LA SCINTIGRAPHIE DE PERFUSION MYOCARDIQUE A L'ERE DE LA QUANTIFICATION

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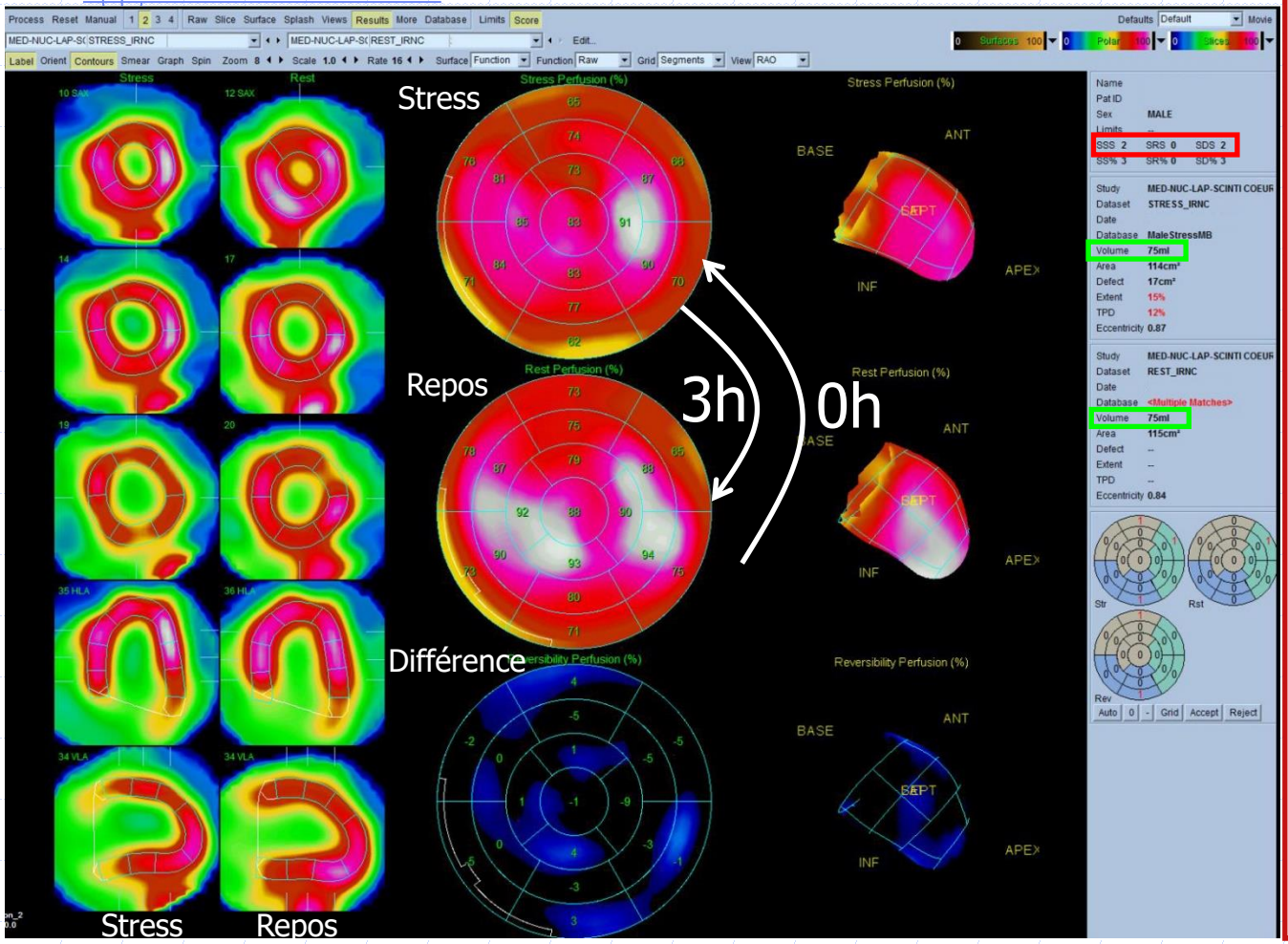
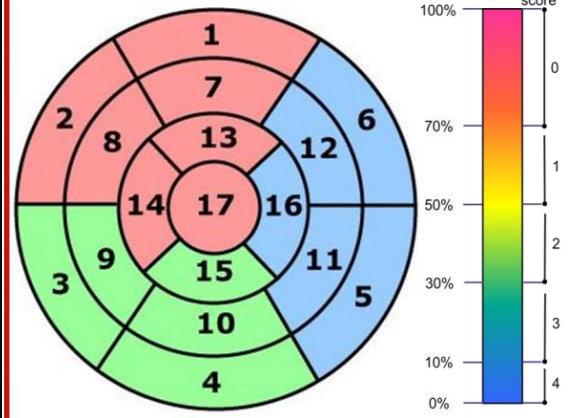
Quantitative Perfusion SPECT (QPS)



1- Quantification relative (QPS)

Scores sommés
% Surface VG anormale



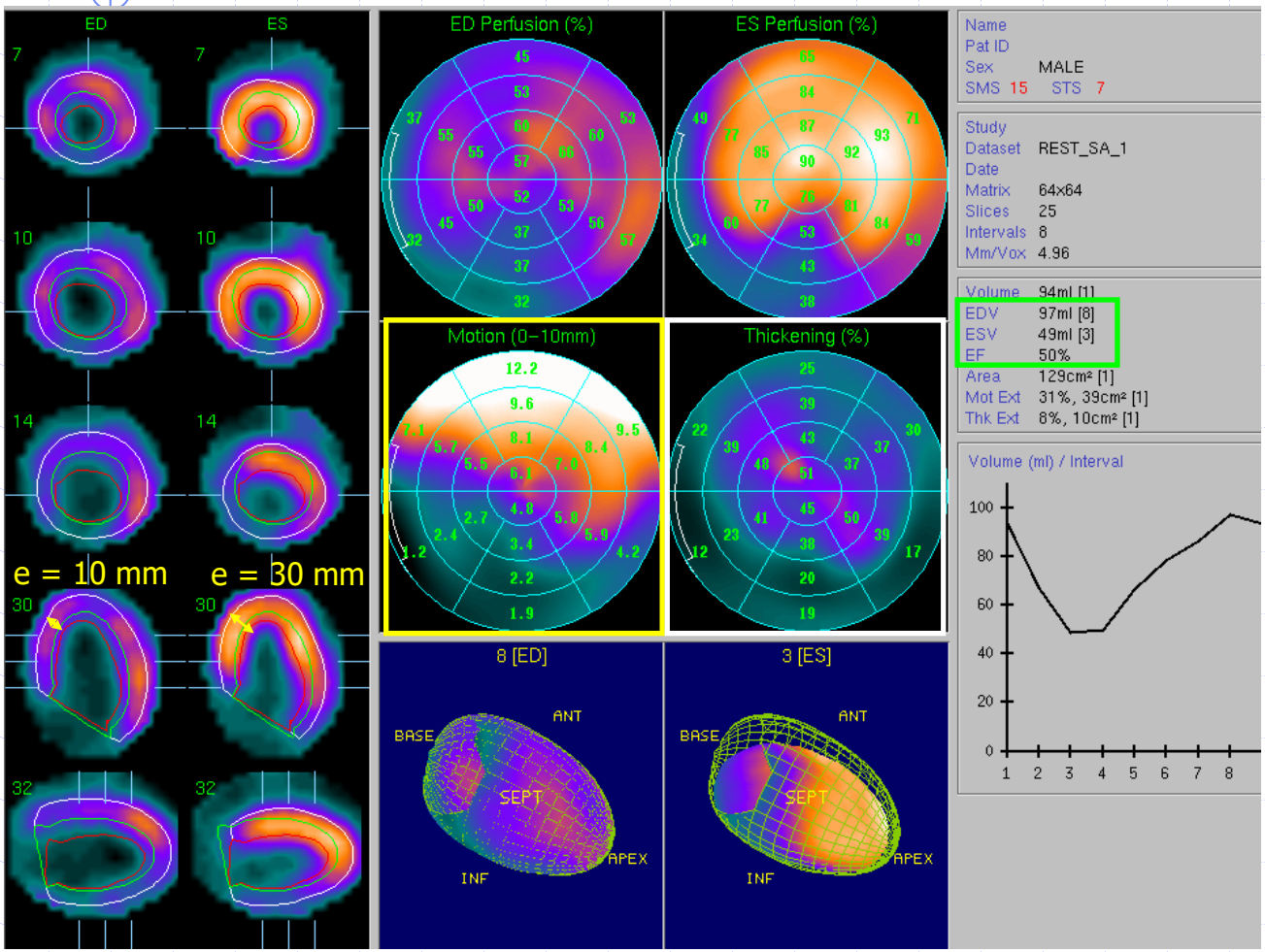
2- Dilatation VG (QPS)

DIT: V_{stress}/V_{repos}(non gated) > 1,4

Remodelage VG : V > 63 mL/m²
soit environ 120 (H) ou 100 (F) mL

A Ghatak Semin Nucl Med 2013; 43:71-81 – MD Duca J Nucl Cardiol 1999; 6:570-6
T Sharir J Nucl Cardiol 2018;25:738-741 – M Alama J Nucl Cardiol 2018;25:724-37

Quantitative Gated SPECT (QGS)



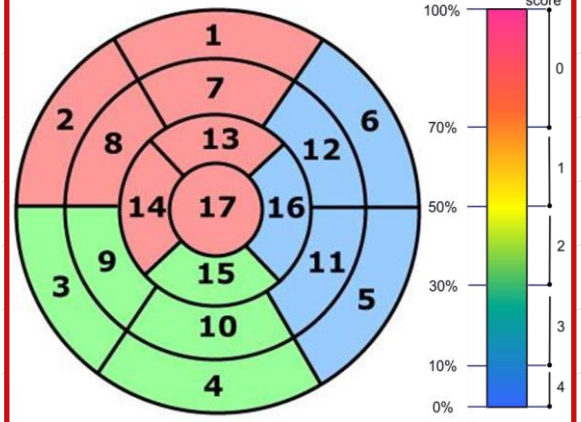
e/LMH = 0,7 CR = 0,6 Perte de 40 %

e/LMH = 2 CR = 1

1- Quantification relative (QPS)

Scores sommés

% Surface VG anormale



2- Dilatation VG (QPS)

DIT: V_{stress}/V_{repos}(non gated) > 1,4

Remodelage VG : V > 63 mL/m²

soit environ 120 (H) ou 100 (F) mL

3- Cinétique segmentaire (QGS)

Sidération (au stress)

Hibernation (au repos et stress)

4- Artefacts d'atténuation (QGS)

Hypo S/R à ES normal ou AC par CT

5- Pronostic CV à 3 ans (QGS)

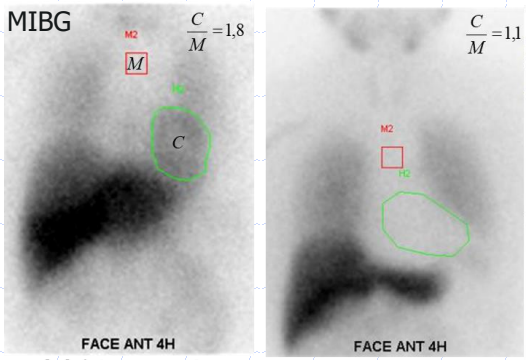
FE < 51 (F) ou 43% (H)

ESV > 27 (F) ; 39 (H) mL/m² (40 ; 70 mL)

