

APPORTS DES EXAMENS SCINTIGRAPHIQUES EN MEDECINE D'URGENCE: MISE AU POINT ET AVANCEES RECENTES

Denis Mariano-Goulart

Département de médecine nucléaire, CHU de Montpellier

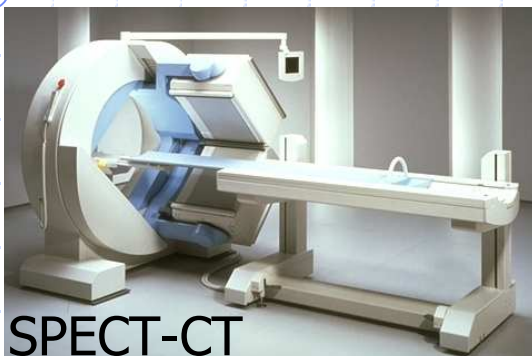
(04 67 33) 85 98 ou (06 65 84) 91 13

d-mariano_goulart@chu-montpellier.fr

<http://scinti.etud.univ-montp1.fr>

27 mars 2012.

PROGRES EN SCINTIGRAPHIE



SPECT-CT



PET-CT



SPECT-CZT

- Spécialité « active »: 04 67 3 3 84 72
 - 15 000 actes/an (60/j) dont 2400 os, 2800 cœur, 3800 TEP; +5%/an
- Disponible : 7h30-17h, lundi-vendredi
- Protocoles: Admin. RP → Délai 0-3h → 1/2 h images → Δ^{ic}
- Couplage à une TDM (↓ artefacts, localisation, multimodalité)
- Peu irradiant: Dose < 5 mSv (2 fois moins qu'une TDM)

FRACTURES NECROSES

Se = 100% & Sp > 80%
stress: 80% Rx normales

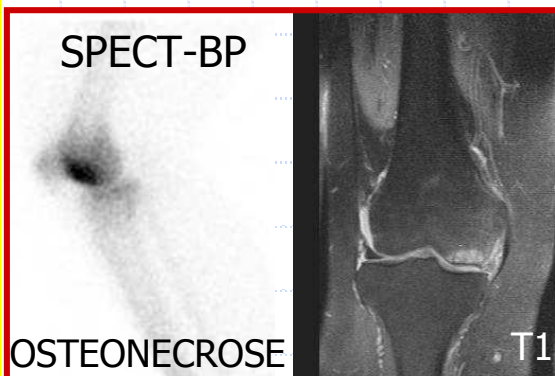
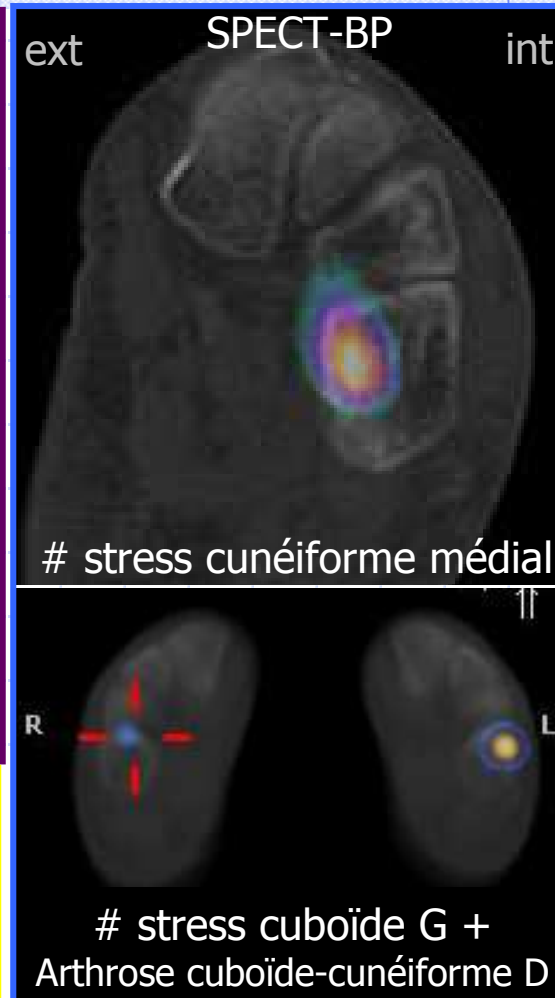
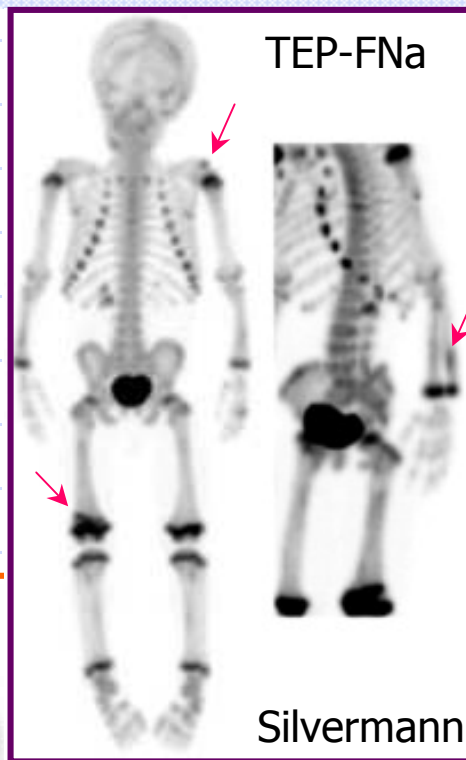
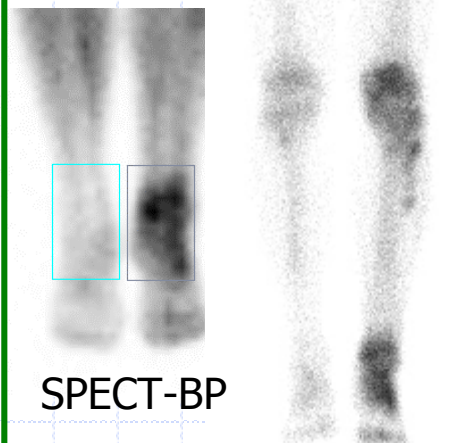
Nécrose:

Se=Sp=90%
≡ IRM

ALGO:

Se,Sp=96,98%

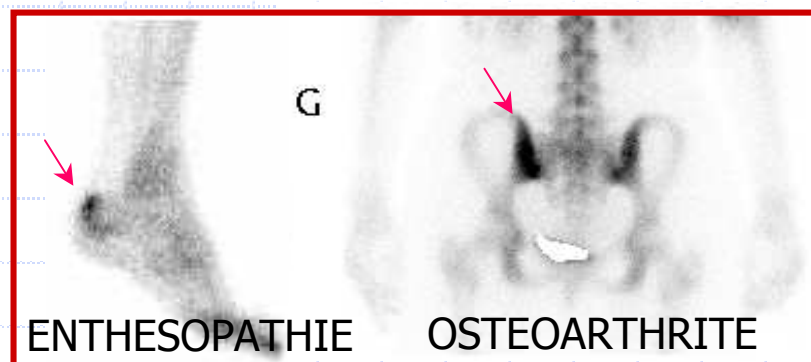
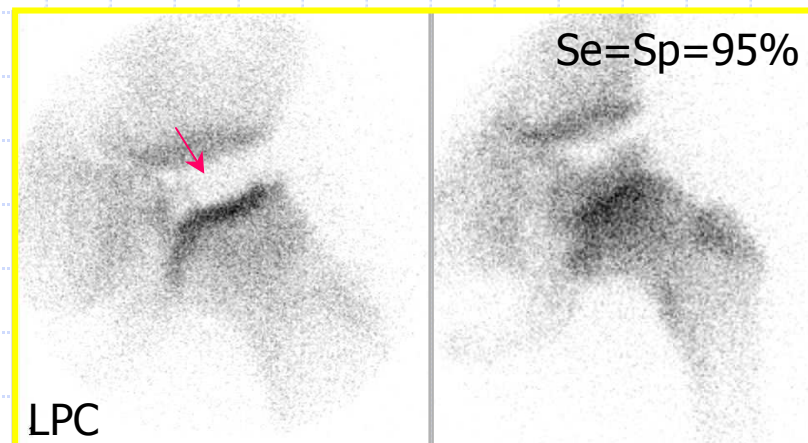
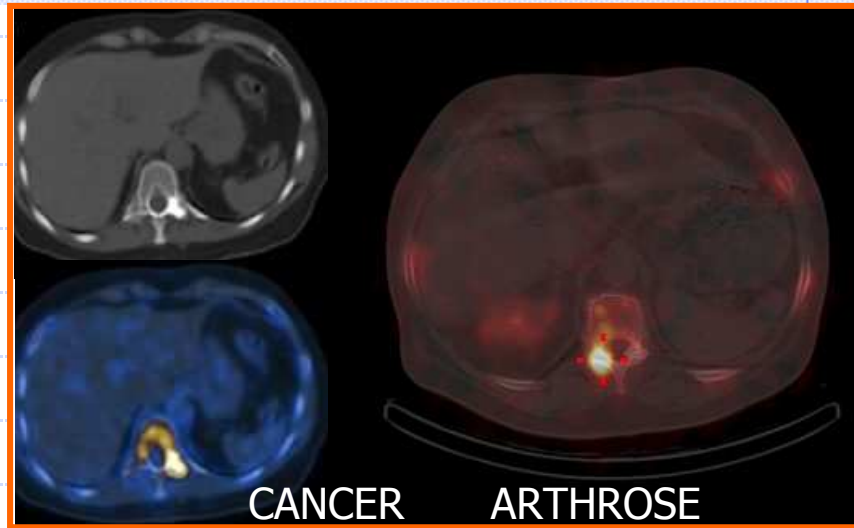
ALGODYSTROPHIE



ARTHROPATHIES

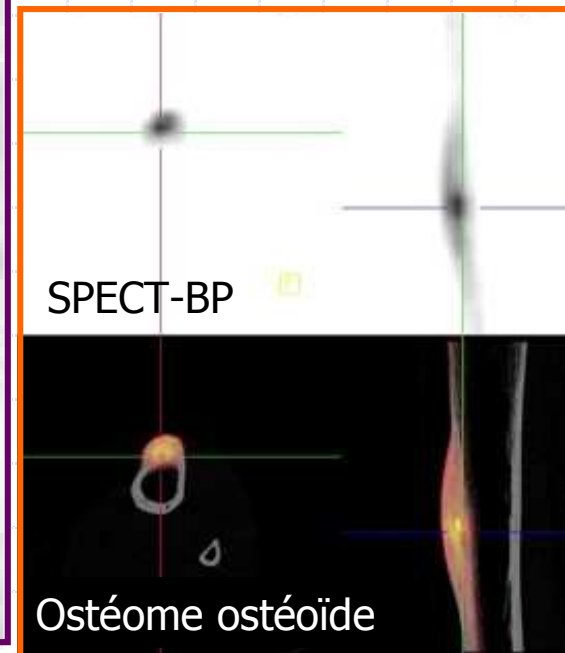
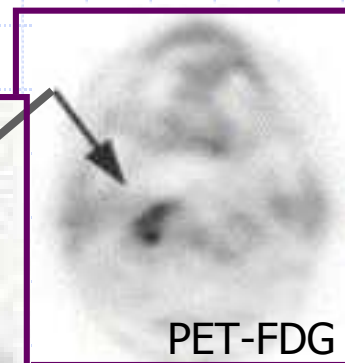
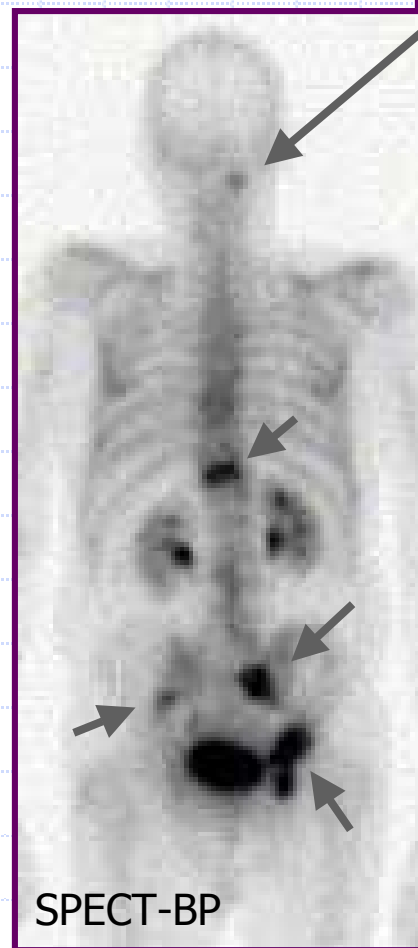
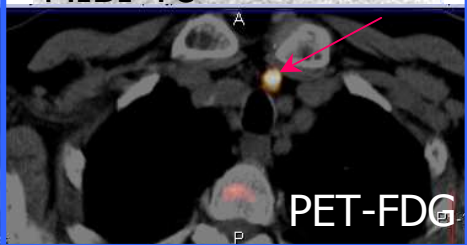
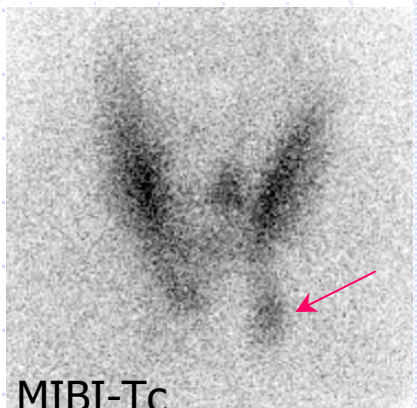
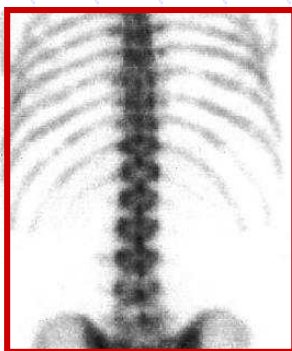
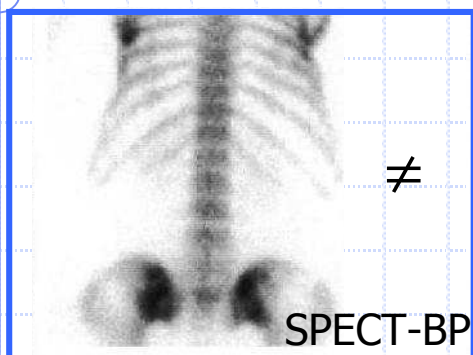


