Scintigraphie myocardique de perfusion et BBG

Réunion de DES Auvergne Rhône Alpes 24 Novembre 2018
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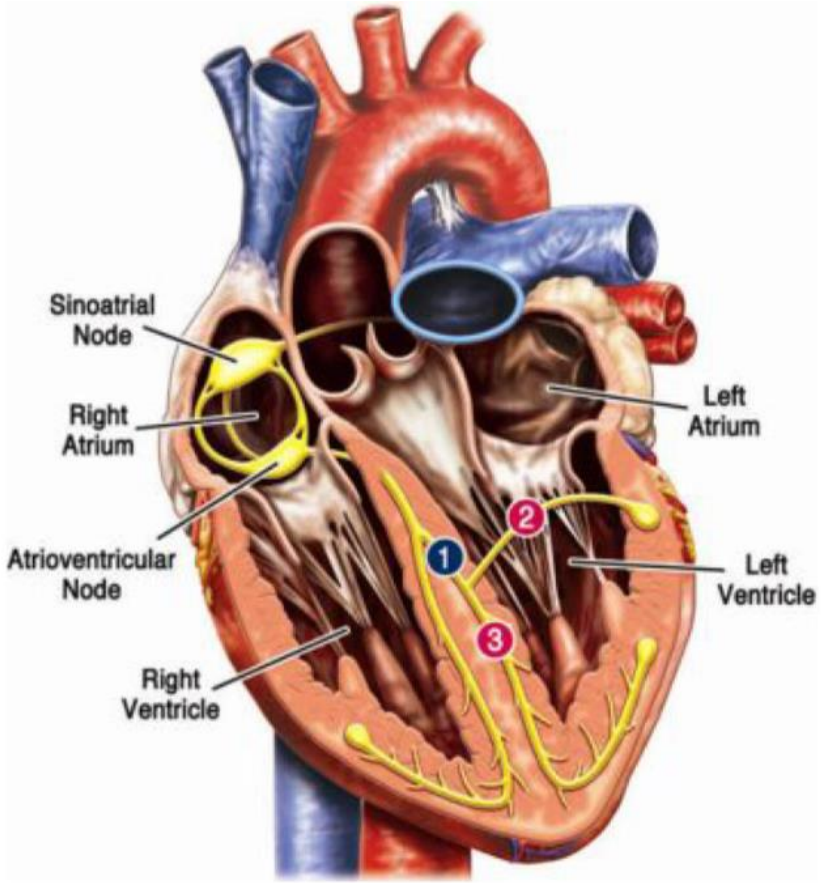
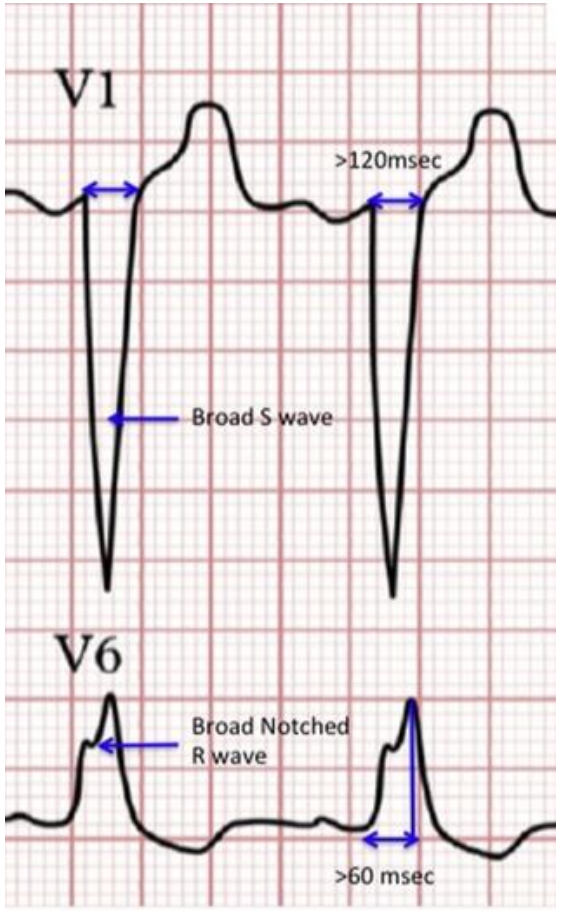
BBG : Généralités

