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ORIGINAL ARTICLE

Does chemotherapy influence the quantification of SUV when contrast-enhanced CT is used in PET/CT in lymphoma?

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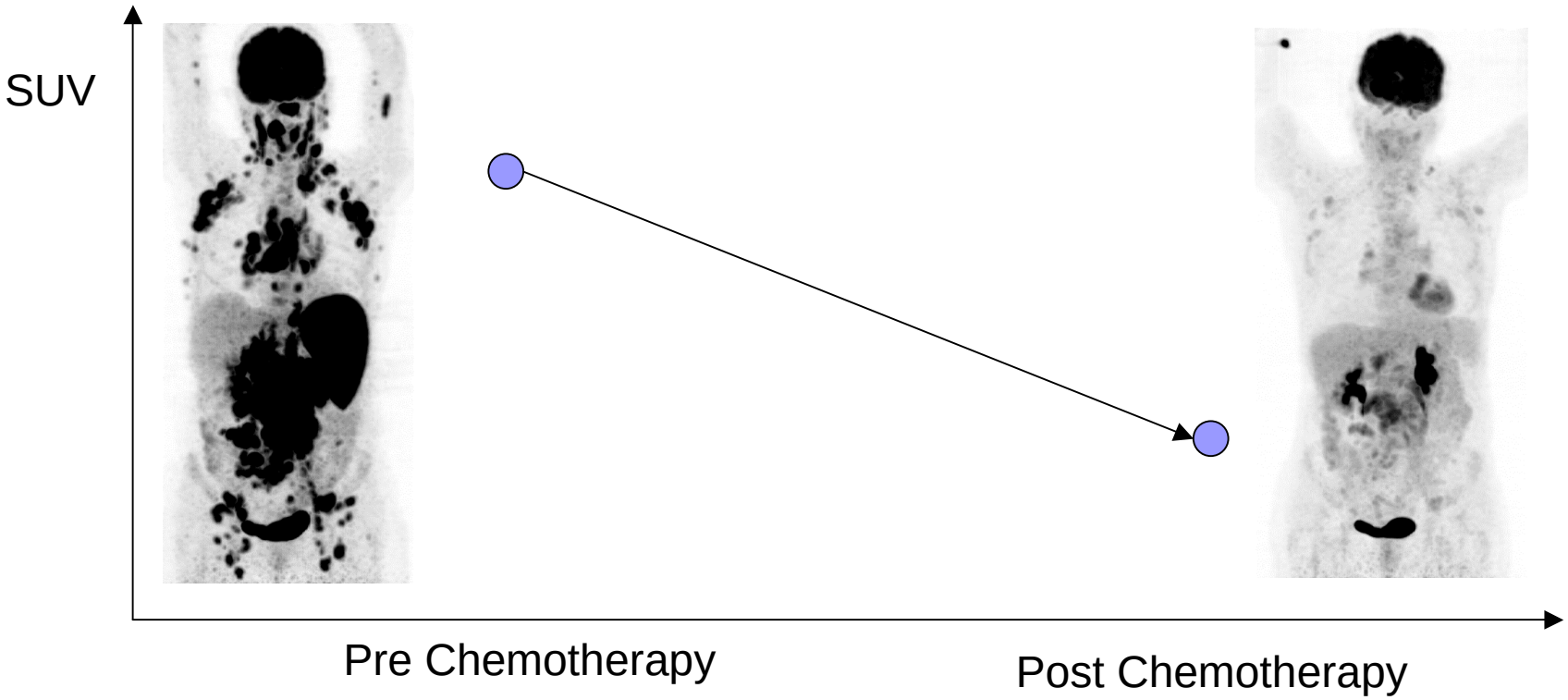
Objectives

- **For lymphoma**
  - **Impact contrast enhanced CT for attenuation correction in PET-CT**
  - **Influence of chemotherapy on SUV variations**