UNE SCINTIGRAPHIE OSSEUSE CE NORMALE EXCLU PRESQUE TOUTES LES PATHOLOGIES OSTEOARTICULAIRES EN POUSSEE

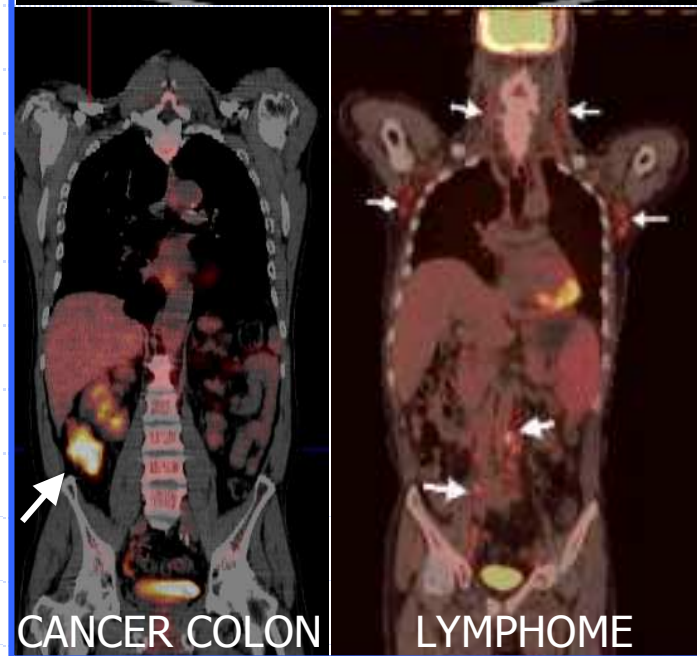
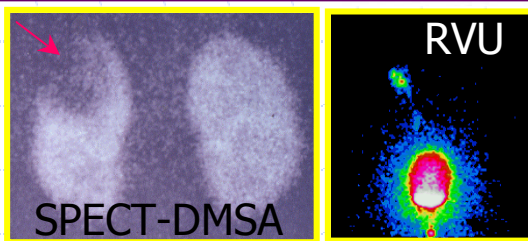
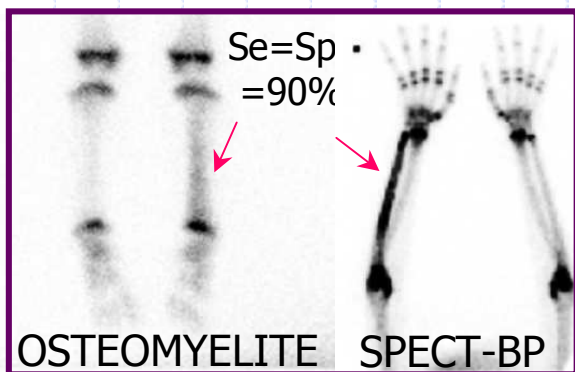
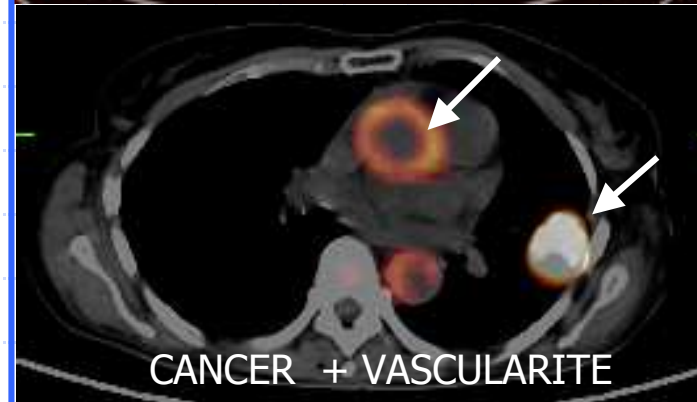
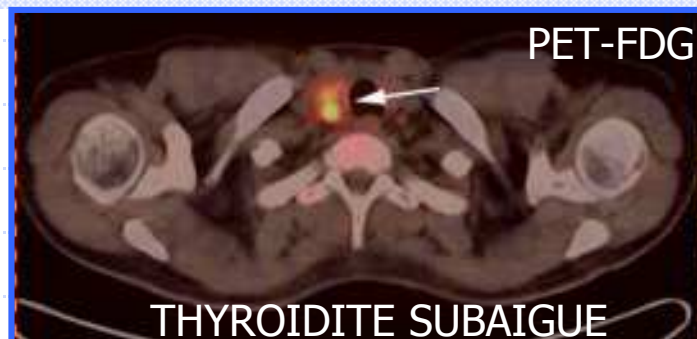
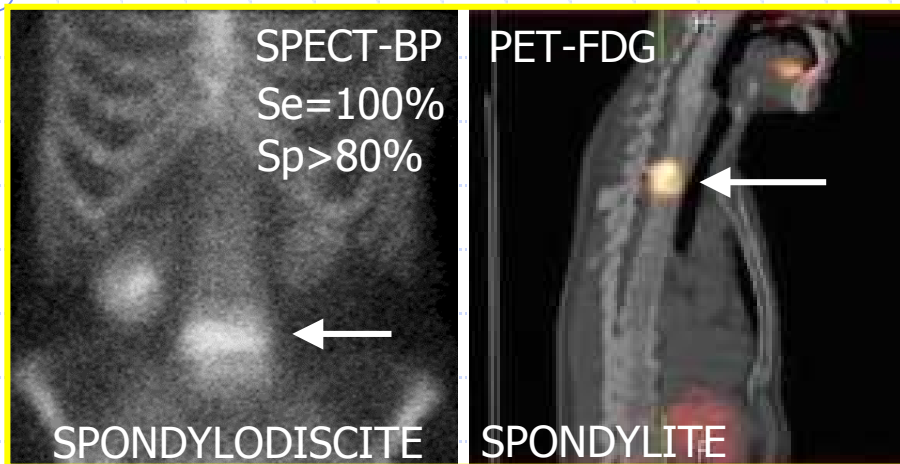


