

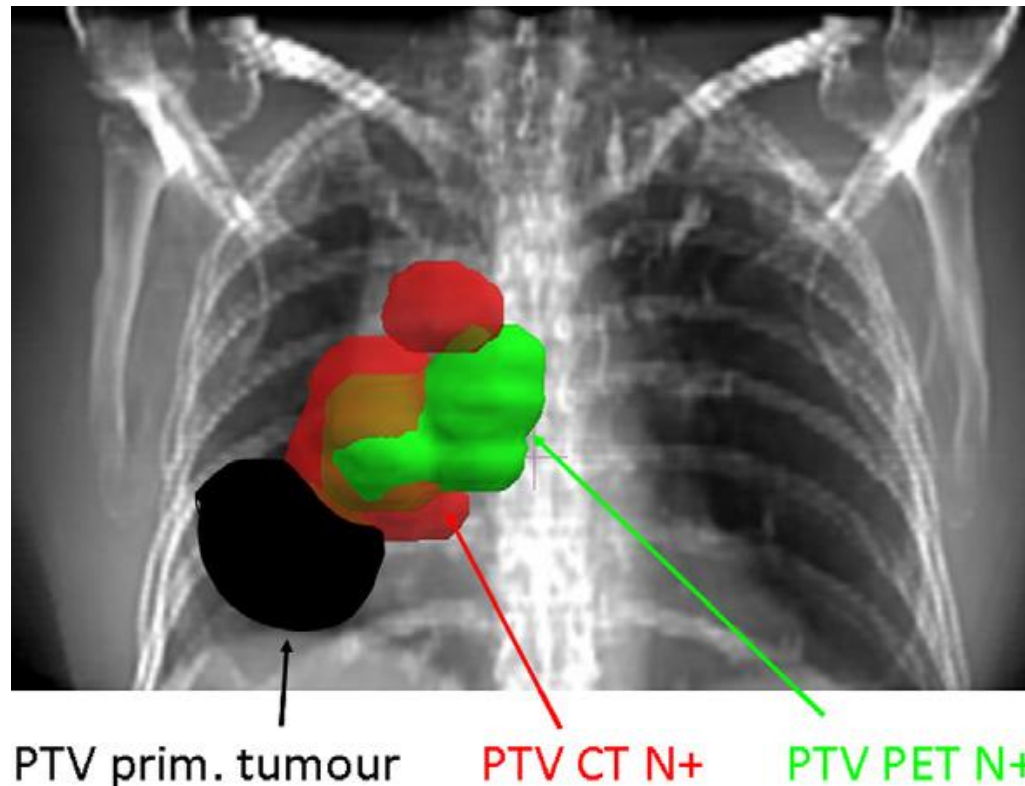
Définition du volume hypoxique dans les cancers bronchiques

Expérience RTEP6

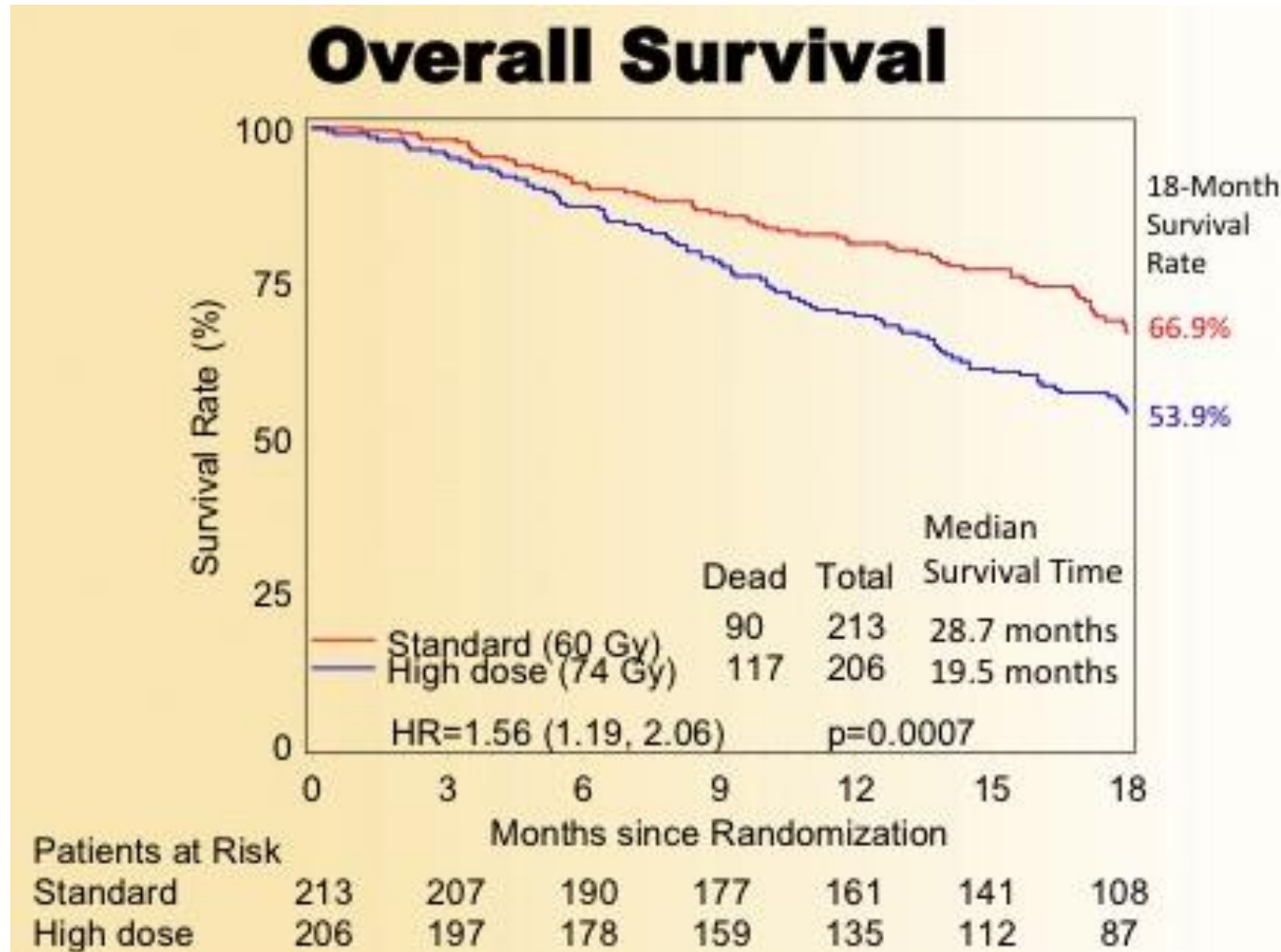
Thureau S, Gouel P, Piton N, Dujon A, Baste JM, Daniel L, Modzelewski R, Bohn P, Grégoire V, Vera P
Département Radiothérapie et Physique Médicale - Médecine Nucléaire
Centre Henri Becquerel & Quant.IF (EA4108 – FR CNRS 3638)

