Lung fibrosis secondary to Pneumocystis Pneumonia in a HIV positive patient

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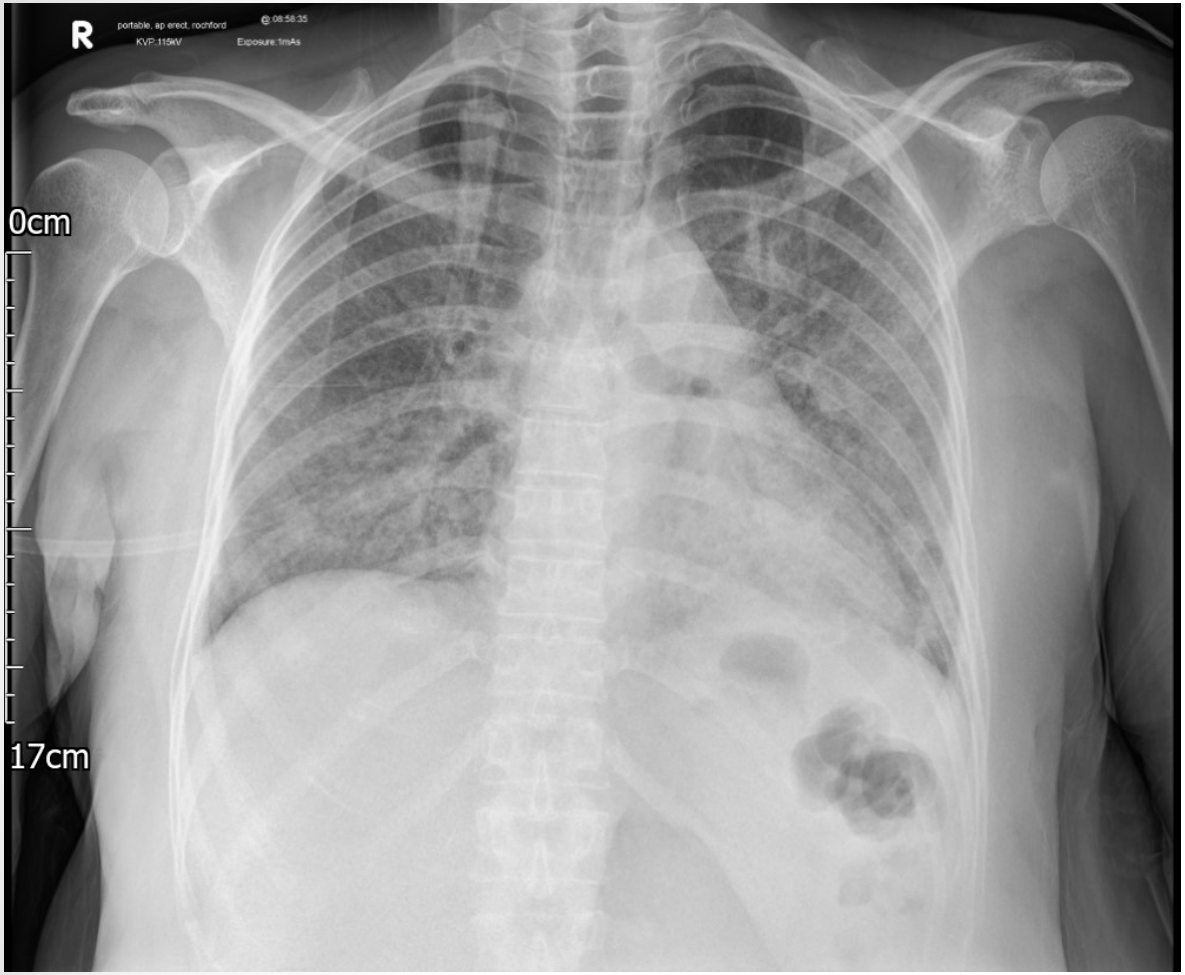
Clinical Information

- This 55 year old lady presented with a 10 day history of Shortness of breath, dry cough, night sweats, and weight loss.
- She was found to be severely hypoxic. In the hospital, she was started on IV antibiotics for chest sepsis.
- On testing positive for HIV along with CD4 counts of 12, Co-trimoxazole and fluconazole were charted as per protocol. Initially admitted to the respiratory unit for type 1 respiratory failure, the infection markers worsened and so a transfer to intensive care was required for CPAP.
- On recovery she was discharged home but unfortunately succumbed a month later.
- Serial chest imaging was requested which demonstrated progression of active infection to lung fibrosis.

