

CARDIAC PATHOLOGY

Cardiac Xrays

- Right ventricular enlargement
- Left ventricular enlargement
- Mitral stenosis
- Congestive heart failure
- Pericardial effusion
- Pulmonary hypertension

Right Ventricular Enlargement

- CT ratio >0.5
- Cardiac apex is round and elevated above diaphragm
- Cardio-phrenic angle is acute



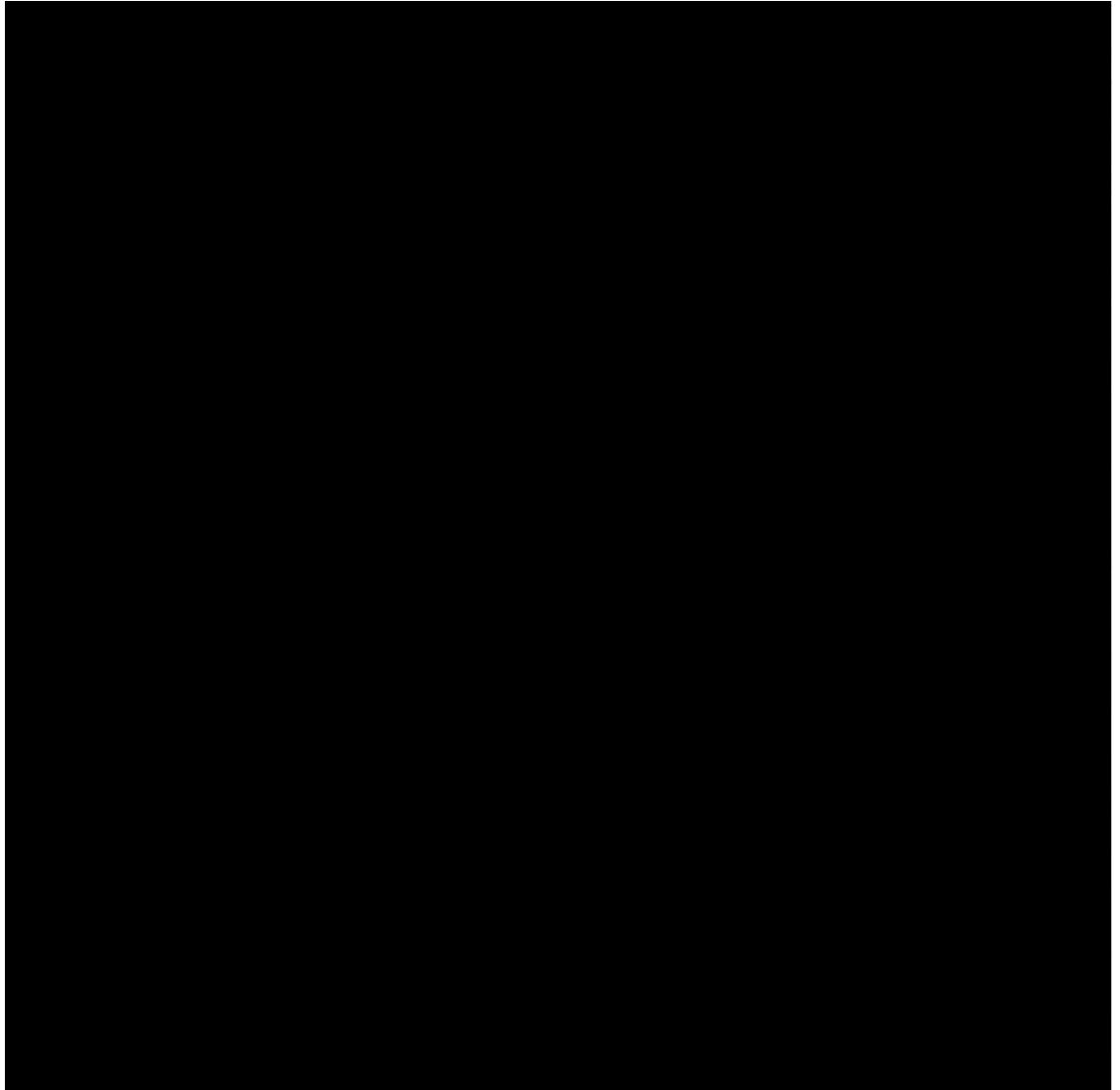
Left Ventricular Enlargement

- CT ratio >0.5
- Cardiac apex displaced downwards & to left
- Cardio-phrenic angle is obtuse & merges with diaphragm



Mitral Stenosis

- Cardiomegaly (RV type)
- Straightening of left heart border
- Double right heart border
- Splaying of carinal angle



Mitralisation of heart

Mitralisation of heart means straightening of the left border of heart

1. Aortic knuckle: small
2. Pulmonary conus: enlarged
3. Left atrial appendage: prominent
4. Left border of left ventricle: no change

