



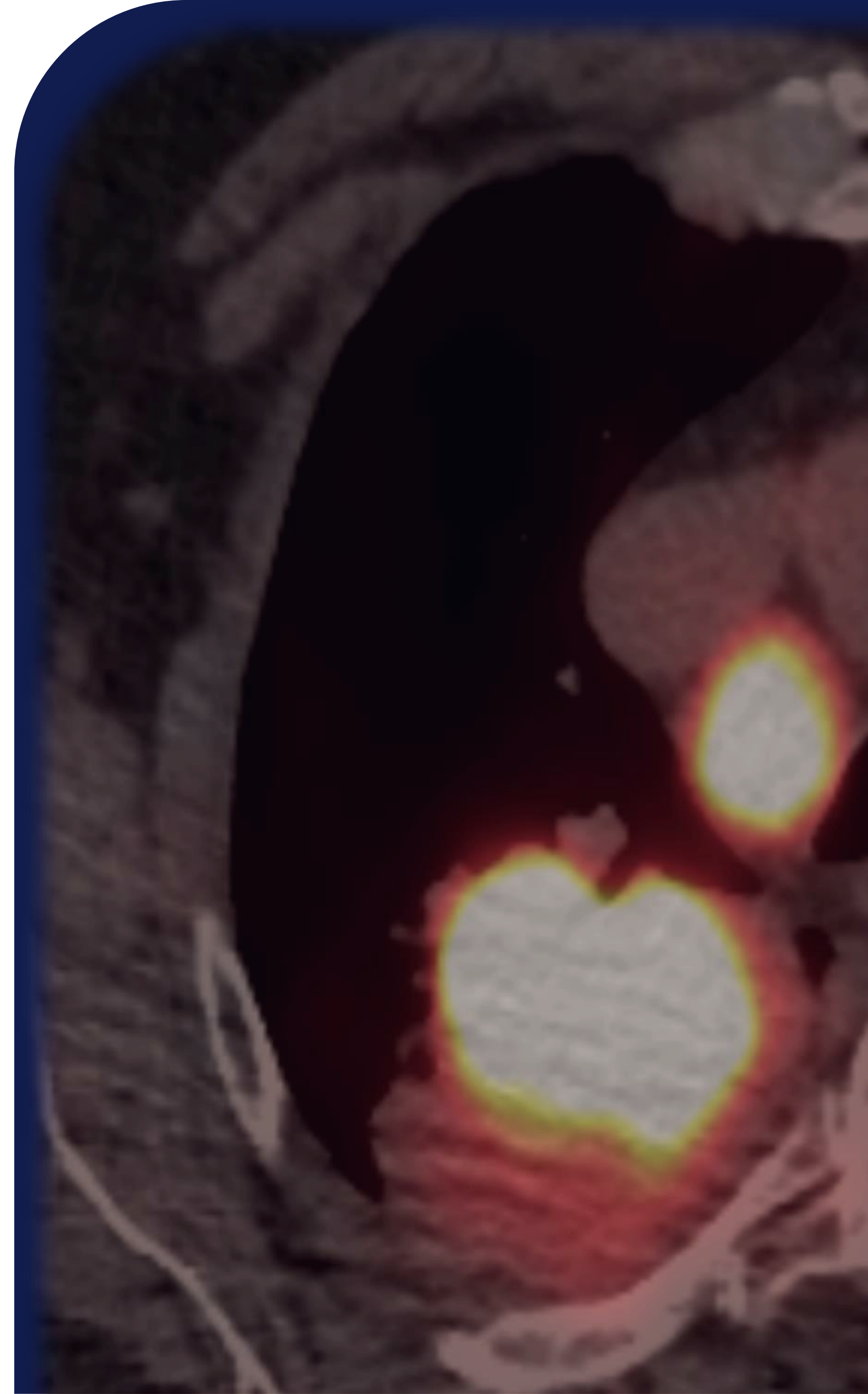
Is ^{18}F -FDG PET/CT Useful for Restaging NSCLC Patients after Neoadjuvant Immunotherapy?