SPECT-BP

HYPERCALCEMIE, TUMEURS, CANCERS



INFLAMMATIONS INFECTIONS



EMBOLIE PULMONAIRE

IMPORTANCE DES D- DIMERES

- $p(\text{EP} / \text{DD-}) < 1\%$

IMPORTANCE DE LA PROBA. CLINIQUE P

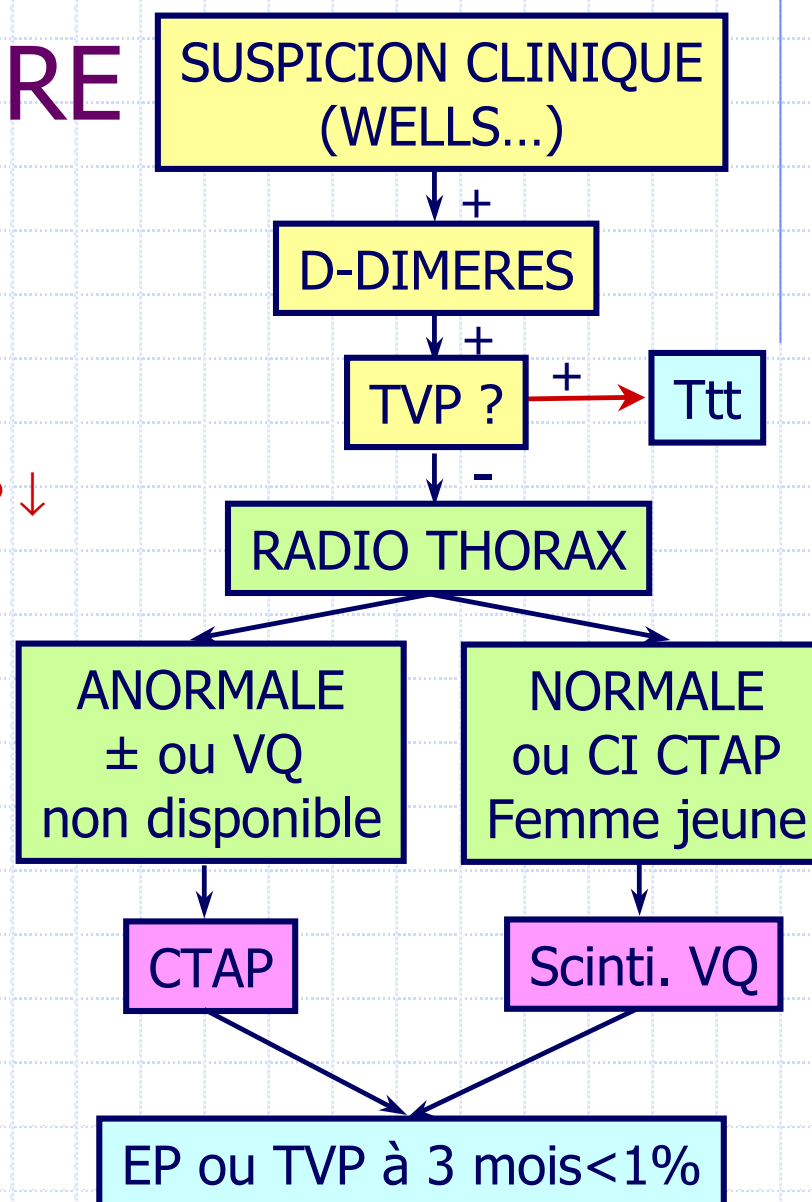
- $p(\text{EP}/\text{T+}) = \text{VPP}(\text{CTAP} // \text{VQ}) = 86\%$
- mais $\text{VPP}(\text{CTAP} // \text{VQ}) = 58\% // 56\%$ si P ↓

IMPORTANCE DE LA RADIO DU THORAX

- Opacité//EP ⇒ VQ non Δ^{ic}. ↑

DOSIMETRIE AUX SEINS

- 20-80 mSv CTAP // 0,3-0,9 mSv VQ
- Risque K(sein, poumon)/CTAP variable:
0.2/1000 (H 80 ans) → 1% (F 20 ans)*
- Préférer VQ chez les femmes jeunes
(risque = 1/ 40 000)



JAMA. 2007 Jul 18;298(3):317-23.

Estimating risk of cancer associated with radiation exposure from 64-slice computed tomography coronary angiography.

Einstein AJ, Henzlova MJ, Rajagopalan S.

Department of Medicine, Division of Cardiology and Department of Radiology, Columbia University College of Physicians and Surgeons, New York, New York 10032, USA. andrew.einstein@columbia.edu

Abstract

CONTEXT: Computed tomography coronary angiography (CTCA) has become a common diagnostic test, yet there are little data on its associated cancer risk. The recent Biological Effects of Ionizing Radiation (BEIR) VII Phase 2 report provides a framework for estimating lifetime attributable risk (LAR) of cancer incidence associated with radiation exposure from a CTCA study using the most current data available on health effects of radiation.

OBJECTIVES: To determine the LAR of cancer incidence associated with radiation exposure from a 64-slice CTCA study and to evaluate the influence of age, sex, and scan protocol on cancer risk.

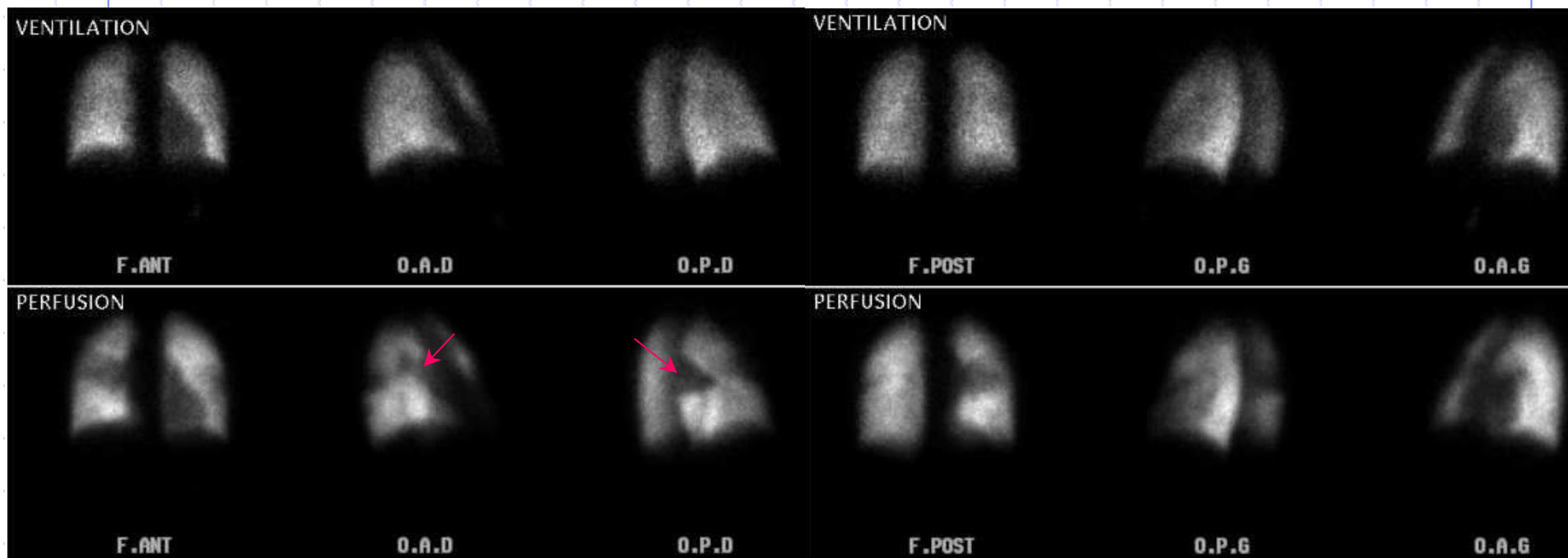
DESIGN, SETTING, AND PATIENTS: Organ doses from 64-slice CTCA to standardized phantom (computational model) male and female patients were estimated using Monte Carlo simulation methods, using standard spiral CT protocols. Age- and sex-specific LARs of individual cancers were estimated using the approach of BEIR VII and summed to obtain whole-body LARs.