JR Galt. IEEE Trans Med Imag. 1990; 9 ; G Germano. JACC 1997;30 ;
T. Sharir et al. Circulation 1999;100 ; J Nucl cardiol 2006;13(4) et J Nucl cardiol 2018;25; Emmet JACC 2002;39;
S Karimi-Ashtiani J Nucl Med 2012;53; Wei Yang J Nucl Cardiol 2018;25

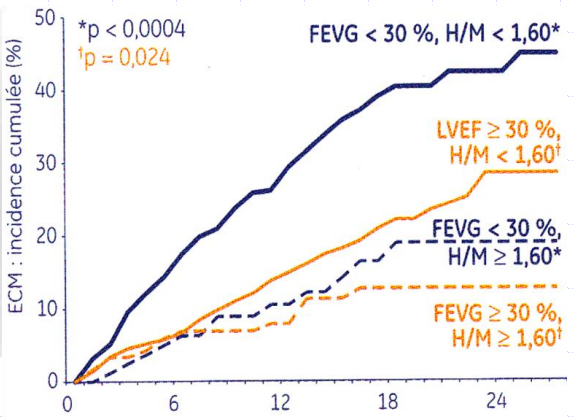
SPECT D'INNERVATION SYMPATHIQUE

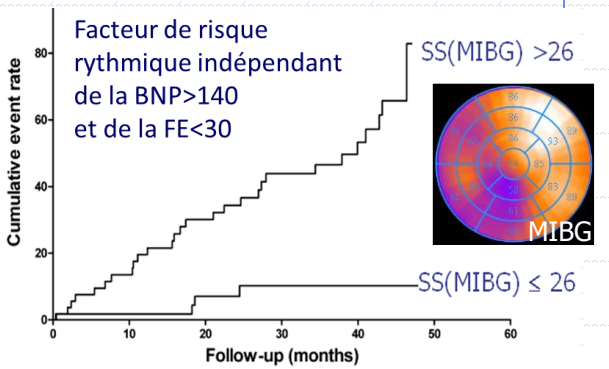
- Pronostic IC NYHA 4 / Indication DAI



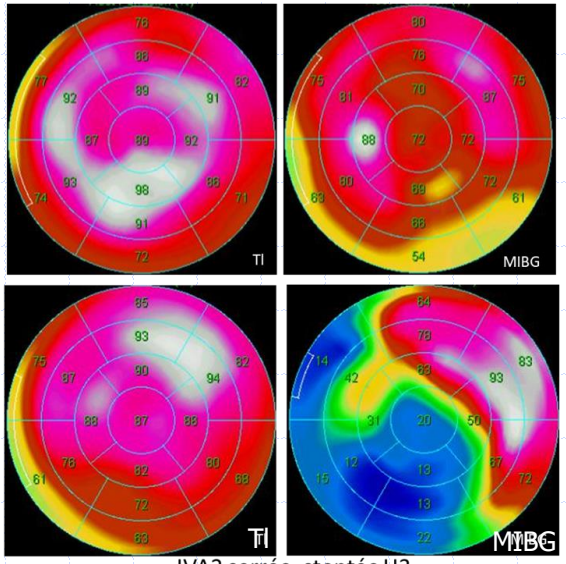
90% survie à 2 ans

60% survie à 2 ans





CD3 suboccluse stentée H3, 80% / IVA2 + Mg1, stentées J3

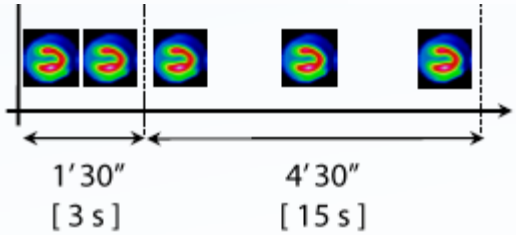


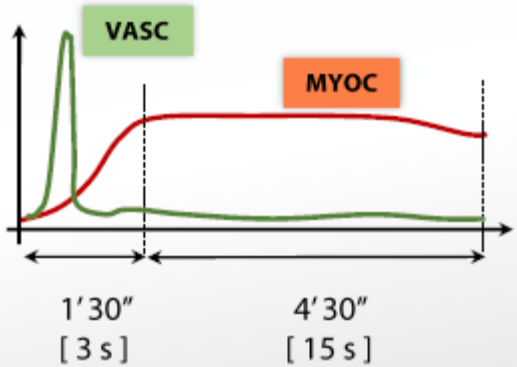
IVA2 serrée, stentée H3

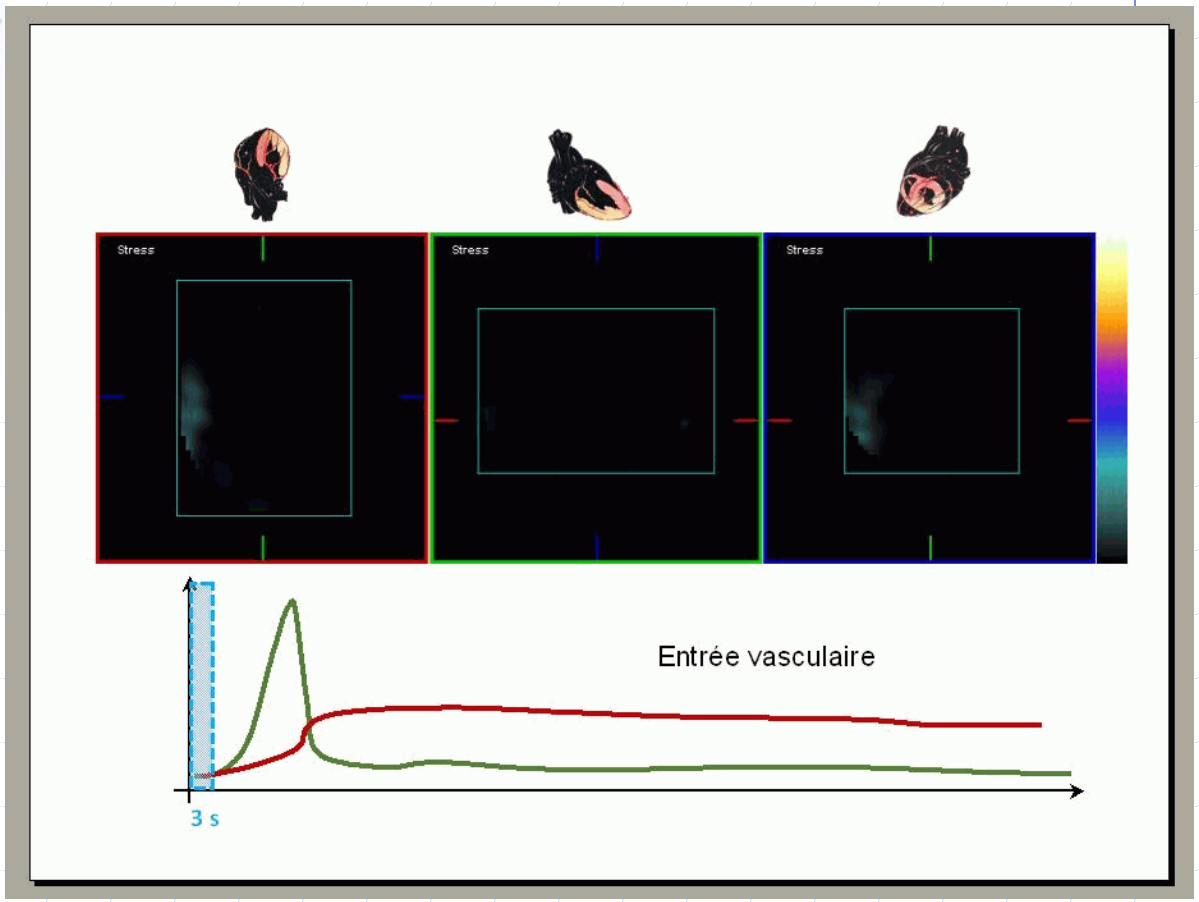
- Zones à risque/Gâchette
  - Viables avec recapture MIBG altérée

Admire HF (N=961) AF Jacobson et al. JACC 2010; 55(20) - MJ Boogers et al. JACC 2010; 55(24) - Bax et al. Circ Cardiovasc Imaging 2008 - E d'Estanques et al. J Nucl Cardiol 2017;24-C. Hédon, Nucl Med Comm 2018;26-F Vauchot J Nucl Cardiol 2018;25-JT Ortiz-Perez Eur Heart J 2007;28

SPECT DYNAMIQUE (LIST MODE)

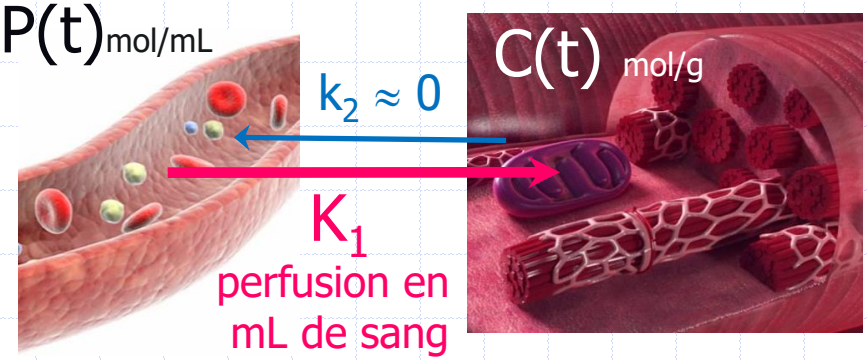






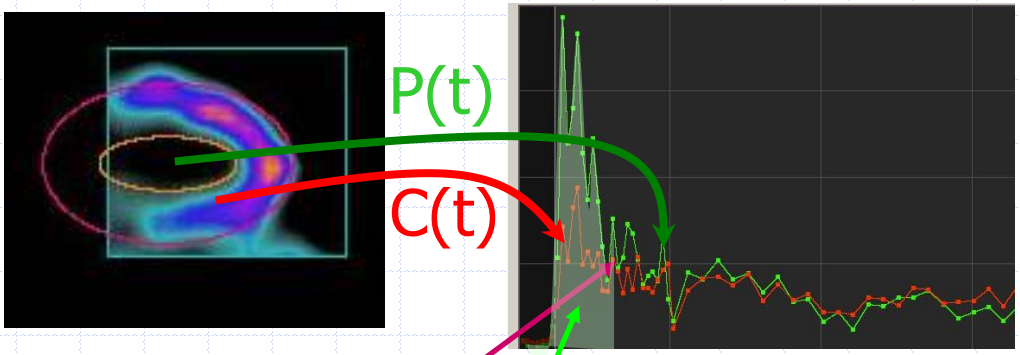
1 mCi Tc-TF centrage — 5 mCi Tc-TF Repos List 5' — 0,56 mg/kg DIP 4' — 18 mCi Tc-TF Stress List 5'