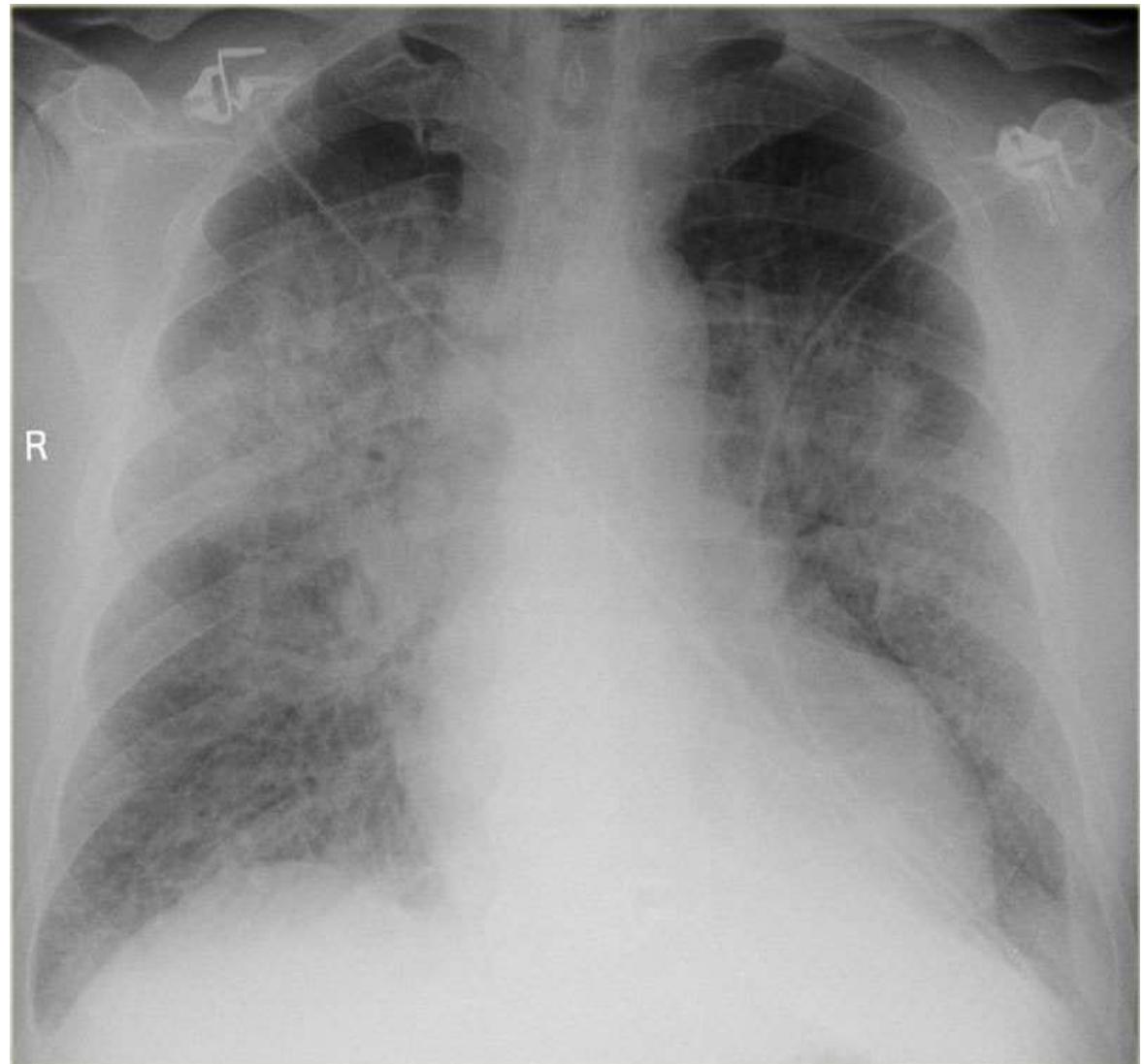
Congestive Heart Failure

- Increased interstitial markings
- Upper zone vascular redistribution
- Bilateral Pleural effusion
- Cardiomegaly (LV type)



Congestive Heart Failure

- “Batwing” appearance
- Kerley B lines
- Cardiomegaly (LV type)
- Min pleural effusions



Pericardial Effusion

- CT ratio >0.5
- Globular heart shadow
- “Water bottle” sign

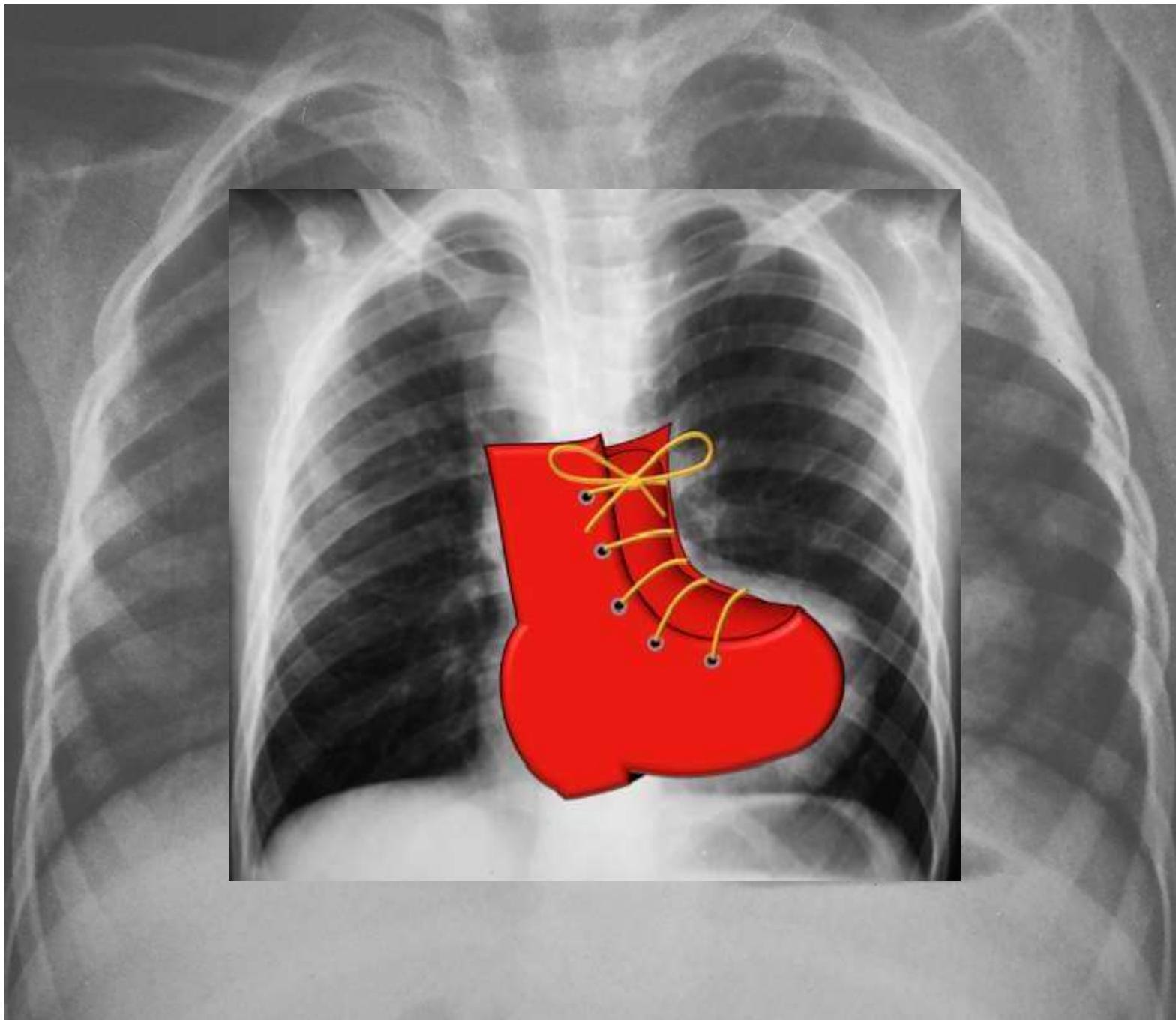


Pulmonary Hypertension

- Enlarged pulmonary arteries
 - € >16 mm right descending pulmonary artery (PA view)
 - 1 >18 mm left descending pulmonary artery (lateral view)
- Prominent pulmonary outflow tract
- Peripheral pulmonary vessels pruning
- Right ventricular hypertrophy



Guess what ???



