

Planar V/Q Scans and Scan Adaptations

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Challenges to V/Q SPECT

- Patients reliant on Oxygen
- Extremely claustrophobic patients
- Patients in extreme pain (unable to lie flat)
- Bariatric patients

If V/Q SPECT is not an option

- CT?
- Patients who cannot undergo V/Q SPECT will in MOST circumstances be unable to tolerate CTPA
- 7 / 250 V/Q patients have been unable to tolerate SPECT V/Q
- Planar V/Q still an option!

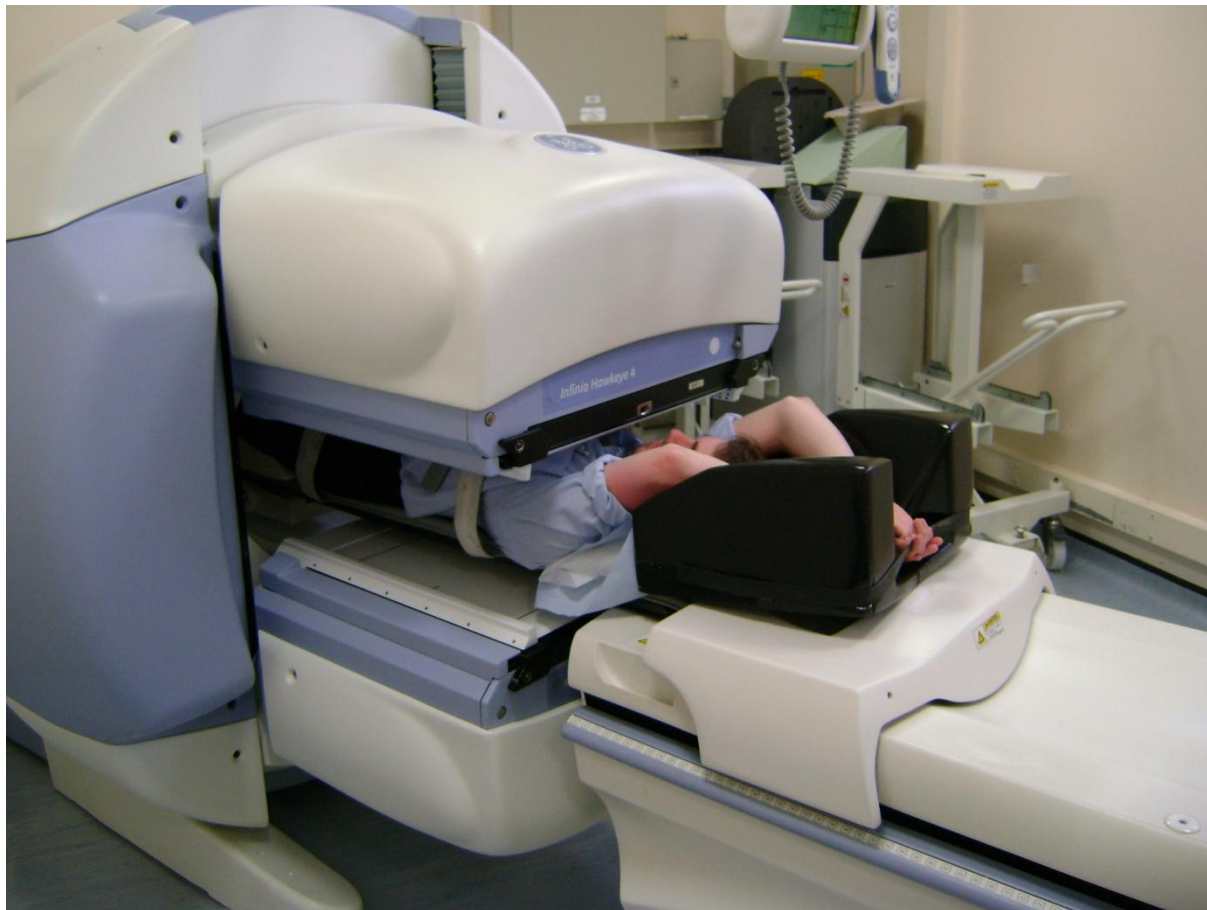
CHT Planar Imaging Protocol

- Supine I.V. injection 100 MBq Tc^{99m} - MAA
- 400 Kcts – Perfusion / 250 Kcts Ventilation
- 128 x 128 matrix
- Single energy acquisitions
- GP collimator (suitable for Kr^{81m})
- 8 views - Alternate Perfusion/Ventilation
Anterior / Posterior + Left / Right Posterior
Oblique

