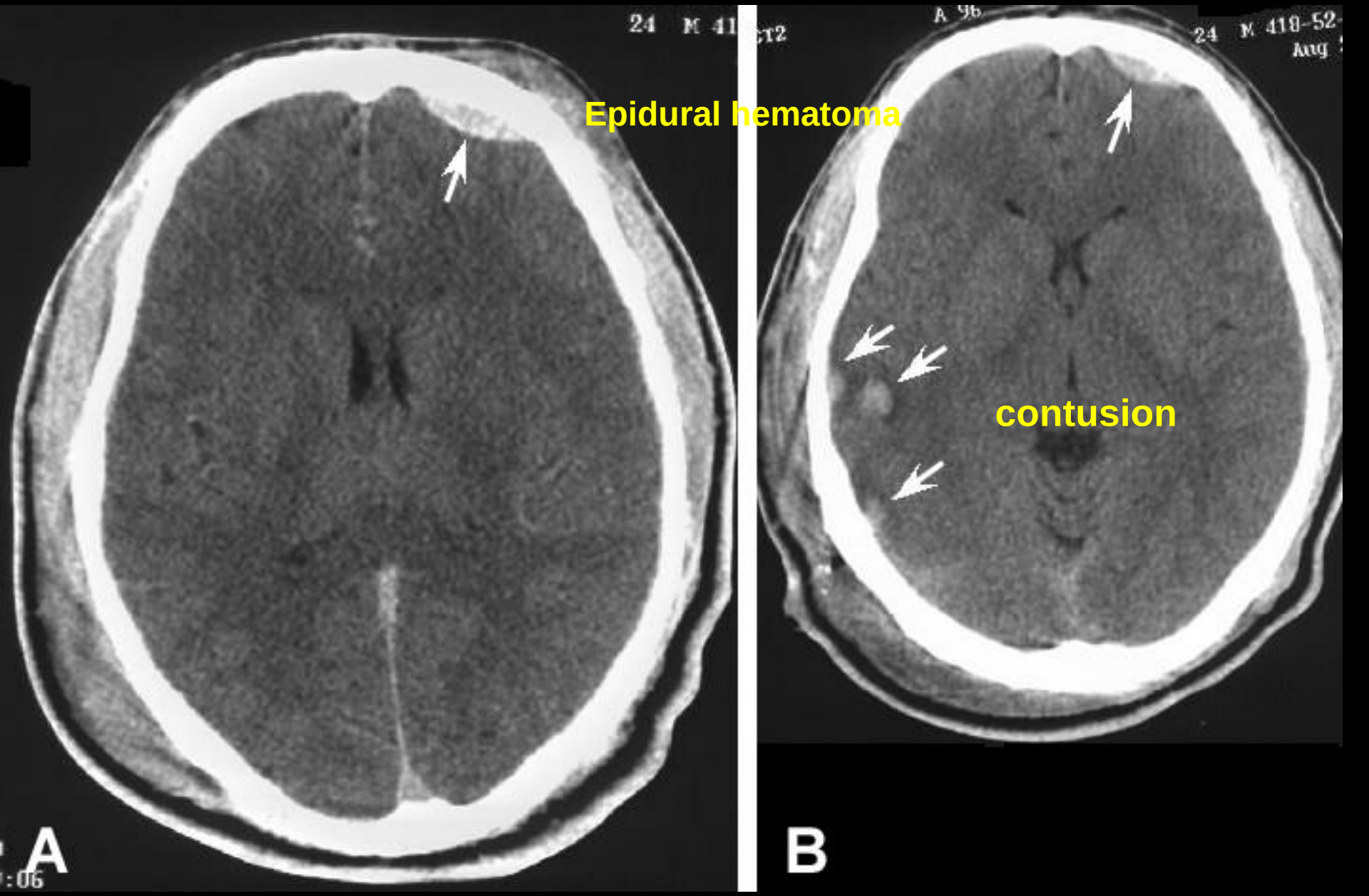
- SUBARACHNOID HEMORRHAGE

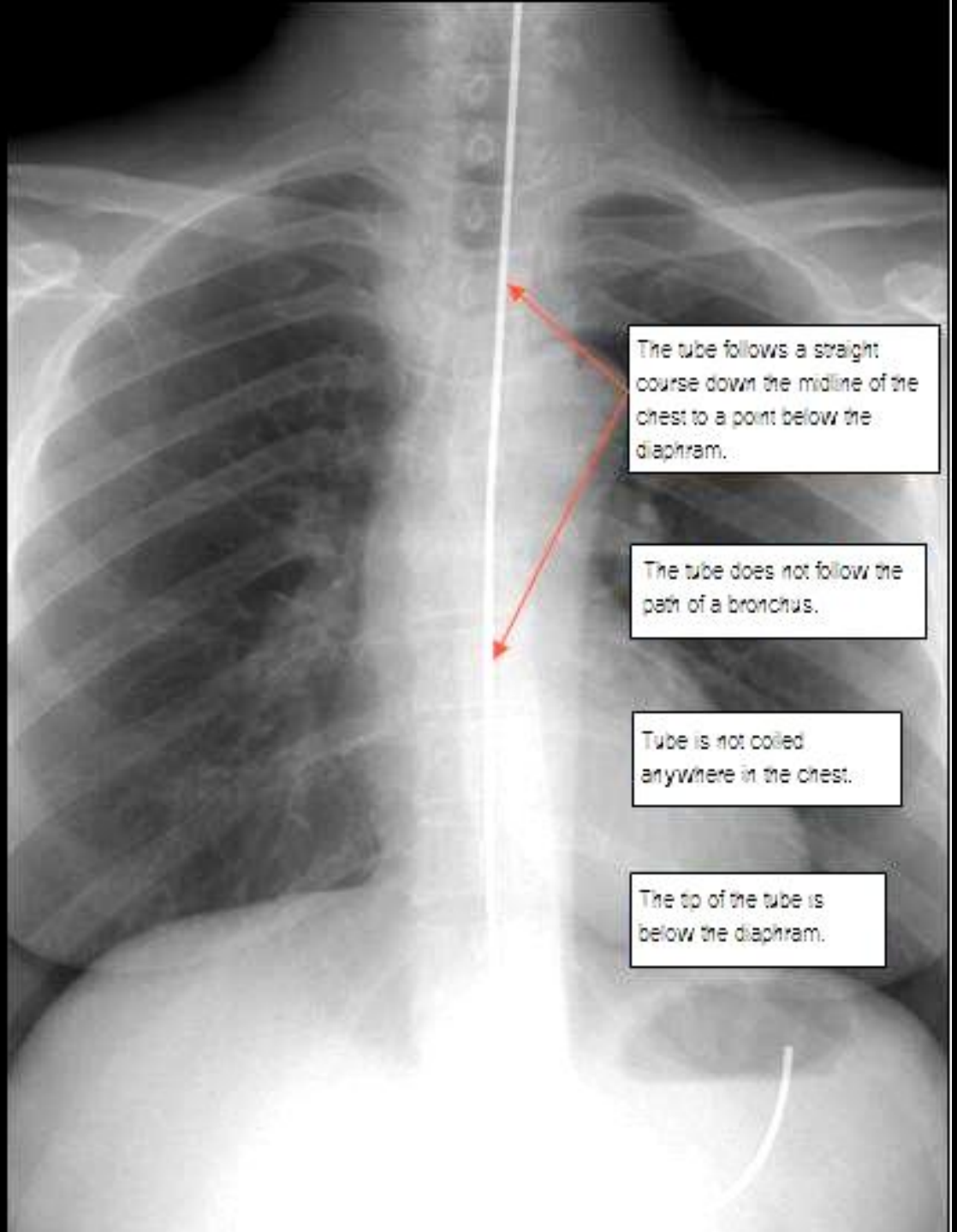
Traumatic SAH

SAH secondary to
MCA aneurysm