- Interruption ou retard de conduction dans la branche gauche du faisceau de His
- P augmente avec l'âge
  - <1% à 50 ans
  - 6% à 80 ans
- Pathologies cardiaques associées :
  - **Coronaropathie**
  - Hypertrophie myocardique
  - HTA
  - Valvulopathie
  - Myocardite
  - …



Neeland et al. J Am Coll Cardiol. 2012



Kumar et al. AJC 2012

BBG et Test d'ischémie : ESC 2013

ESC European Society of Cardiology

	Typical angina		Atypical angina		Non-anginal pain	
Age	Men	Women	Men	Women	Men	Women
30–39	59	28	29	10	18	5
40–49	69	37	38	14	25	8
50–59	77	47	49	20	34	12
60–69	84	58	59	28	44	17
70–79	89	68	69	37	54	24
>80	93	76	78	47	65	32

PPT intermédiaire 15-85%

Recommendations	Class [a]	Level [b]
Risk stratification is recommended based on clinical assessment and the result of the stress test initially employed for making a diagnosis of SCAD.	I	B
Stress imaging for risk stratification is recommended in patients with a non-conclusive exercise ECG[d]	I	B
Risk stratification using stress ECG (unless they cannot exercise or display ECG changes which make the ECG non evaluable) or preferably stress imaging if local expertise and availability permit is recommended in patients with stable coronary disease after a significant change in symptom level.	I	B
Stress imaging is recommended for risk stratification in patients with known SCAD and a deterioration in symptoms if the site and extent of ischaemia would influence clinical decision making.	I	B
Pharmacological stress with echocardiography or SPECT should be considered in patients with LBBB.	IIa	B
Stress echocardiography or SPECT should be considered in patients with paced rhythm.	IIa	B