Krypton Administration



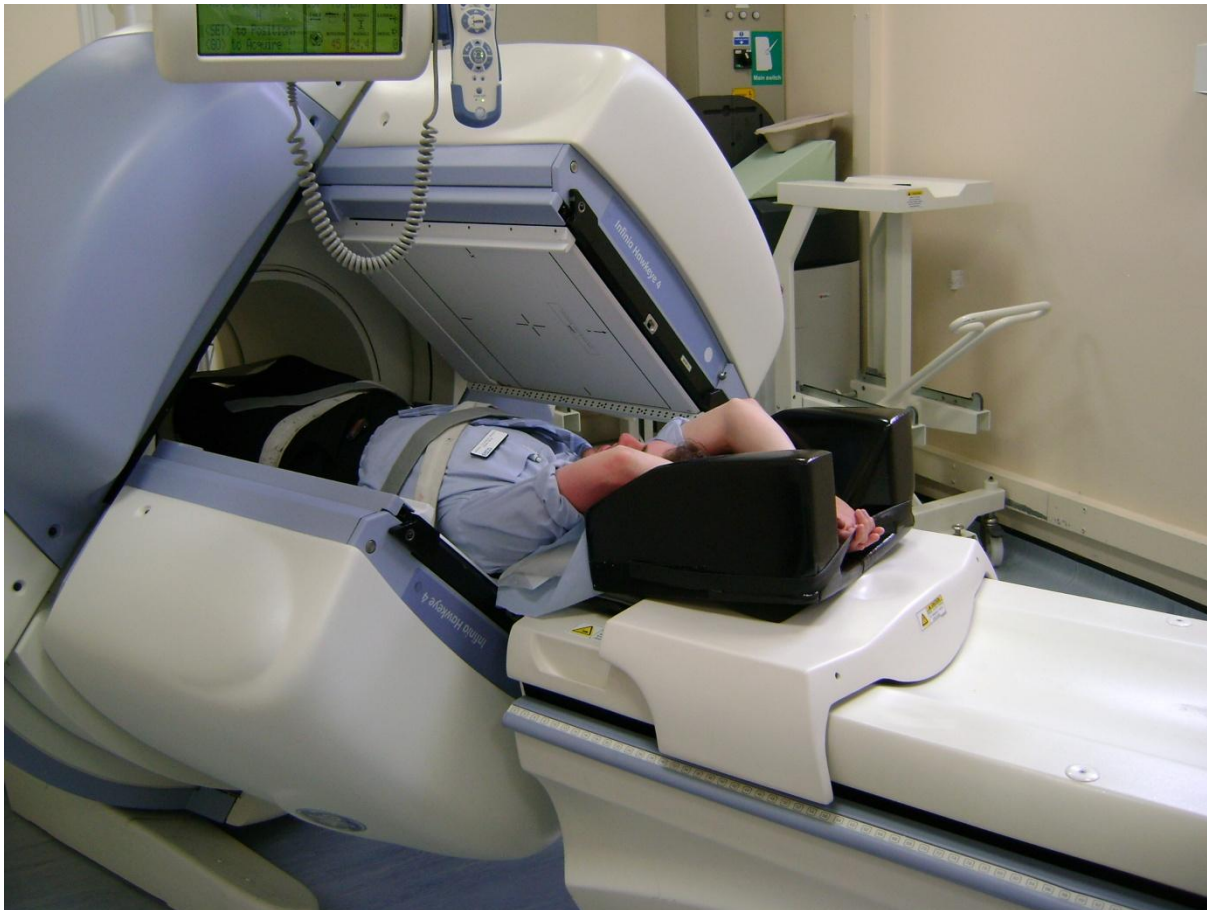
Imaging



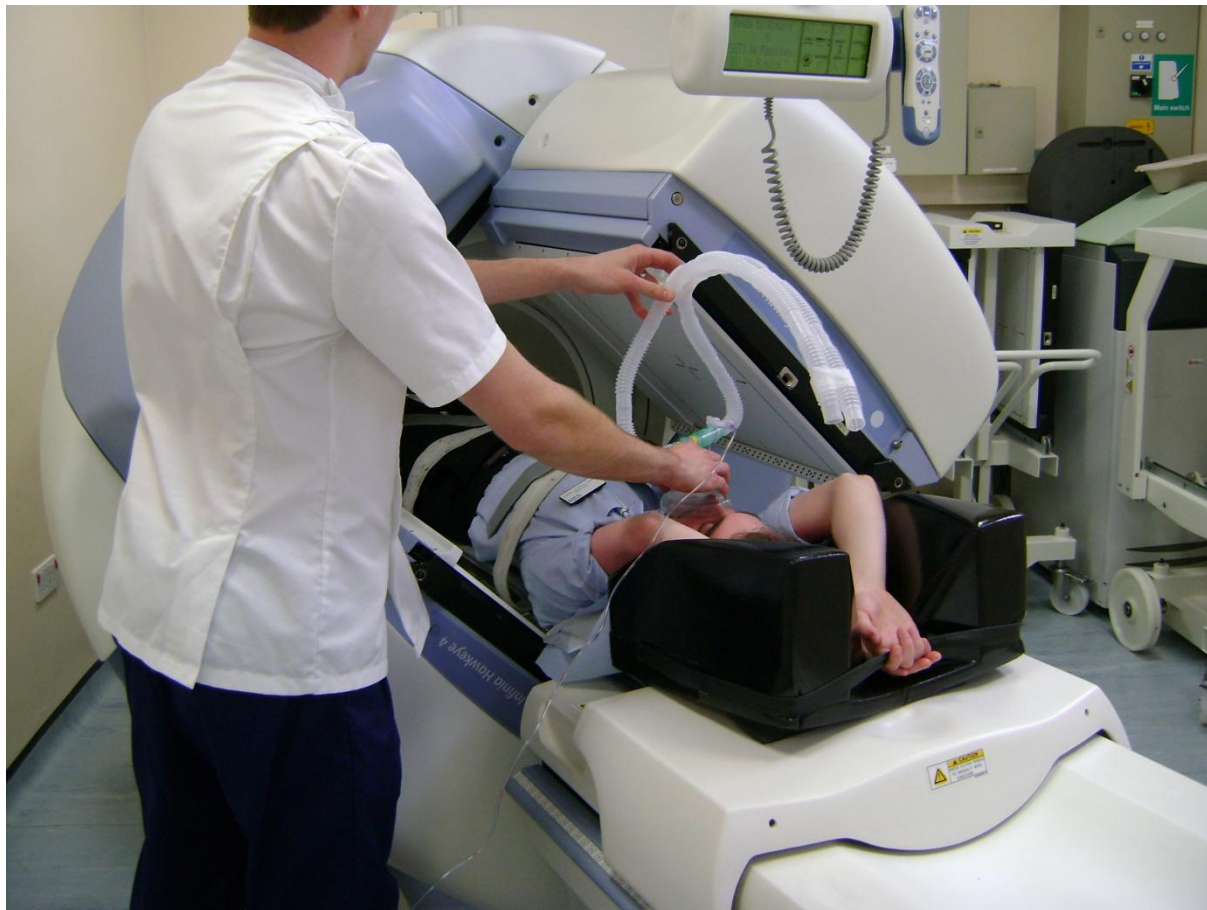