RESERVE CORONAIRE

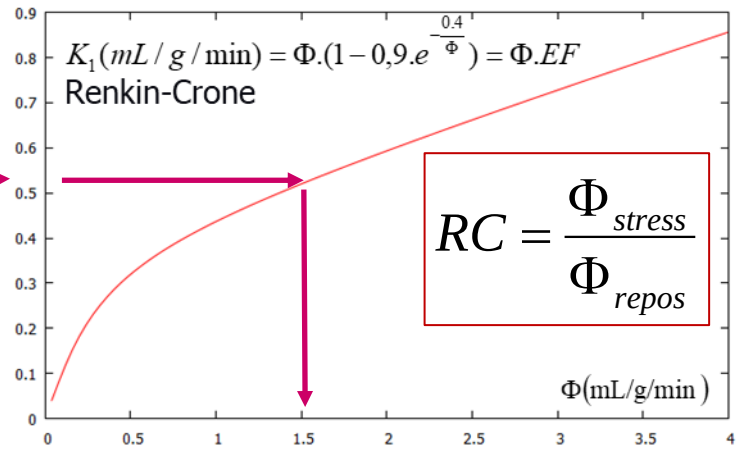


$$\frac{dC(t)}{dt} = K_1.P(t) \Rightarrow \int_0^t \frac{dC(t)}{dt}\,dt = K_1.\int_0^t P(t)dt$$

$$C(t) = K_1.\int_0^t P(t)dt$$



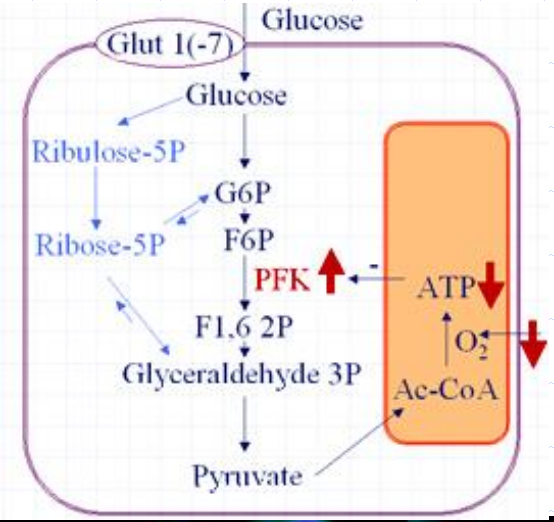
$$K_1 = \frac{C(t)}{ASC(t)} \approx \frac{\overline{C}_{Myoc\ plateau}}{ASC_{Pic\ vascu}}$$

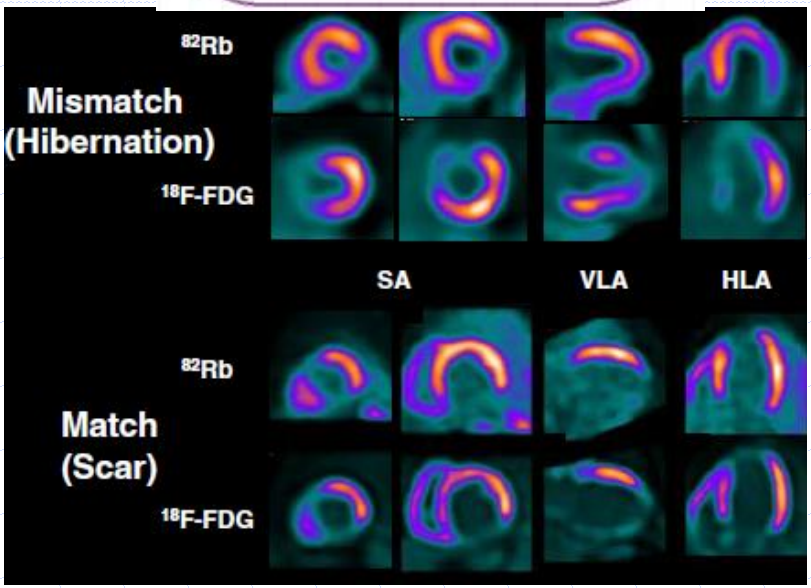


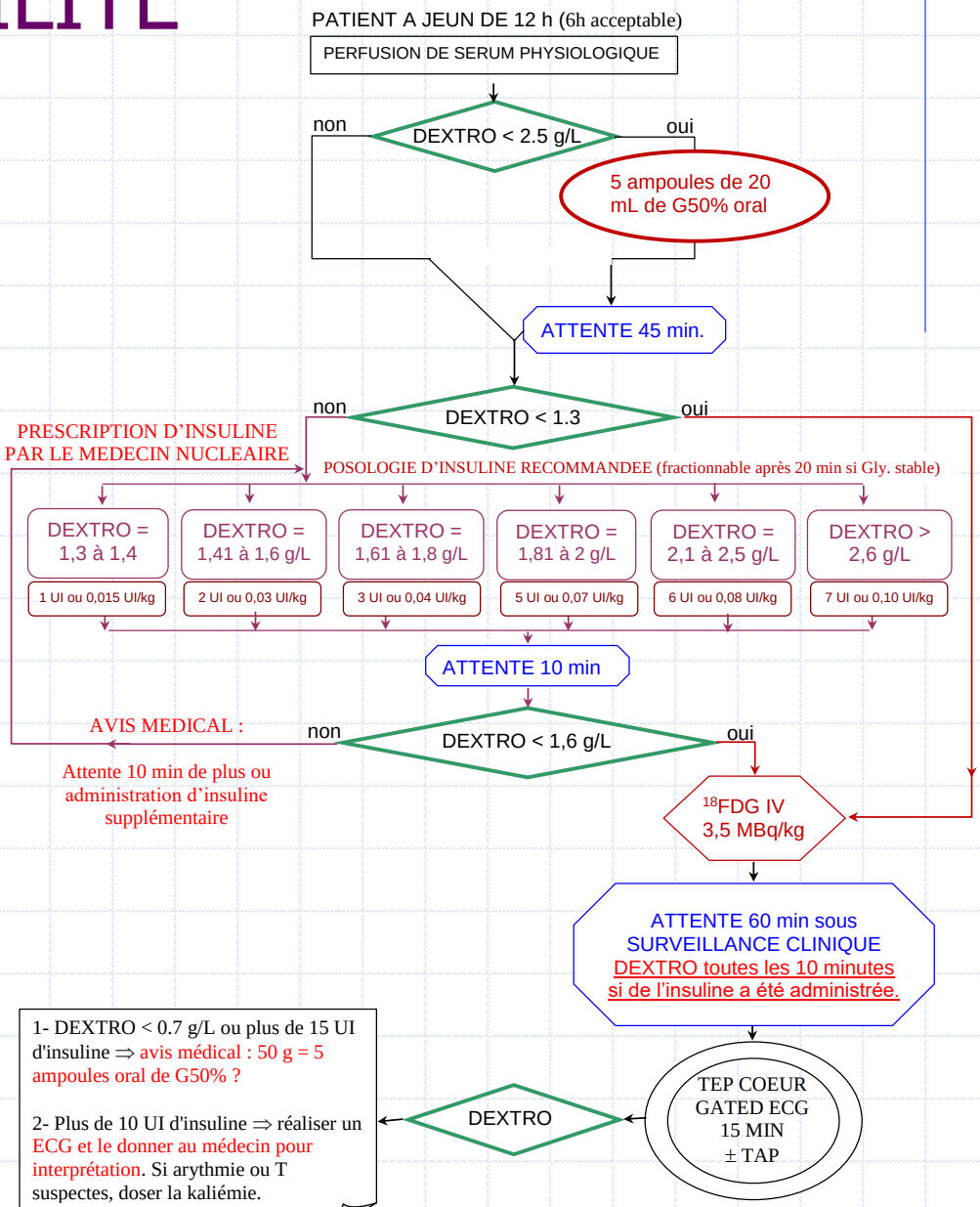
(correction EVP et contamination P→C)