Planning PET (selective nodal irradiation)

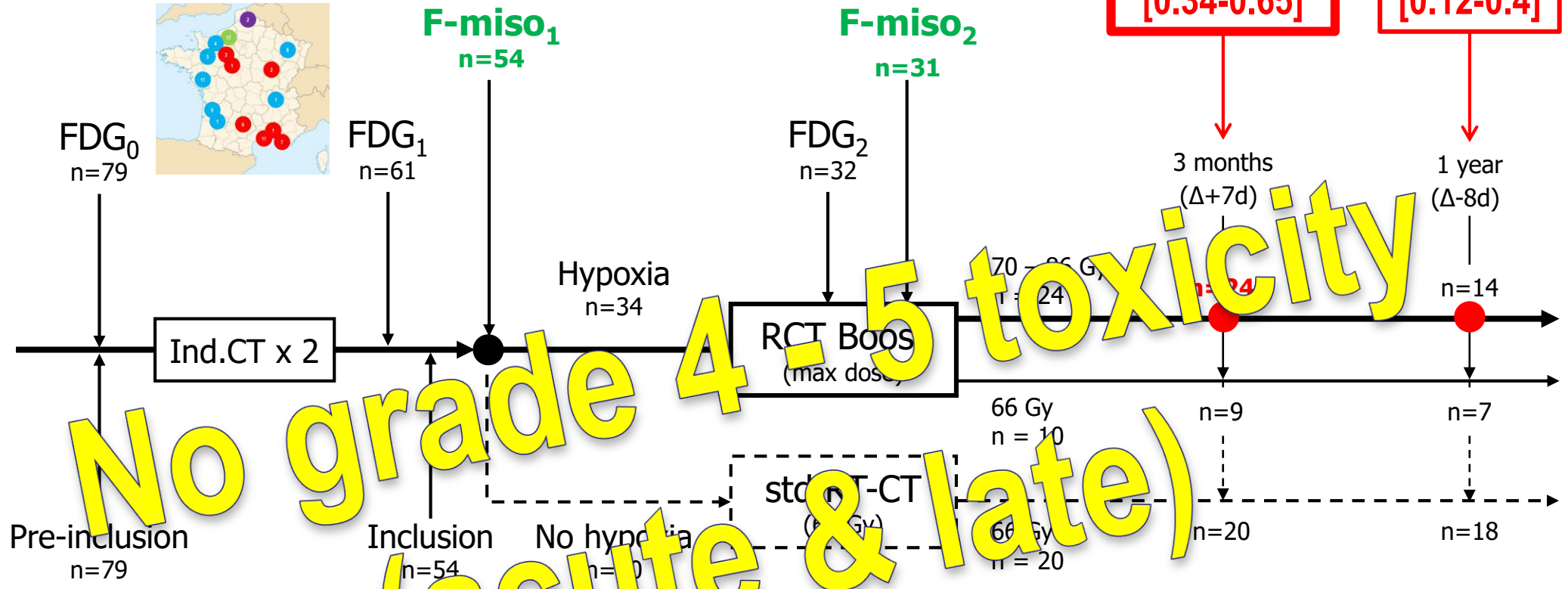
- Reduction of radiation fields
 - ✓ Possibility for **boost**
 - ✓ Decrease dose in oesophagus, normal lung and myocardium



Standard-dose versus high-dose conformal radiotherapy with concurrent and consolidation carboplatin plus paclitaxel with or without cetuximab for patients with stage IIIA or IIIB non-small-cell lung cancer (RTOG 0617): a randomised, two-by-two factorial phase 3 study



RTEP5 – Phase II of boost in NSCLC

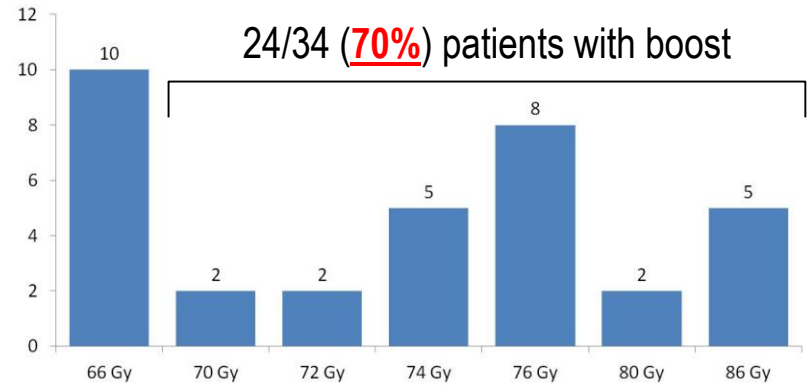


50%
[0.34-0.65]

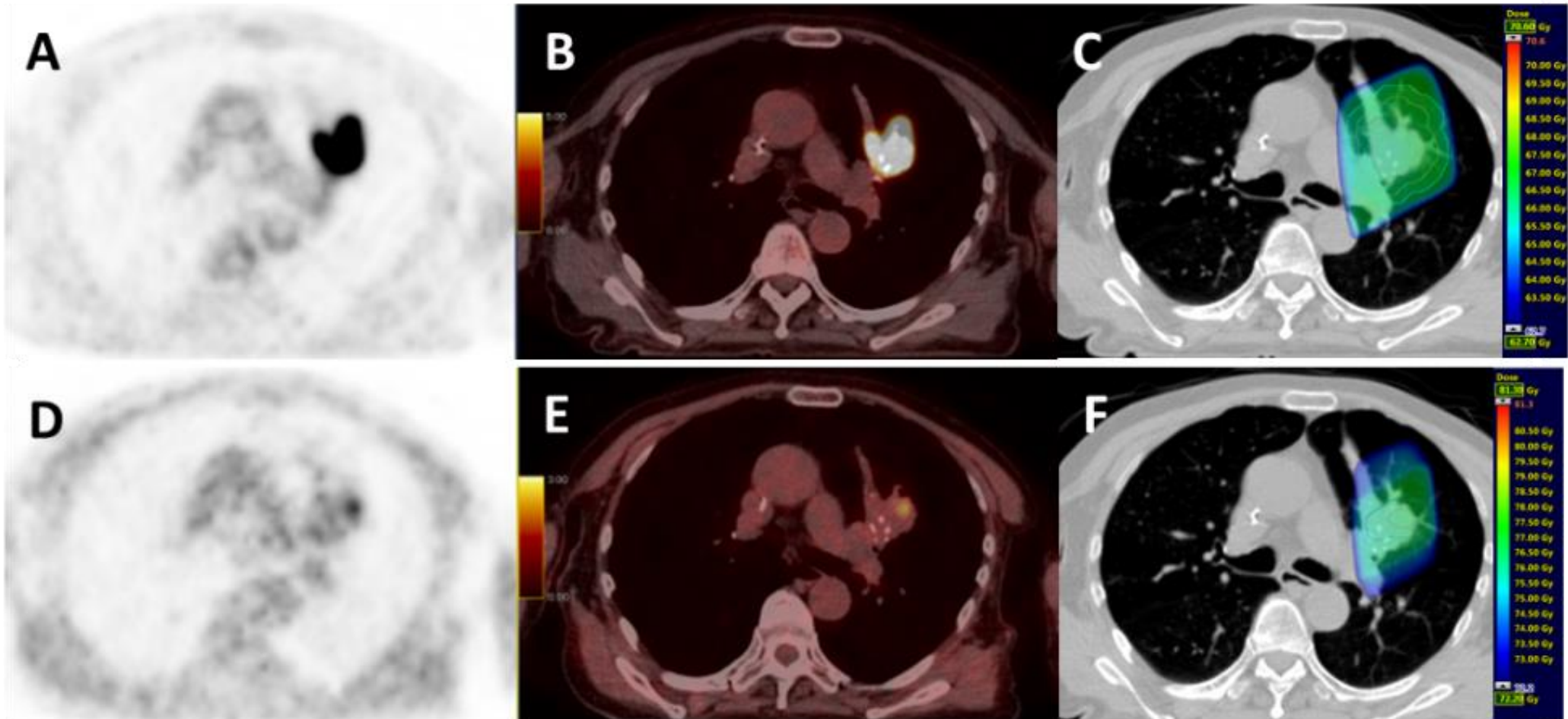
36%
[0.12-0.4]