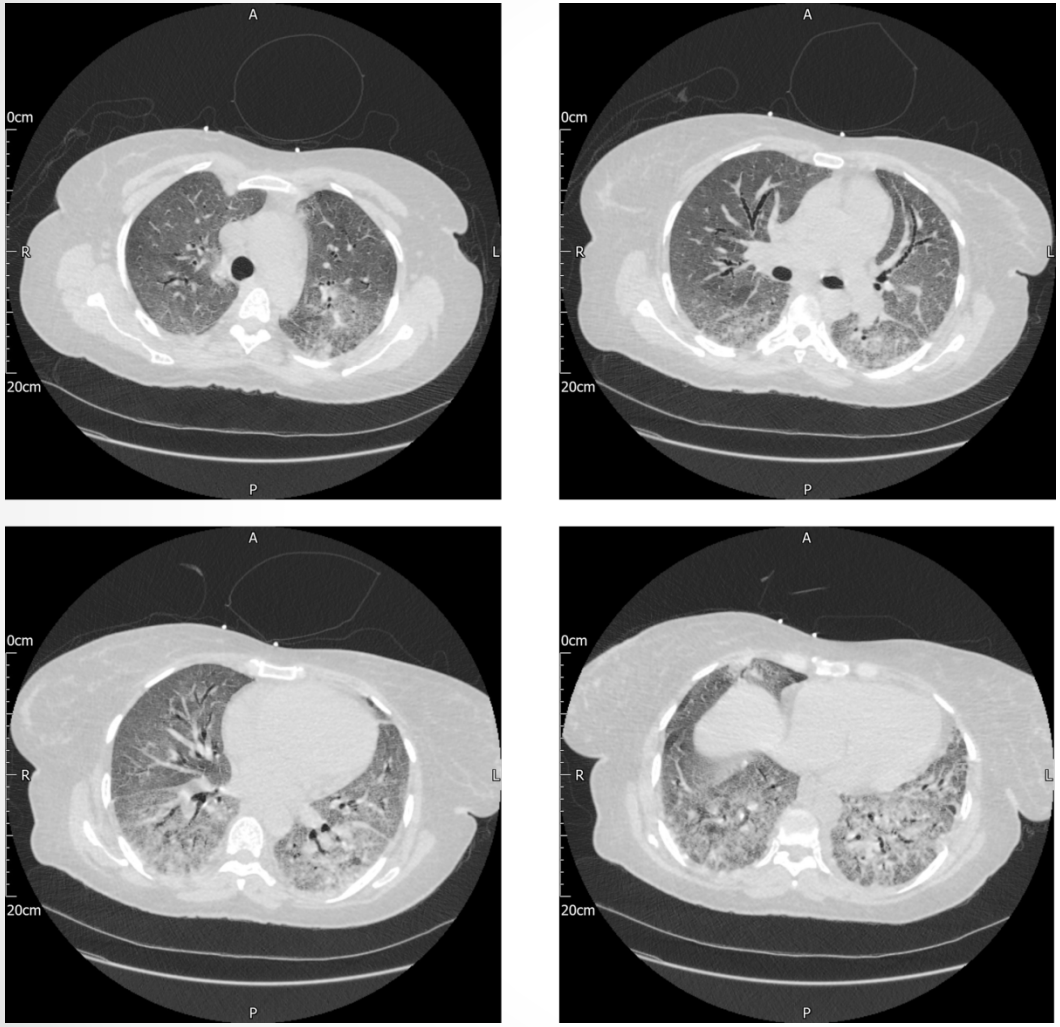
Initial Chest AP Radiograph on hospital admission



AP chest radiograph demonstrates bilateral mid and lower zone ground glass haziness.

Evidence of congestion but no sizable consolidation.

High resolution CT chest on day 2 of admission



There is extensive ground-glass density scattered in bilateral lungs with sparing in the posterior recess on both the sides.