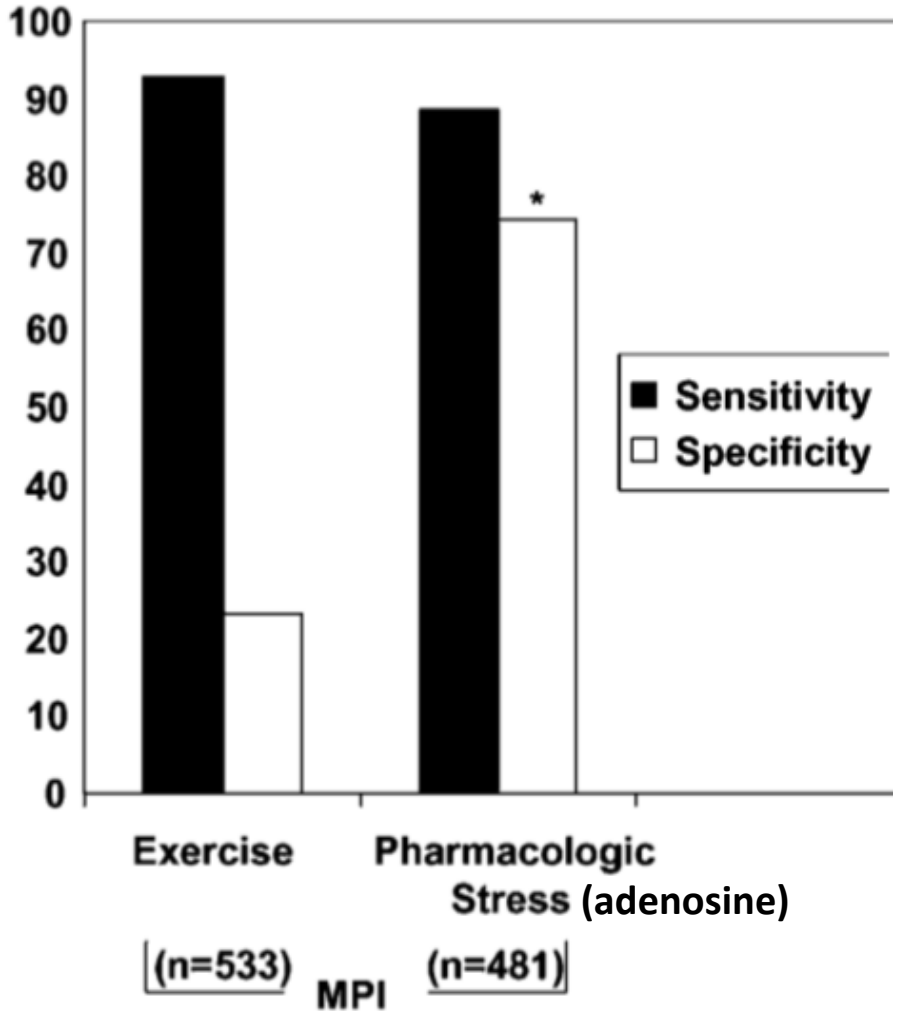
BBG et FP en SMP

Table I. Proposed mechanisms for FP perfusion abnormalities in patients with LBBB

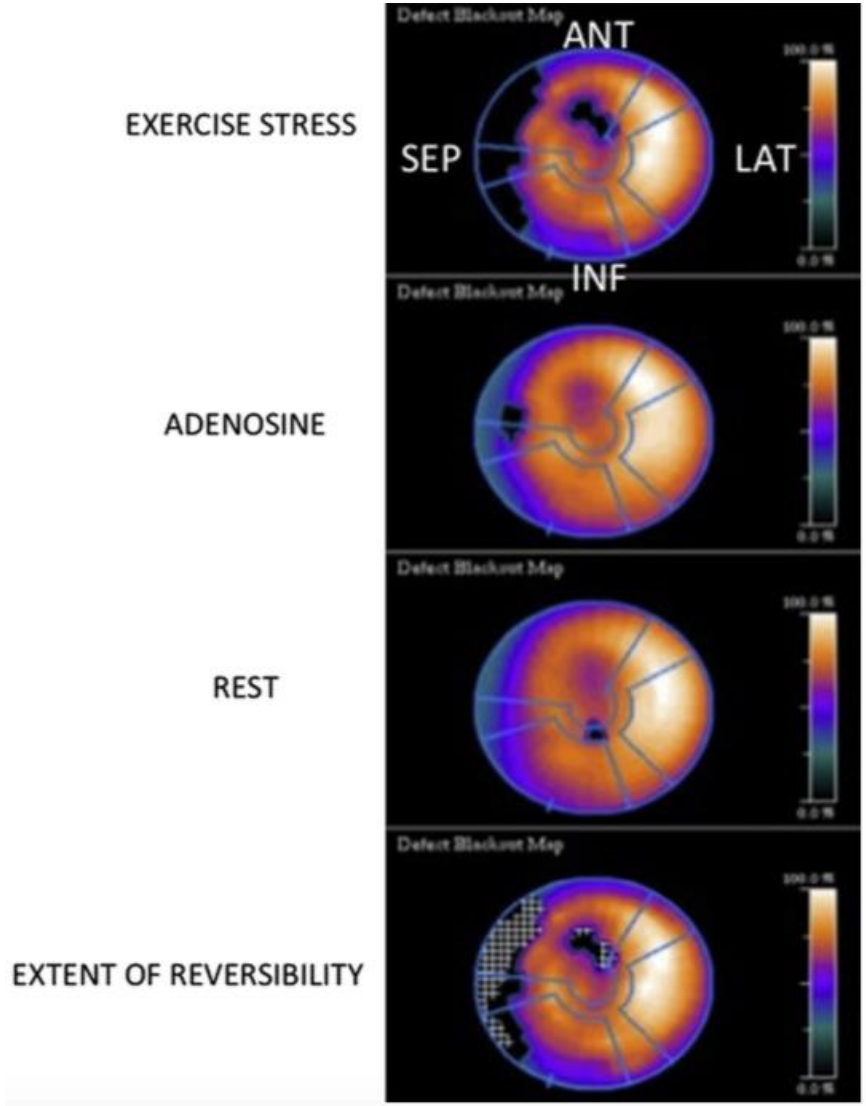
Decreased perfusion leading to decreased radionuclide counts
Decreased blood flow in response to lower septal resting oxygen demand (autoregulation)
Diastolic compression of septal perforators secondary to abnormal and delayed septal contraction/relaxation
Septal microvessel compression secondary to abnormal and delayed septal contraction/relaxation and redistribution of circumferential shortening
Reduced septal endothelial function and coronary flow reserve
Reduced diastolic blood flow due to shorted diastolic filling time (especially at higher heart rates)
Cardiomyopathic changes (septal thinning and fibrosis)
Normal perfusion with apparent decrease in radionuclide counts
Partial-volume effect due to decreased septal wall thickness and failure to thicken normally (relative to the other walls)