LUNG PATHOLOGY

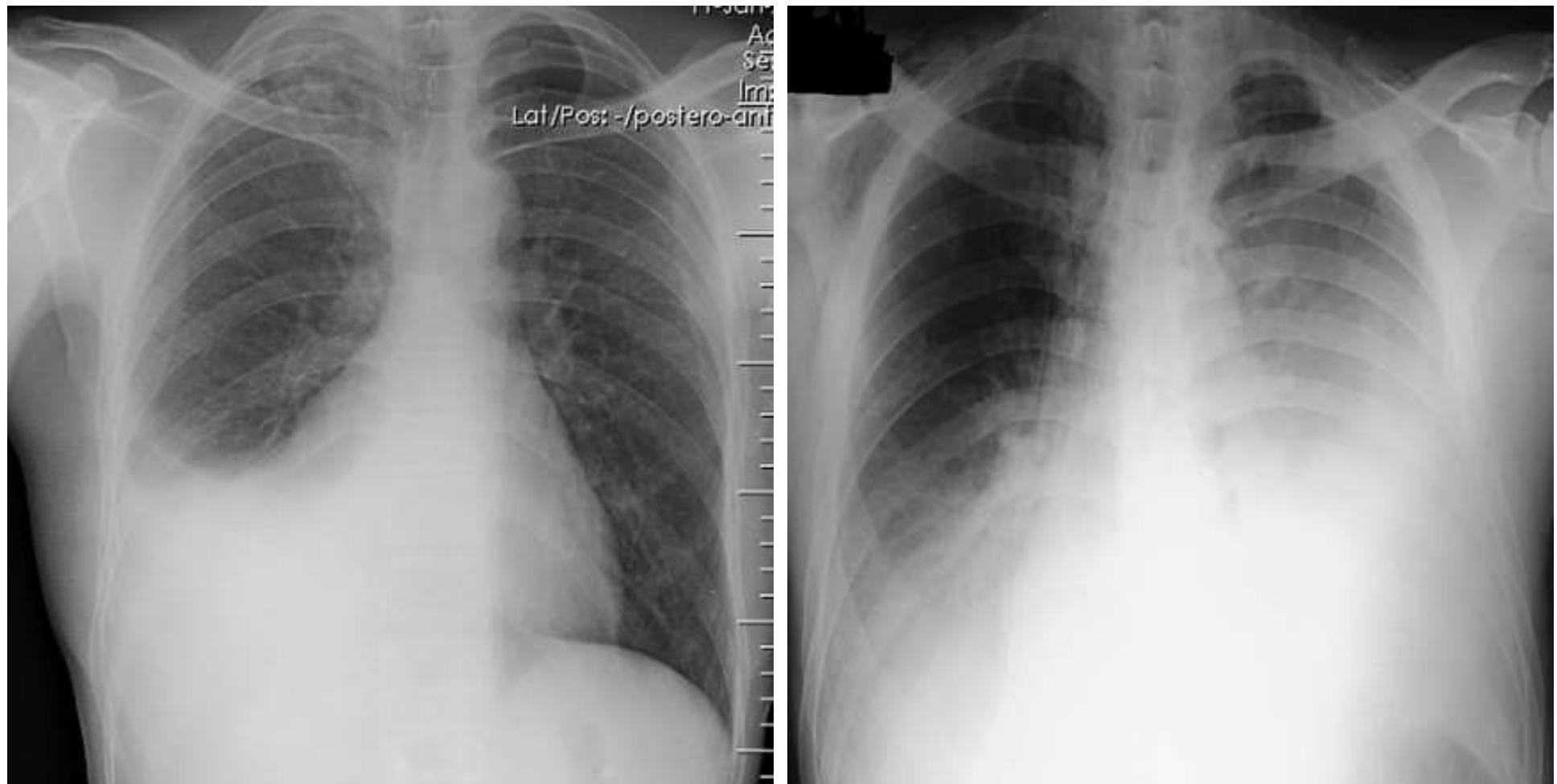
The white lung fields (radio-opacity)

- Pleural effusion
- Consolidation
- Collapse
- Fibrosis
- Coin lesion
- Miliary lesion
- Lung mass
- Hilar Lymphadenopathy
- Pulmonary edema
- Hemithorax

The black lung fields (radio-lucency)

- Pneumothorax
- Hydropneumothorax
- Cavitating lesion
- Emphysema
- Subcutaneous emphysema