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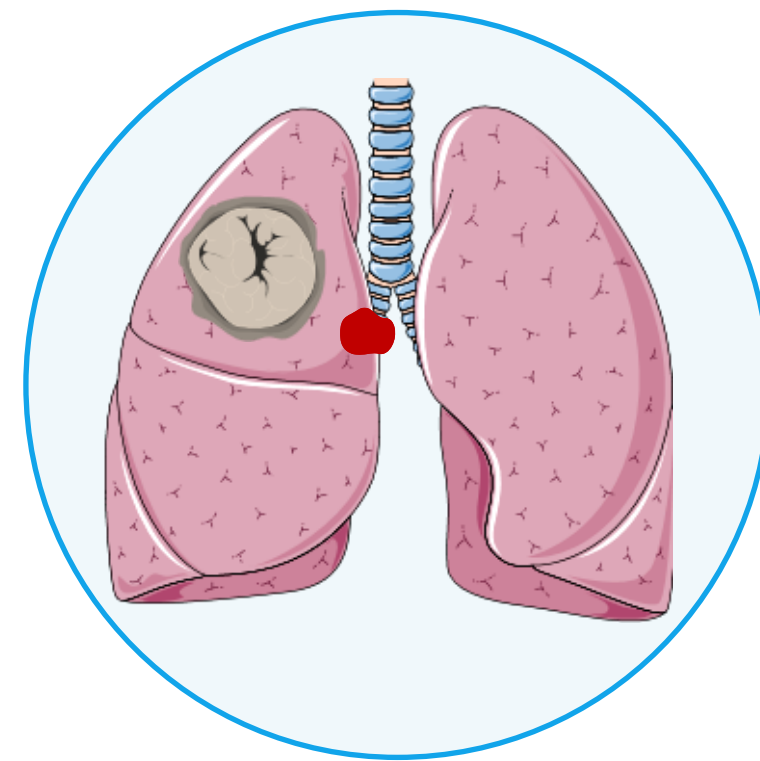
Christian Doppler Laboratory for Machine Learning Driven Precision Medicine



Financial disclosure

- Presenting author does not have any relationship to report with ACCME defined ineligible companies.
- Presenting author will not be discussing unlabelled/investigational uses of medical devices or pharmaceuticals during this presentation.

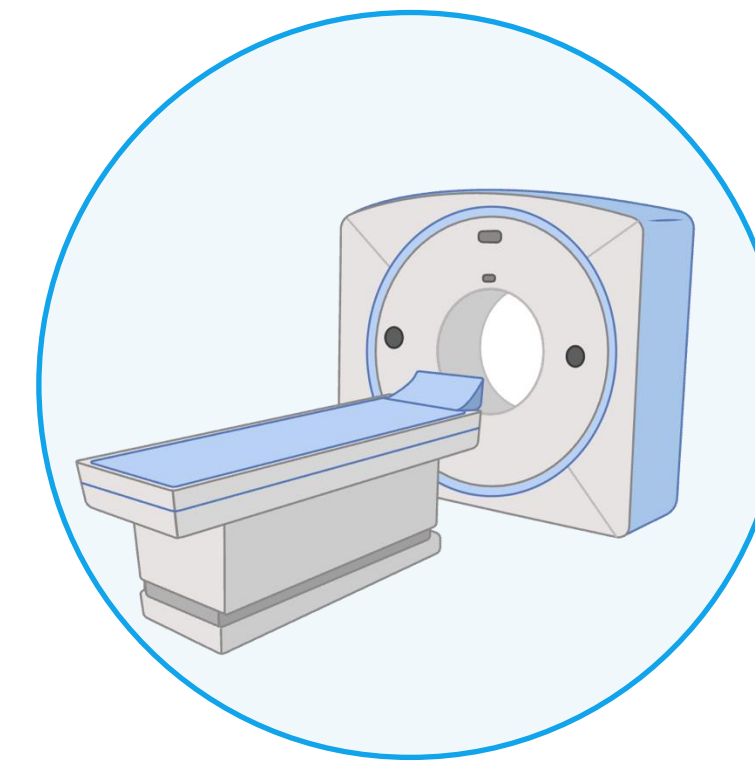
After neoadjuvant immunochemotherapy, imaging must answer one critical question:



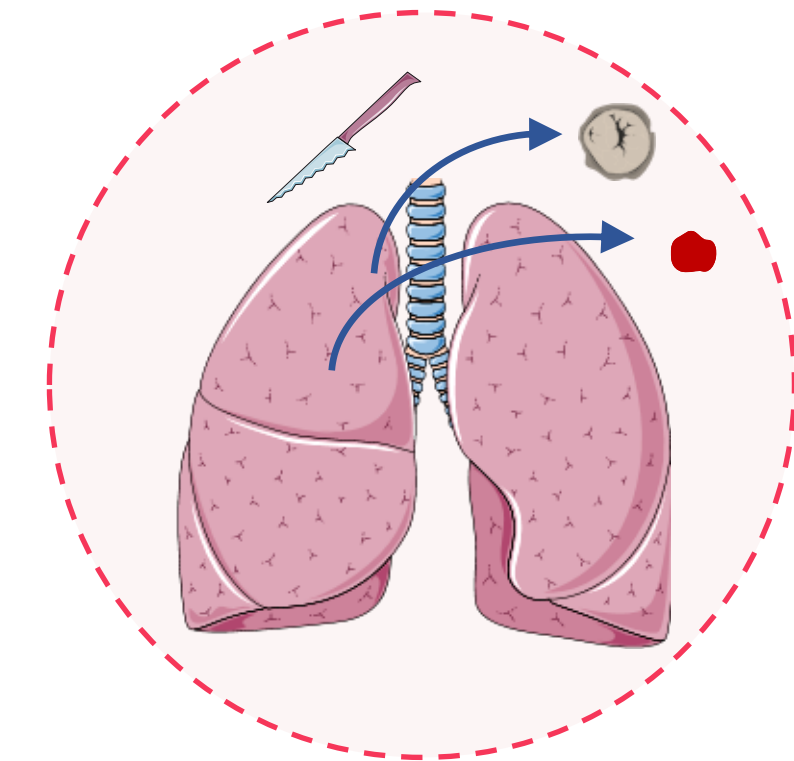
Early-stage NSCLC



Immunochemotherapy



Post-treatment 18F-FDG PET/CT

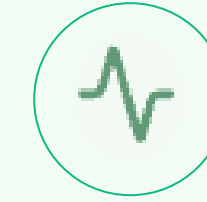


Surgery?



Has the disease progressed?

→ new metastases → unresectable disease

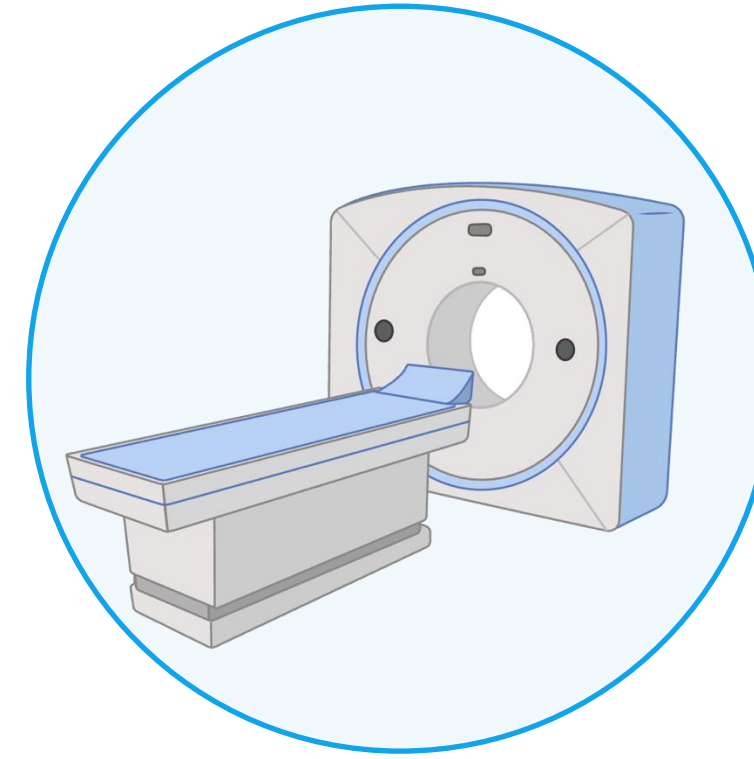


What is the treatment effect?

Tumor shrinkage does not necessarily equal pathological response

Can we proceed to surgery?

Why does ^{18}F -FDG PET/CT seem attractive?

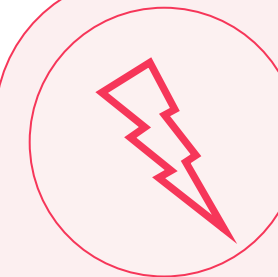


Post-treatment ^{18}F -FDG PET/CT



Potential value

- Metabolic information
- Detects residual active disease
- Detects distant metastatic disease



Potential pitfalls

- False-positive findings
 - (Treatment-related) inflammation
 - Nodal immune-flare
- additional work-up needed

Imaging of treatment response – how to?



NCCN recommends restaging after induction therapy using
CT ± FDG-PET/CT
to exclude disease progression or interval development of distant
metastatic disease