MAIN OUTCOME MEASURES: Whole-body and organ LARs of cancer incidence.

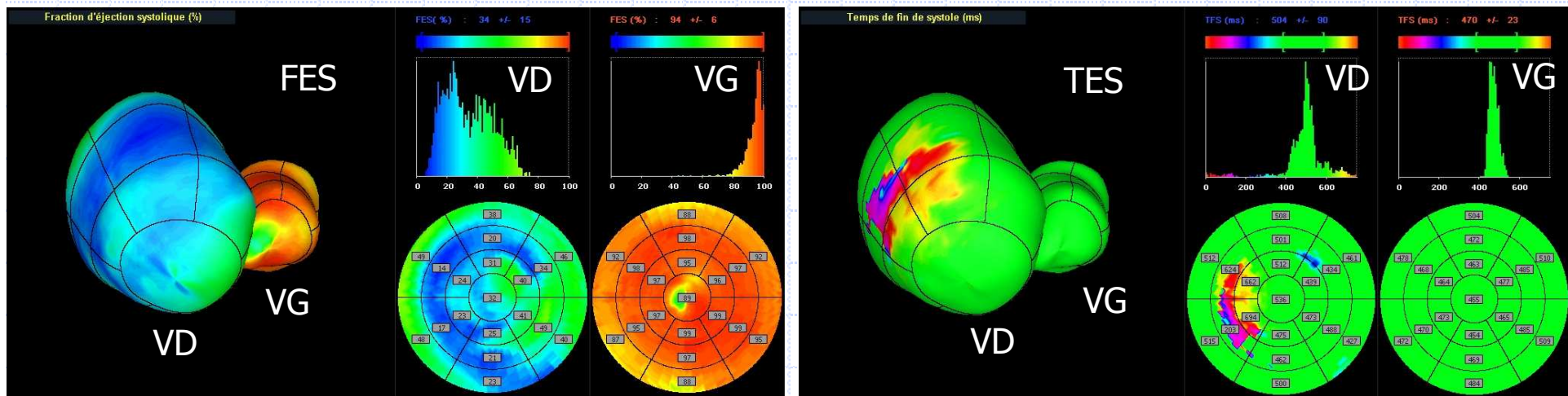
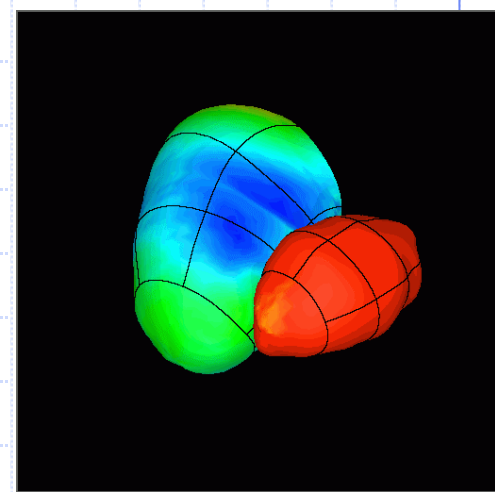
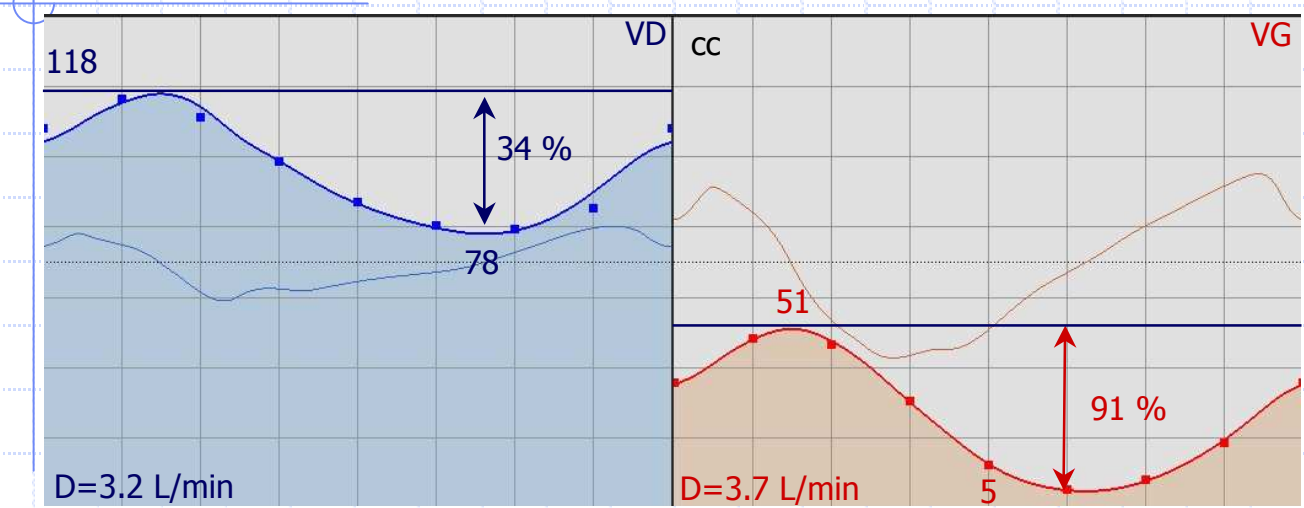
RESULTS: Organ doses ranged from 42 to 91 mSv for the lungs and 50 to 80 mSv for the female breast. Lifetime cancer risk estimates for standard cardiac scans varied from 1 in 143 for a 20-year-old woman to 1 in 3261 for an 80-year-old man. Use of simulated electrocardiographically controlled tube current modulation (ECTCM) decreased these risk estimates to 1 in 219 and 1 in 5017, respectively. Estimated cancer risks using ECTCM for a 60-year-old woman and a 60-year-old man were 1 in 715 and 1 in 1911, respectively. A combined scan of the heart and aorta had higher LARs, up to 1 in 114 for a 20-year-old woman. The highest organ LARs were for lung cancer and, in younger women, breast cancer.

CONCLUSIONS: These estimates derived from our simulation models suggest that use of 64-slice CTCA is associated with a nonnegligible LAR of cancer. This risk varies markedly and is considerably greater for women, younger patients, and for combined cardiac and aortic scans.