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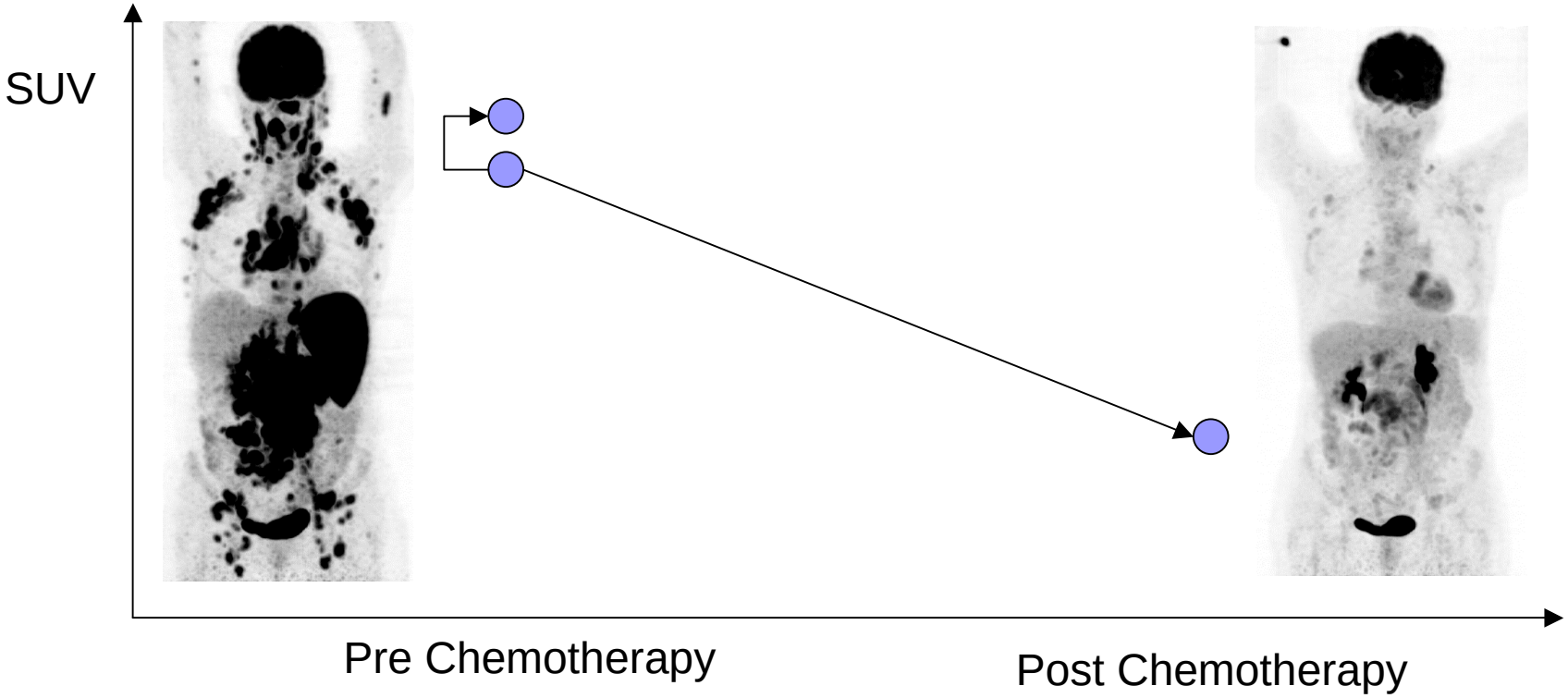
Antoch AJR 2002	SUV_{mean}	**30 pts** *vs* 10 control 120 ROIs *vs* 40 ROIs	*No significant ROI*	*p* not significant 1 intrahep 3 perihep
Yau J Nucl Med 2005	SUV_{max}	**26 pts** 193 ROIs	Liver : 5.8% Spleen : 4.8% Aorta : 6.6% **Lesions : 3.8%**	*p* not significant Lung Femur Ilio-psoas
Mawlawi AJR 2006	SUV_{max}	**9 pts** 48 ROIs	SCV : 27.1% Heart : 16.7% **Lesions : 8.4%**	*p* not significant Liver Spleen
Berthelsen Eur J Nucl Med 2005	SUV_{mean}	**19 pts** 49 ROIs	Liver : 5.8% **Lesions : 3.6%** Global : 2.3%	*p* not significant SCV

Small series, various parameters, inconstant results, no studies on the effect of treatment