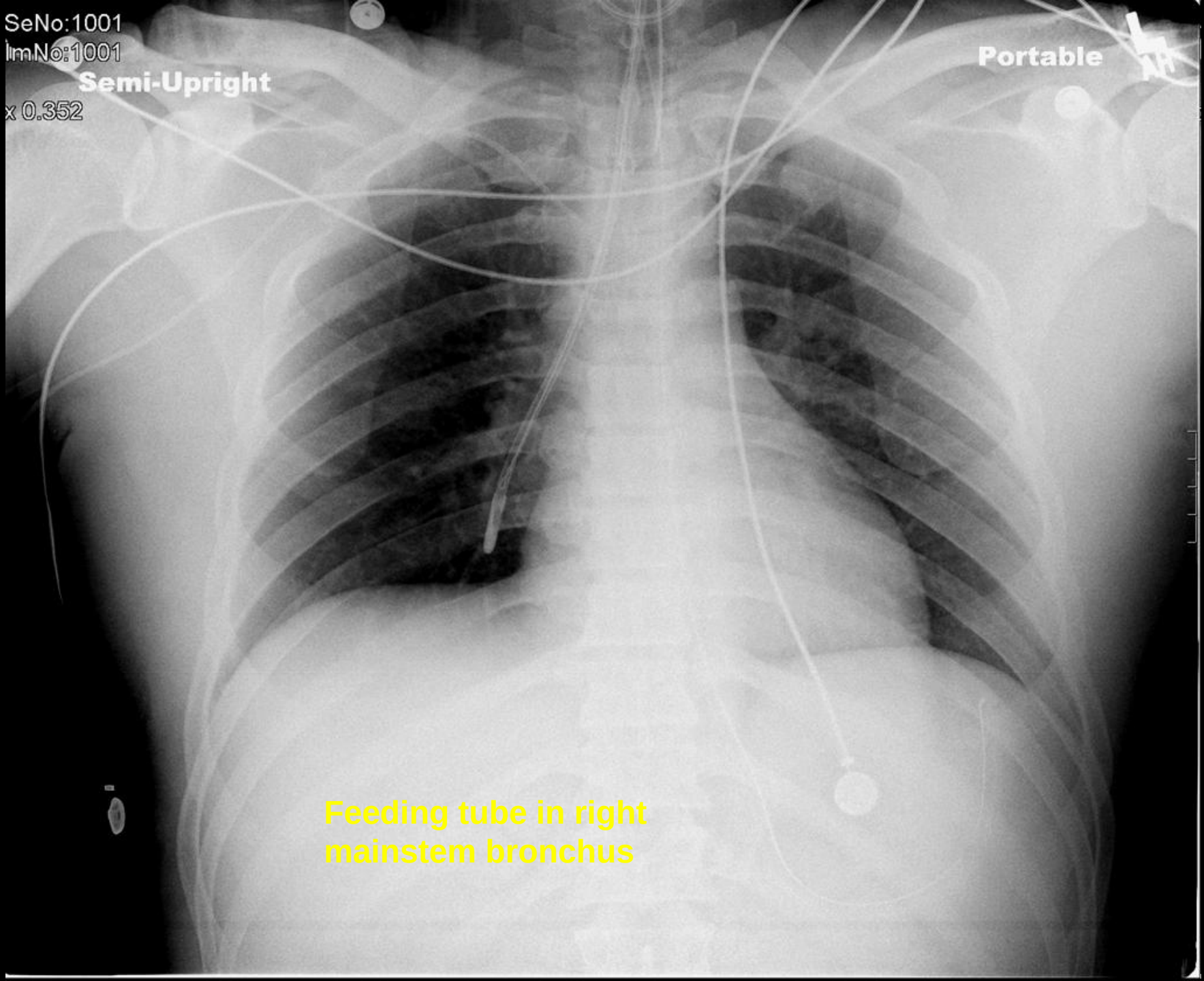
Subdural hematoma

contusion


Epidural hematoma
contusion
A
B



Normal feeding tube