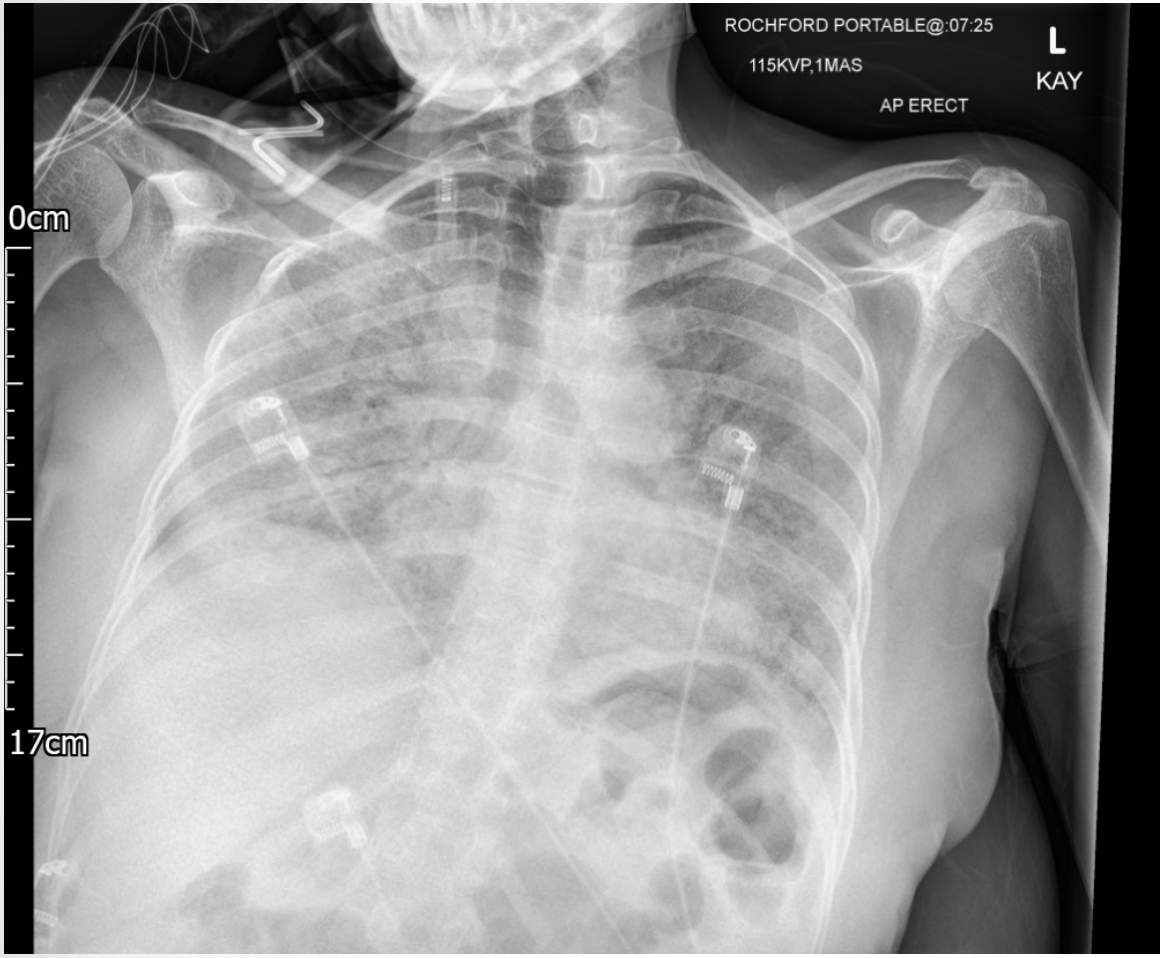
Admixed alveolar patchy solid opacities coalescing to form areas of consolidation in bilateral lower lobes, left upper and right middle lobes.

There are areas of smooth interlobular septal thickening noted in the left upper lobe.

Scan suggestive of Acute respiratory distress.