No grade 4-5 toxicity (acute & late)

- 25 non-inclusions
- 12 ineligibility regarding FDG₁ (**including 9 M+ [11%] on FDG₁**)
- 8 bad procedures (inadapted induction CT, technical or logistic problems)
- 4 patient decision
- 1 investigator decision



RTEP5 – Phase II of boost in NSCLC



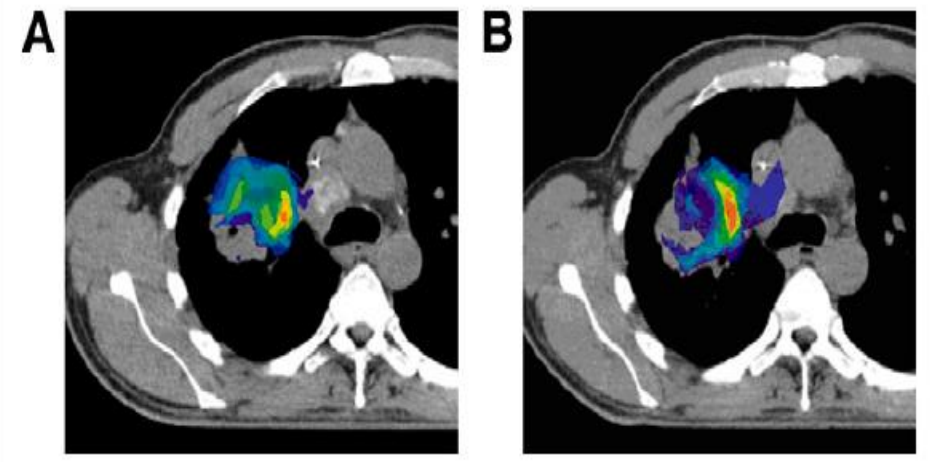
Analyse des traceurs à faible contraste

Positif vs négatif

Global κ -Test for Visual Analysis of PET/CT Images for 18 Nuclear Medicine Physicians at 18 Centers

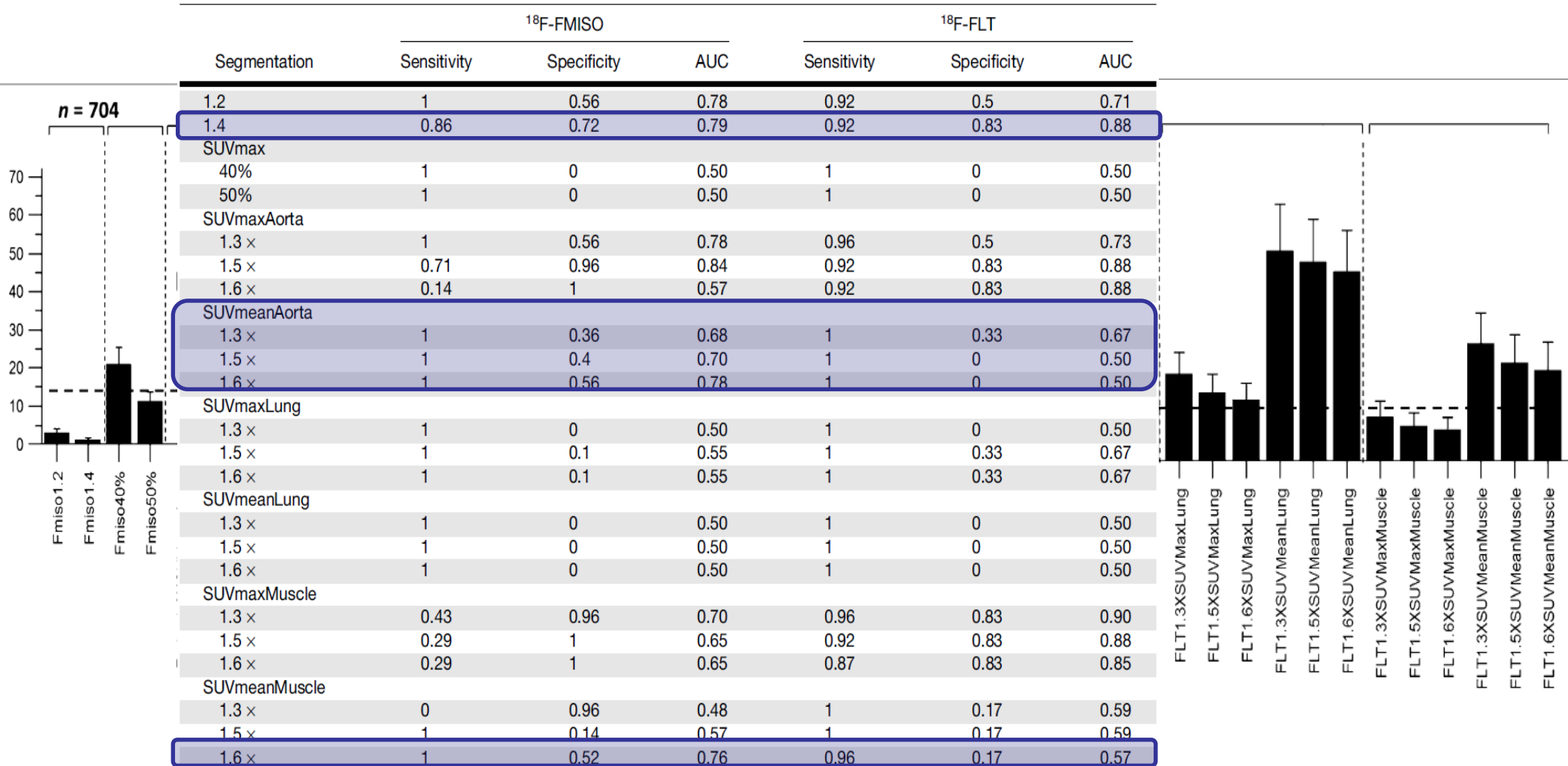
κ	¹⁸ F-FDG	¹⁸ F-FMISO	¹⁸ F-FLT
5 classes	0.59	0.43	0.44
2 classes	0.81	0.77	0.77