position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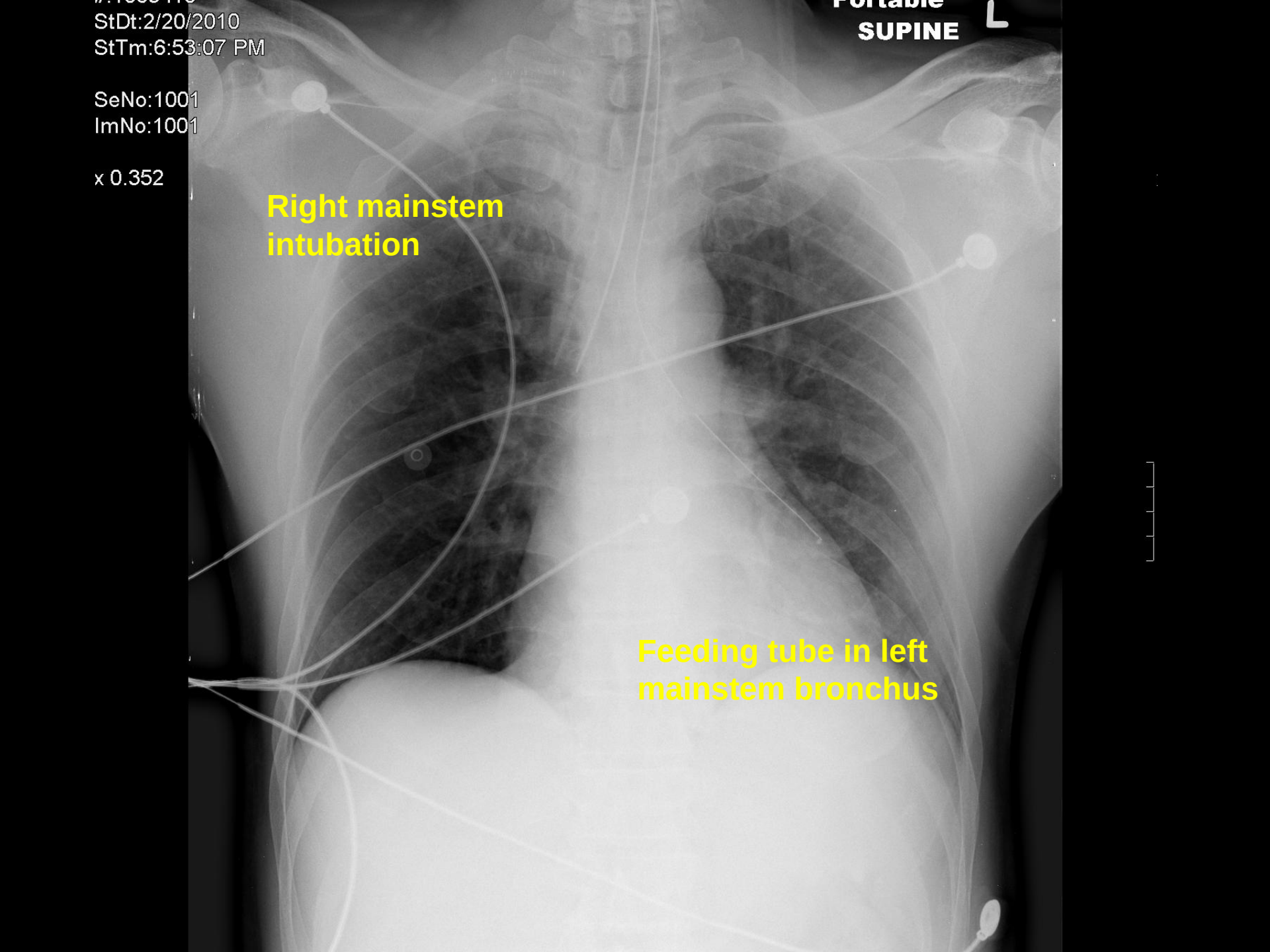
ImNo:1001
Semi-Upright
x 0.352
Portable
Feeding tube in right
mainstem bronchus


StDt:2/20/2010
StTm:6:53:07 PM
SeNo:1001
ImNo:1001
x 0.352
Portable
SUPINE
L
Right mainstem intubation
Feeding tube in left mainstem bronchus