JA Leppo Circ Res. 1989; 65:632-9

TEP ^{18}FDG DE VIABILITE MYOCARDIQUE

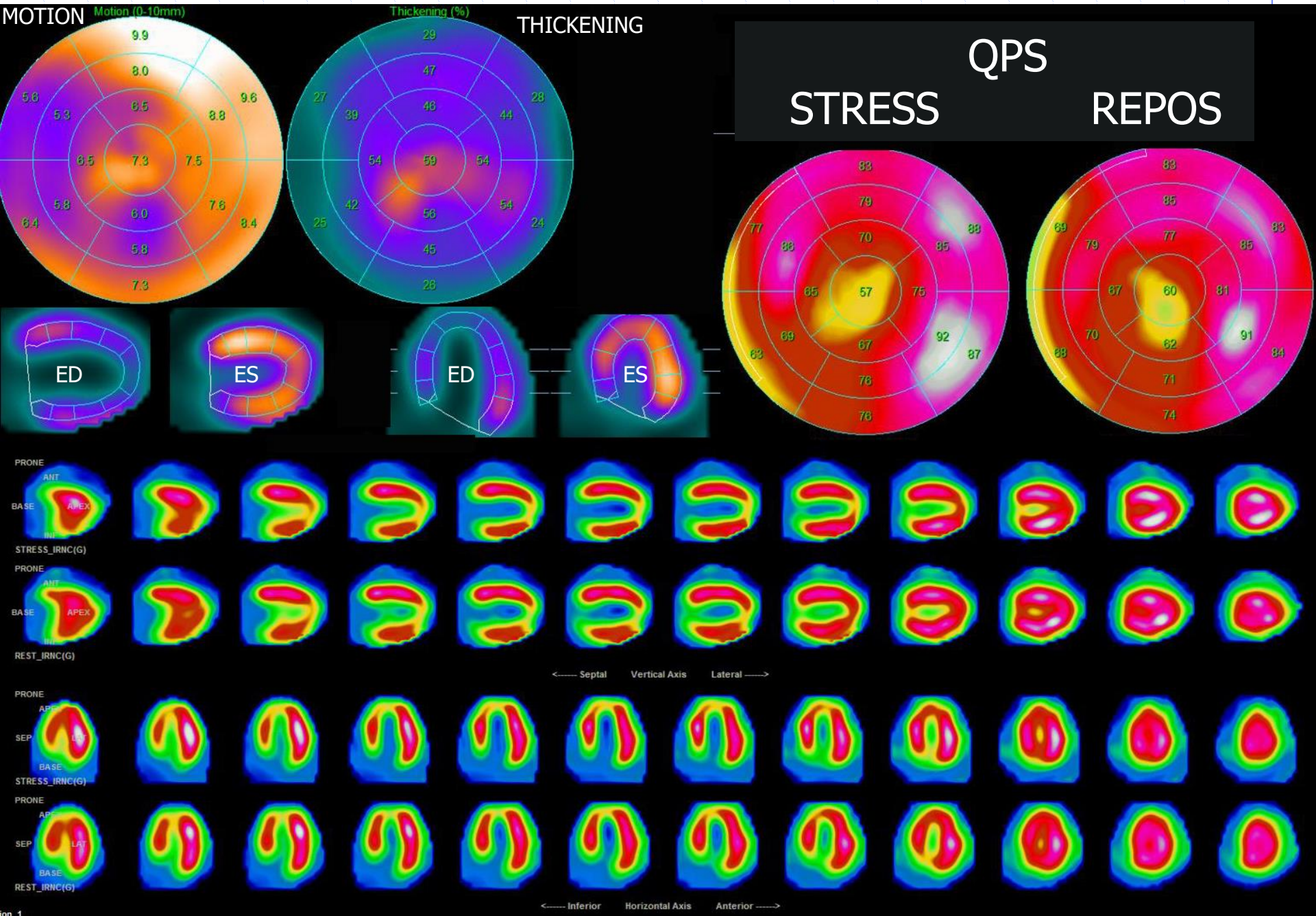




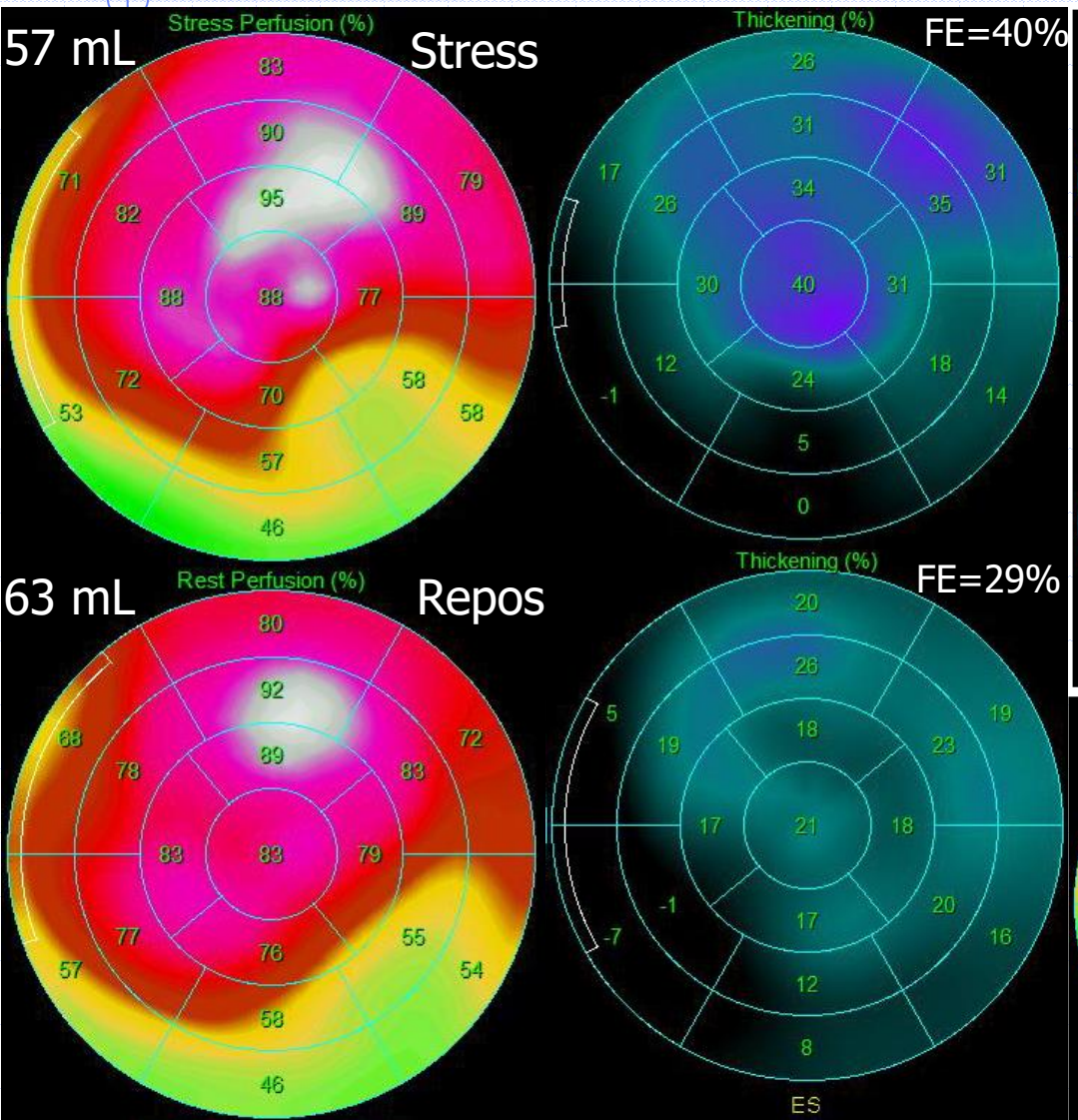


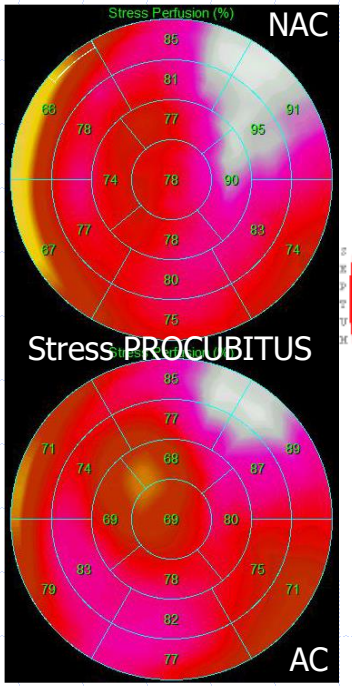
D. Mariano-Goulart. 30/11/2020. Réf. J Nucl Med 2013; 54(8): 1485-1507 et avis du Pr E Renard.

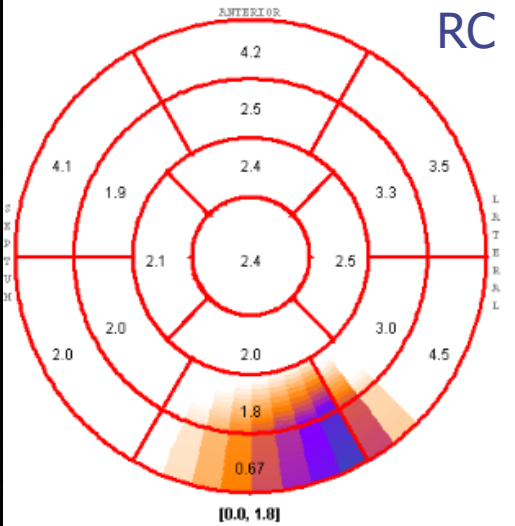
Wooclap

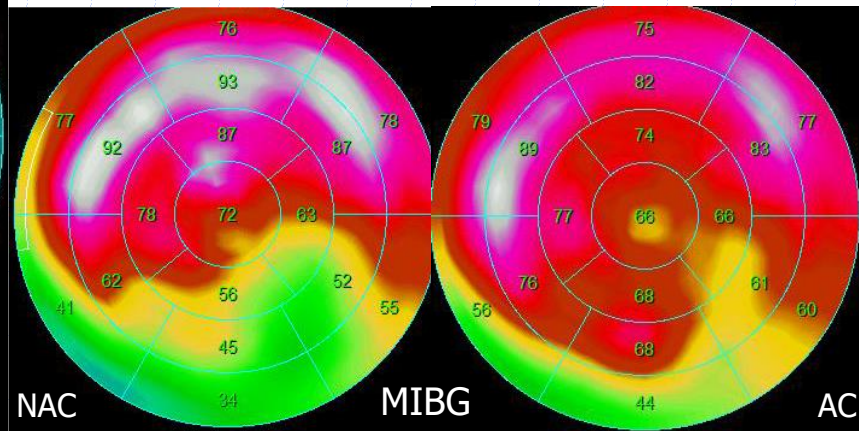

MOTION
Motion (0-10mm)
9.9
8.0
5.6
5.3
6.5
9.6
8.8
6.5
7.3
7.5
5.8
6.0
7.6
6.4
8.4
5.8
7.3
Thickening (%)
THICKENING
29
47
27
39
46
28
44
54
59
54
42
56
54
25
24
45
26
QPS
STRESS
REPOS
83
79
77
88
70
85
65
57
75
69
67
92
87
63
76
76
83
85
89
79
77
83
85
87
67
60
81
70
62
91
88
84
71
74
ED
ES
ED
ES
PRONE
ANT
BASE
APEX
INF
STRESS_IRNC(G)
PRONE
ANT
BASE
APEX
INF
REST_IRNC(G)
<------ Septal Vertical Axis Lateral ------>
PRONE
SEP
BASE
STRESS_IRNC(G)
PRONE
SEP
BASE
REST_IRNC(G)
<------ Inferior Horizontal Axis Anterior ------>