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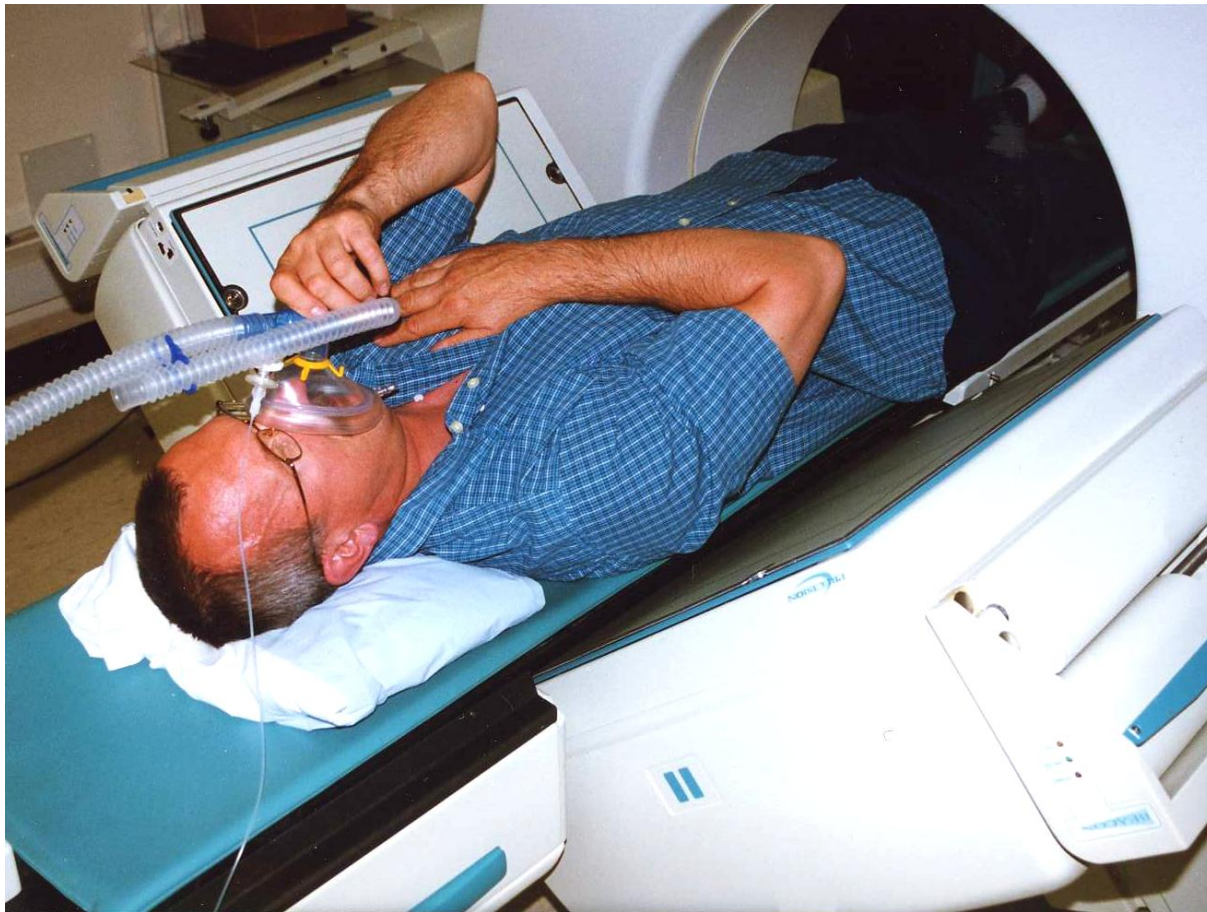
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