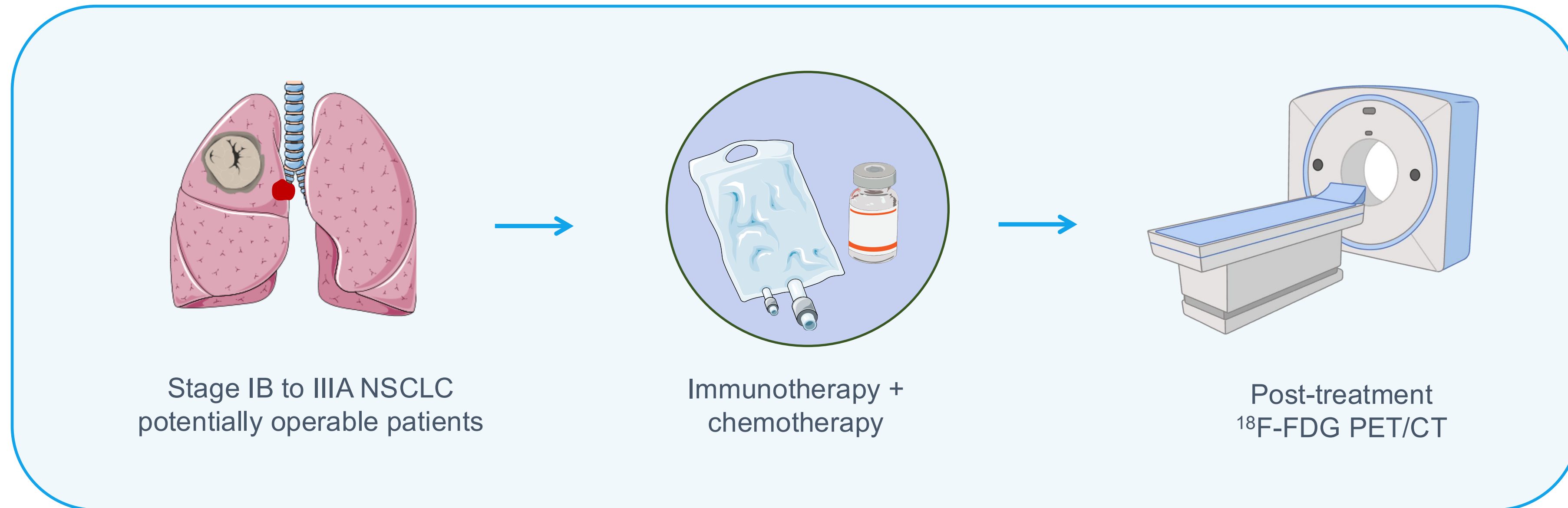


But does **¹⁸F-FDG PET/CT** actually **add clinically relevant information** that changes the management?

Purpose

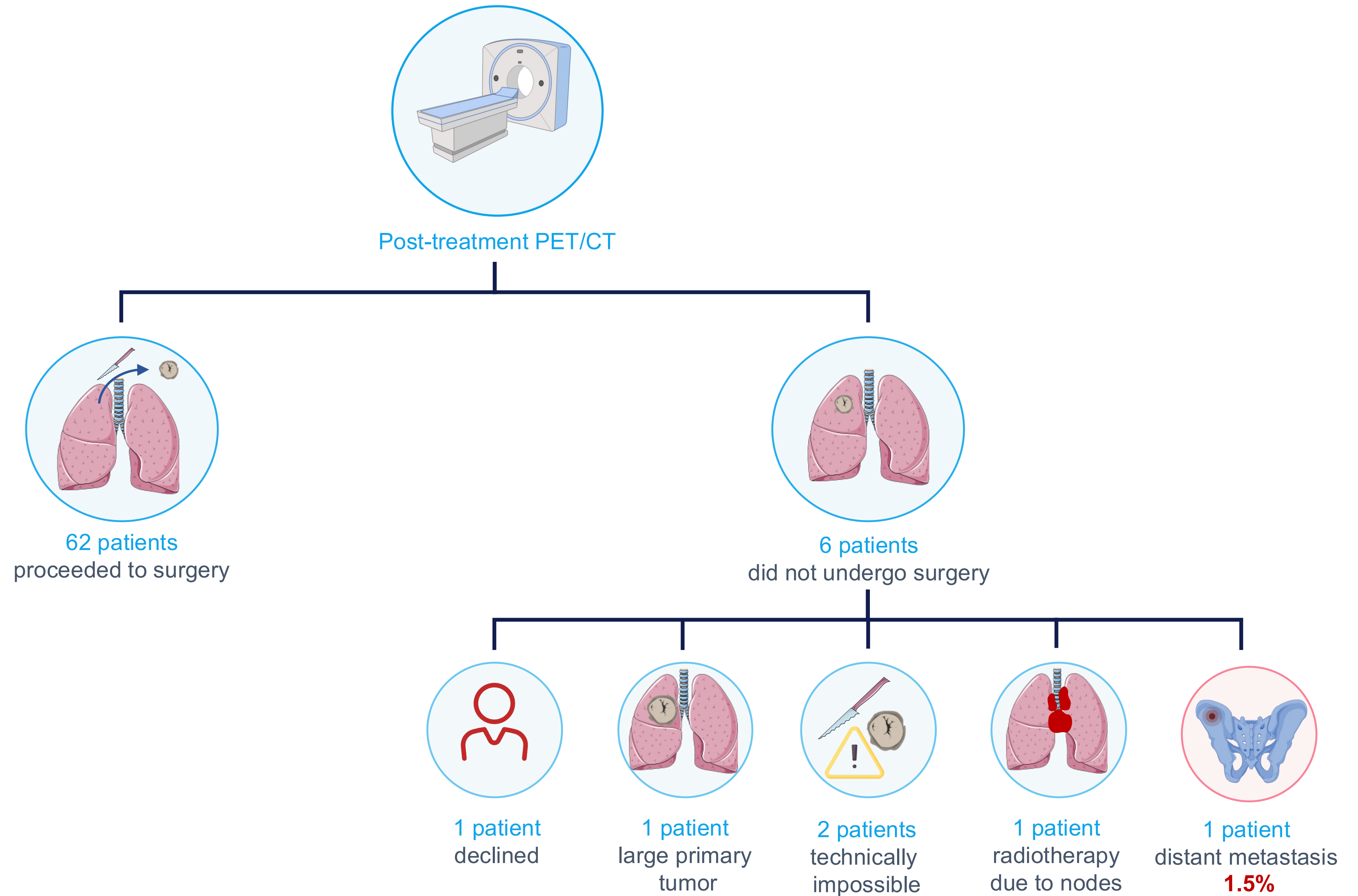
To evaluate the clinical impact of pre-operative ^{18}F -FDG-PET/CT in non-small cell lung cancer (NSCLC) patients who received neoadjuvant immunochemotherapy.