Pleural Effusion



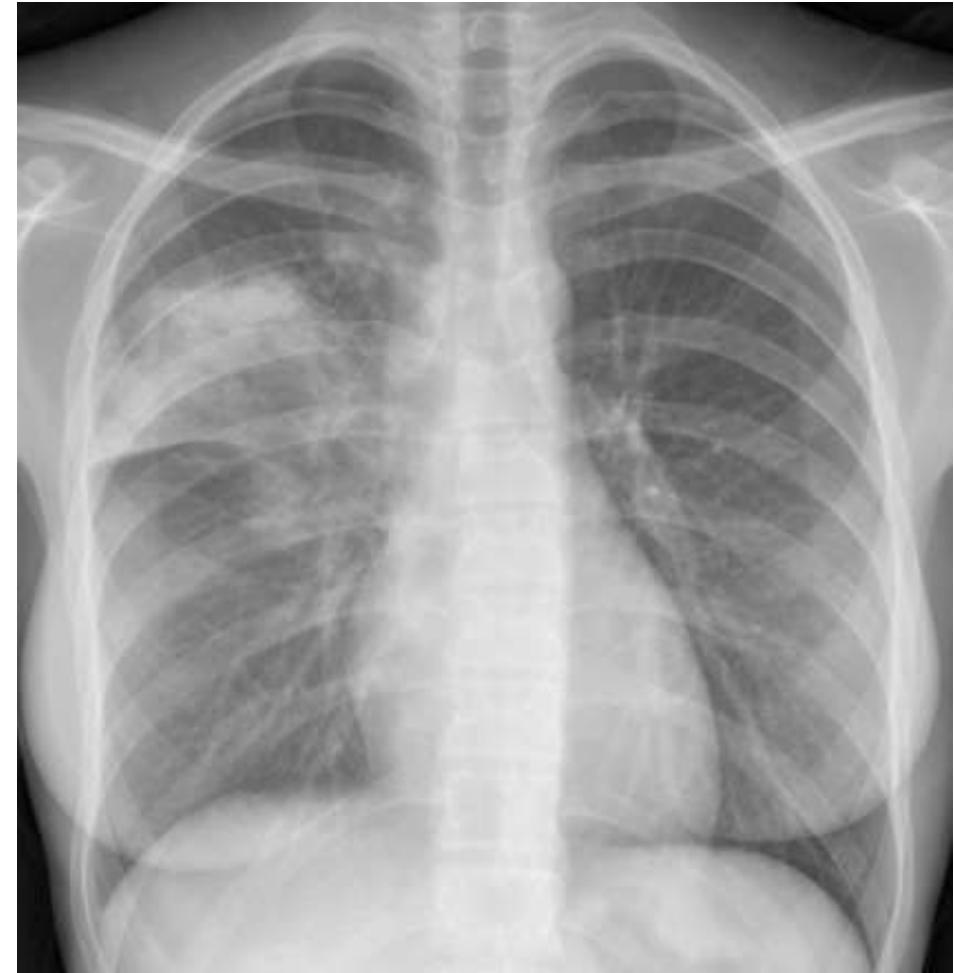
Pleural Effusion

How to detect minimal pleural effusion ???

- CXR-PA: 150-175 ml
- CXR-lateral decubitus:
10-50 ml
- USG thorax: 3-5 ml



Consolidation



Consolidation



Collapse



Collapse



Fibrosis



Solitary Pulmonary Nodule (Coin lesion)

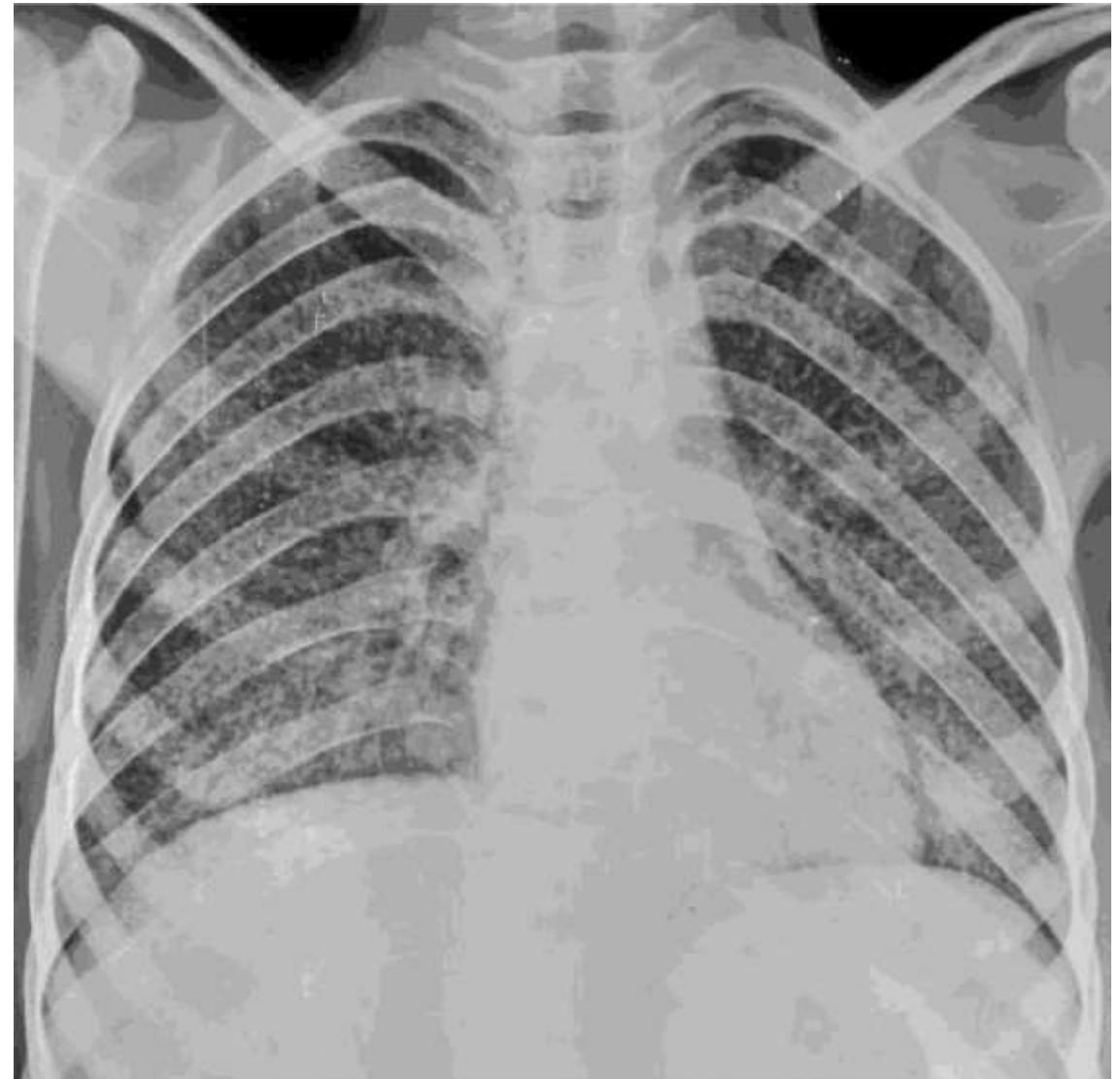
- Granulomas: tuberculoma, histoplasmosis, aspergilloma
- Bronchial carcinoma
- Bronchial adenoma
- Lung abscess
- Encysted pleural effusion
- Pseudotumor
- Pulmonary hemartoma
- Hydatid cyst
- Rheumatoid nodule
- Wegners's nodule