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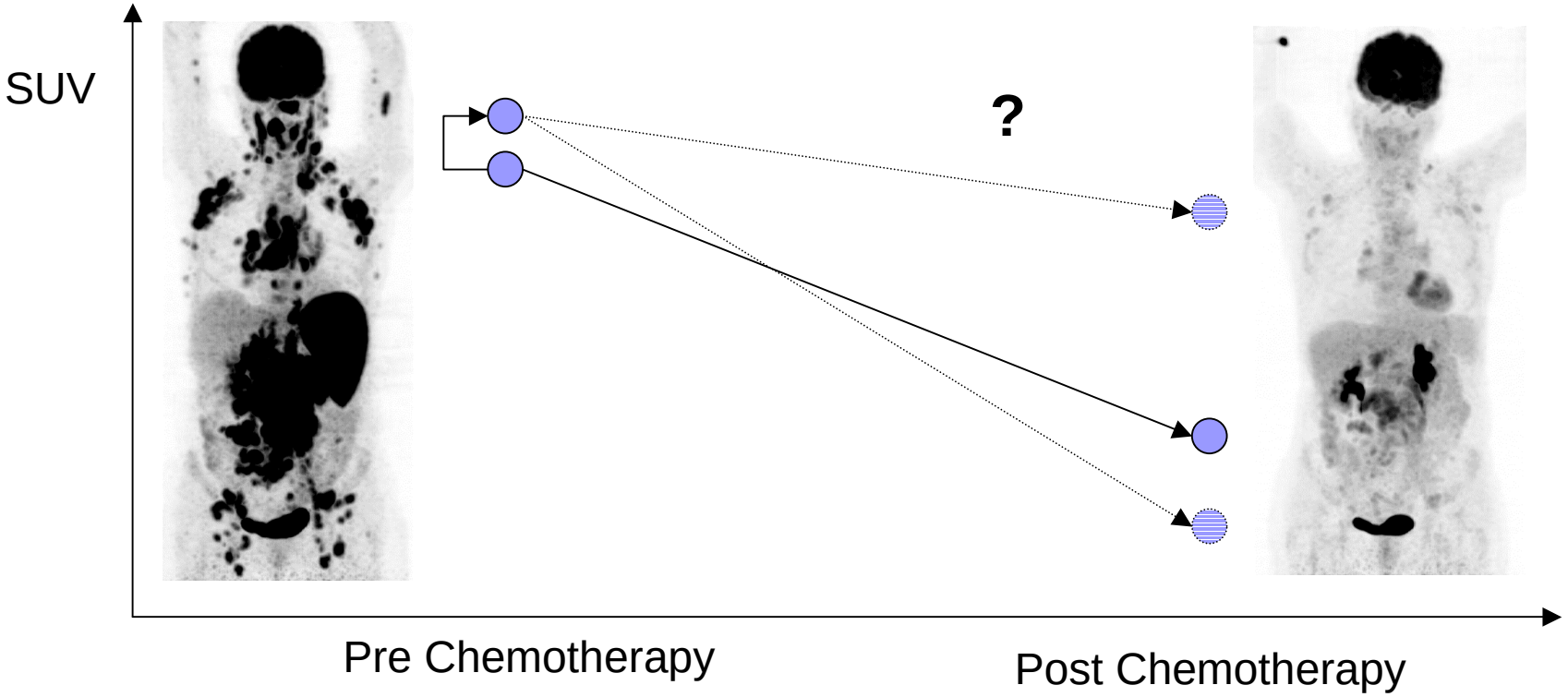