Materials and Methods



- 68 patients (31 male, 37 female)
- Age Ø 64 (range 47 - 79)
- Histological subtypes: 42 adenocarcinoma, 26 squamous cell carcinoma

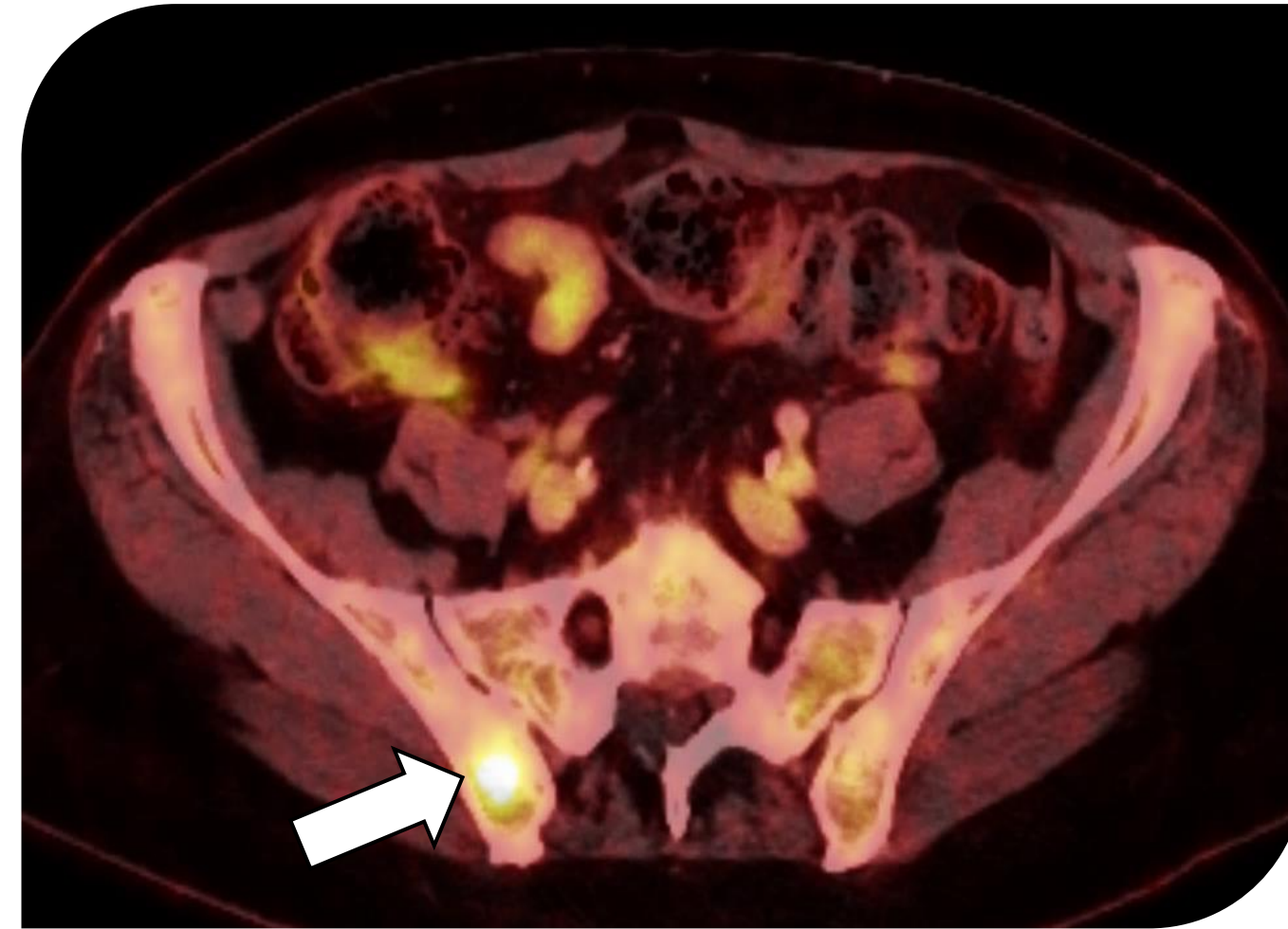
Results



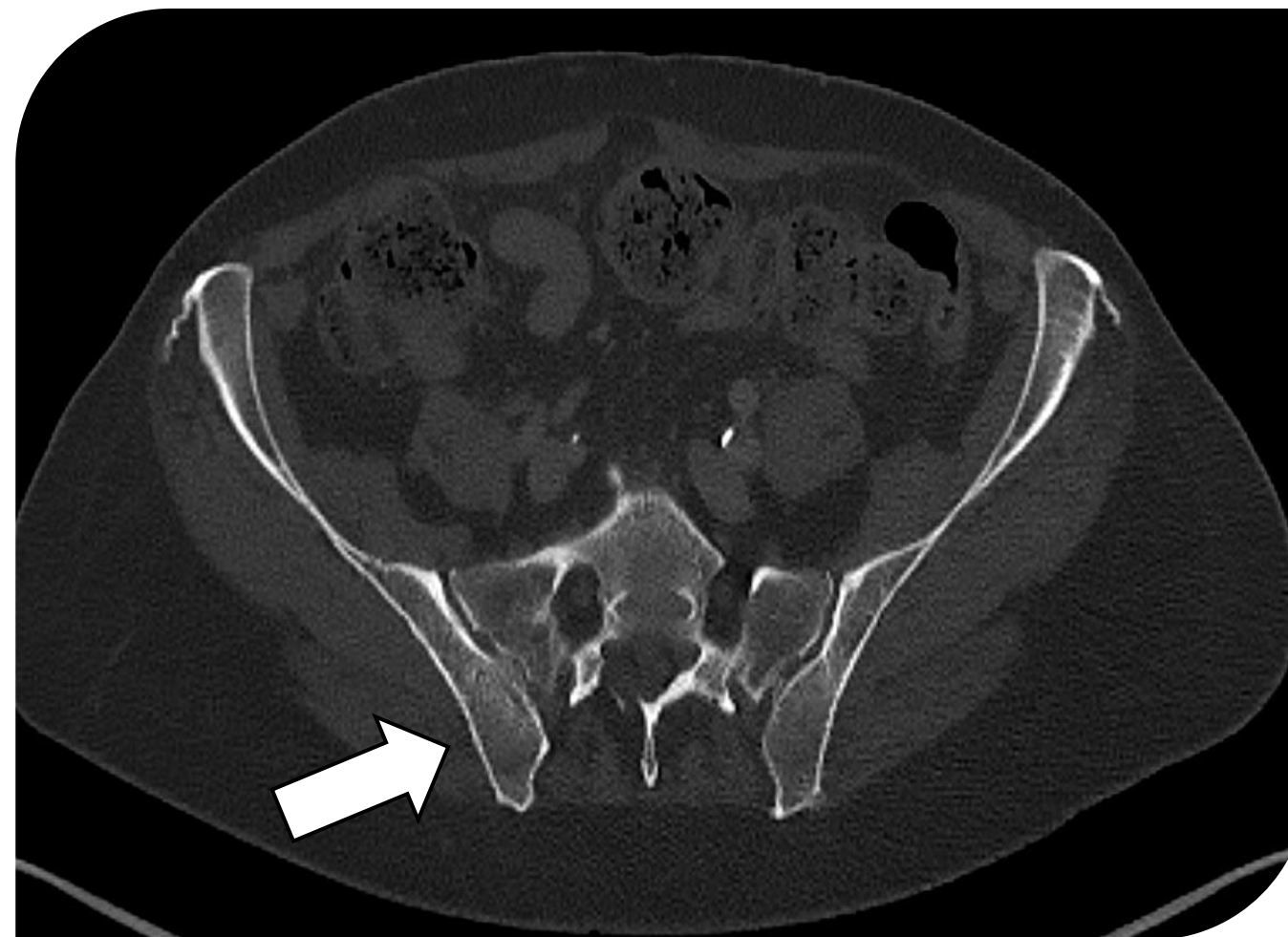
Clinical Case



M1 disease



Post-treatment ^{18}F -FDG PET/CT



Post-treatment CT in bone window



PET/CT finding

New FDG-avid, extra-thoracic, osseous lesion, **not visible** on CT