Définition des volumes



Analyse des traceurs à faible contraste

Sensitivity and Specificity of Different Methods of Volume Delineation



Tumoural hypoxia and RT

TEP/PET-Imidazolé

✓ **¹⁸F-misonidazole**

✓ ¹⁸F-FAZA

✓ ¹⁸F-FETA

✓ ¹⁸F-FETNIM

✓ ¹⁸F-EF1

✓ ¹⁸F-EF3

✓ ¹⁸F-EF5

✓ ¹²⁴I-IAZA

✓ ¹²⁴I-IAZG

✓ ¹²⁴I-IAZGP

✓ ¹⁸F-FRP10

✓ ¹⁸F-HX4

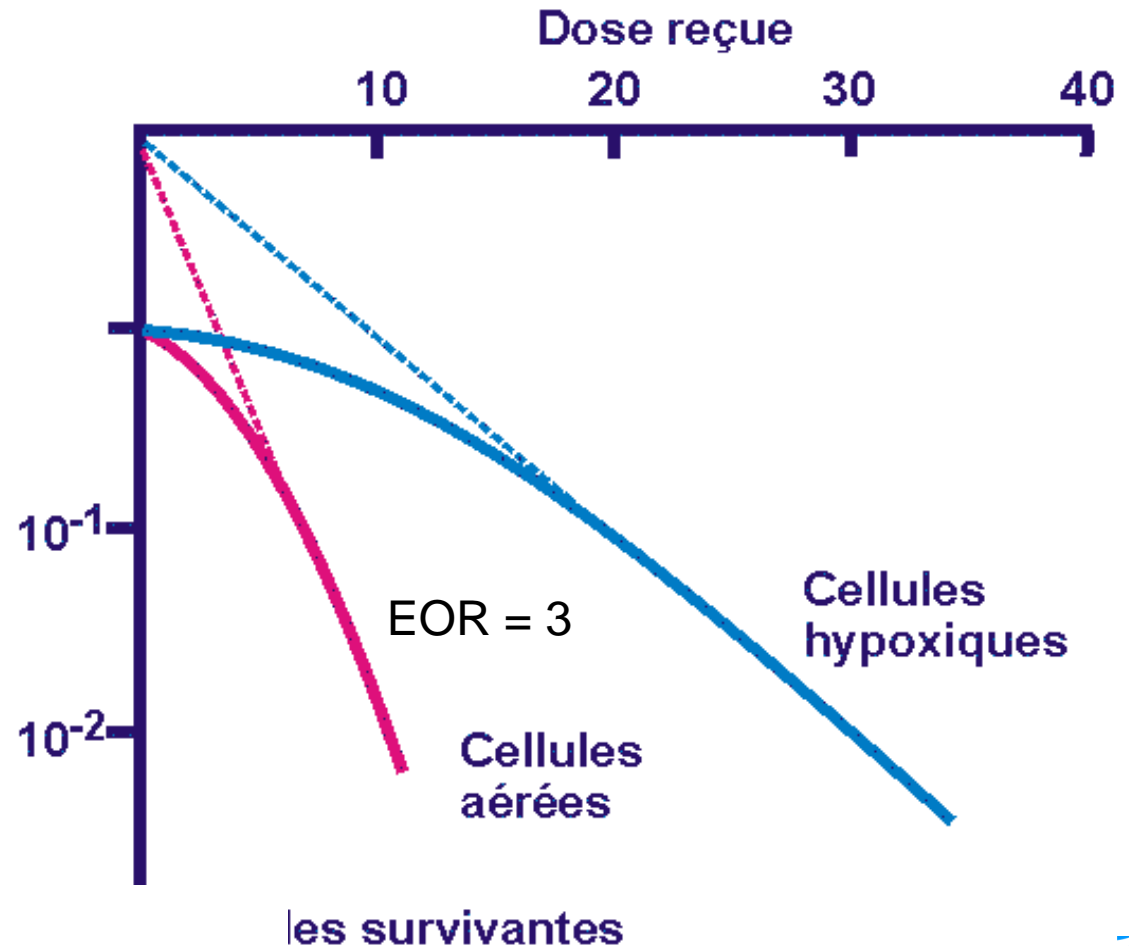
✓ ⁶⁸Ga-NOTA-NI

✓ ...