H 70 a, stents CD2, Diag1, IVA3, Q inf

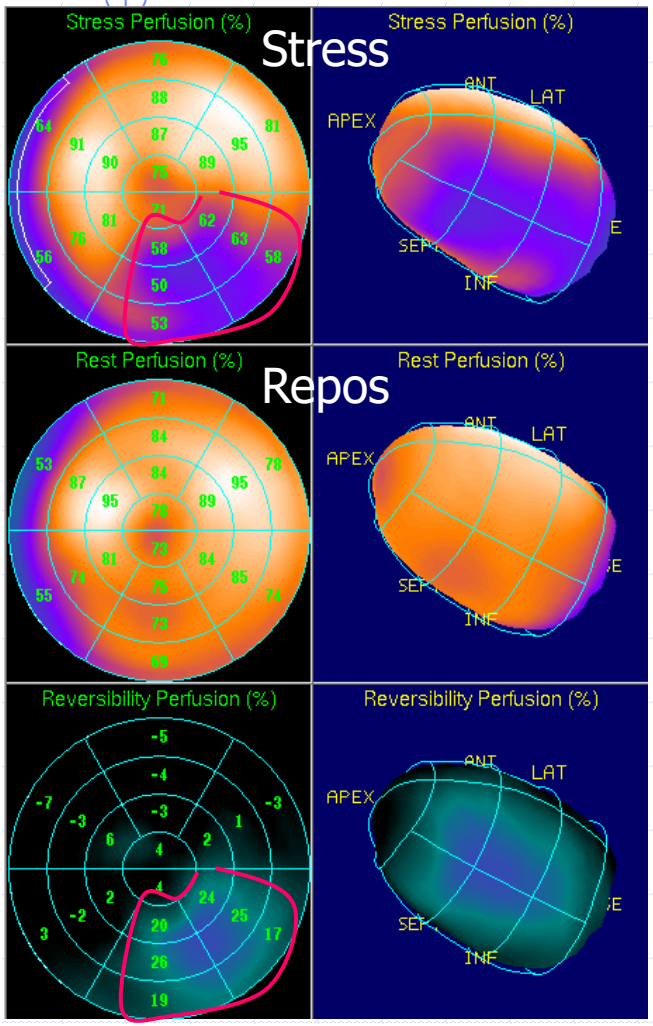


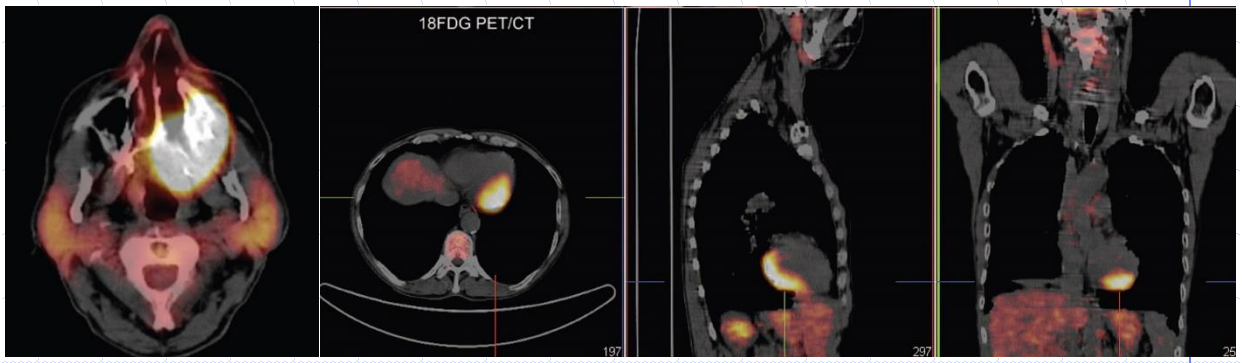


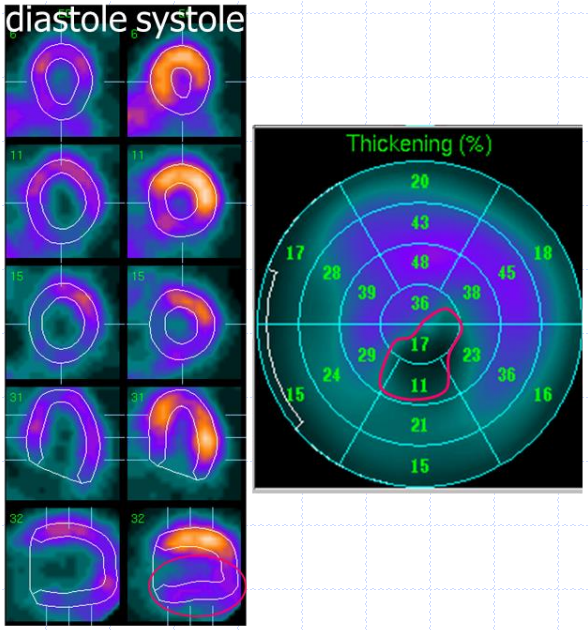


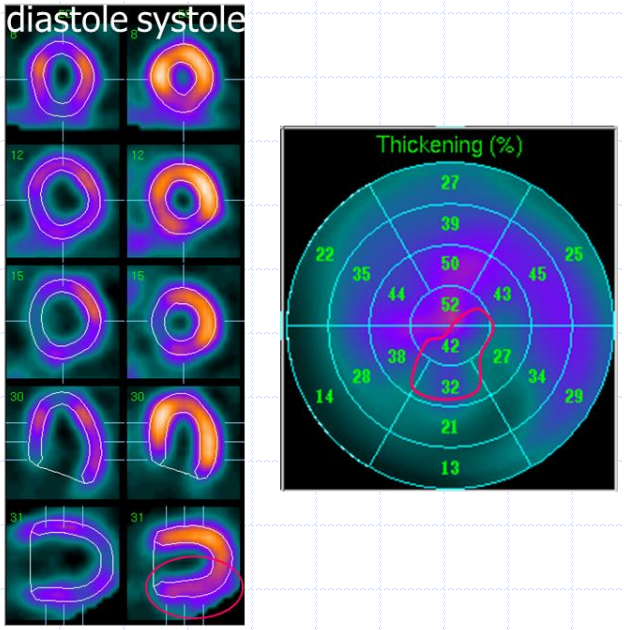


H 53 a,HIV LBGC







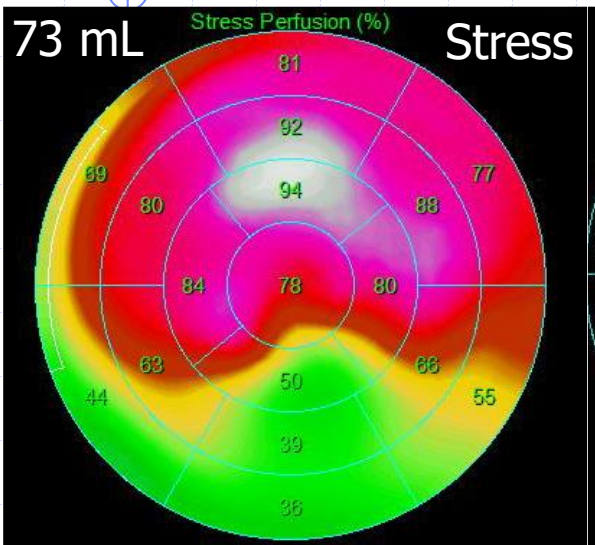


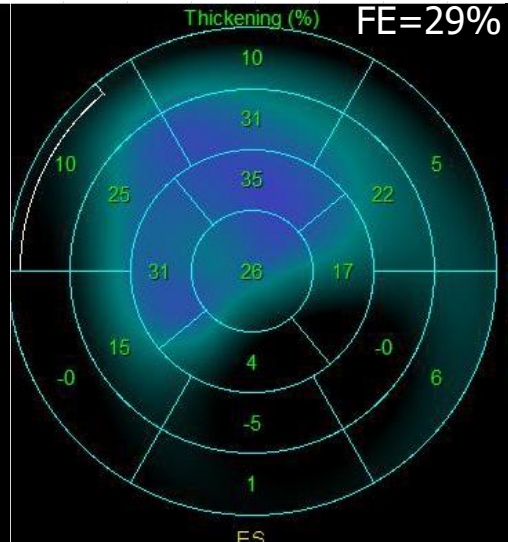
EFFORT
ES(apico-inf) = 11-17%

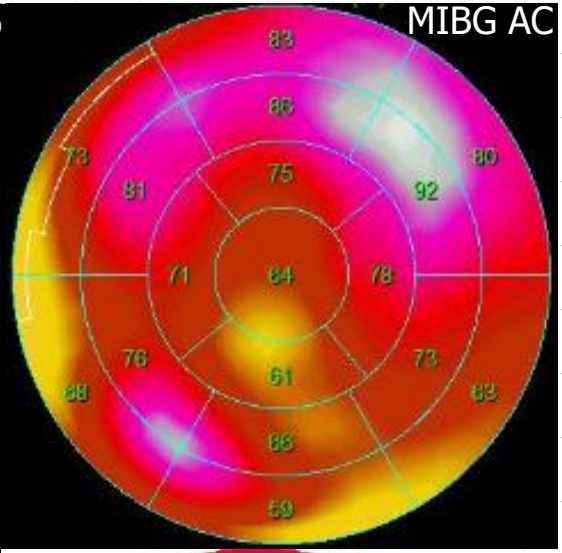
REPOS
ES(apico-inf) = 32-42 %

J Am Coll Cardiol 2002;39:991-8 - Clin Nucl Med 2009;34(10) :731-3