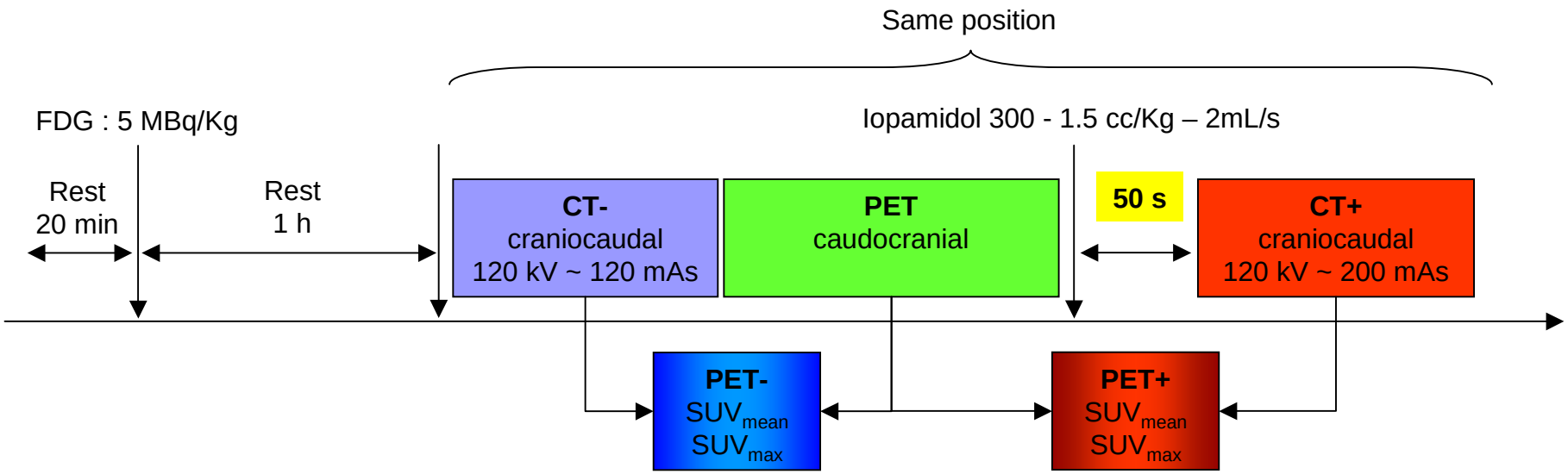
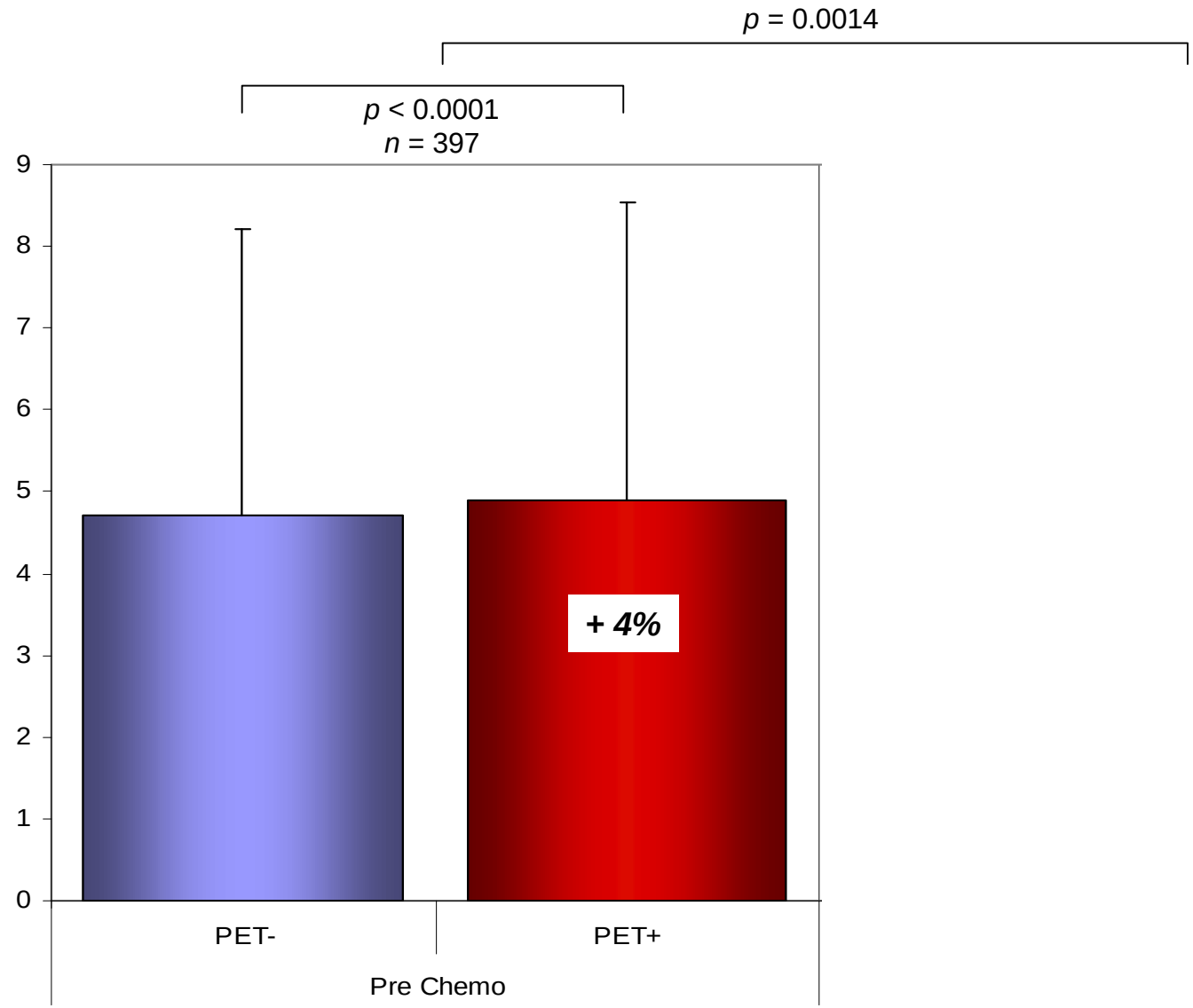