EMBOLIE PULMONAIRE

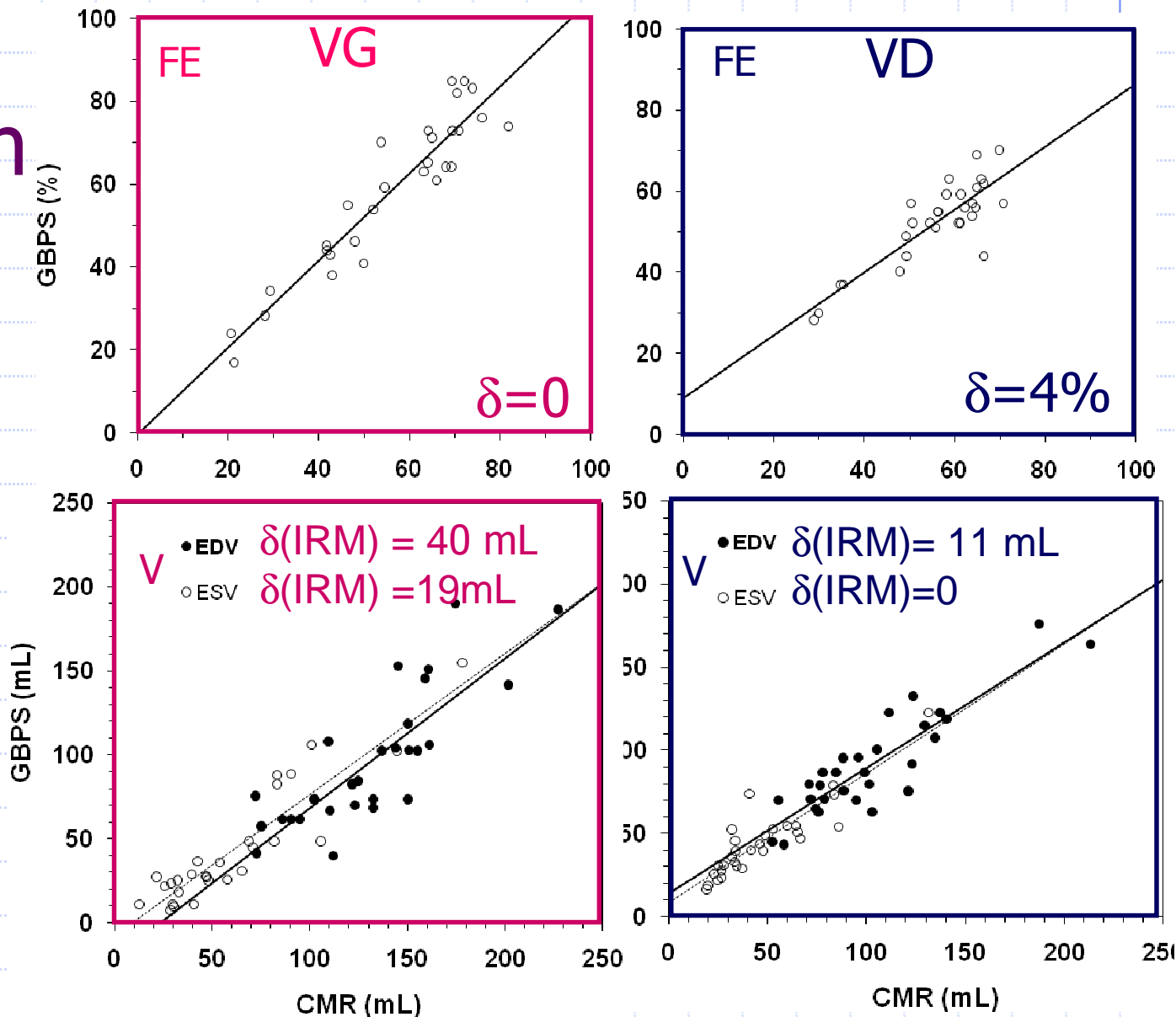


DYSPNEE: FES DU VG & DU VD



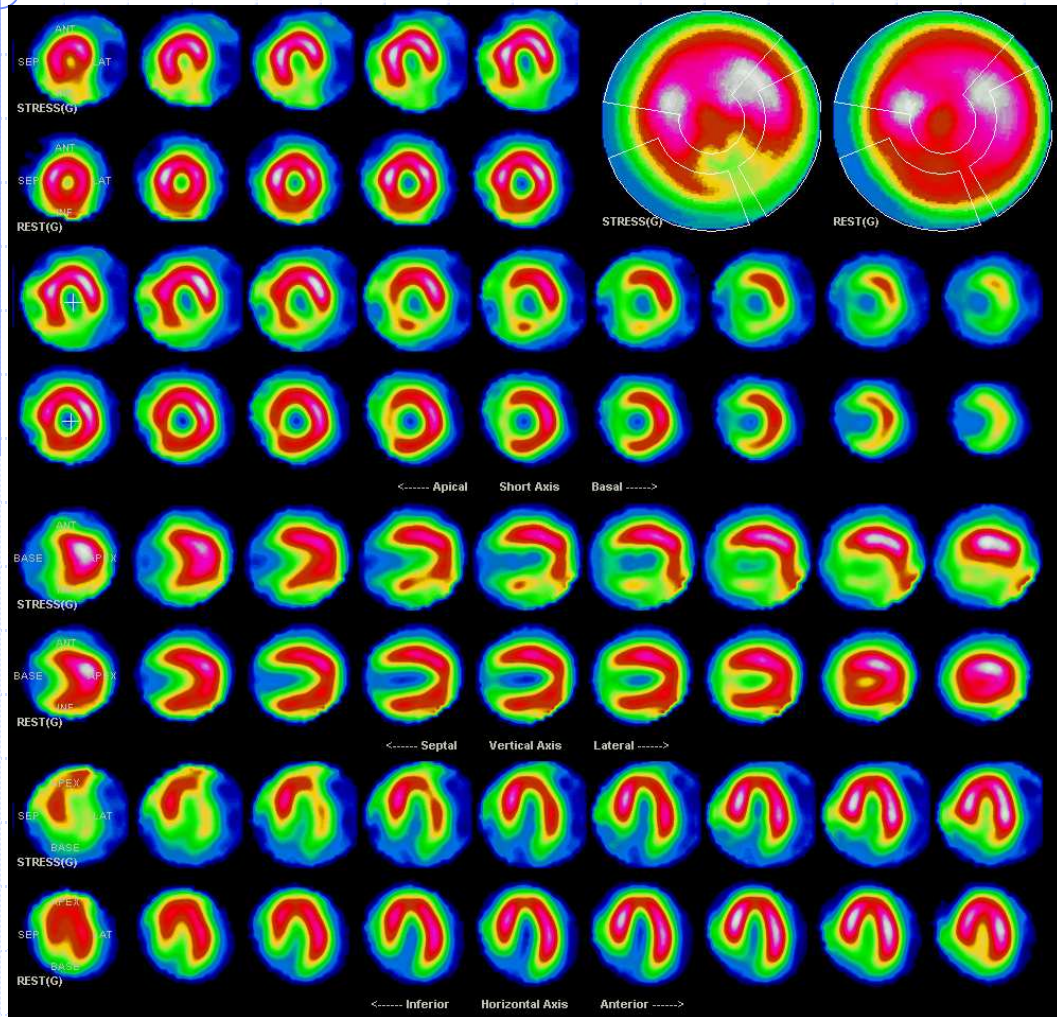
IVG, IVD, HTAP, DVDA, DYSKINESIES, HYPOKINESIES...