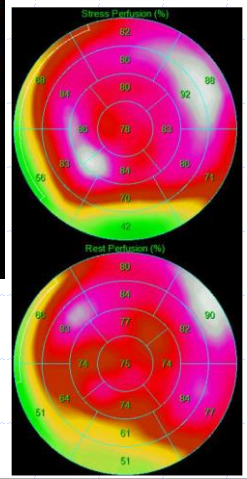
F 49 a, M6 post stents RVP, CD2, CD3

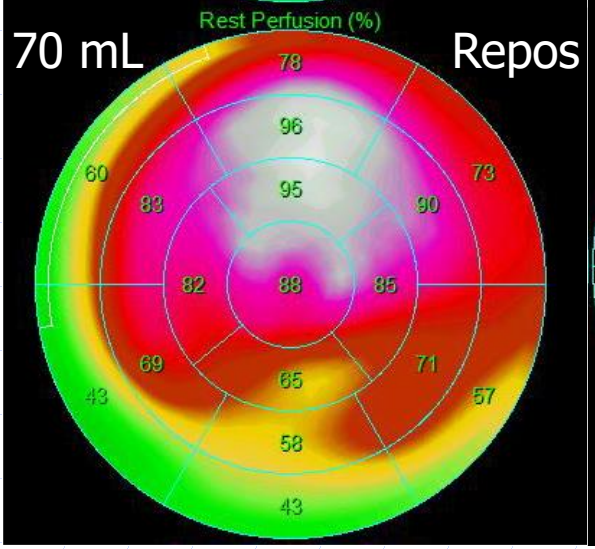


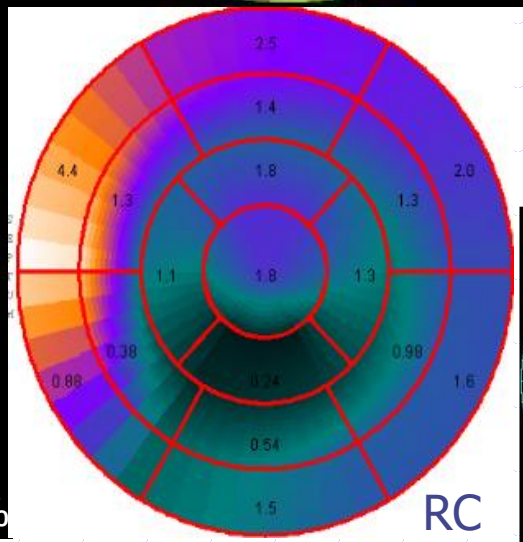


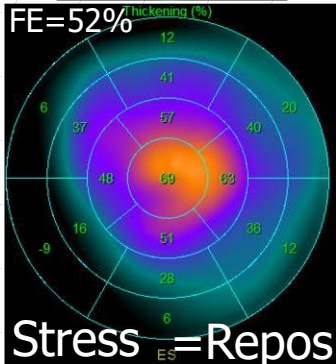


Contrôle à un an

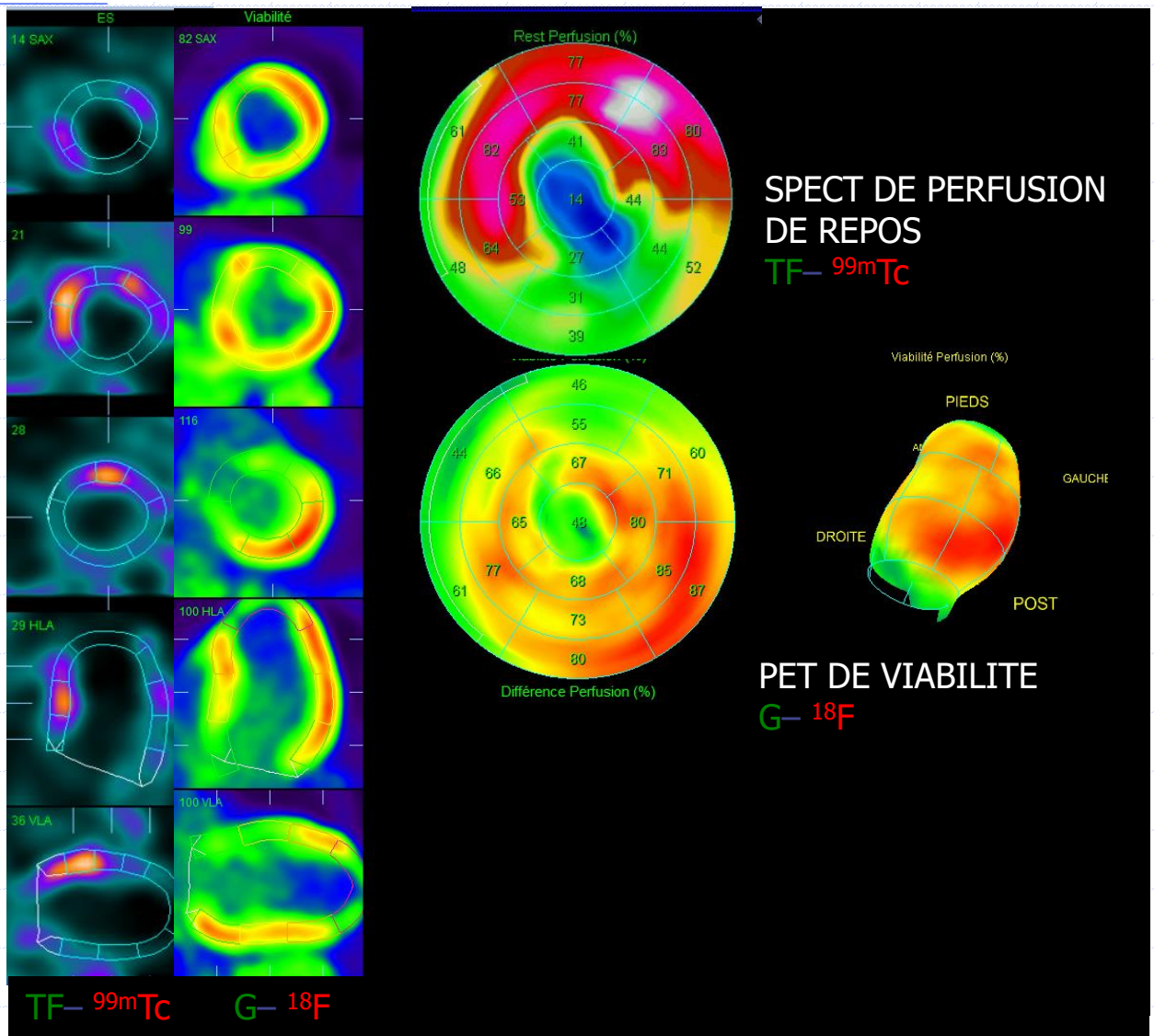




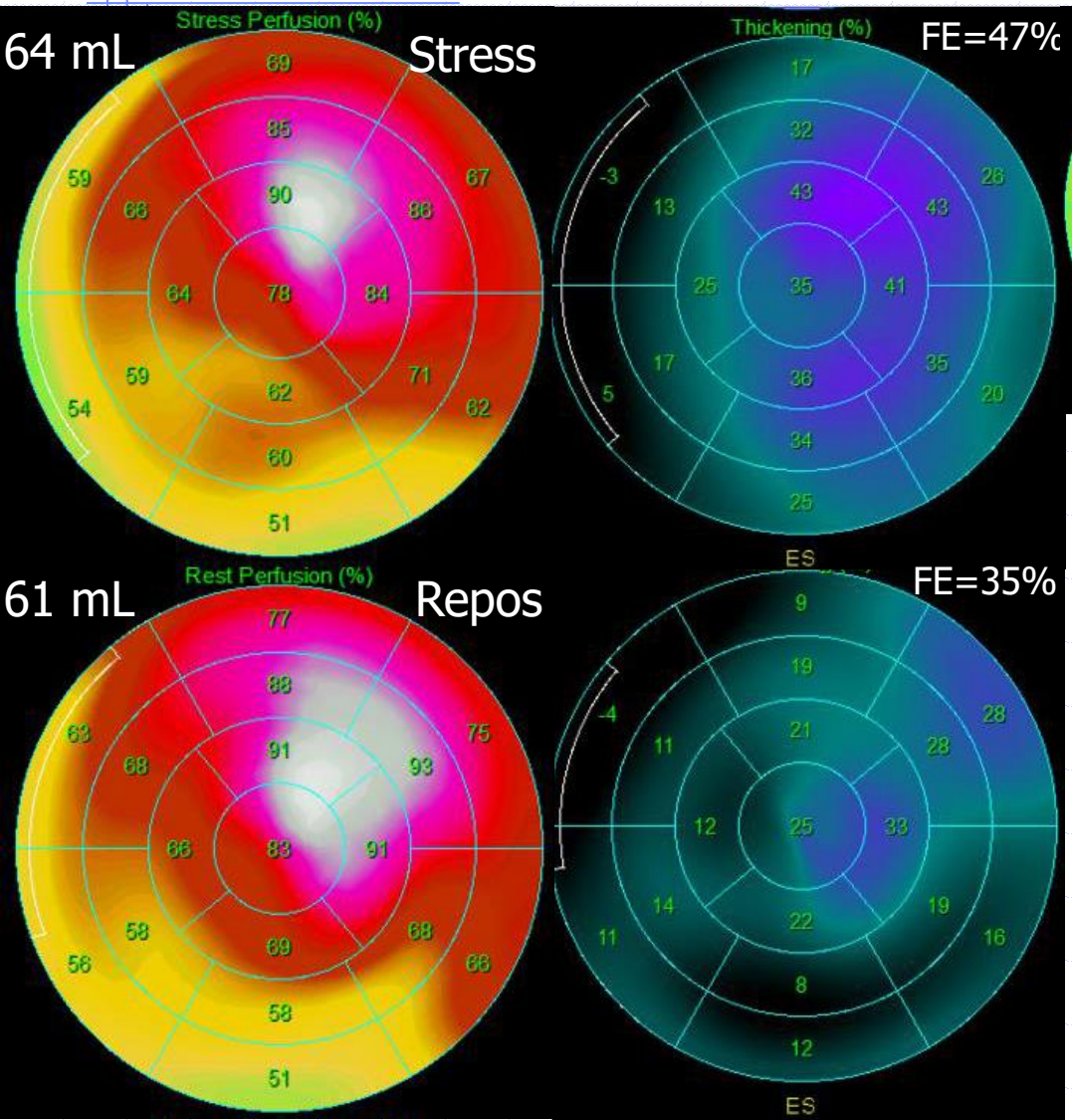


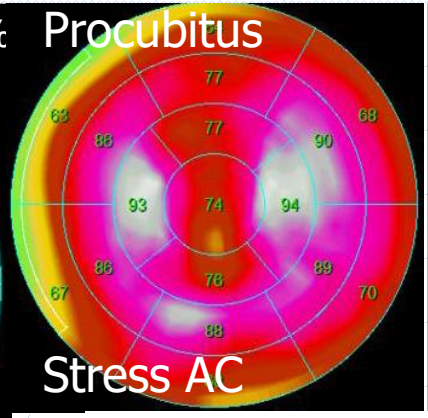


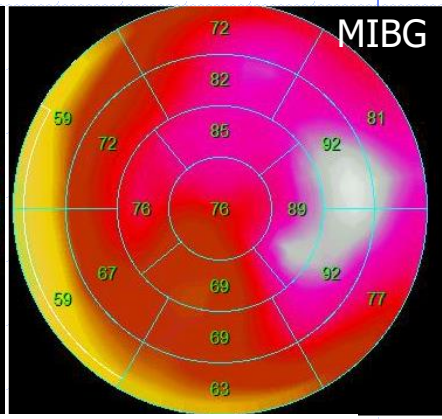
H 49a, Cx1, CD1, IVA2 occluses. Sténose Mg1, lésion TC: viabilité ?