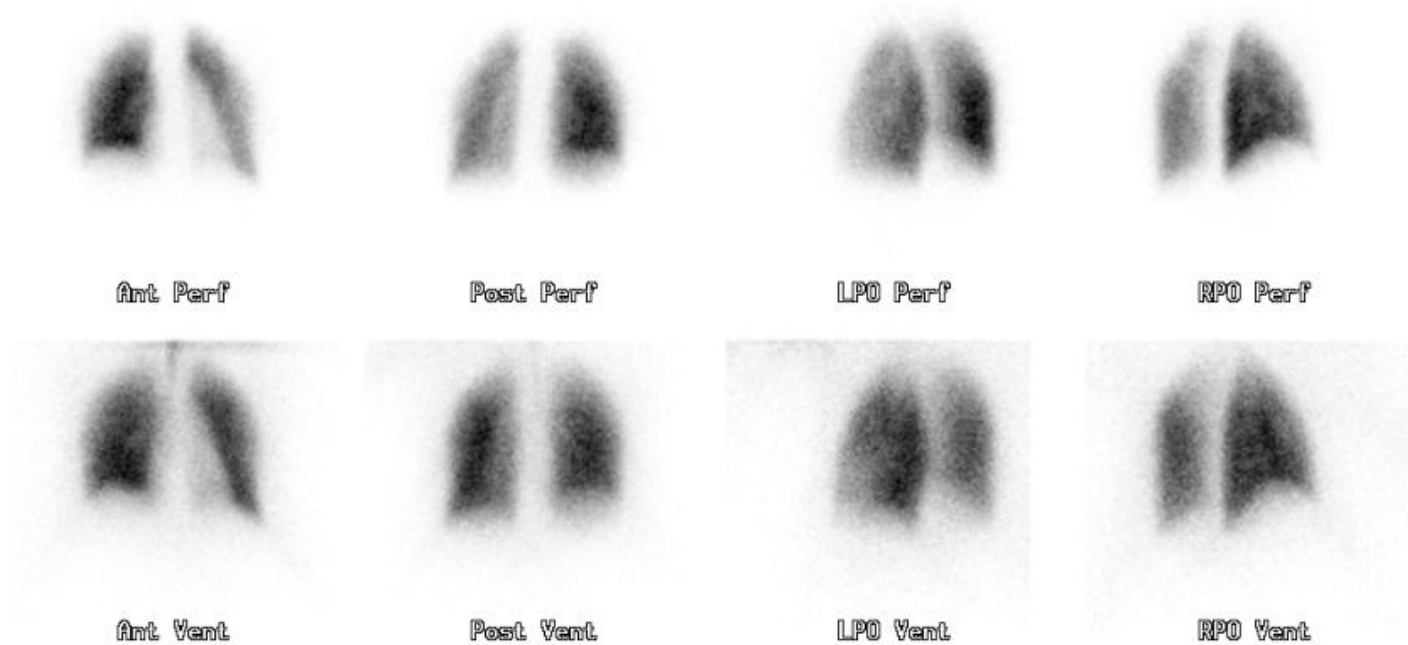
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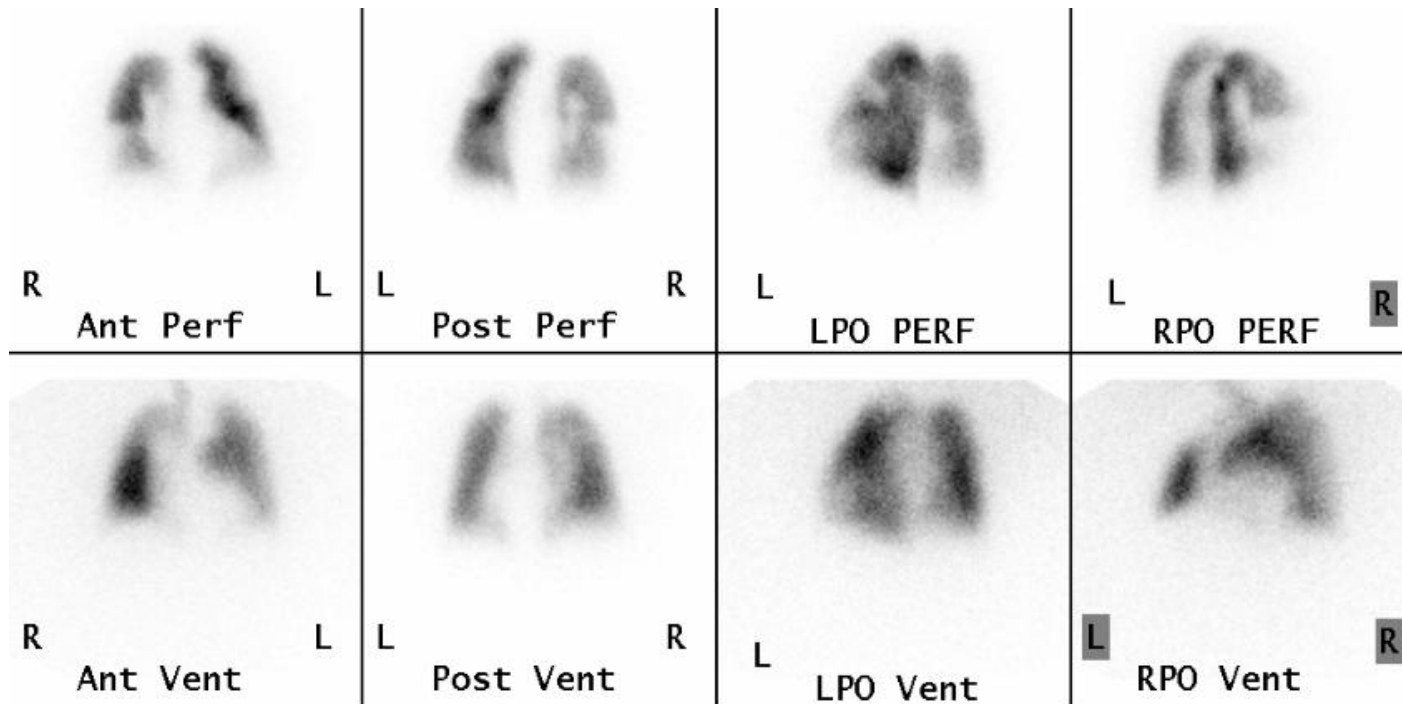
Normal Appearances