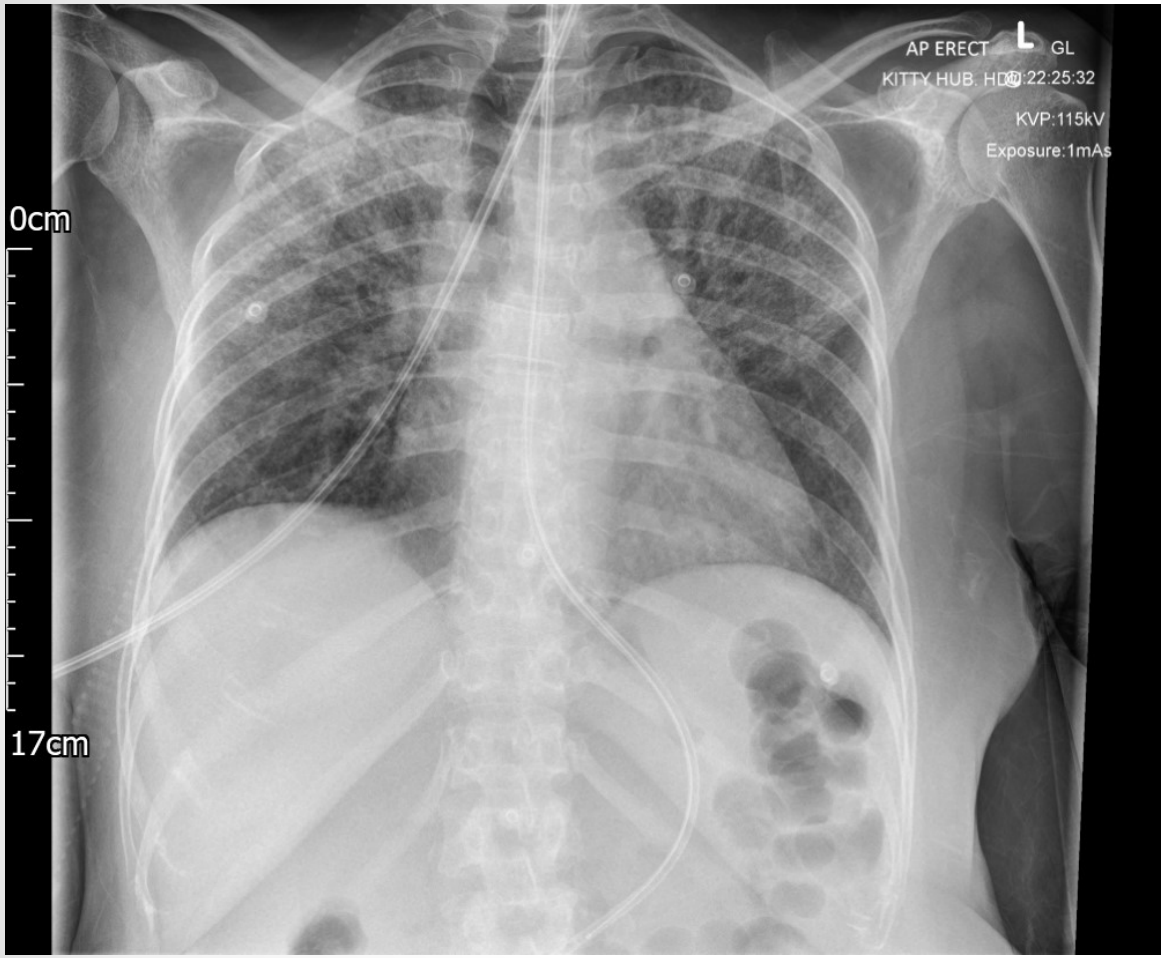
Findings classical of Pnemocystis pneumonia

Chest AP radiograph 2 weeks into hospital admission



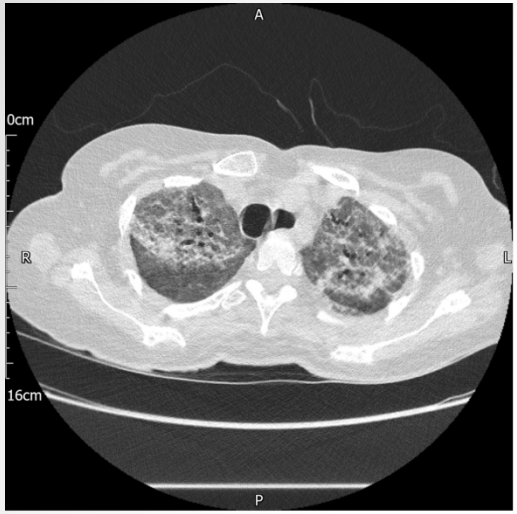
Diffuse bilateral alveolar opacification consistent with ARDS. Overall, worsening appearance since the previous radiograph.

