58 y/o M with lower lobe crackles 4 days after CABG

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AP Radiograph taken post-op
On Presentation – 4 Days Post-op
Pulmonary Edema Secondary to CHF
Increased Interstitial Markings
Perihilar opacification with indistinct vasculature
Pulmonary Edema Secondary To CHF

Three Stages of Pulmonary Edema

• Vascular redistribution.
• Interstitial edema.
• Alveolar edema.
Pulmonary Edema

Vascular Redistribution

• Seen in pulmonary venous hypertension – chronic elevation of LA pressure
• Increased caliber of the upper lobe vessels compared to the lower lobe vessels.
• Vessels in the upper lobes are usually smaller than the lower lobe vessels.
  – Artery:Bronchus ratio = 0.85
  – At the hilum the ratio should be equal
  – In the lower lobes, the arteries are larger with a ratio of 1.35
Pulmonary Edema

Interstitial Edema
- Caused by increased fluid within the pulmonary veins.
- Fluid leaks into the interlobular and peribronchial interstitium
- Increased interstitial markings
- Indistinctness of the pulmonary vasculature
- Peribronchial cuffing – Fluid leakage into the peribronchovascular interstitium
- Kerley A, B and C lines – all represent thickened interlobular septa
  - Kerley B: peripheral lung, perpendicular to pleura
  - Kerley A: radiate from hila
  - Kerley C: overlapping of A and B lines
Pulmonary Edema

Alveolar Edema
• Alveoli fill with fluid as the continued fluid accumulation cannot be compensated by lymphatic drainage
• Perihilar opacifications are present
• Can see pleural effusions and cardiomegaly
• Usually symmetric and dependent
Pulmonary Edema

- Three basic types
  - Cardiogenic (hydrostatic)
  - Fluid overload
    - Hydrostatic
    - Decreased intravascular oncotic pressure (hypoalbuminemia, hepatic or renal failure)
  - Increased capillary permeability (ARDS)
- Widened vascular pedicle width is associated with the first two types
References