

[⁸⁹Zr]Zr-Girentuximab PET/CT for the targeted diagnosis of clear cell renal cell carcinoma (ccRCC)

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ccRCC

- ~75% of renal masses
- ~90% of RCC deaths ⁽¹⁻³⁾

- Renal mass resections
 - 20-30% benign
 - 30% complication rate – haematomas, pneumothorax ⁽⁴⁾

- Renal mass biopsies
 - 10-15% non diagnostic ⁽⁴⁾



Patient

- 74 year old male
- 10 year Hx of ccRCC
- Recent PE and thrombus in pelvic veins

- Sudden haemorrhage in R. Teres minor muscle
 - Undiagnosed metastatic lesion, or secondary to anti coagulants?

^{89}Zr Zirconium Girentuximab

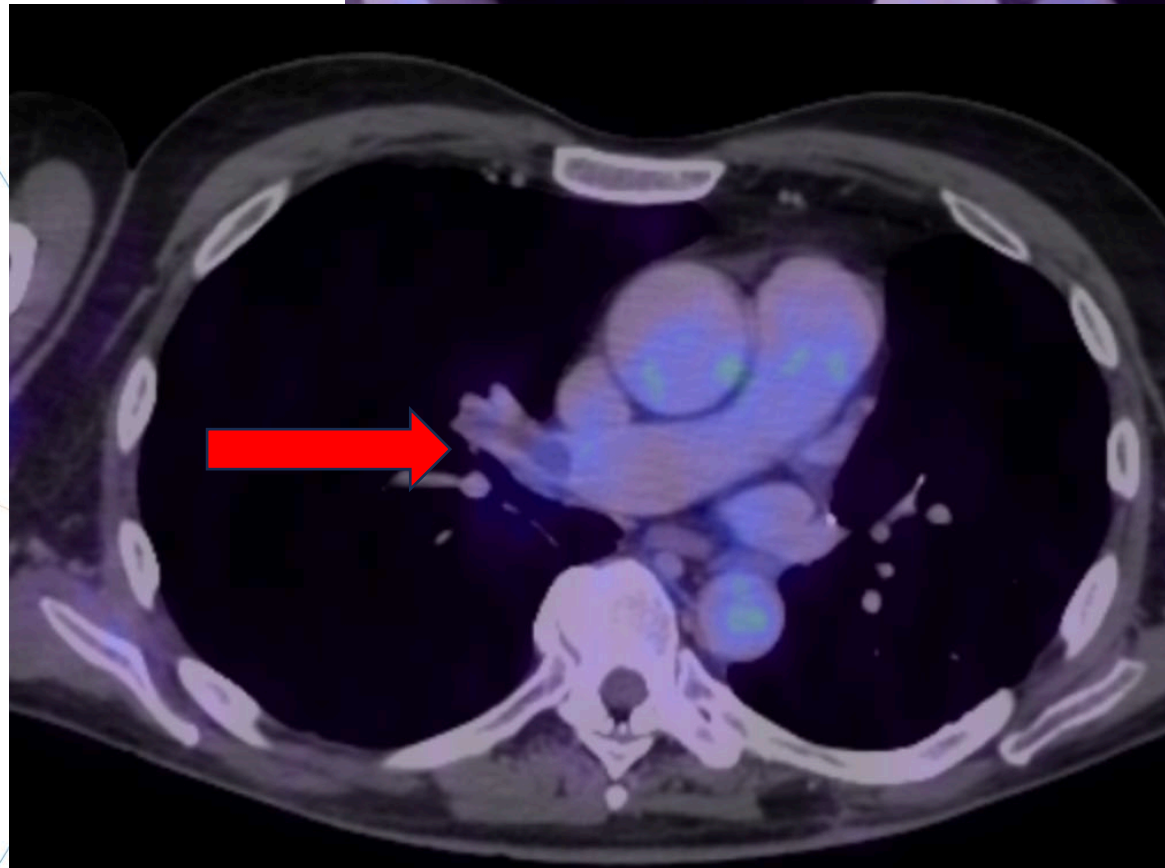
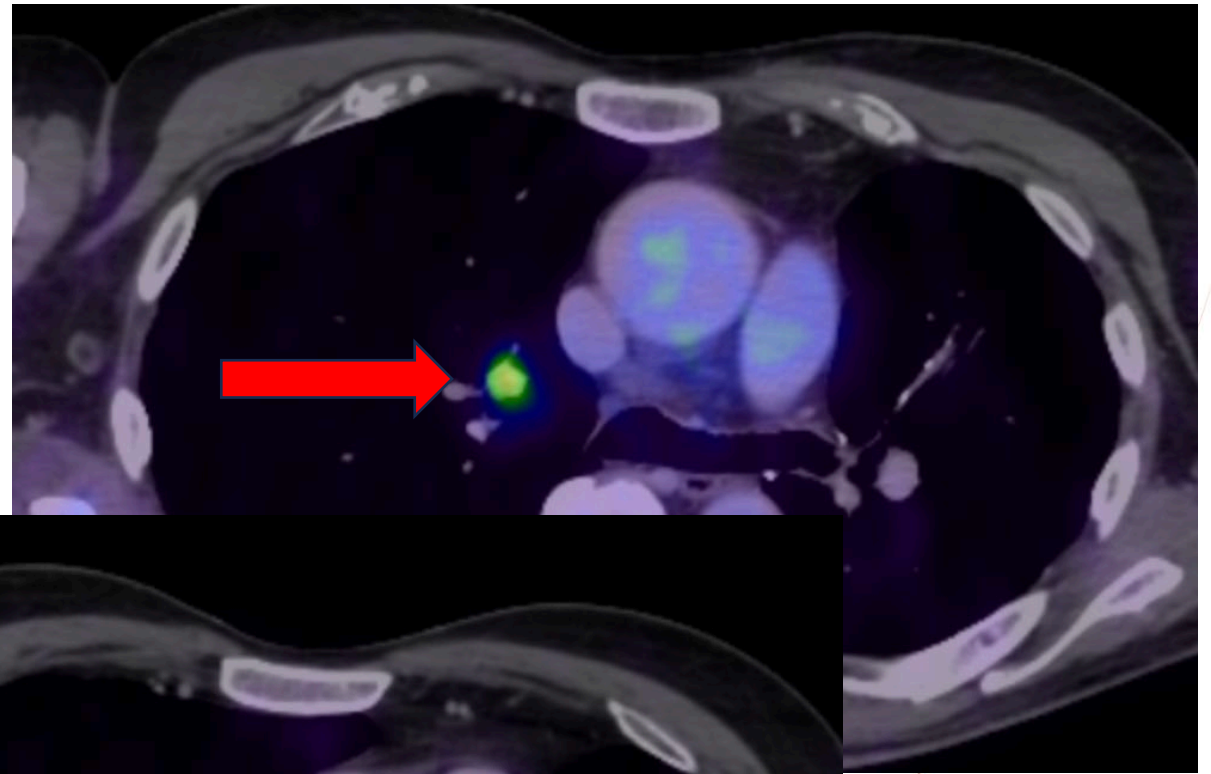
- ^{89}Zr Zirconium
 - Half Life – 78.41 hours
- Girentuximab
 - Novel antibody against Carbonic Anhydrase IX (CAIX) receptors (marker of hypoxia)
 - CAIX receptors over-expressed in 90% of ccRCC cells
 - Hepatobiliary excretion = optimal renal visualization
 - Image at 4 – 7 days ^(5,6)