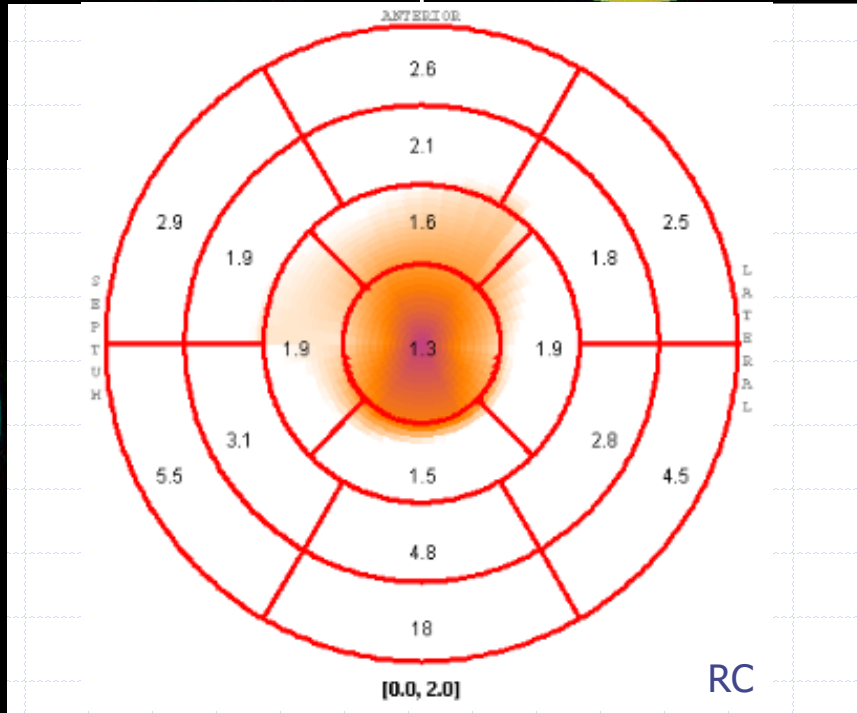


H 74 a, tabac, stent IVA1, embol IVA3

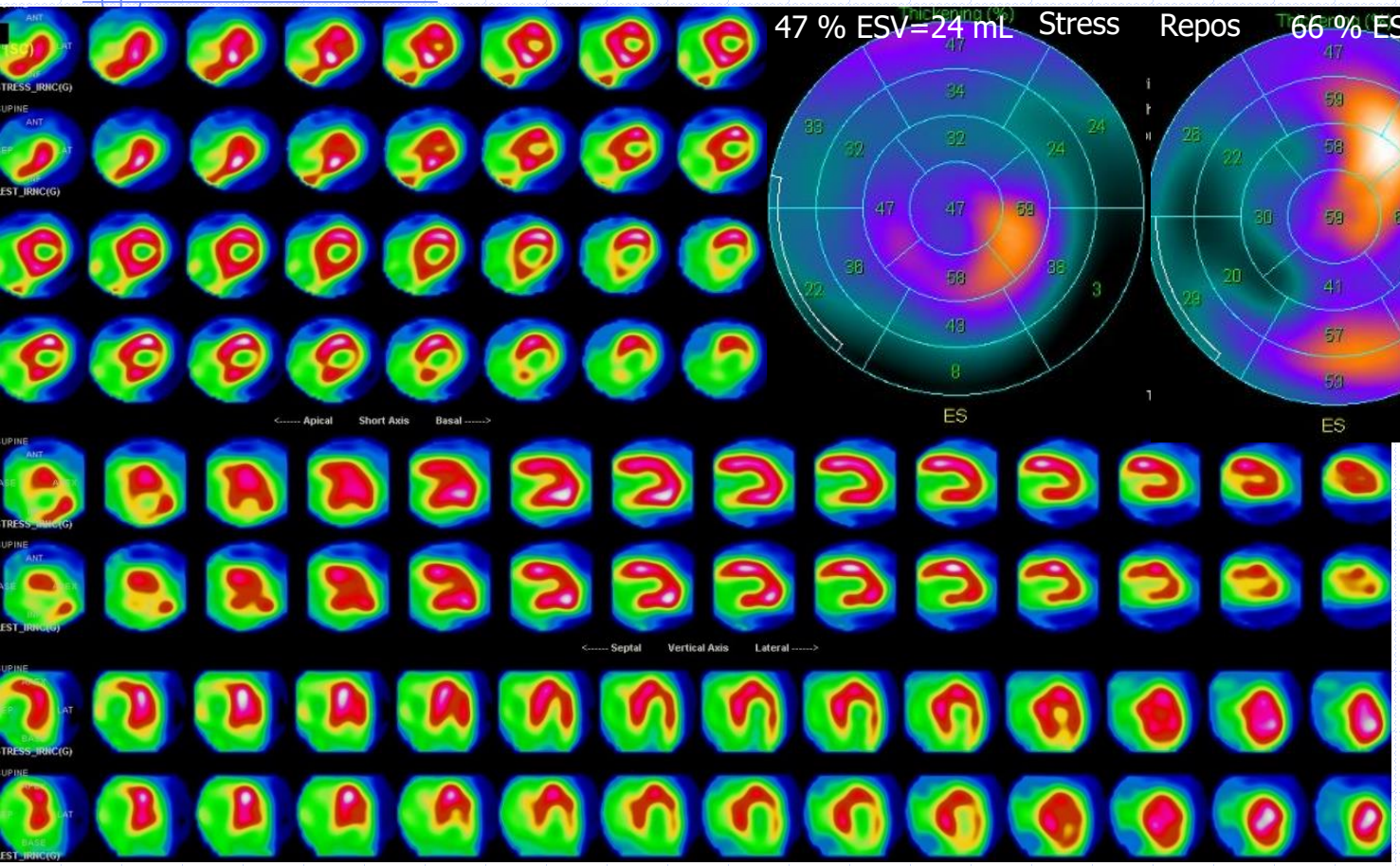


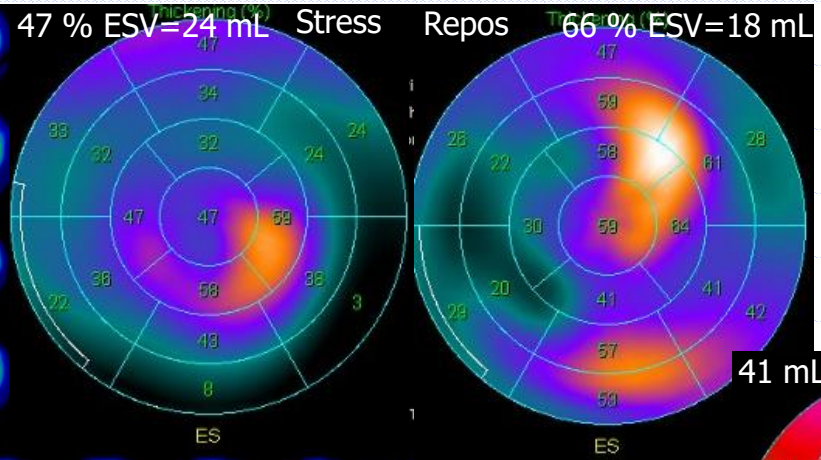


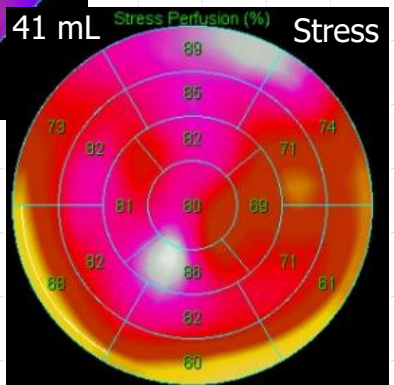


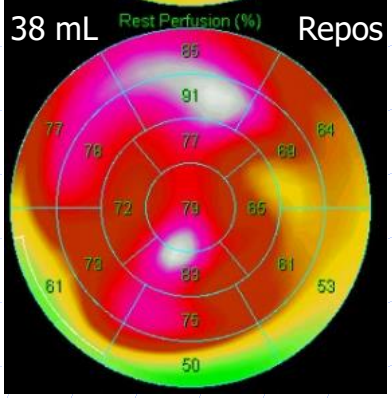


H 58 ans, tabac, DNID, LDL, IDM inf, Stent CD1. Lésions non stentées IVA2-3 et Mg1.

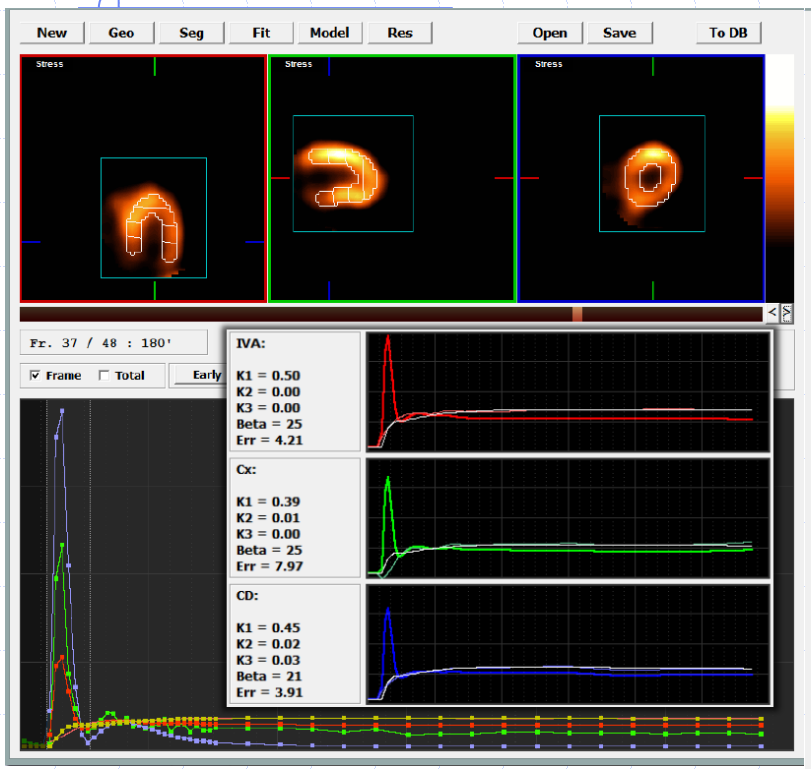


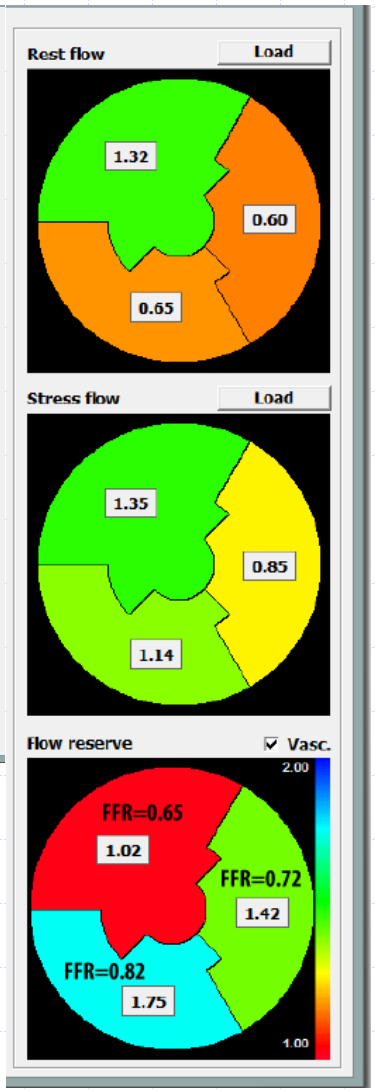






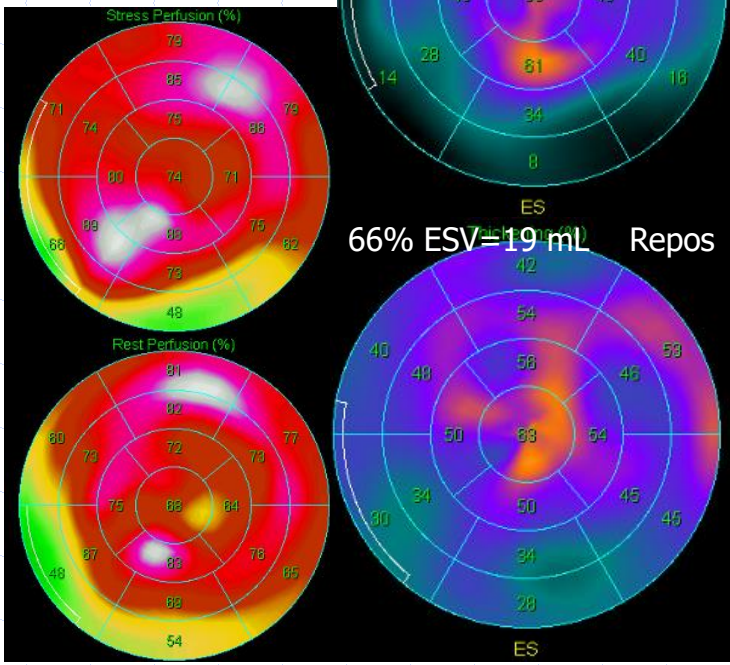
H 58 ans, tabac, DNID, LDL, IDM inf, Stent CD1. Lésions non stentées IVA2-3 et Mg1.