Clinical History : Previous four episodes of pneumothorax. Currently worsening dyspnoea. Right sided pain in the back. ?PE.

NM lung ventilation + perfusion : The scan is within normal limits.

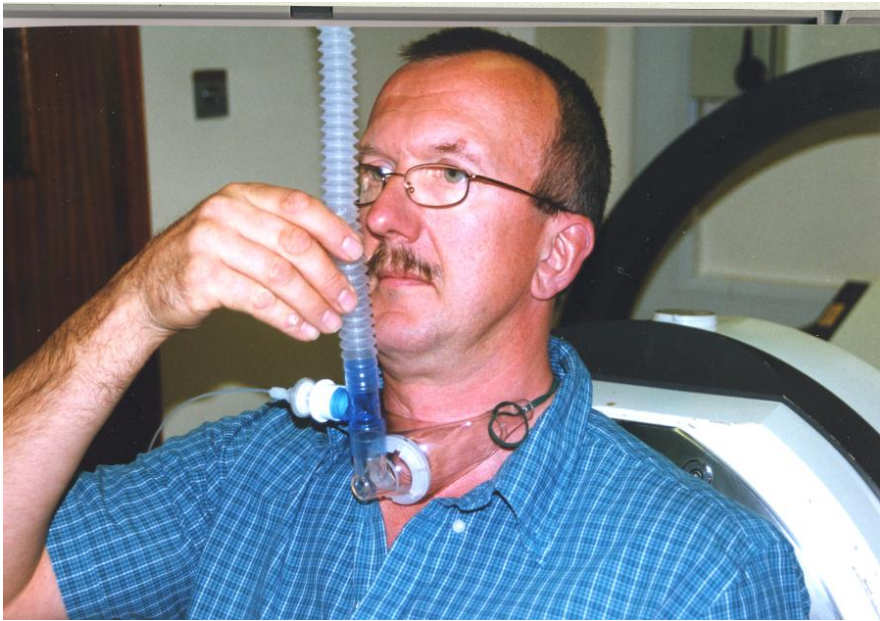
Abnormal Appearances



NM lung ventilation + perfusion : There are at least 2 large classical segmental mismatched defects, one in each lung. Unmatched ventilation defect seen in the right base as well.

Conclusion: High probability for PE.