Procedure

- Day 1
 - IV infusion of 36.46MBq of ⁸⁹Zirconium Girentuximab
- Day 6
 - PET/CT Imaging Performed
 - Vertex to mid thigh
 - 10 minute/bed position
 - Contrast enhanced – Arterial and portal venous phase whole body (ccRCC typically hyperenhance on arterial phase)

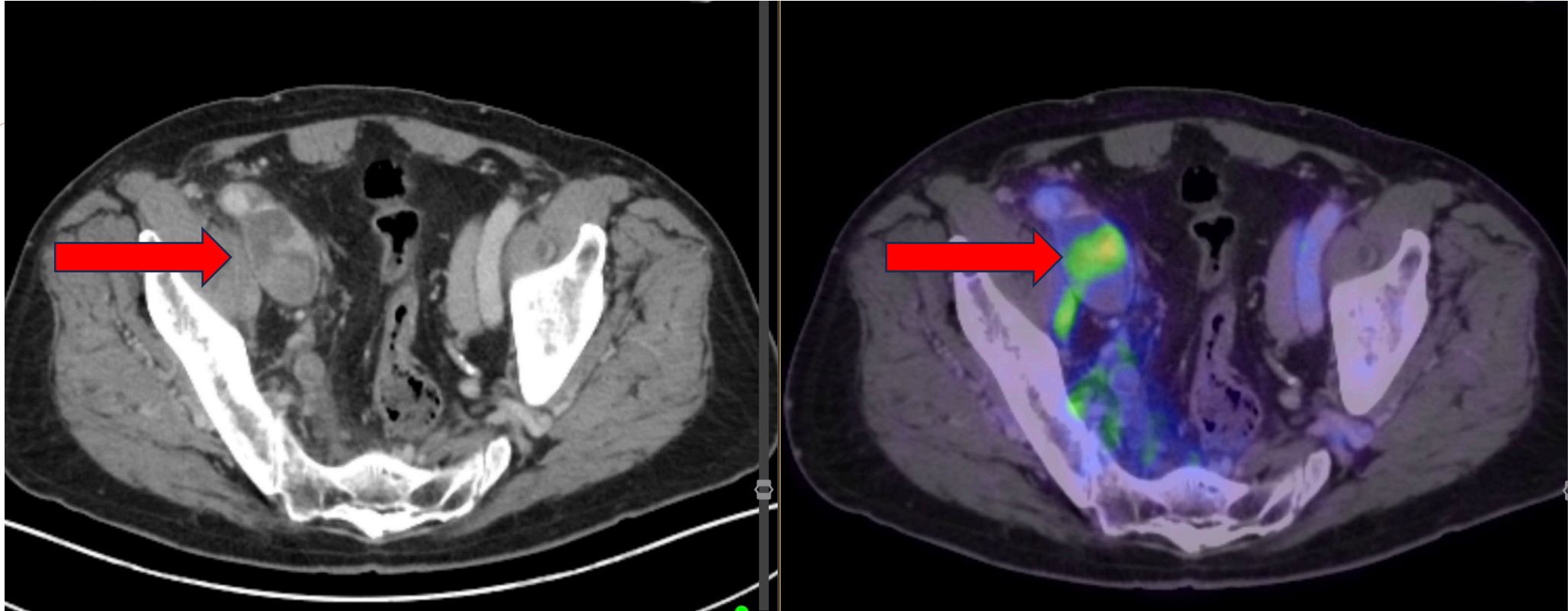
Pulmonary Emboli

- 3 foci
 - 1 tumour thrombus (SUV 2.4g/ml)
 - 2 bland thrombus



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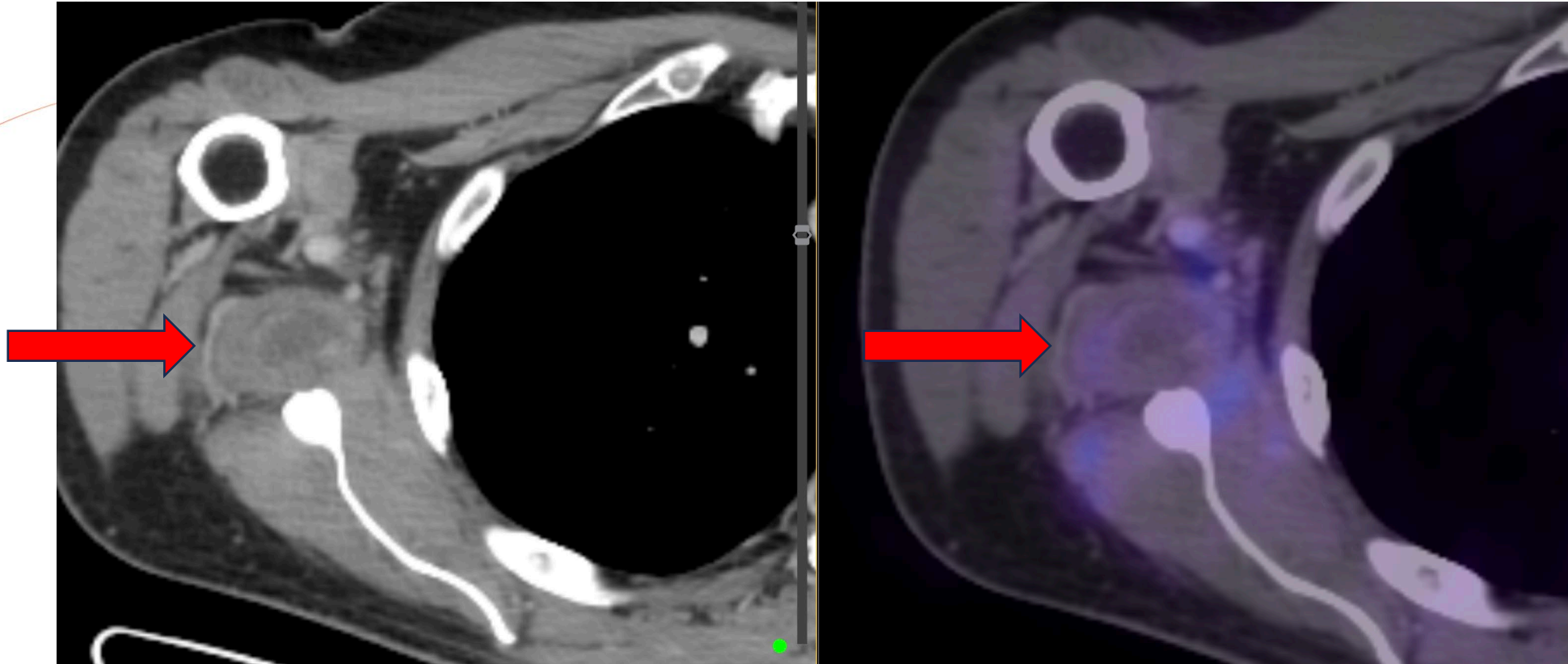
Pelvic Emboli



- Mixture of bland and tumour thrombus in pelvic vein (SUV 5.5 -16.5)

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Right Teres Muscle



- No tracer uptake = not tumour bleed
- Radiation therapy therefore not indicated

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Conclusion

- ^{89}Zr Zirconium Girentuximab
 - Novel antibody ligand for hypoxic marker CAIX
 - Potential to more accurately stage patients with ccRCC
 - Potential to alter management for patients with metastatic ccRCC
 - If we can see it, can we treat it with ^{177}Lu Lutetium-Girentuximab???

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