Validation TVI versus IRM*



VES(G-D): 9 ± 14 (GBPS) versus 18 ± 13 (IRM)

SCA & SPECT MYOCARDIQUE



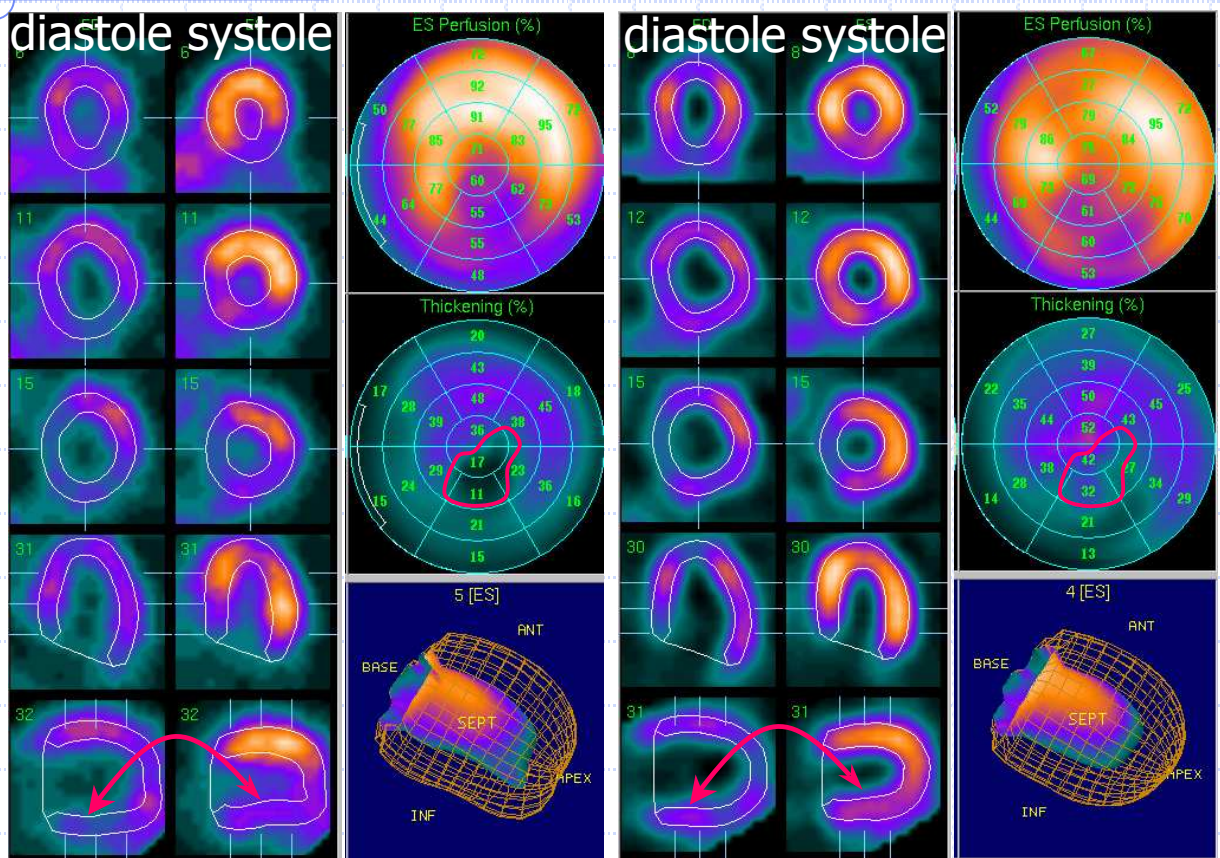
EVOLUTION

- 2004 : < 1000
- 2012 : 2800

PERFUSION

- Stress mixte/Repos
- Se > 90 %

SCA & SPECT MYOCARDIQUE



EFFORT

ES(apico-inf) < 20 %

REPOS

ES(apico-inf) > 30 %

EVOLUTION

- 2004 : < 1000
- 2012 : 2800

PERFUSION

- Stress mixte/Repos
- Se > 90 %

CINETIQUE PAROIS EPAISSISSEMENT

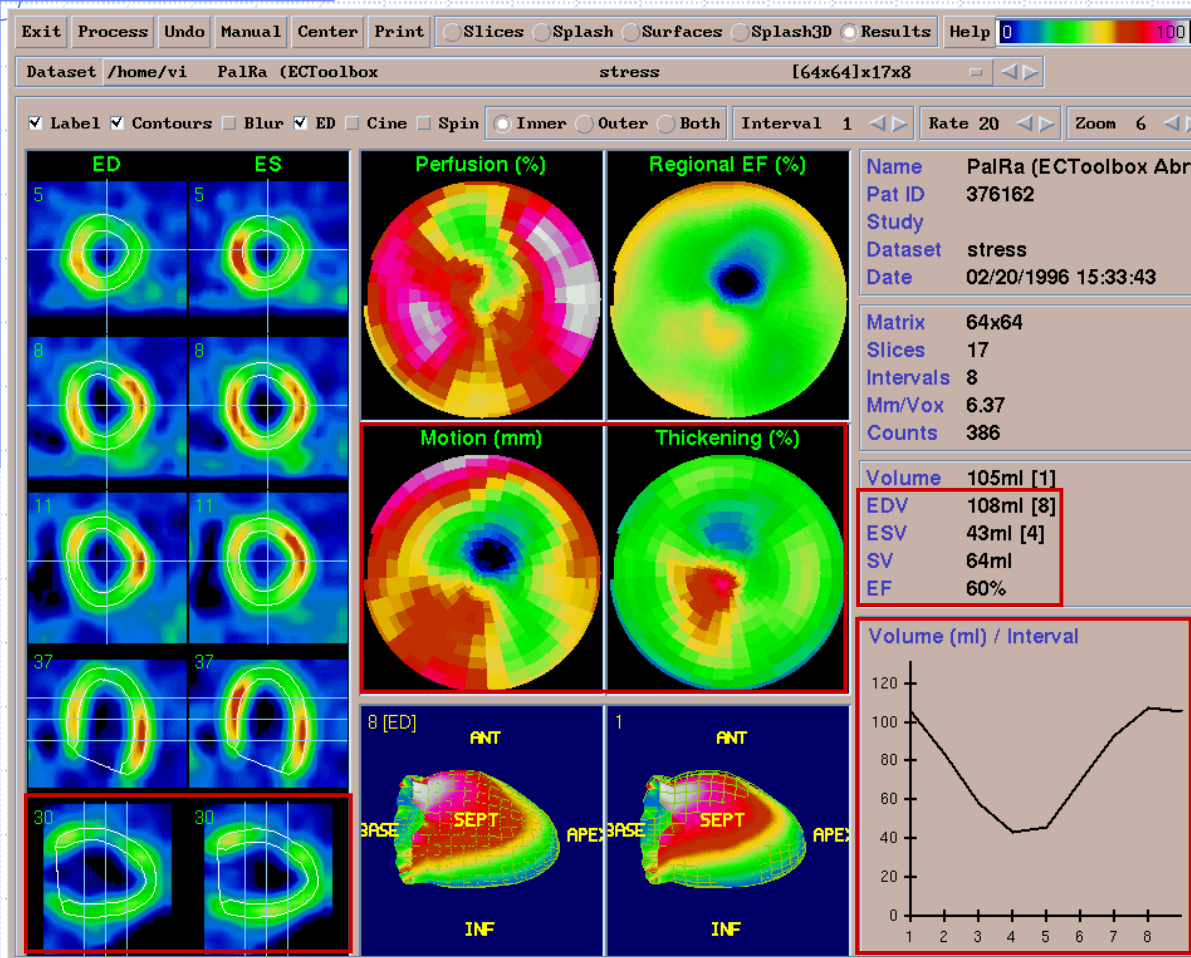
- ↓ artefact, Sp > 80%
- sidération de stress ?
- hibernation S/R ?
- tri-tronculaires ?