Adaptations



- Trachyostomy
- Adapt Krypton administration

Adaptations



- Paediatric Mask needed
- No reservoir used

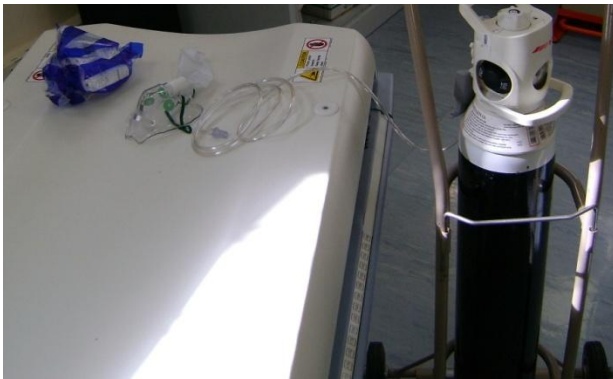
Adaptations

- Seated



Adaptations

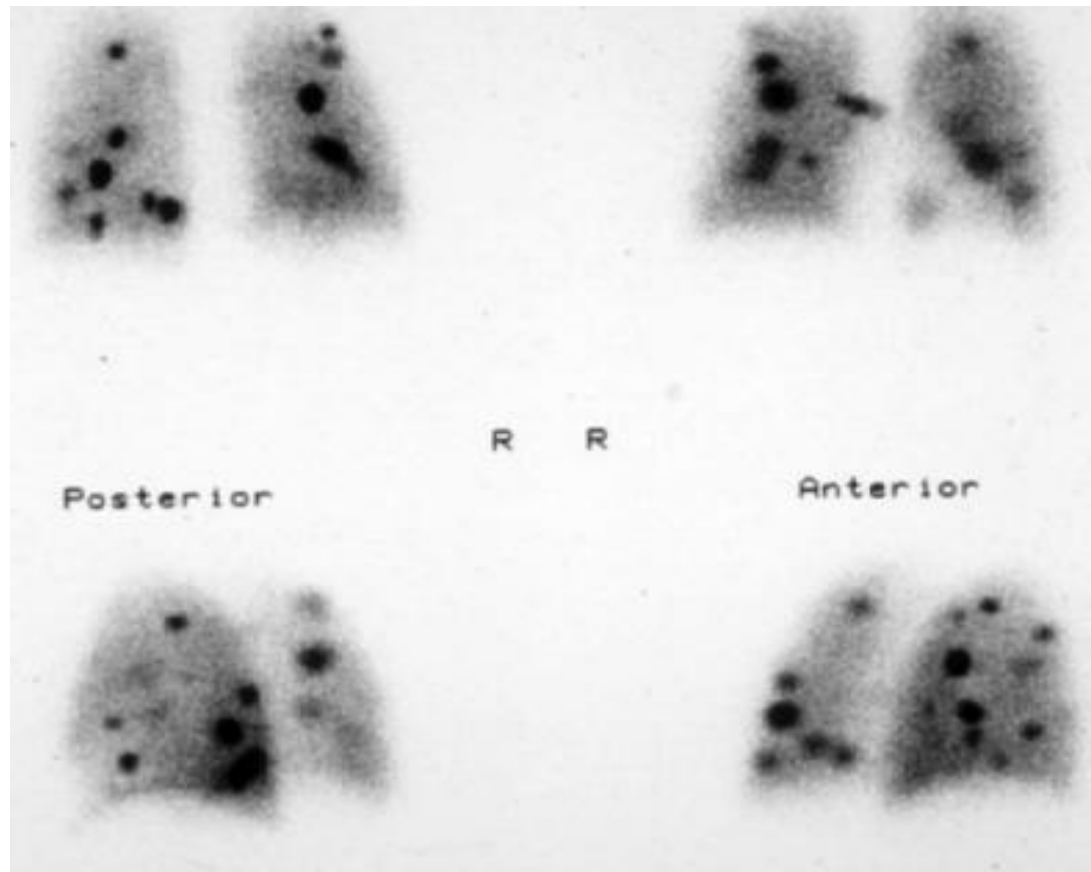
- Oxygen



Artefacts

- Patient related
- Radiopharmaceutical / injection
- Technical

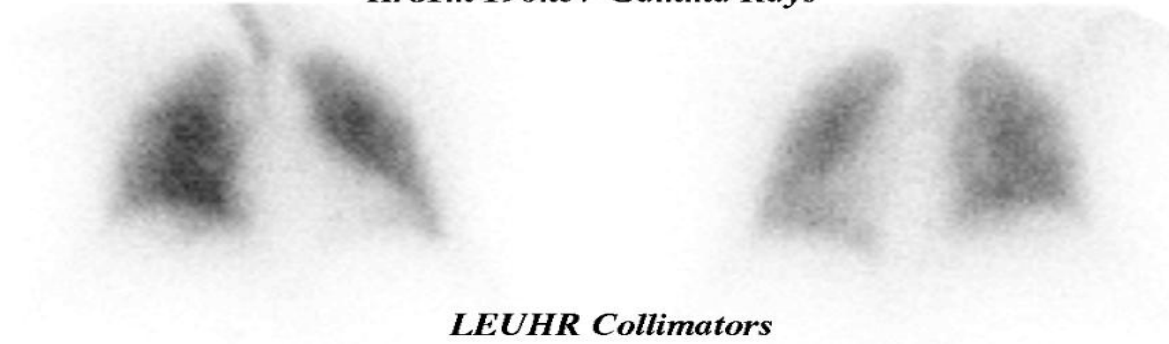
Artefacts



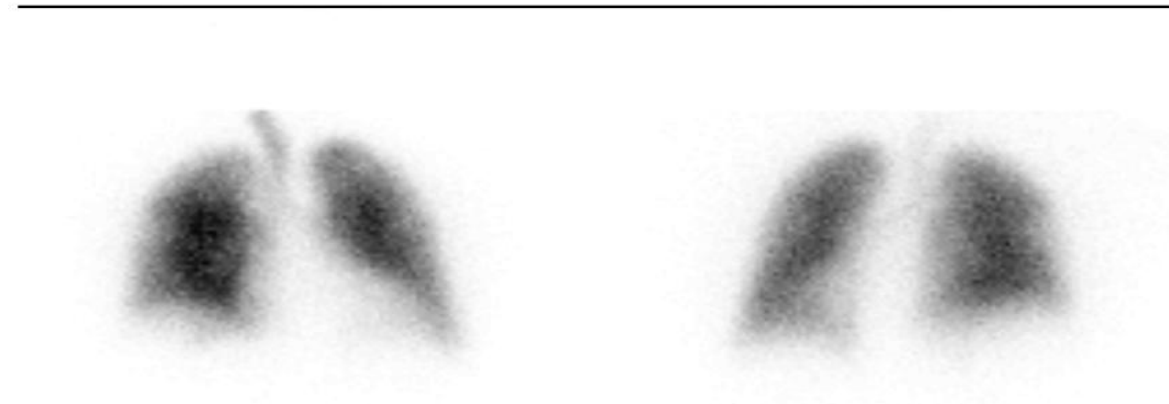
Clumping of $\text{Tc}^{99\text{m}}$ MAA

