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.



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



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



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



- 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

 Gluecker, Thomas, et al. "Clinical and Radiologic Features of Pulmonary Edema." *RadioGraphics*, vol. 19, no. 6, 1999, pp. 1507–1531., doi:10.1148/radiographics.19.6.g99no211507.