Work-up

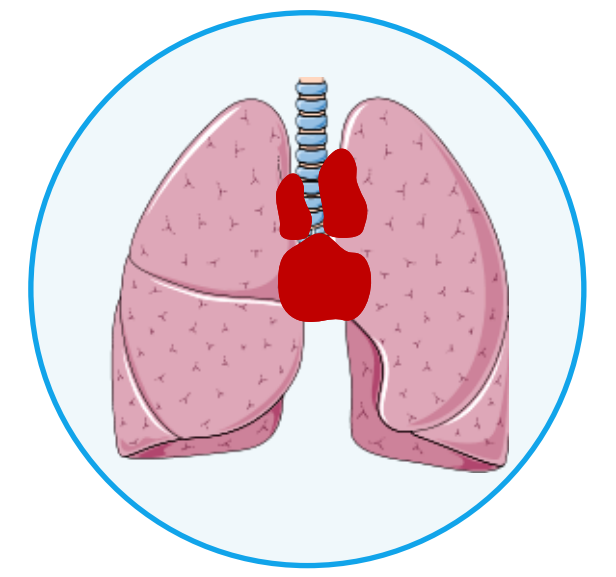
Confirmed metastatic disease



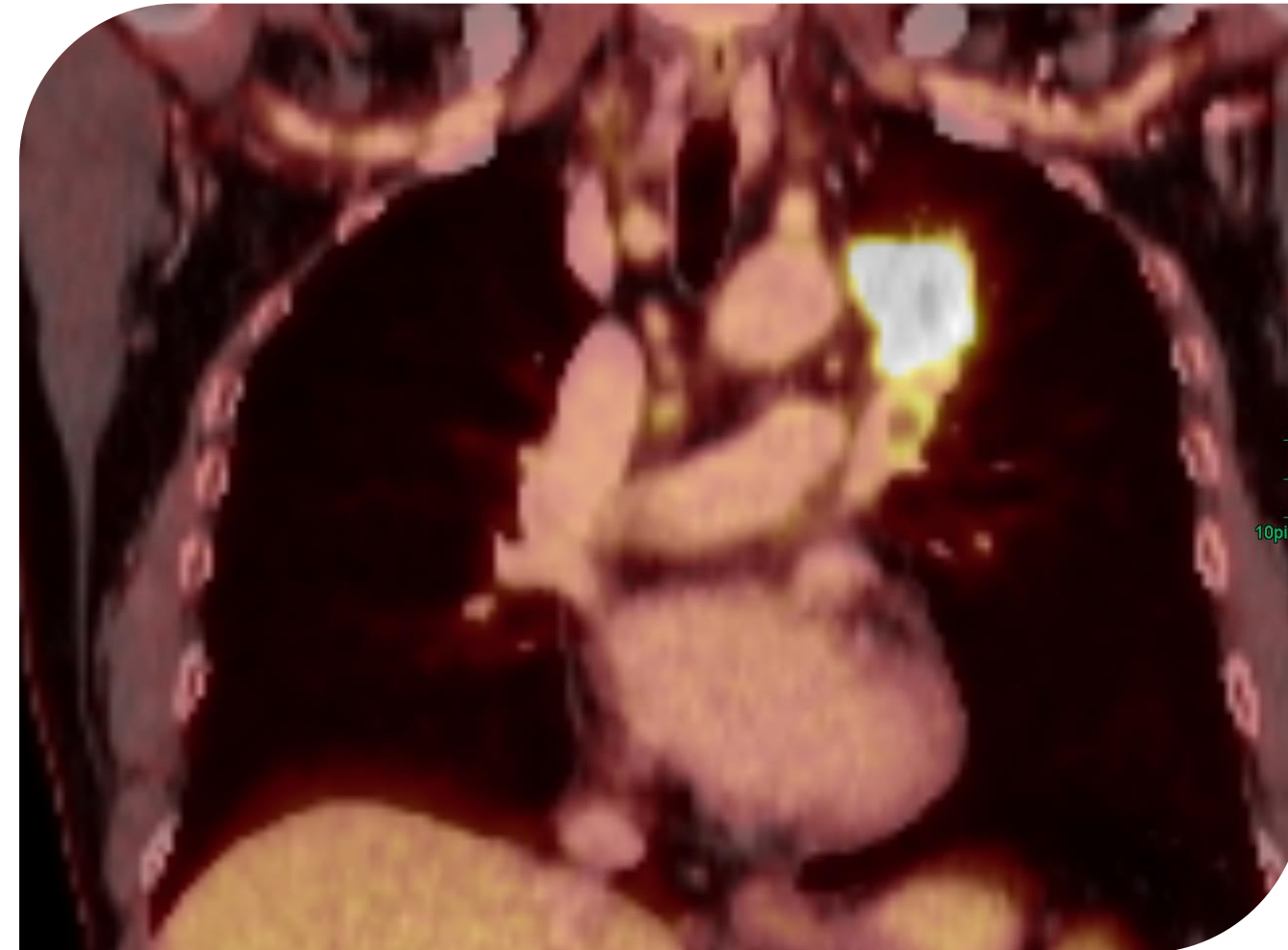
Clinical consequence

Change of treatment strategy
→ **surgery cancelled**

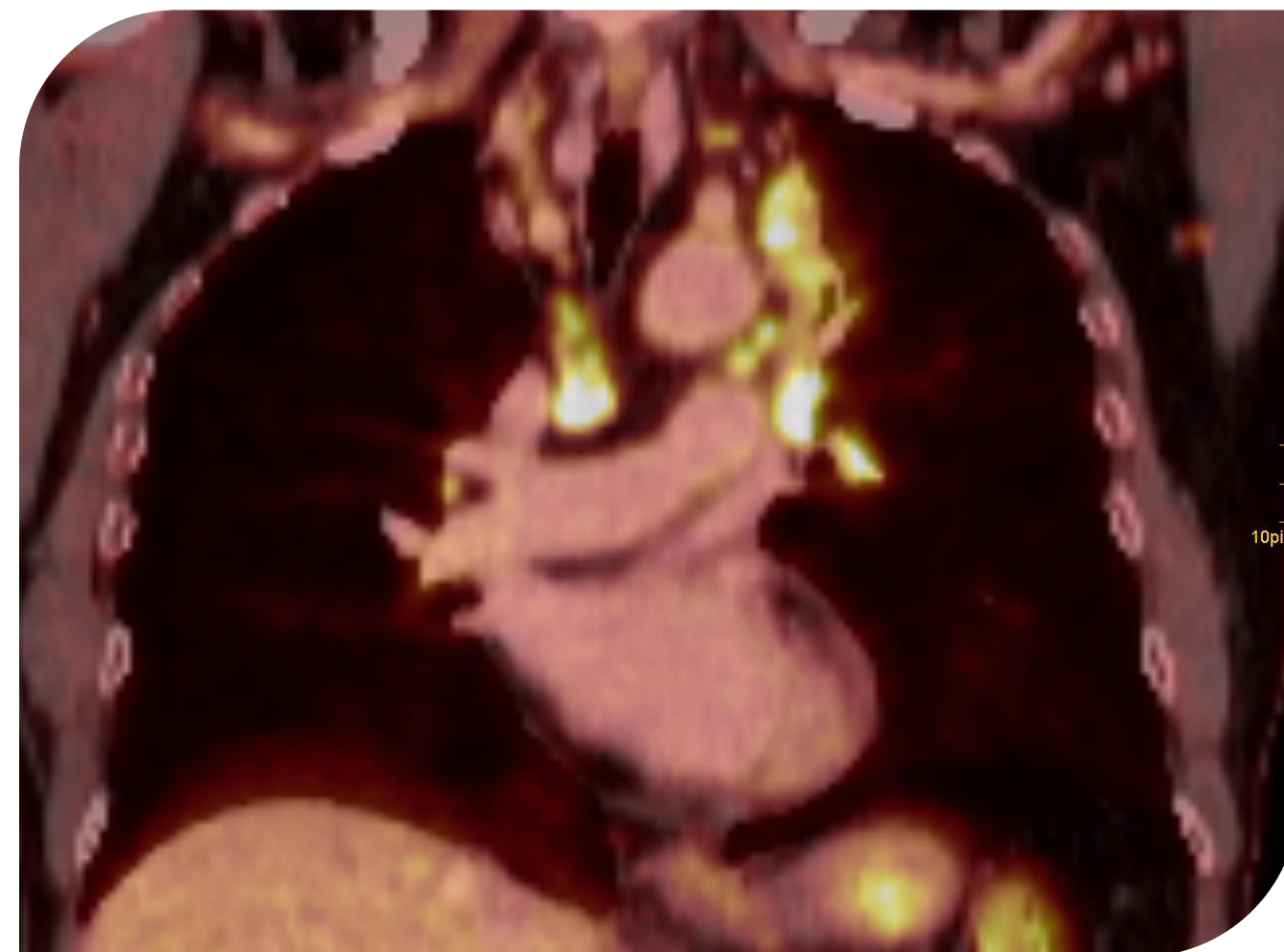
Clinical Case – Pitfalls of PET/CT



Nodal immune flare



Baseline ^{18}F -FDG PET/CT



Post-treatment ^{18}F -FDG PET/CT



PET/CT finding

New FDG-avid mediastinal/hilar nodes



Initial concern

Nodal progression

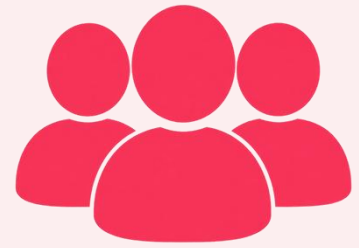


Histological confirmation

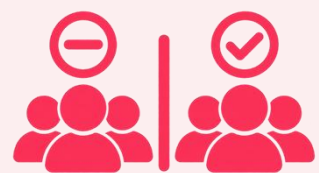
Nodal immune flare

^{18}F -FDG PET/CT can generate false-positive findings after immunotherapy

Limitations



- Retrospective, single center
- Small sample size (n=68)



- No control group
→ no comparison with a CT-only cohort



- Potential underestimation of clinical value
→ value beyond “management change“ not measured

Conclusion



NCCN Guidelines recommend:
CT ± PET



However:
we showed a **management change** in only **1.5 %** after
post-treatment FDG PET/CT



Value vs. burden

- Cost
- Resources allocation
- Patient burden

Please contact me for any questions.

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