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

Edward Gillis, DO
AP Radiograph taken post-op
AP Radiograph Taken 1 Day Post-op
On Presentation – 4 Days Post-op
Pulmonary Edema Secondary to CHF
Increased Interstitial Markings
Perihilar opacification with indistinct vasculature
Bilateral pleural effusions
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