40% SPN are malignant

Miliary lesions

- Miliary tuberculosis
- Sarcoidosis
- Pulmonary eosinophilia
- Histoplasmosis
- Pneumoconioses
- Hemosiderosis
- Miliary metastasis
thyroid, renal, breast,
prostate, osteosarcoma



Pulmonary Metastasis

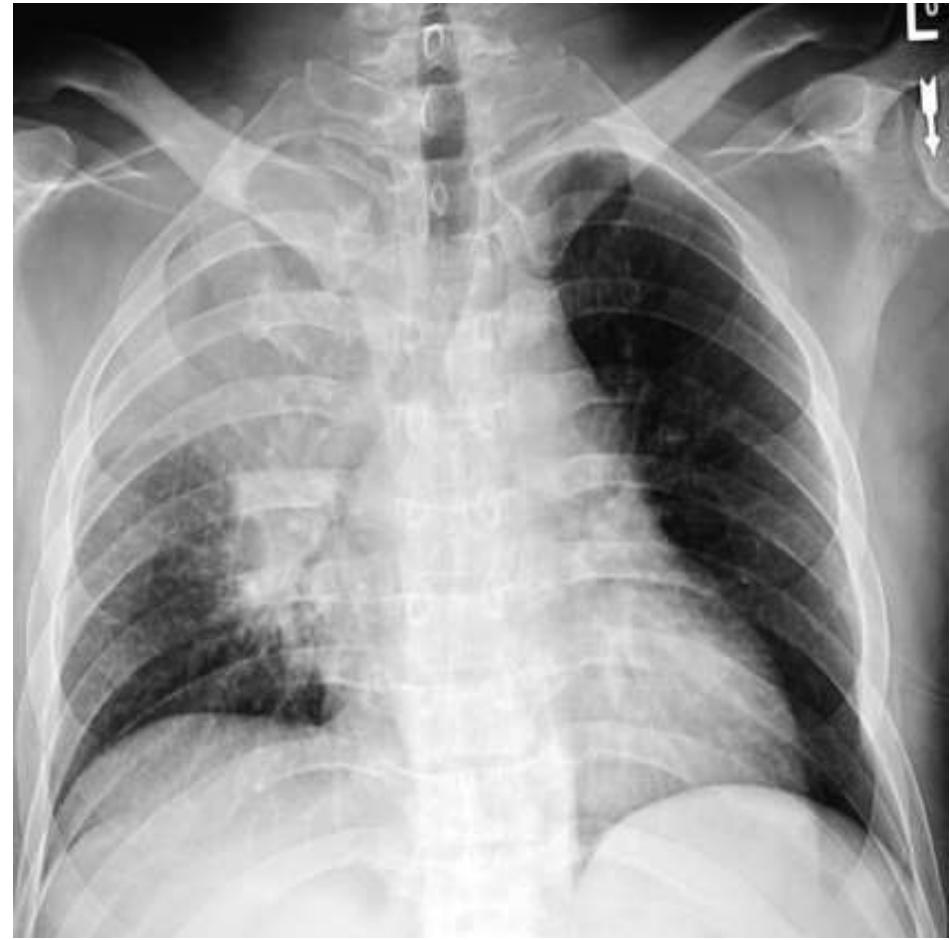


Miliary nodules: <2 mm
Pulmonary nodule: 730 mm



Pulmonary micronodule: 27 mm
Pulmonary mass: >30mm

Lung Mass



Hilar Lymphadenopathy

Bilateral hilar lymphadenopathy

- Sarcoidosis
- Lymphoma
- Tuberculosis
- Histoplasmosis
- Pneumoniosis: silicosis

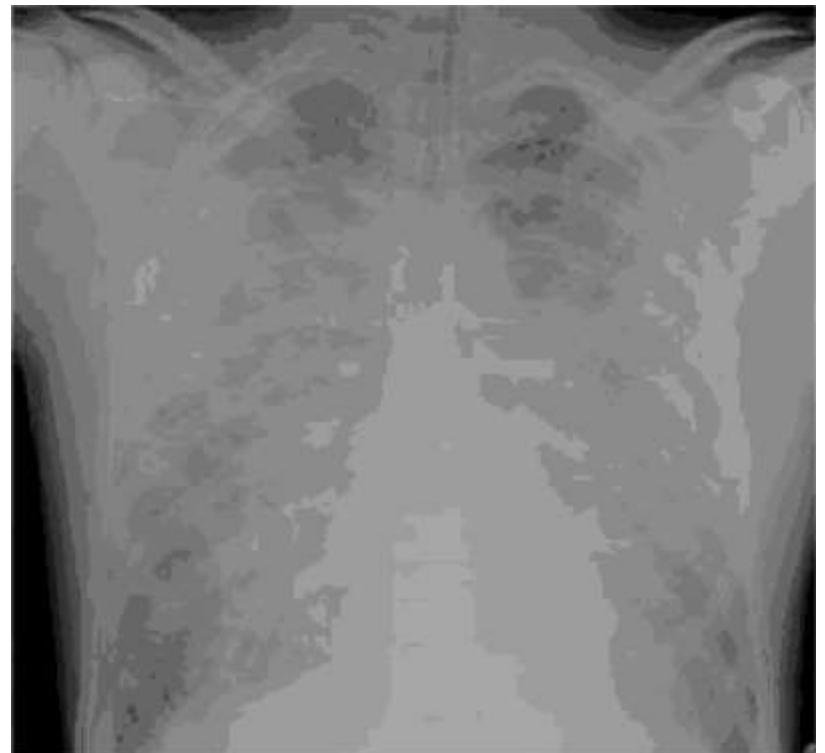
Unilateral hilar lymphadenopathy

- Lymphoma
- Carcinoma
- Tuberculosis
- Histoplasmosis



Pulmonary Edema





Radiographic feature	Cardiogenic pulmonary edema (LVF)	Noncardiogenic pulmonary edema (ARDS)
Heart size	Enlarged * ^{***}	Normal
Vascular distribution	Balanced or inverted	Normal or balanced
Distribution of edema	Even or central	Patchy or diffuse
Pleural effusion	Present	Not usually present
Peribronchial cuffing	Present	Not usually present
Septal lines	Present	Not usually present
Air bronchograms	Not usually present	Usually present