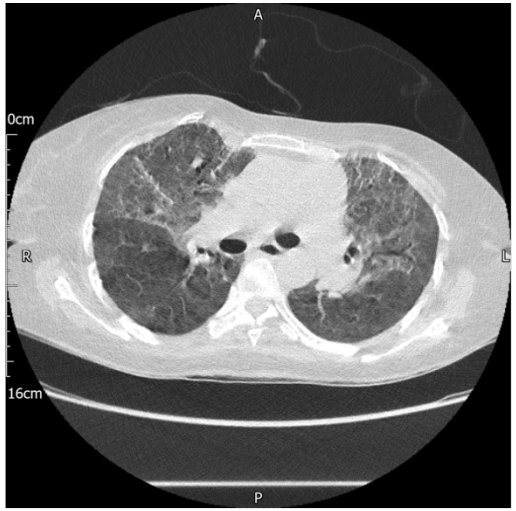
Chest AP radiograph 6 weeks into hospital admission

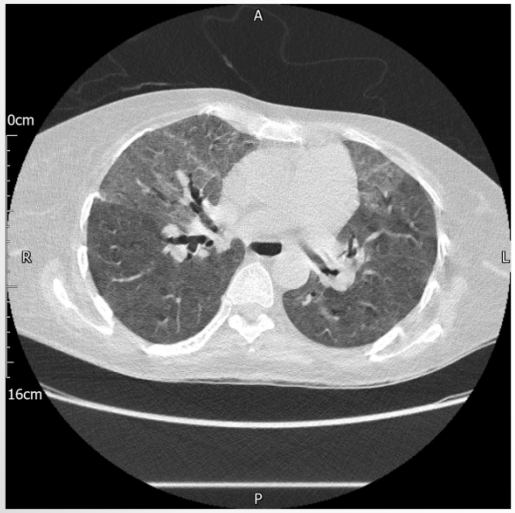


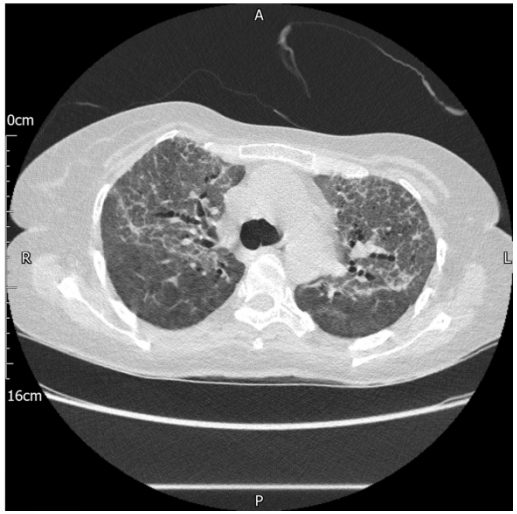
Bilateral upper lobe prominent interstitial markings, indicative of upper zone fibrosis.

CT Thorax 2 months into the hospital admission









Chest CT before discharge noted interlobular septal thickening with ground glass attenuation and bronchiectasis in both upper lobes consistent with post PCP fibrosis.

Acute changes in previous CT have resolved.

Discussion

- **EPIDEMIOLOGY -**
- Pneumocystis jirovecii is a fungus which causes pneumonia in humans but more specifically in immune compromised patients such as HIV with CD4 counts of less than 200
- UK has seen a rise in confirmed cases of PCP which were mostly due to transplant patients on immunosuppressants or hematological malignancy

- **PRESENTATION -**
- Most commonly the patient presents with dry cough.
  Shortness of breath on exertion. Pyrexia.
- Extra pulmonary diseases in the form of hepatosplenomegaly, lymphadenopathy or ocular disease have been recorded.

- **RADIOLOGY -**
- Chest radiograph can be normal or shows perihilar interstitial opacities.
- Standard CT imaging shows ground glass infiltrates with high resolution.

Conclusion

- CT being highly sensitive there is a paucity of literature about PCP-induced lung fibrosis, radiologists and physicians should be aware of this condition which unfortunately has a poor outcome.

References

- Suzuki, T., Shimoda, Y., Teruya, K. et al. Case report: new development of fibrosing interstitial lung disease triggered by HIV-related pneumocystis pneumonia. BMC Pulm Med 19, 65 (2019). https://doi.org/10.1186/s12890-019-0831-9

- Huang L, Cattamanchi A, Davis JL, den Boon S, Kovacs J, Meshnick S, Miller RF, Walzer PD, Worodria W, Masur H, International HIV-associated Opportunistic Pneumonias (IHOP) Study., Lung HIV Study. HIV-associated Pneumocystis pneumonia. Proc Am Thorac Soc 2011;8 (3):294-300