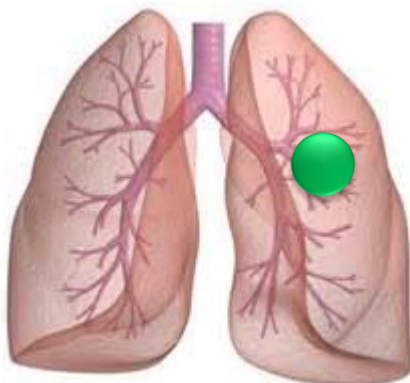
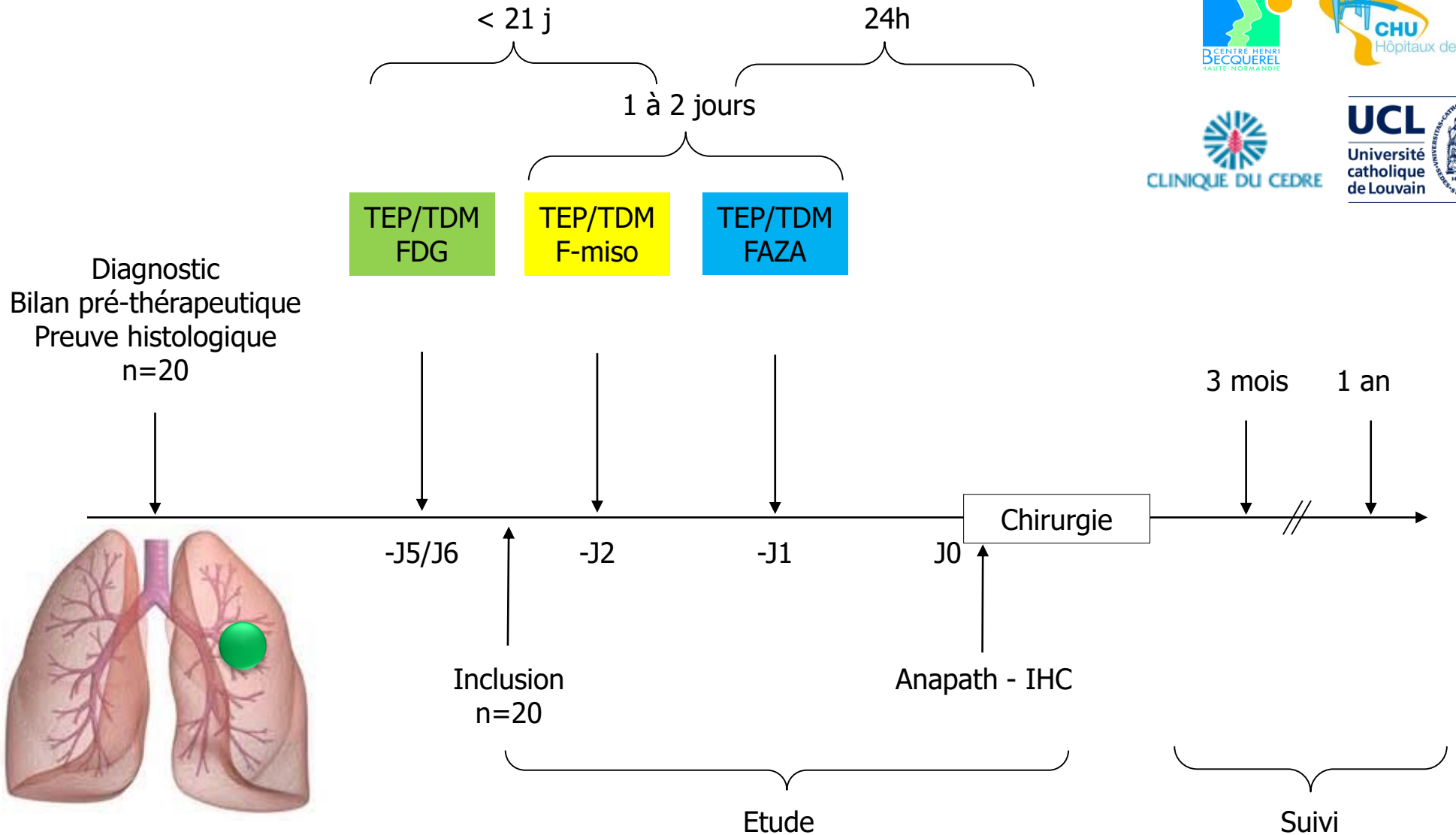
TEP/PET-non-imidazolé

✓ Cu-ATSM

✓ ⁸⁹Zr-cG250-F(ab')₂, ¹²⁴I-cG250-F(ab')₂ (HIF-1 α , CA-IX)



RTEP6. Etude comparative de l'hypoxie mesurée en TEP/TDM au F-miso et au FAZA chez les patients atteints d'un cancer broncho-pulmonaire non à petites cellules au moment du diagnostic : Corrélation avec l'immunohistochimie



Méthodologie - Prospective

- ✓ Cancer histologiquement prouvé
- ✓ Fixation TEP- FDG positive
- ✓ Absence de traitement néoadjuvant (chimiothérapie, radiothérapie)
- ✓ Traitement chirurgical carcinologique
 - ✓ Lobectomie
 - ✓ Pneumonectomie

Résultats préliminaires

✓ Population:

✓ 13 patients inclus – 10 patients analysés

✓ 8 hommes – 2 femmes

✓ Age moyen: 67 (+/- 7)

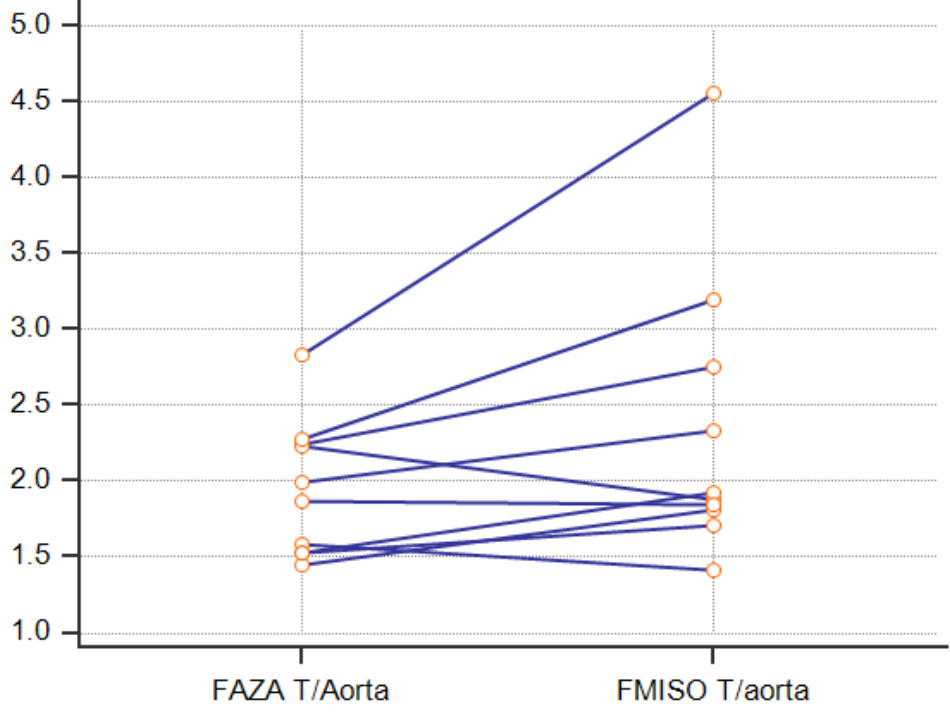
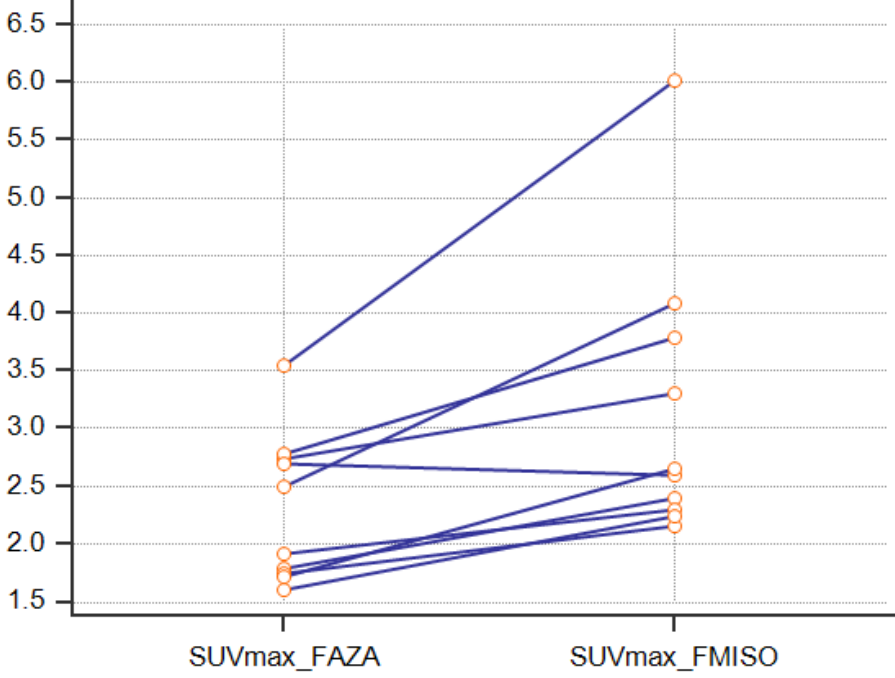
✓ Délais des examens:

✓ Délai FDG – Premier examen hypoxie : 5 jours (+/- 4,7)

✓ Délai FMISO – FAZA: 2,1 jours (+/- 2)

✓ Dernier examen hypoxie : 2,5 jours (+/- 3)

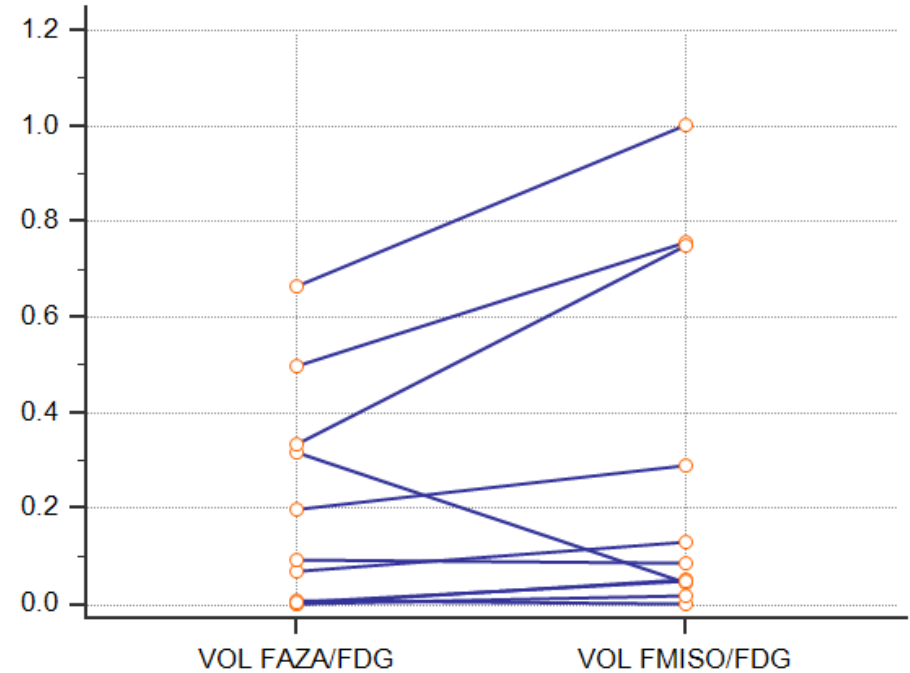
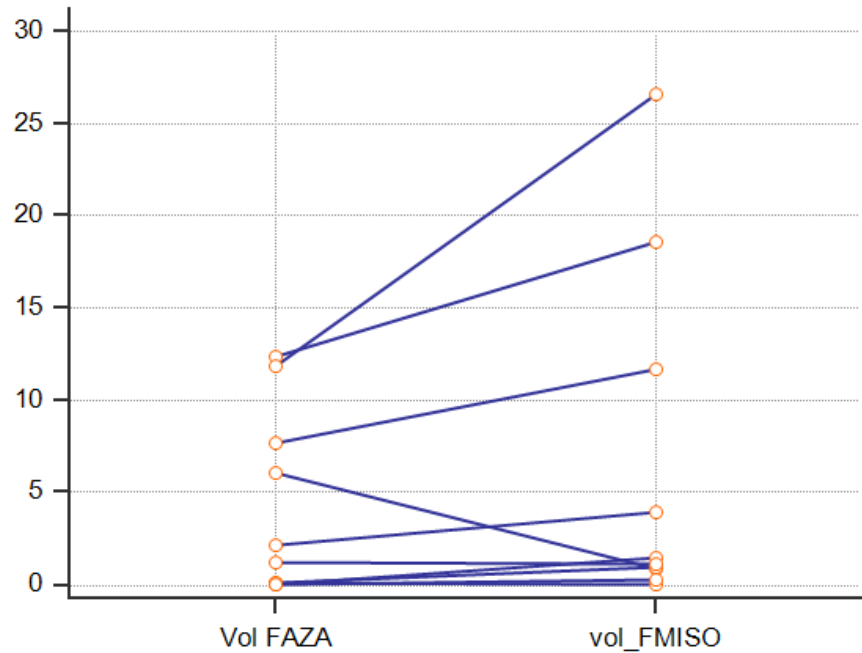
Résultats préliminaires : SUV



	SUV max FAZA	SUV max FMISO	p
SUV	2.3	3.15	0.0048
SD	0.6	1.2	

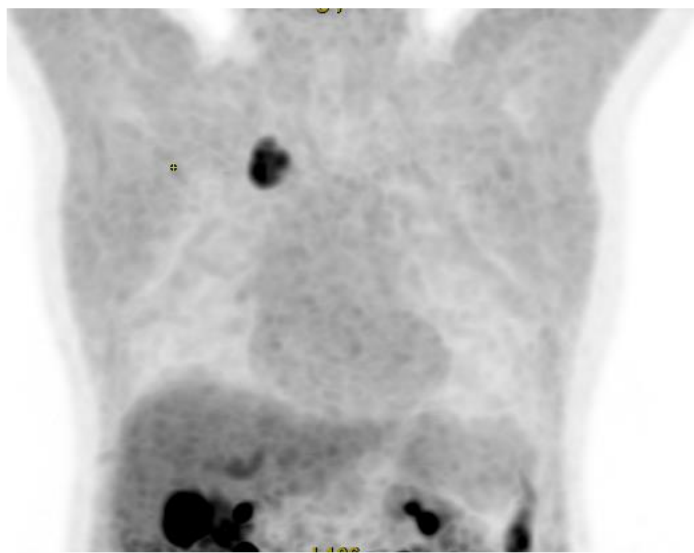
	FAZA T/Aorte	FMISO T/Aorte	p
	1.95	2.34	0.07
SD	0.45	0.94	