Hemithorax

Mediastinum pushed away from the opacified side

- Pleural effusion
- Large lung mass
- Diaphragmatic hernia

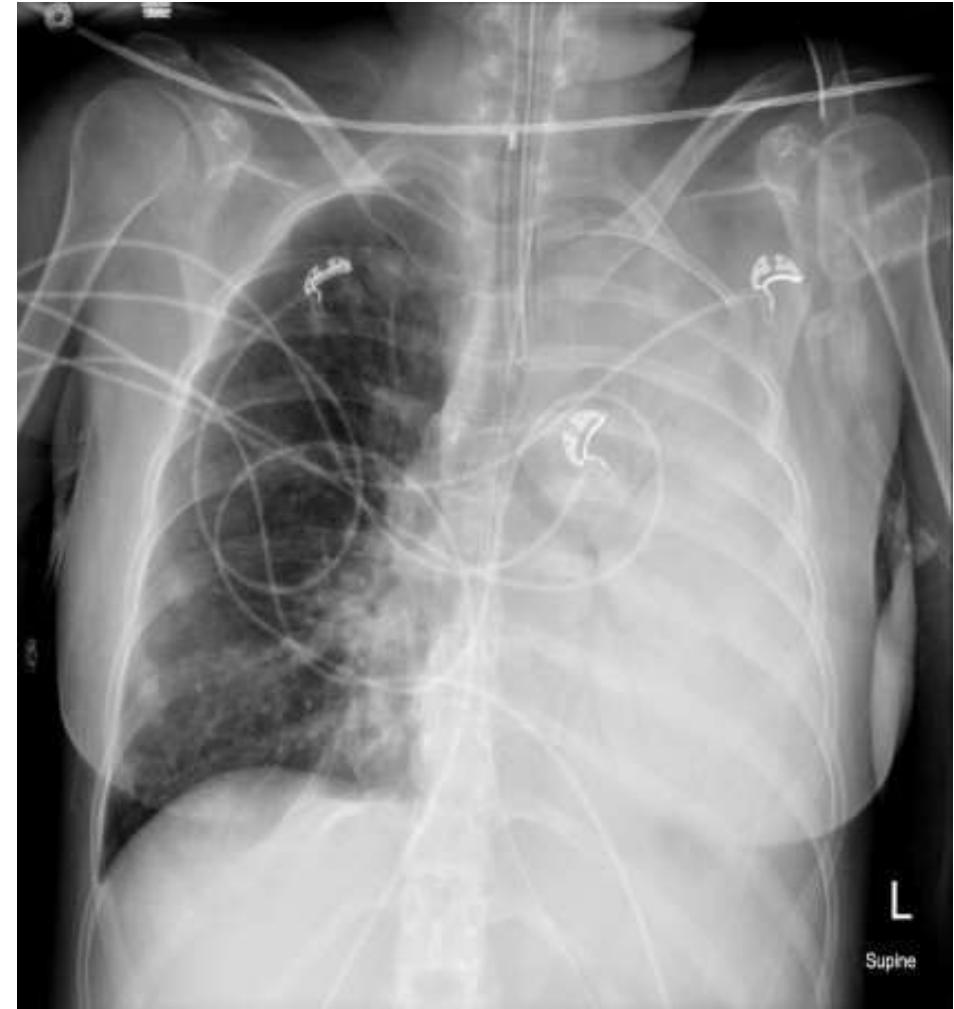
Mediastinum pulled toward the opacified side