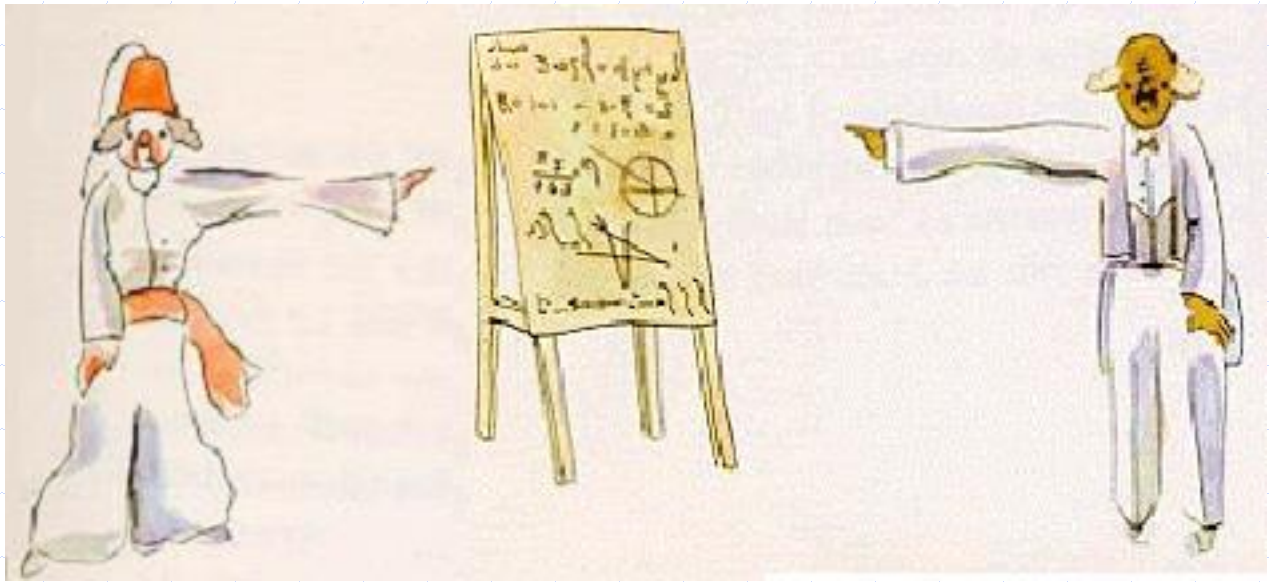


Coro:
90 % IVA 2 et IVA 3
99 % Mg 1 et 30 % Cx
CD1 stentée, perméable

TSM 1 an
après stents
CD, IVA, Cx, Mg



F Ben Bouallègue et al , J Nucl Med 2015; 56:1712-1717

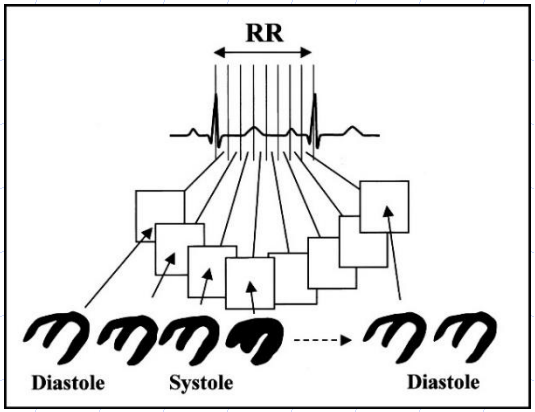


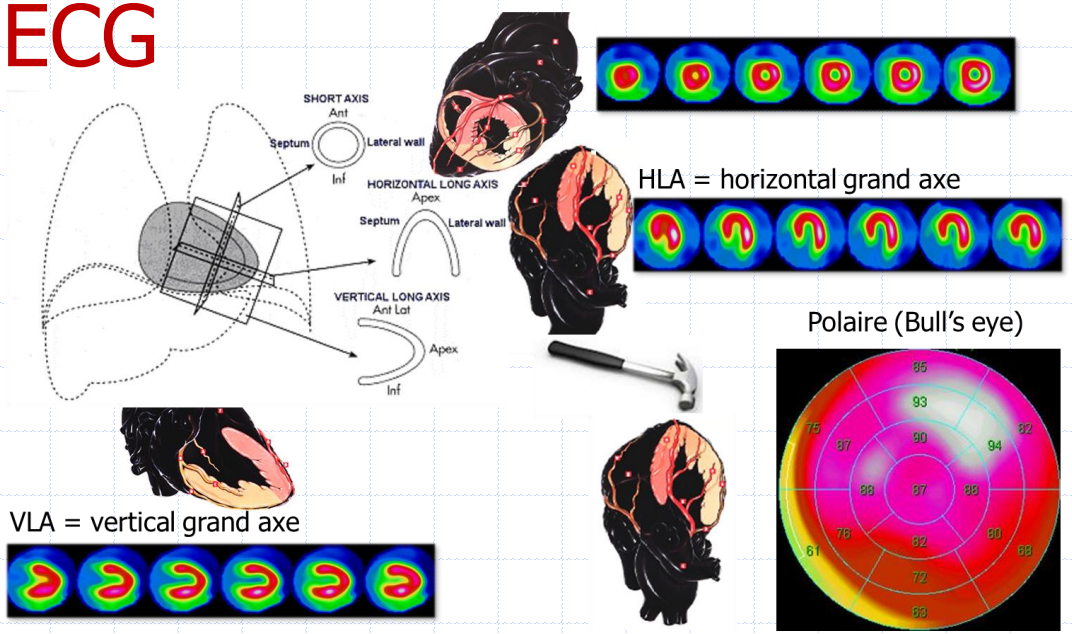
Merci pour votre attention…

http:\\scinti.edu.umontpellier.fr
d-mariano_goulart@chu-montpellier.fr

PERFUSION MYOCARDIQUE

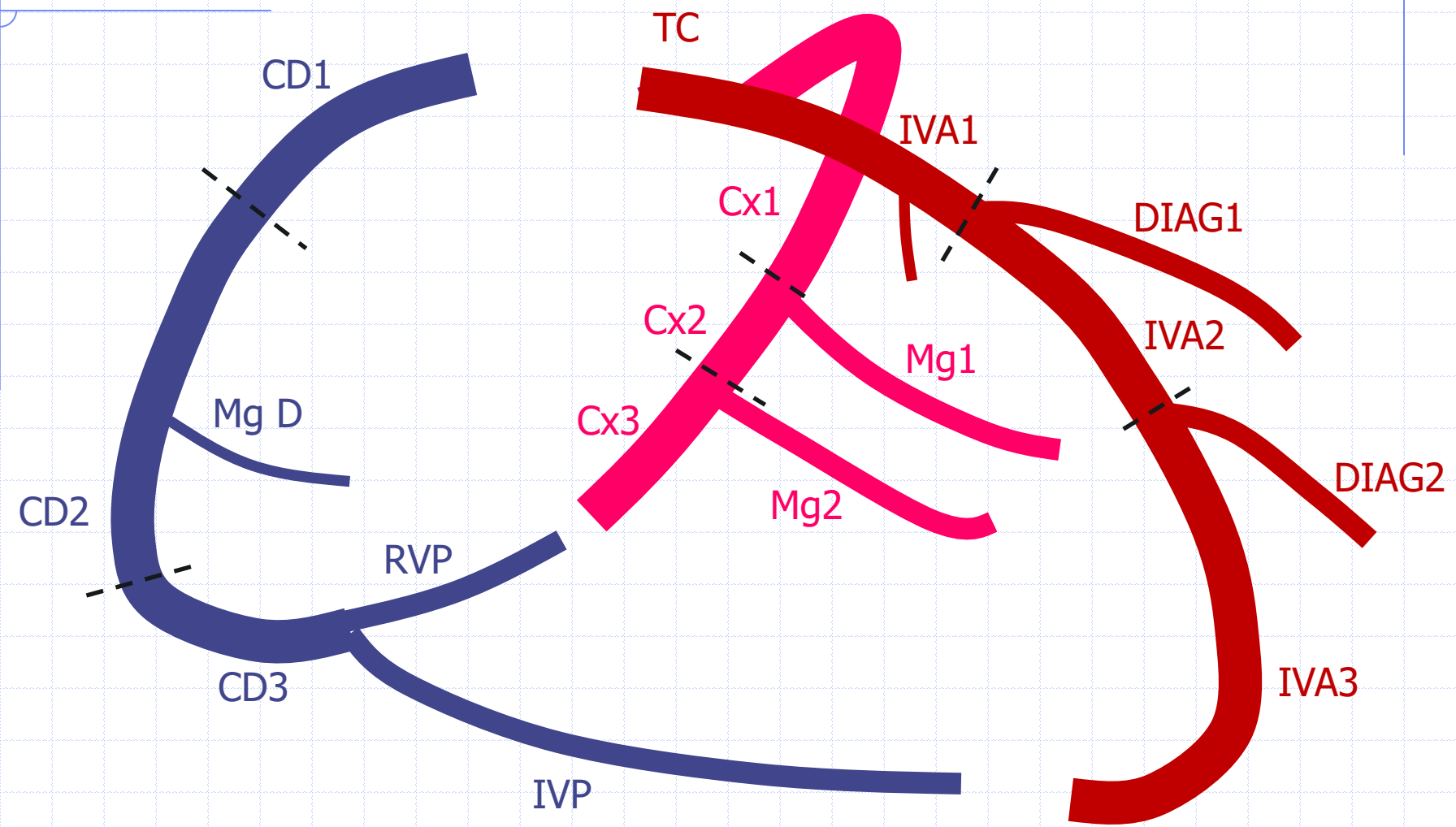
- Traceurs variés: ^{99m}Tc-MIBI/TF, ^{201}Tl, ^{82}Rb, ^{18}F-flurpiridaz
- Protocoles : $E \xrightarrow[3h^*]{} R$ ou $R \rightarrow E$; Standard ou List-Mode
- Caméras SPECT 2 têtes, CZT dédiées ou PET pour la RC
- Synchronisation ECG





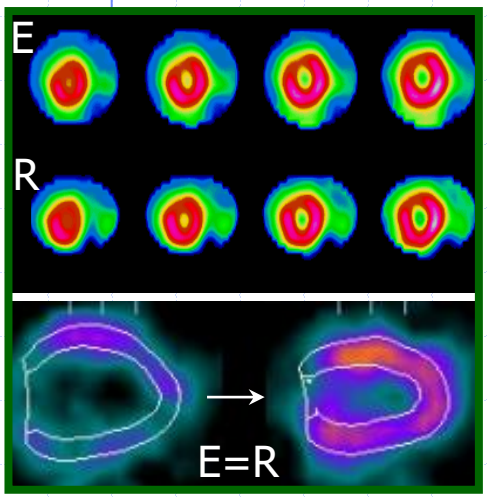
* A. Ghatak. Semin NuclMed 2013 43:71-81 – *MD Duca. J Nucl Cardiol 1999;6(6) – L Biliodeau JACC 1991; 18

ANATOMIE CORONAIRE



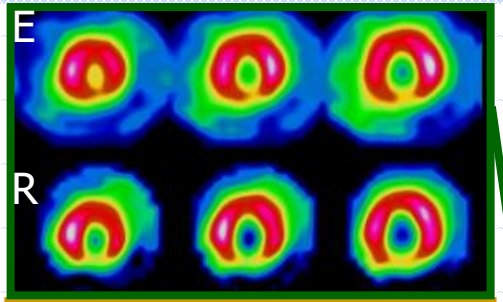
SPIRALE ISCHEMIQUE

NORMAL

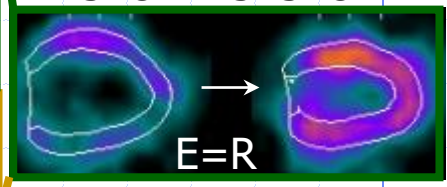


DIASTOLE SYSTOLE

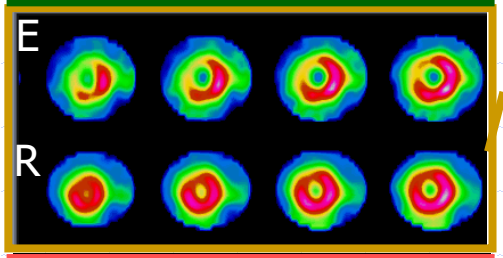
NORMAL (ARTEFACT)



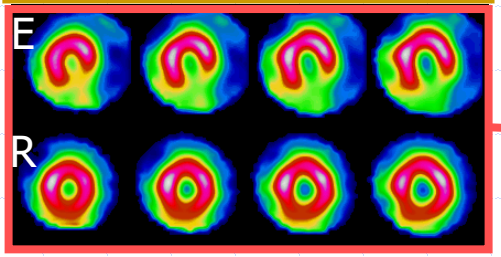
DIASTOLE SYSTOLE



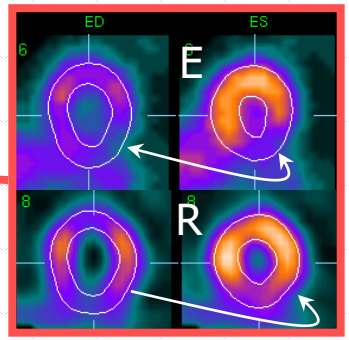
ISCHEMIE 50%<∅<79%



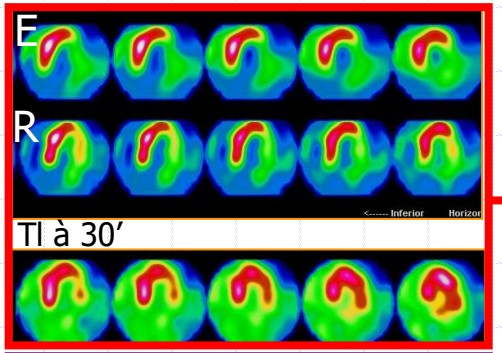
SIDERATION D'EFFORT ∅ < 80%

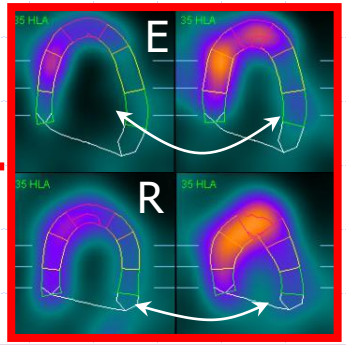


DIASTOLE SYSTOLE

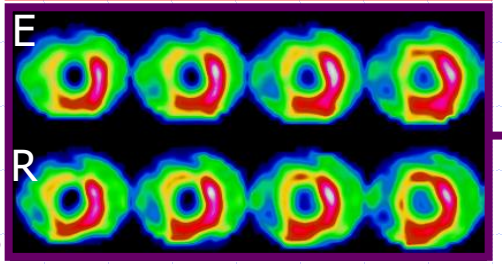


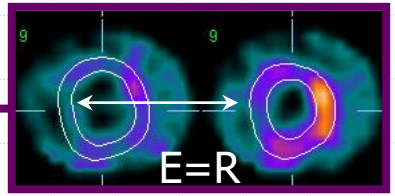
ISCHEMIE E/R VIABLE (HIBERNATION)





NECROSE





T. Sharir. - J Nucl cardiol 2006;13(4):495-506- L Emmet JACC 2002;39:991-8