Design

- Prospective Study
- Protocol before (t_0) and after chemotherapy (t_1)
  - 3 ± 1 cures [2 – 6]
- **<u>50 patients</u>** [31 ♂ (62%)] with lymphoma (**<u>100 PET</u>**)
  - Age 51 ± 18 y/o
  - 33 (66%) NHL et 17 (34%) HD
- PET-CT : Biograph Sensation 16

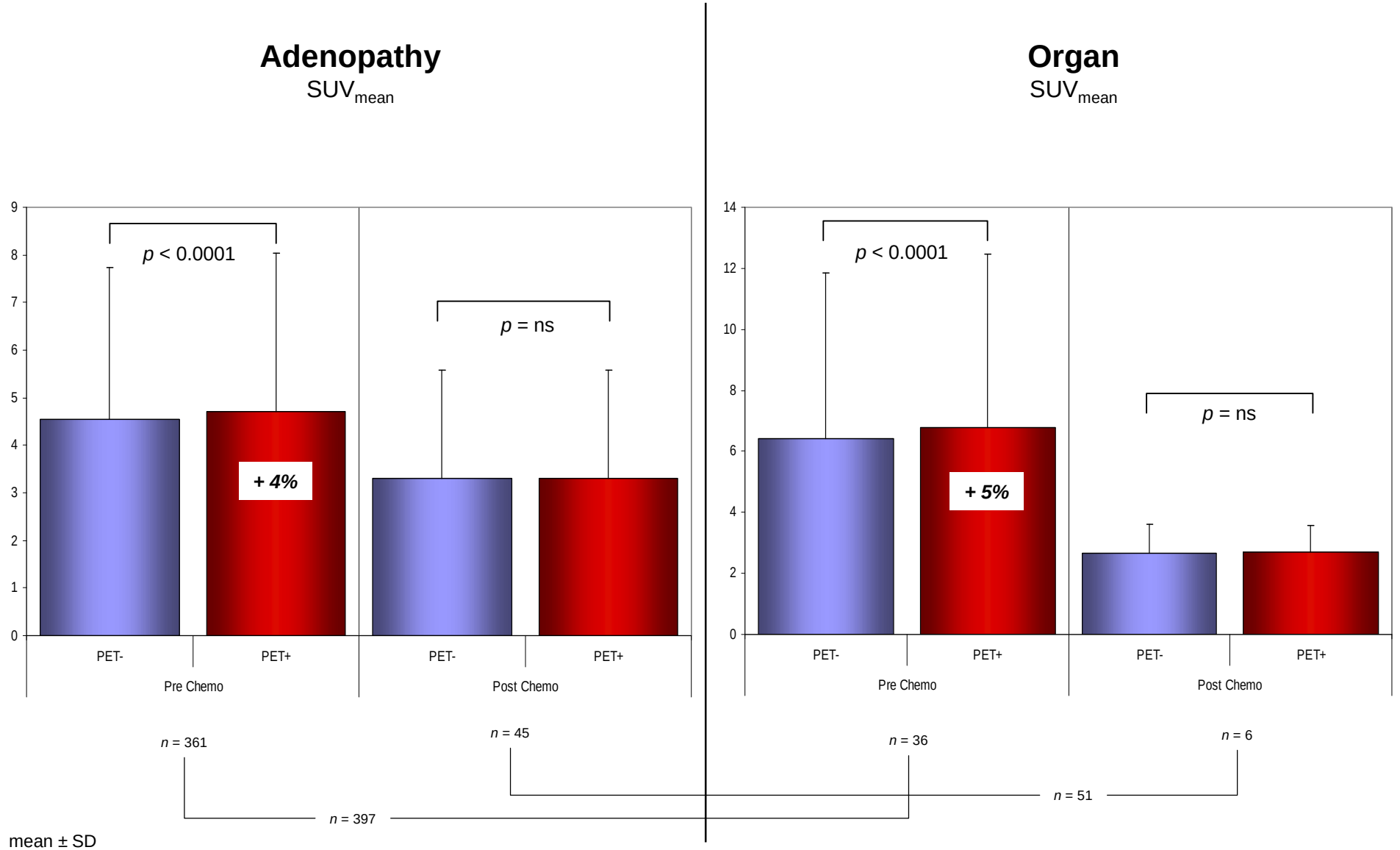


SUV_{mean} & SUV_{max} in lesions

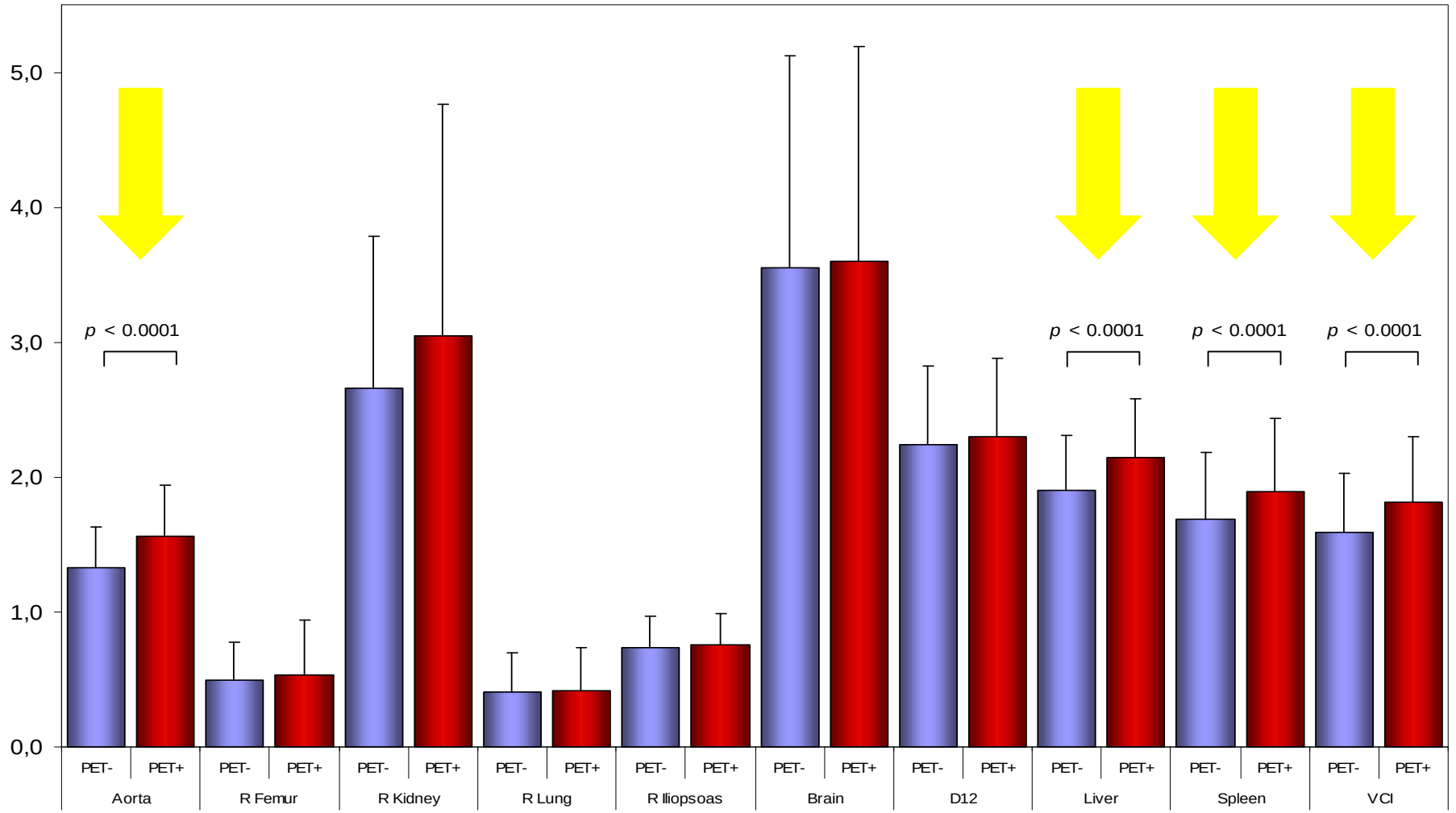


mean ± SD

SUV : Adenopathy vs organ

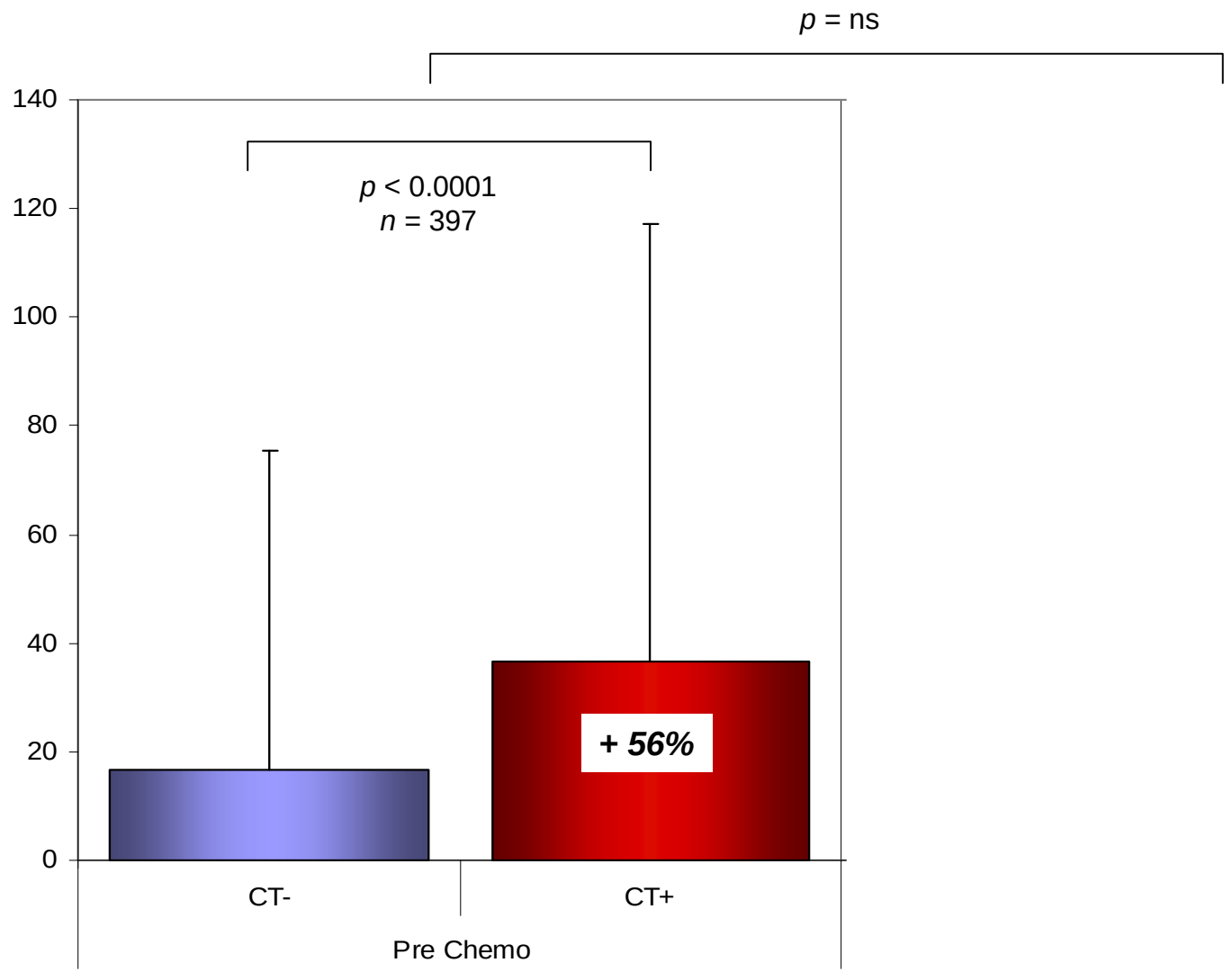


SUV_{mean} on non tumoral tissues (*n*=100)