- Total lung collapse
- Pneumonectomy
- Pulmonary hypoplasia/agenesis

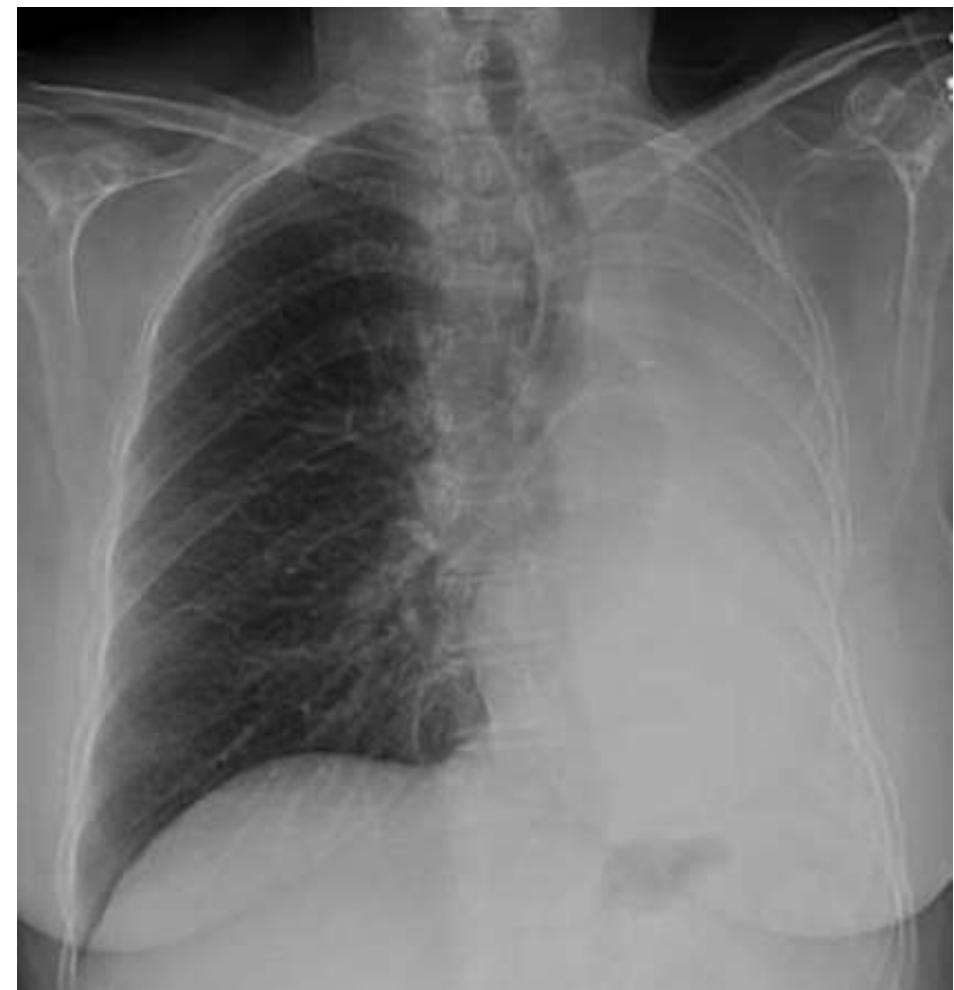
Mediastinum remains central in position

- Consolidation
- Pleural/chest wall mass
- Combination of pathologies

Hemithorax



Hemithorax

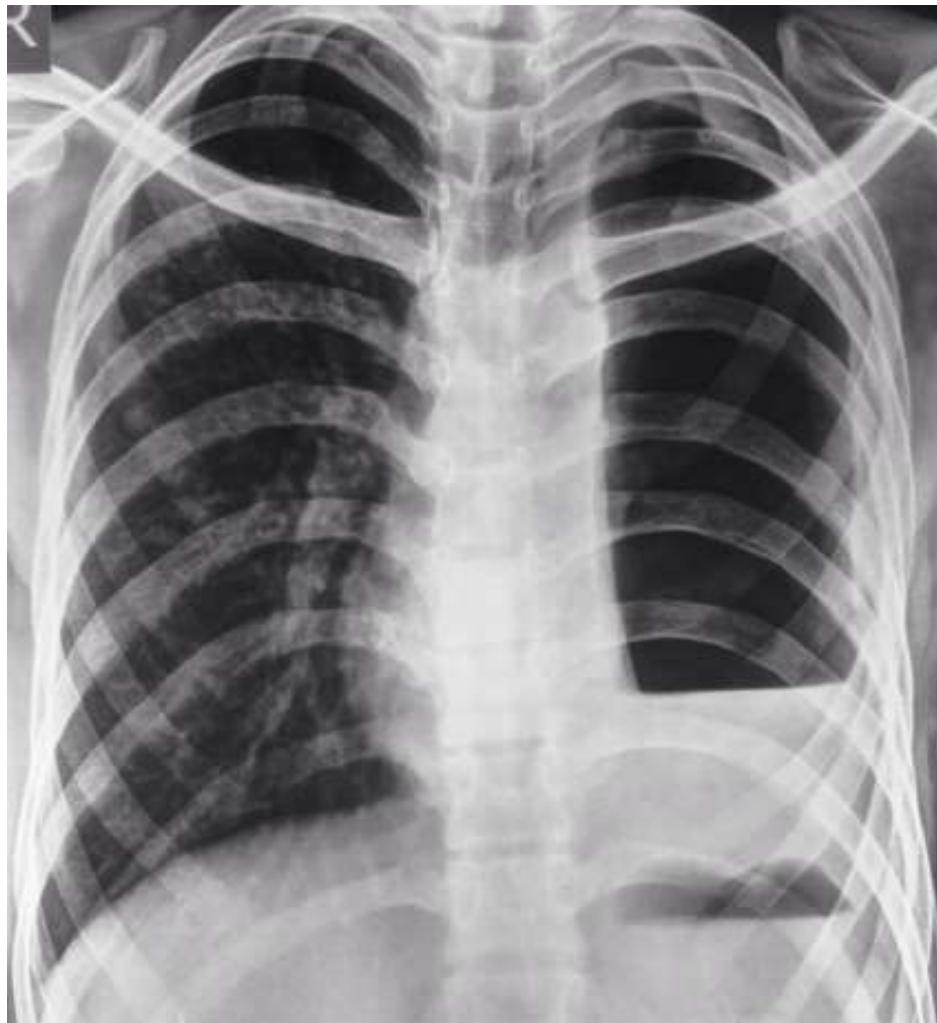


Pneumothorax



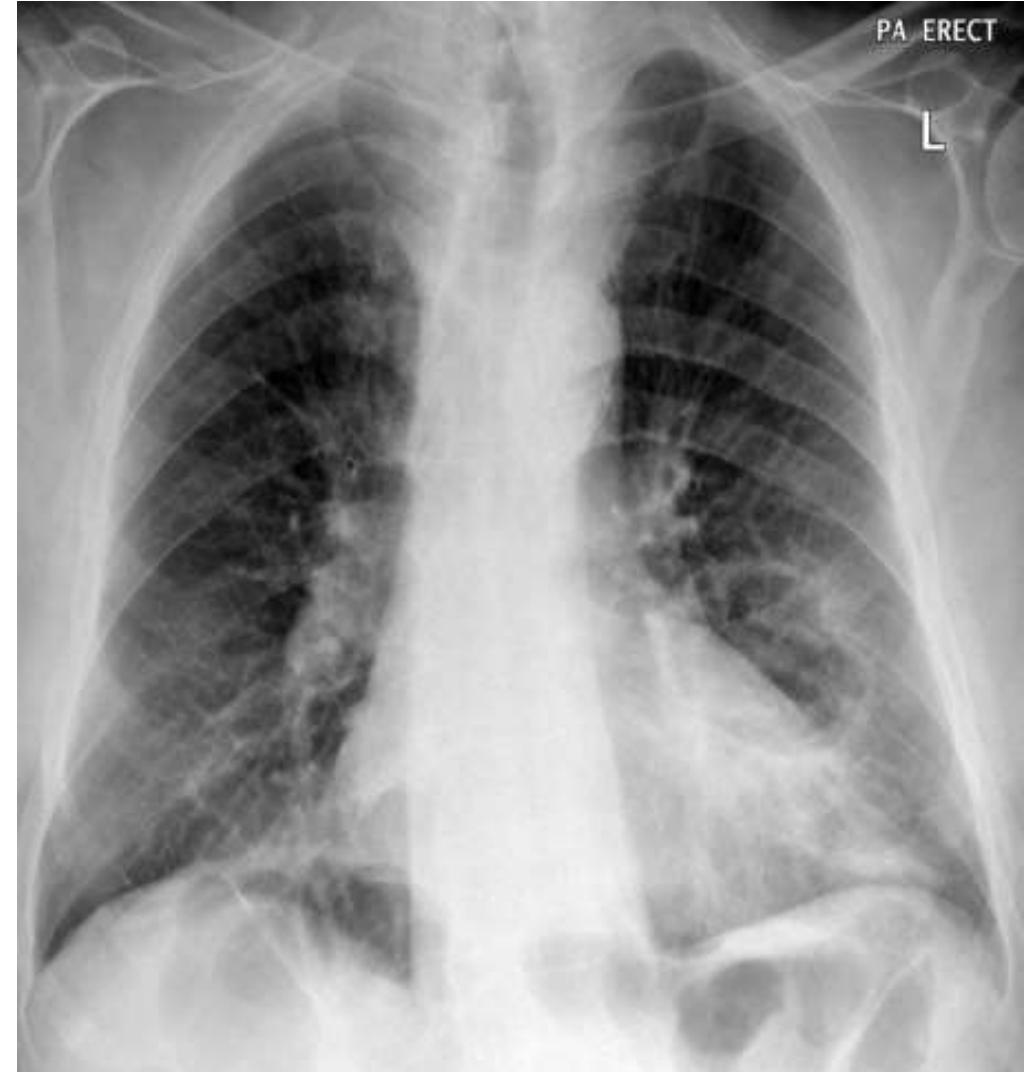
Which film preferred ???