Résultats préliminaires : Volume

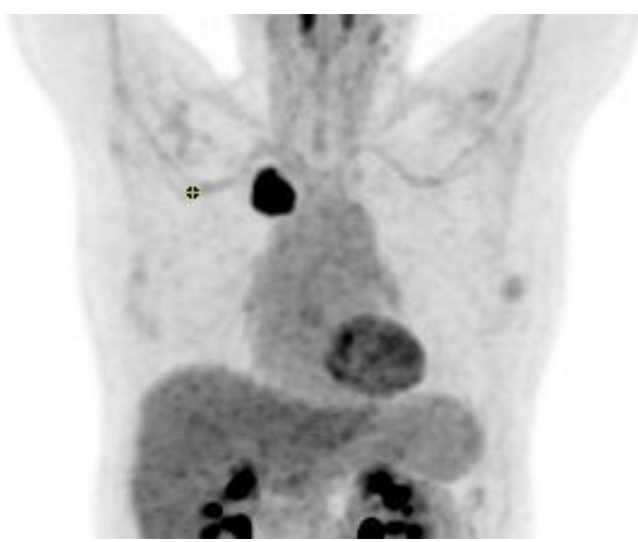


	Volume FAZA	Volume FMISO	p
Volume (cc)	4.14	6.54	0.18
SD	5	9.3	

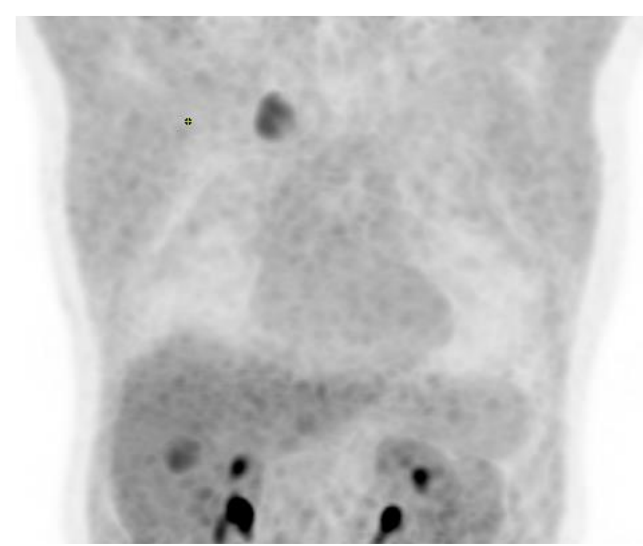
	Volume FAZA/FDG	Volume FMISO/FDG	p
rapport	0.19	0.29	0.14
SD	0.07	0.22	



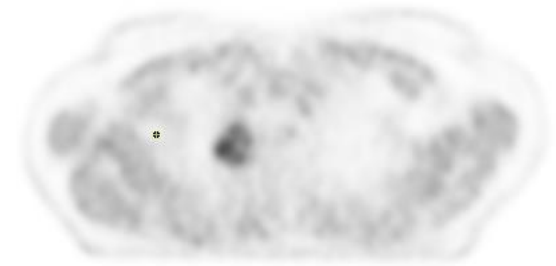
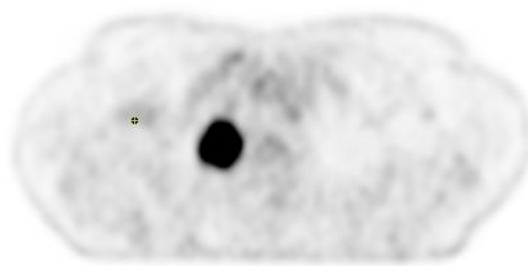
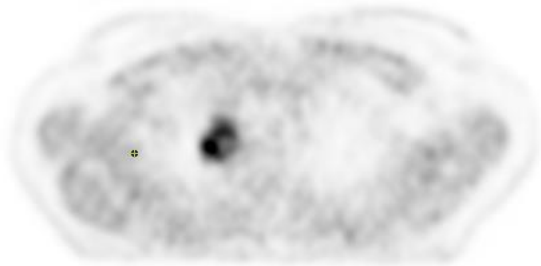
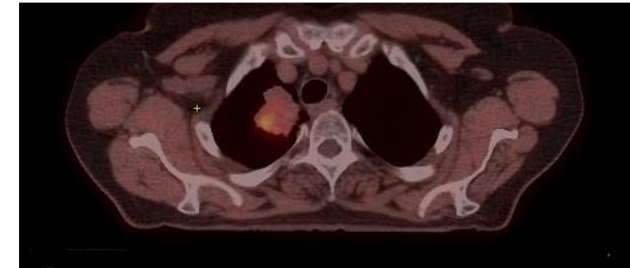
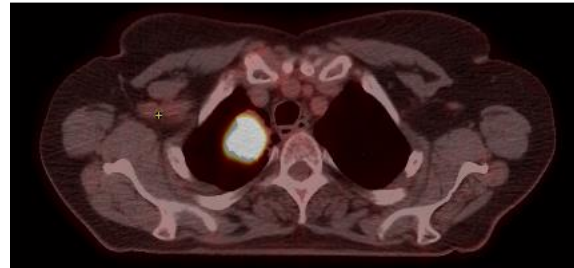
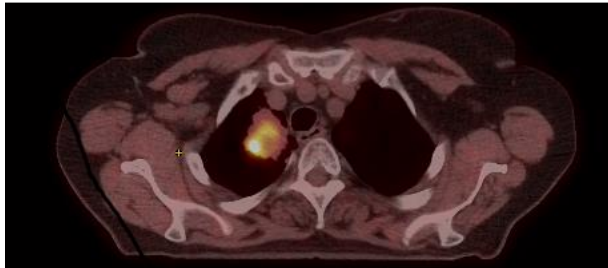
FMISO