VOLUMES VG

FES VG

- Pronostic +++
- RR(3 ans) x 2 à 4

SCA & SPECT MYOCARDIQUE



EVOLUTION

- 2004 : < 1000
- 2012 : 2800

PERFUSION

- Stress mixte/Repos
- Se > 90 %

CINETIQUE PAROIS EPAISSISSEMENT

- ↓artefact, Sp>80%
- sidération de stress ?
- hibernation S/R ?
- tri-tronculaires ?

VOLUMES VG FES VG

- Pronostic +++
- RR(3 ans) x 2 à 4

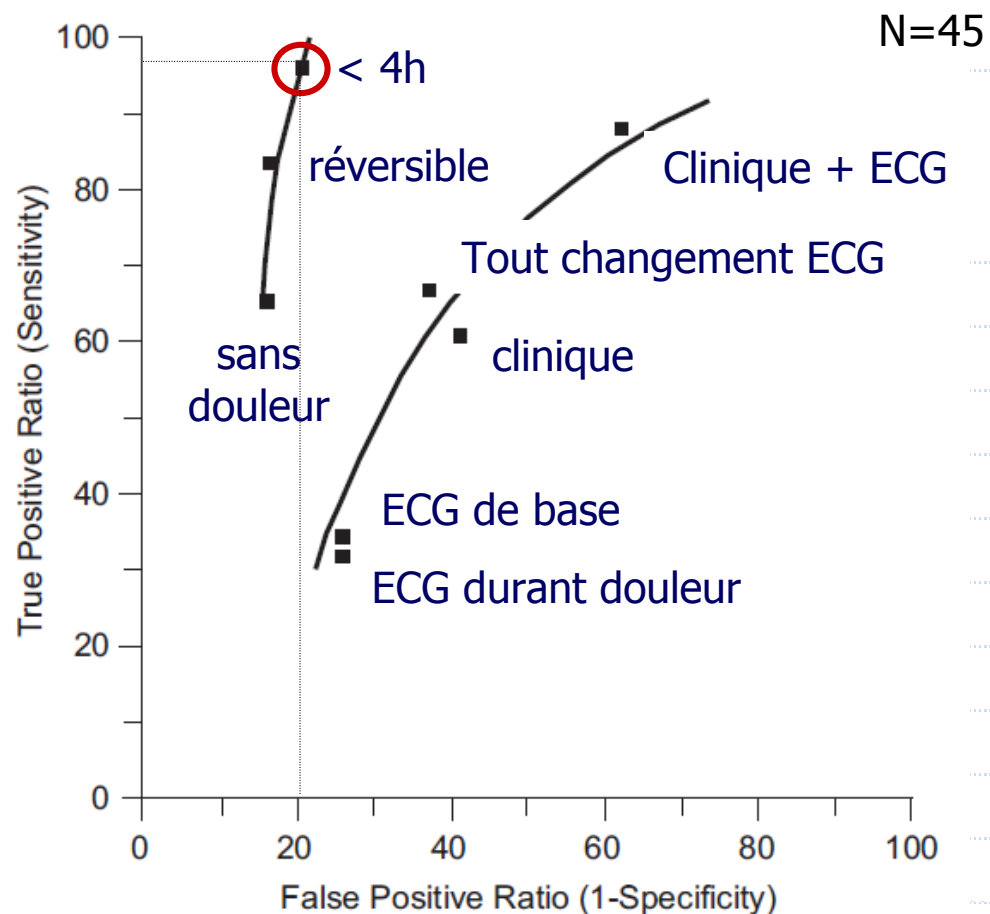
SCA & SPECT MYOCARDIQUE DE REPOS

- ECG : 40-65% N
- Troponine US : N si ischémie sans nécrose
 - Se (cTn T/I) < 40% si angor instable*

◆ TSM de repos :

- Plus précoce / ECG
- Se >> Tropono 24h
- Se = VPN = 99%
- Sp = 73 %
- < 3h de la douleur
- FN : spasme coronaire

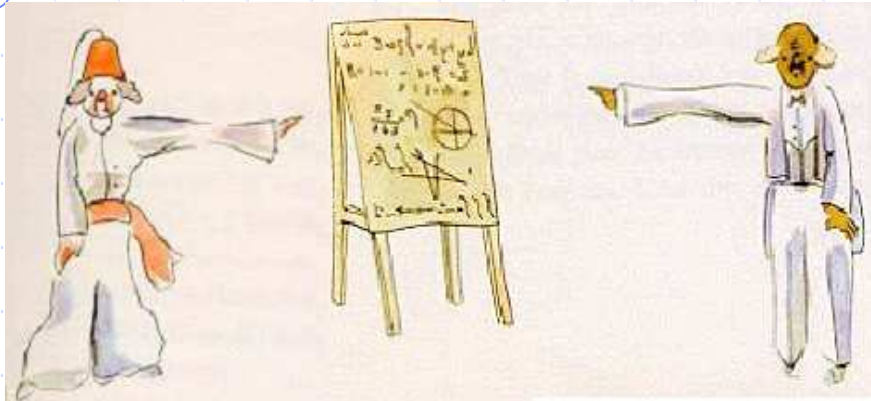
12 études
1979-2007
4210 patients



Conclusions

- ☺ Scintigraphie avec résultats sans délai (< 1h)
 - ☺ Embolie pulmonaire si radio du thorax normale
 - ☺ Origine cardiaque d'une dyspnée
 - ☺ Syndrôme coronarien aigu
- ☺ Scintigraphie avec délai (1-3h)
 - ☺ Douleur ostéoarticulaire (trauma ++)
 - ☺ Suspicion de sepsis, inflammation
- ☺ Imagerie non invasive, peu irradiante, 5j/7
- ☺ N'hésitez pas à appeler :
 - ☺ Salle d'interprétation des médecins : 3 84 72
 - ☺ Rdv : 3 84 64 (ou 3 95 17 ou 3 86 29)

Merci pour votre attention



- **Seminars in Nuclear Medicine. Vol 43, N°2. 2013. Radionuclide imaging in acute care.**
- **Scintigraphie de l'appareil locomoteur. Paycha F et Richard B. *Encycl Méd Chir Appareil locomoteur*. 14-001-Q-10, 2002, 21 p.**

Denis Mariano-Goulart
Département de médecine nucléaire, CHU de Montpellier
(04 67 33) 85 98 ou (06 65 84) 91 13
d-mariano_goulart@chu-montpellier.fr
<http://scinti.etud.univ-montp1.fr>