Hydropneumothorax



Pulmonary Cavity

- **C** arcinoma
- **A** utoimmune:
Wegner granulomatosis
and rheumatoid nodule
- **V** ascular: emboli (septic/bland)
- **I** nfection/abscess:
bacterial (Klebsiella,
Staphalococcus, anaerobic
infections), fungal
(histoplasmosis), amebic,
hydatid cyst
- **T** rauma: pneumatocele
- **Y** oun: congenital,
bronchogenic cyst



Pulmonary Cavity

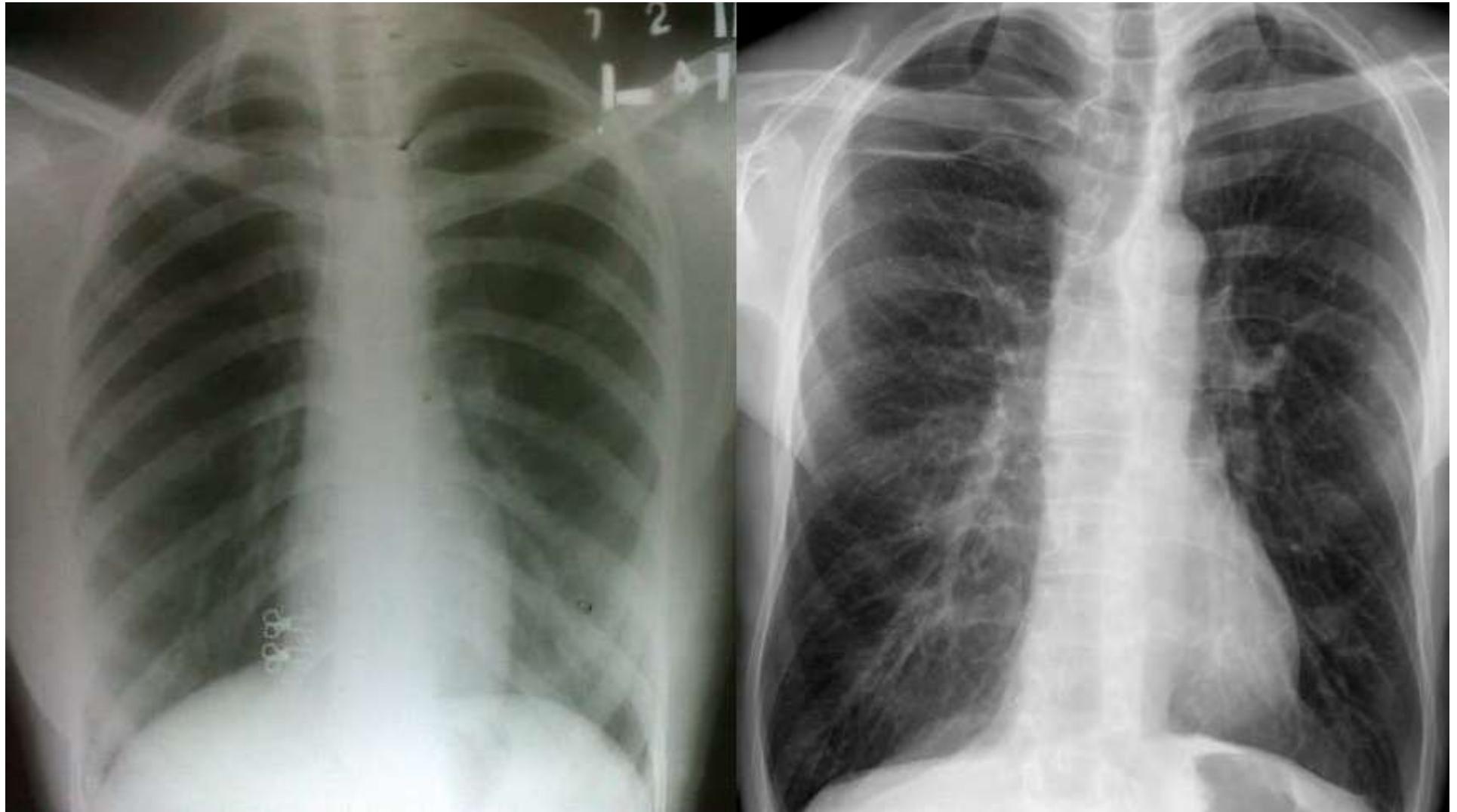


Pulmonary Tuberculosis

- Apical or posterior segment of upper lobes or superior segments of lower lobes mostly involved
- Active tuberculosis:
Infiltrates, consolidations, cavities, mediastinal or hilar lymphadenopathy
- Healed tuberculosis:
Pulmonary nodules, fibrotic scars, bronchiectasis and pleural scarring



Emphysema



Pathognomonic sign ???

Subcutaneous Emphysema



Best of luck. . .