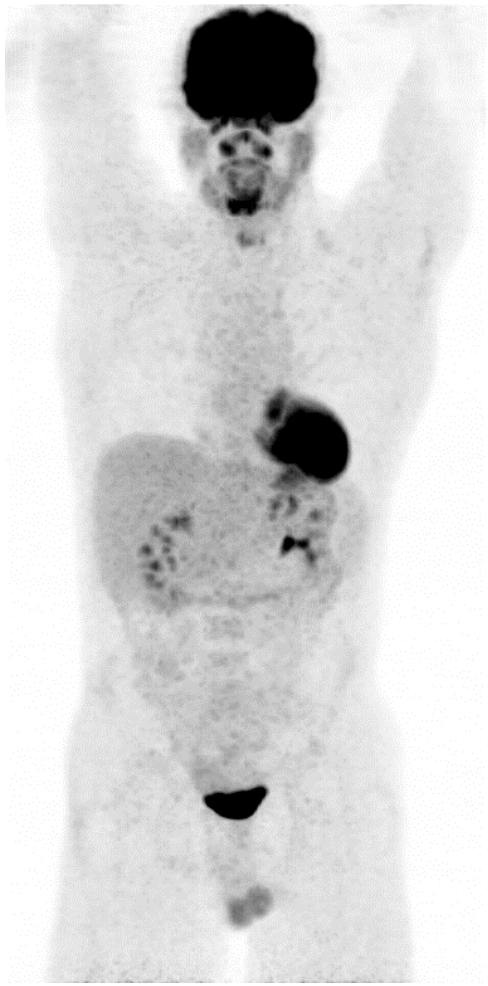


mean ± SD

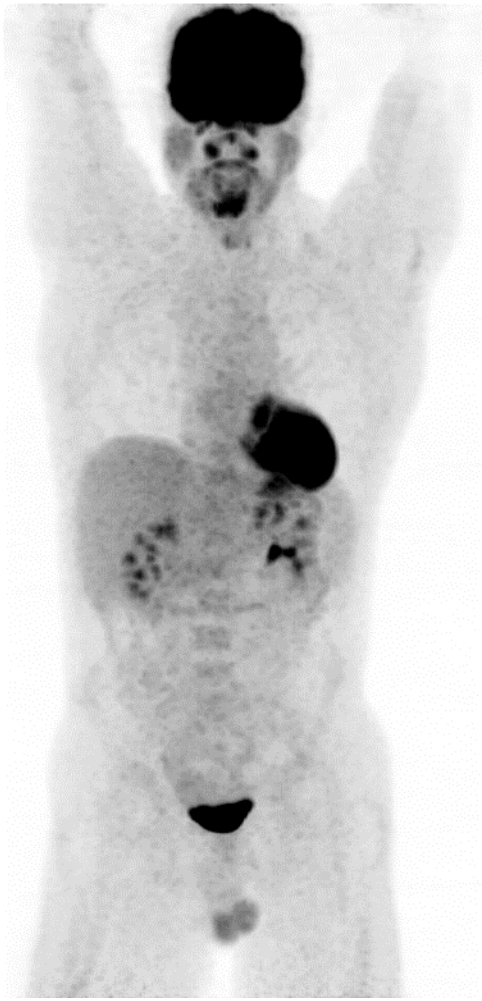
HU_{mean} in adenopathy and organs



mean ± SD

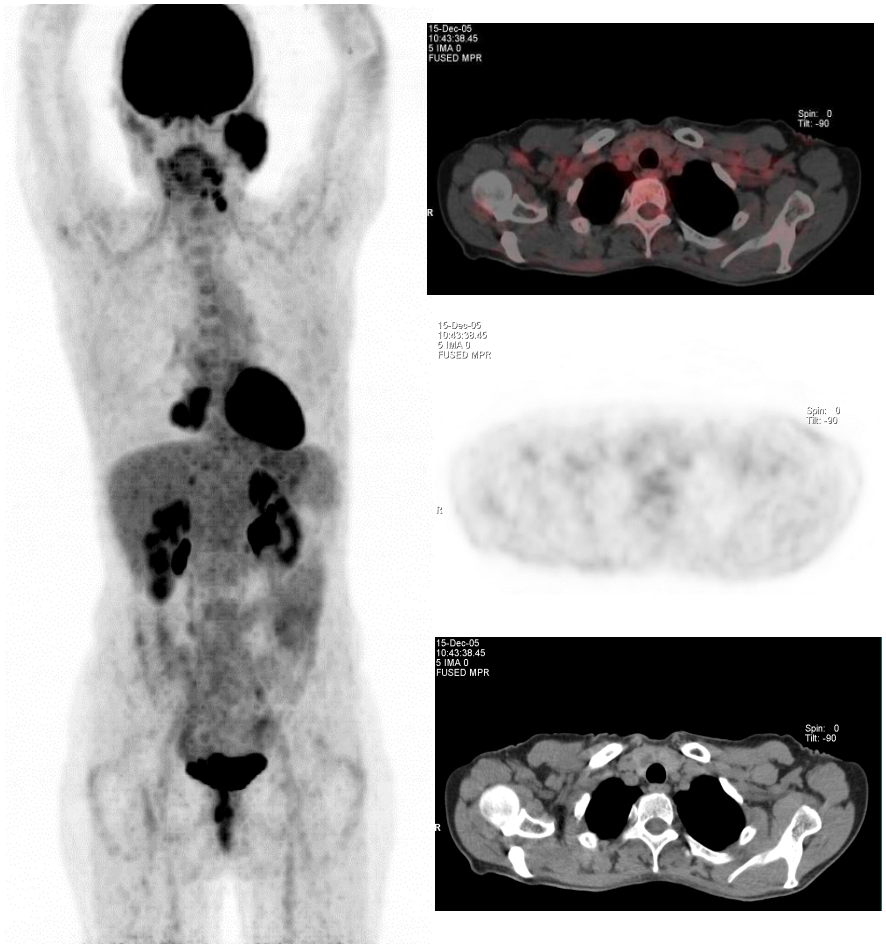


PET-



PET+

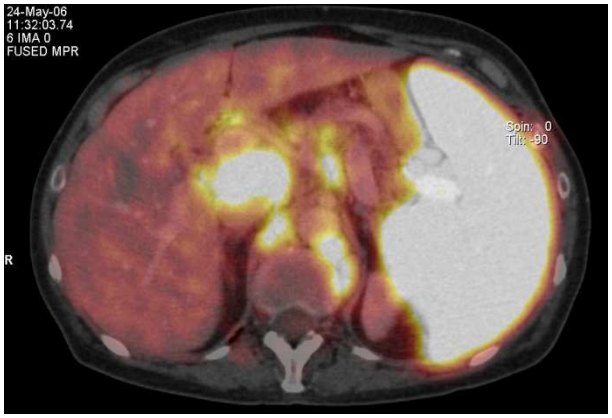
Two vascular artifacts

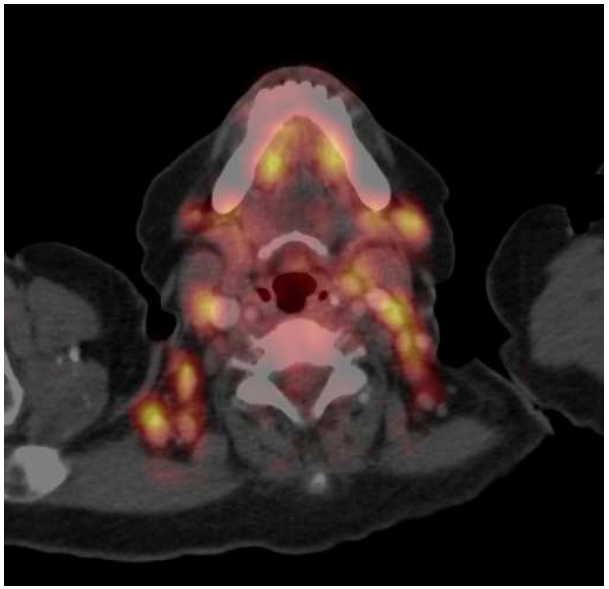


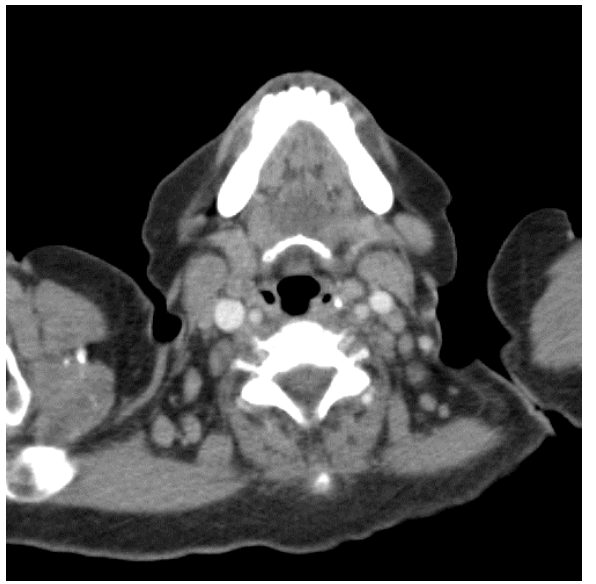
PET-

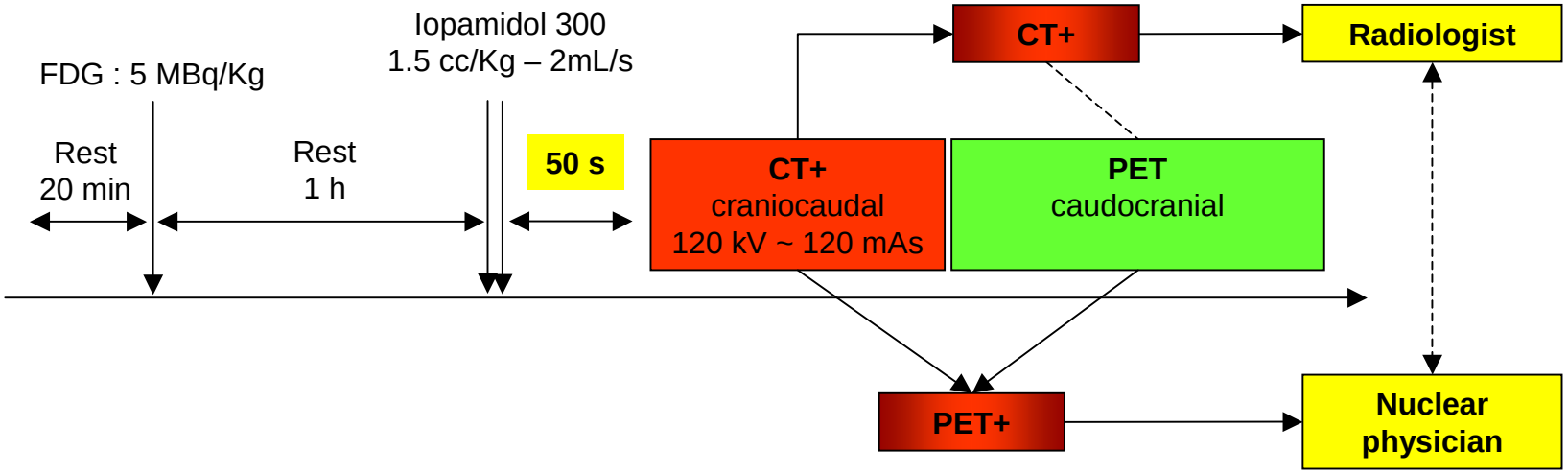
PET+

Comfort interpreting CT







Conclusion

- PET-CT+ feasible for **lymphoma**
  - Before and after chemotherapy with negligible impact on quantification
  - **+4%** SUV_{mean} and SUV_{max} before chemo (< variability of the SUV)
- Artifacts : easily found
- Comfort interpreting CT (la Fougere, 2008)
- Only one examination : PET/CT+
  - For staging and for evaluation at mid-treatment