Artefacts

Kr81m 190keV Gamma Rays

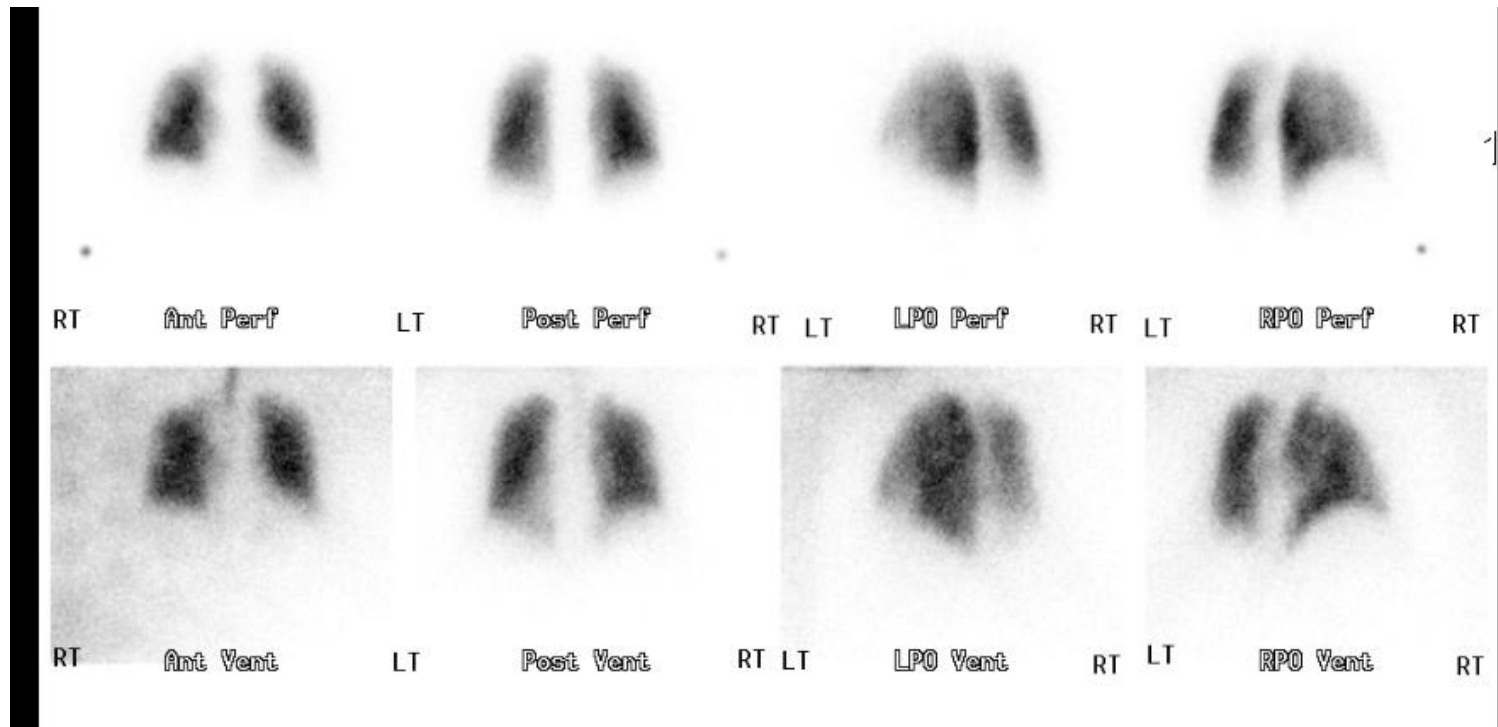


LEUHR Collimators



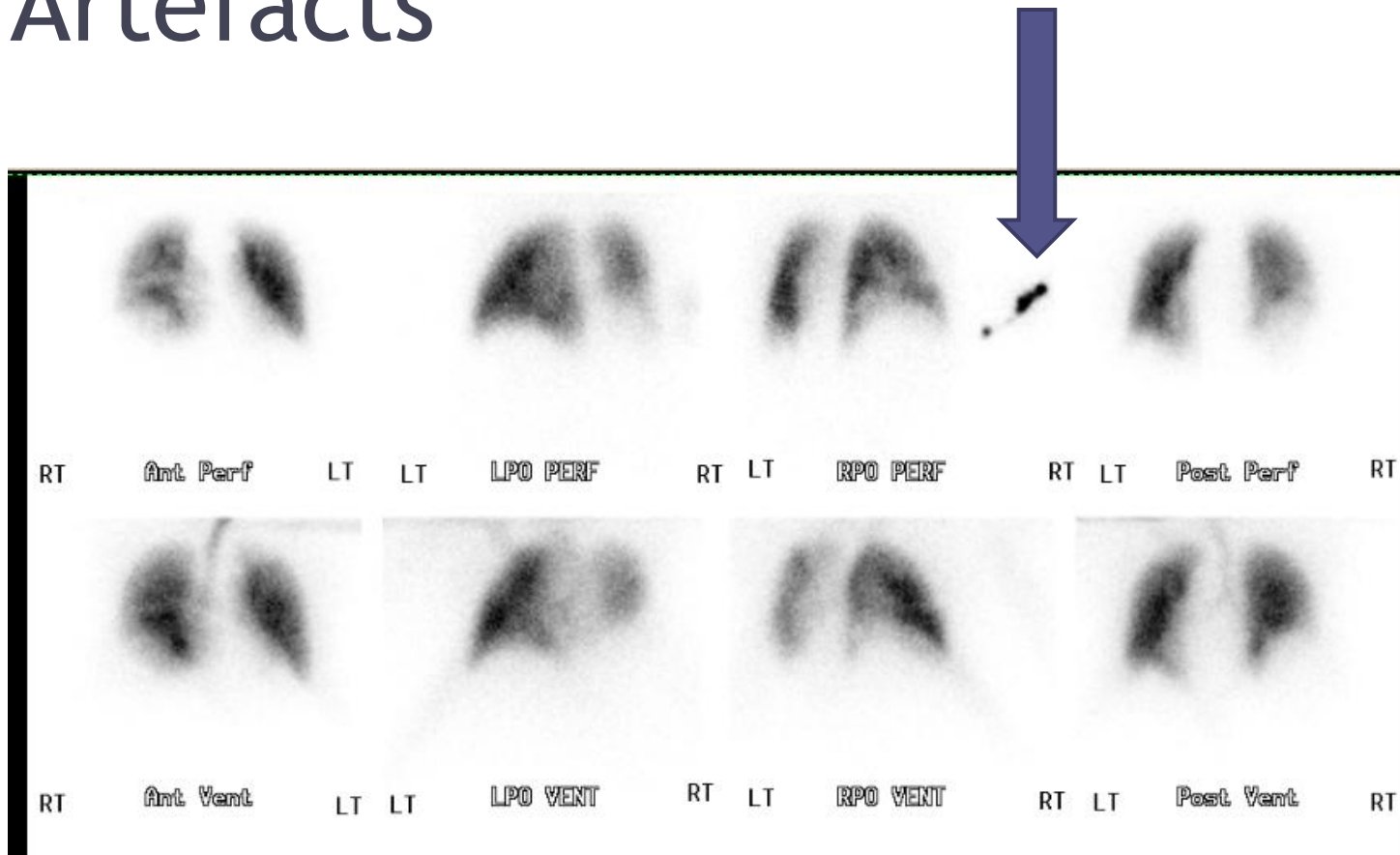
ME Collimators

Artefacts



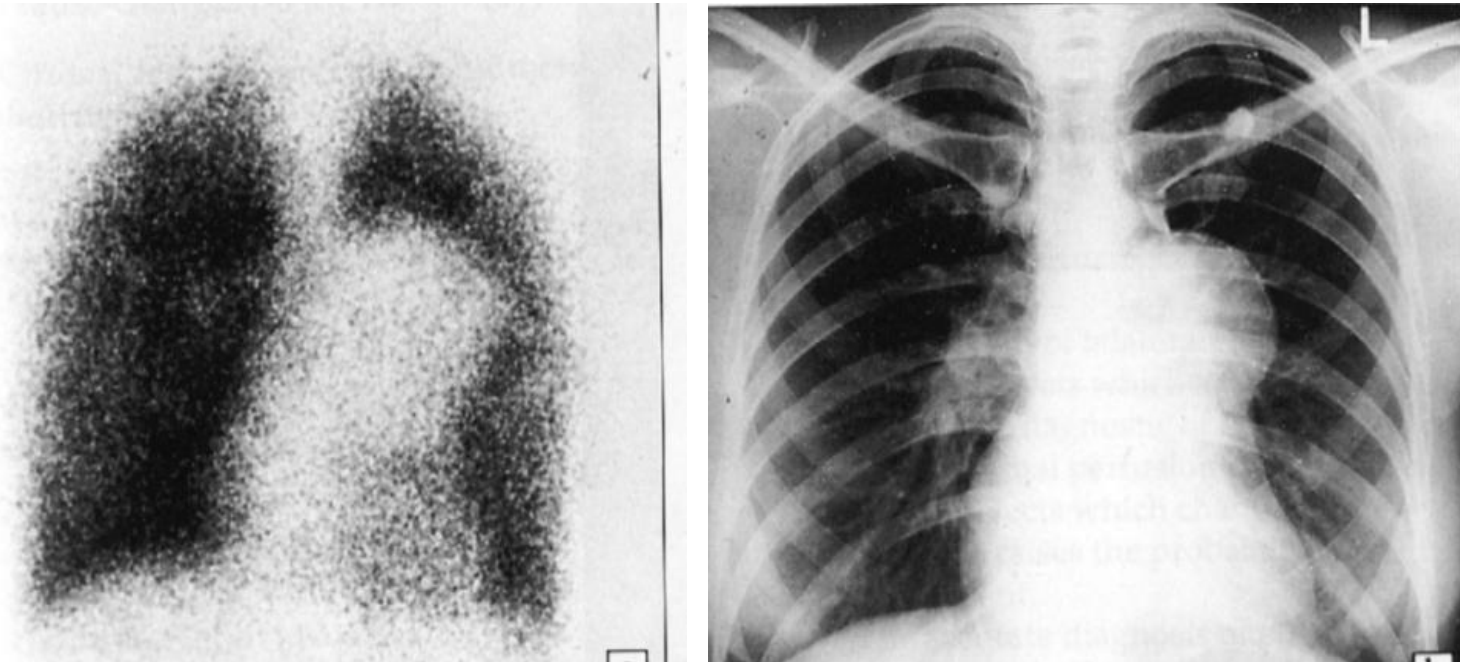
Krypton leakage

Artefacts



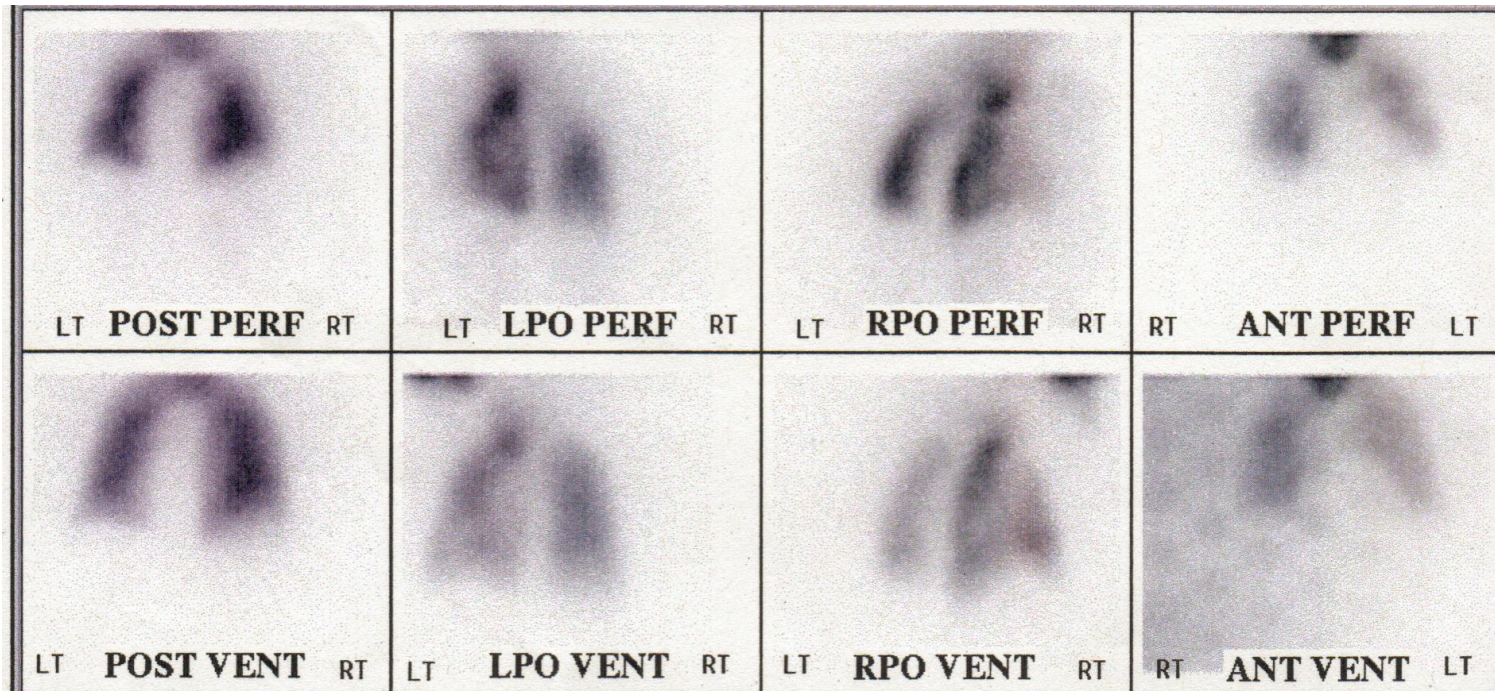
Injection site

Artefacts



Attenuation defect caused by enlarged aortic arch

Artefacts



- ¹³¹I Therapy 1 week previously
- High energy collimators used
- HE collimator needed to avoid septal penetration

Conclusions

- Simple to perform / adaptable
- Wide variety of patients
- Good alternative for SPECT V/Q
- Beware of mask / tubing

Thank you for listening...