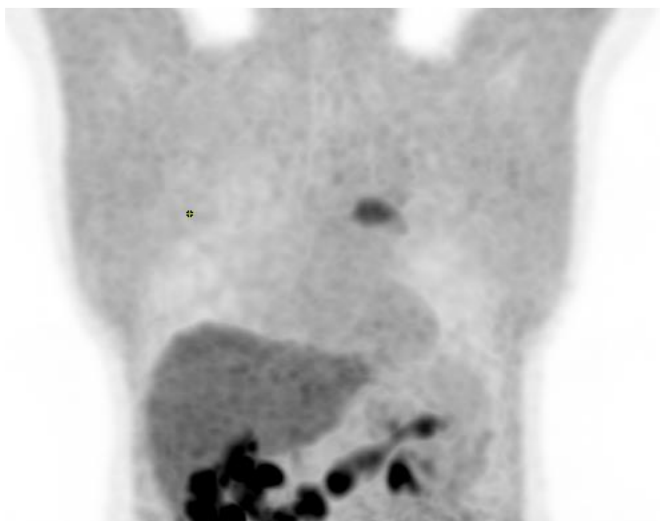


FDG

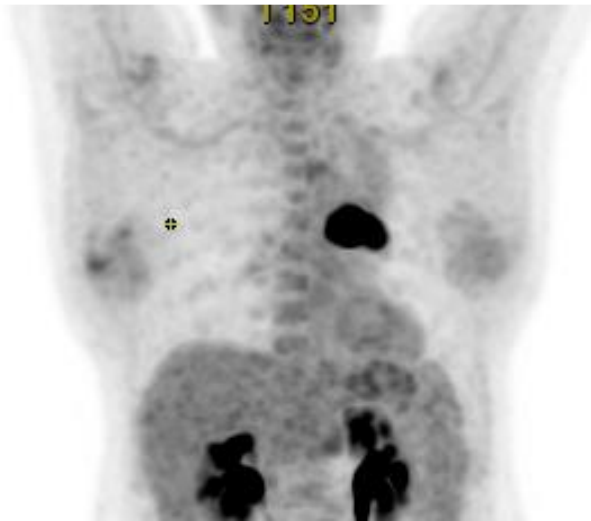


FAZA





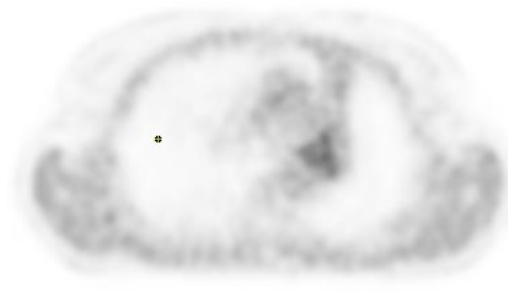
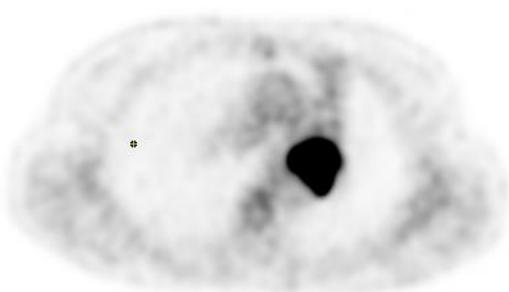
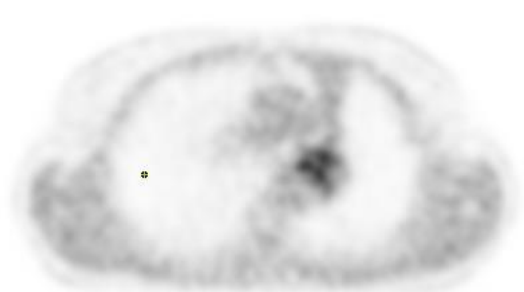
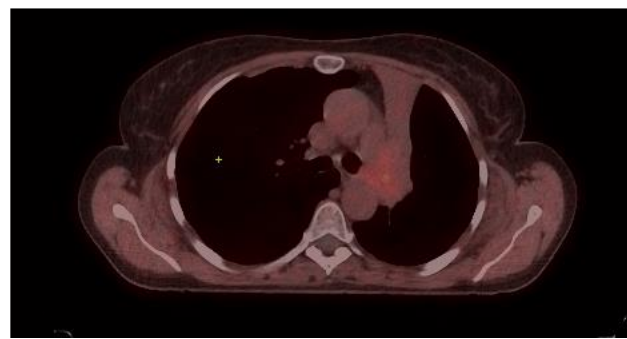
FMISO



FDG

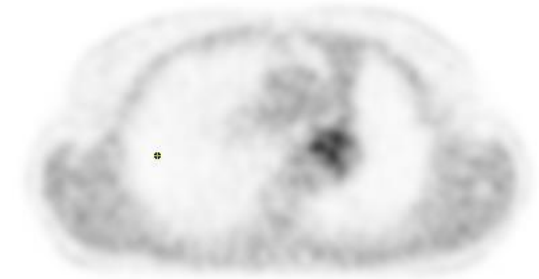


FAZA

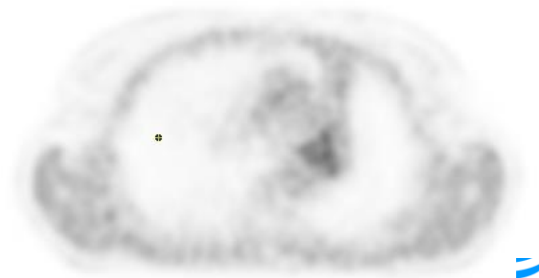


Conclusion

- ✓ Résultats préliminaires
- ✓ Méthodologie rigoureuse avec
 - ✓ Délai entre examens faible
 - ✓ Patient sur plan dur
- ✓ Supériorité du FMISO versus FAZA
 - ✓ SUVmax
 - ✓ Rapport signal tumeur sur bruit de fond

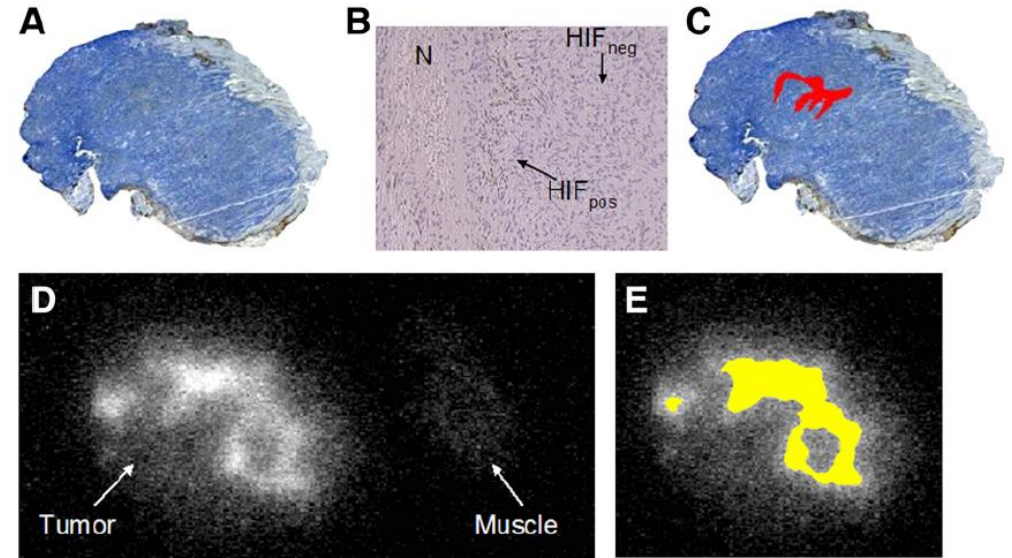


FMISO



FAZA

Perspectives



✓ Poursuite des inclusions

✓ Analyse des données TEP versus les données immuno-histochimiques

✓ HIF-1 α , CAIX, GLUT-1, LDH-5, MCT4

✓ Définition de nouvelles méthodes de segmentation

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