Higgins et al. American Heart Journal 2006

BBG et stress pharmacologique

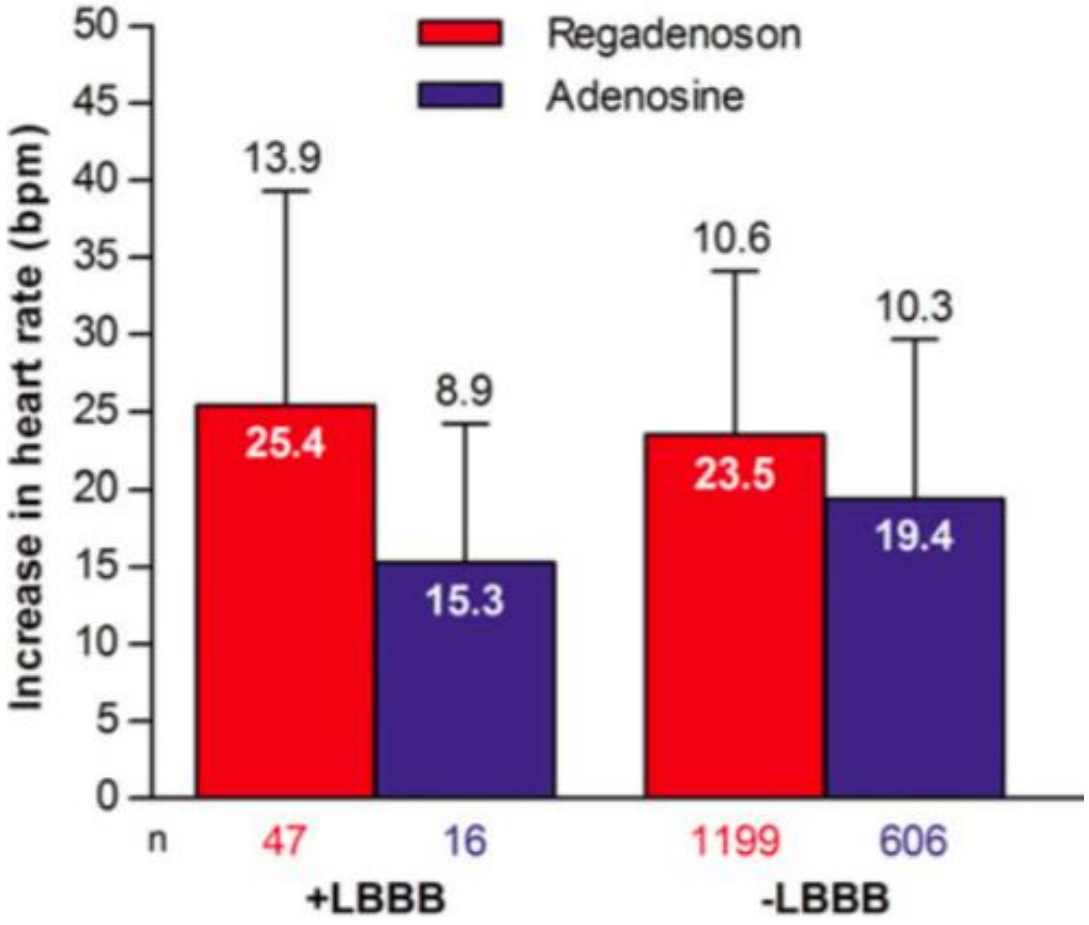


Biagini et al. EJNMMI 2006



Kumar et al. AJC 2012

BBG et Regadenoson



	Left bundle branch block	
	Adenosine (n = 17)	**Regadenoson (n = 47)**
Perfusion variables		
Total PDS (% LV)	14.6 ± 14.7	14.1 ± 15.4
Ischemia PDS (% LV)	5.2 ± 7.7	3.9 ± 7.0
Scar PDS (% LV)	9.4 ± 12.5	10.2 ± 12.1
PDS severity		
Mild (% LV >50% normal activity)	13.5 ± 13.2	12.5 ± 12.5
Moderate (% LV 26%–50% normal activity)	1.1 ± 2.8	1.6 ± 4.6
Severe (% LV 0%–25% normal activity)	0 ± 0	0.1 ± 0.6
Gated SPECT variables		
LV EF (%)	54 ± 22	50 ± 20
LV EDV (mL)	138 ± 74	162 ± 106
LV ESV (mL)	75 ± 66	99 ± 103

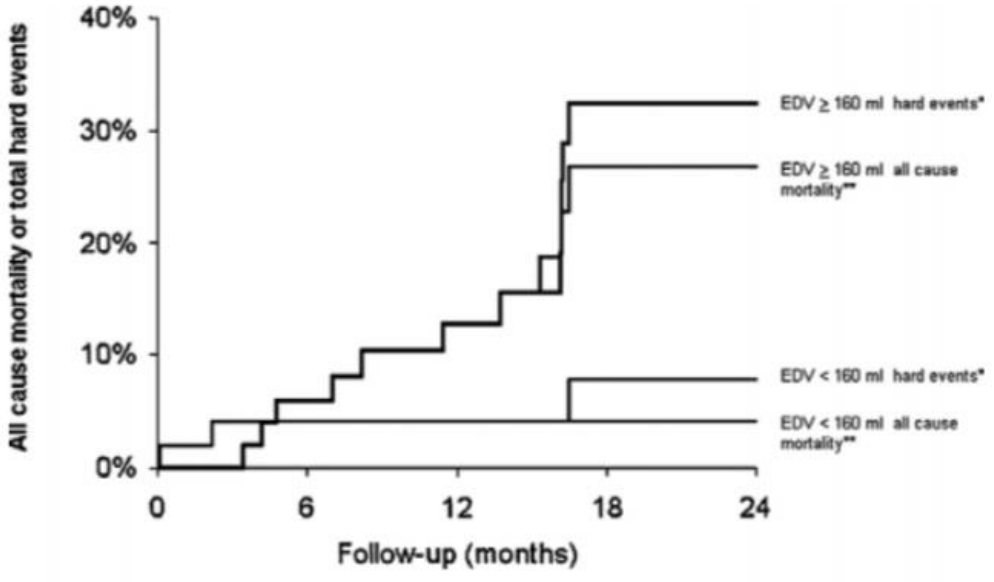
P-value non significatives entre les groupes

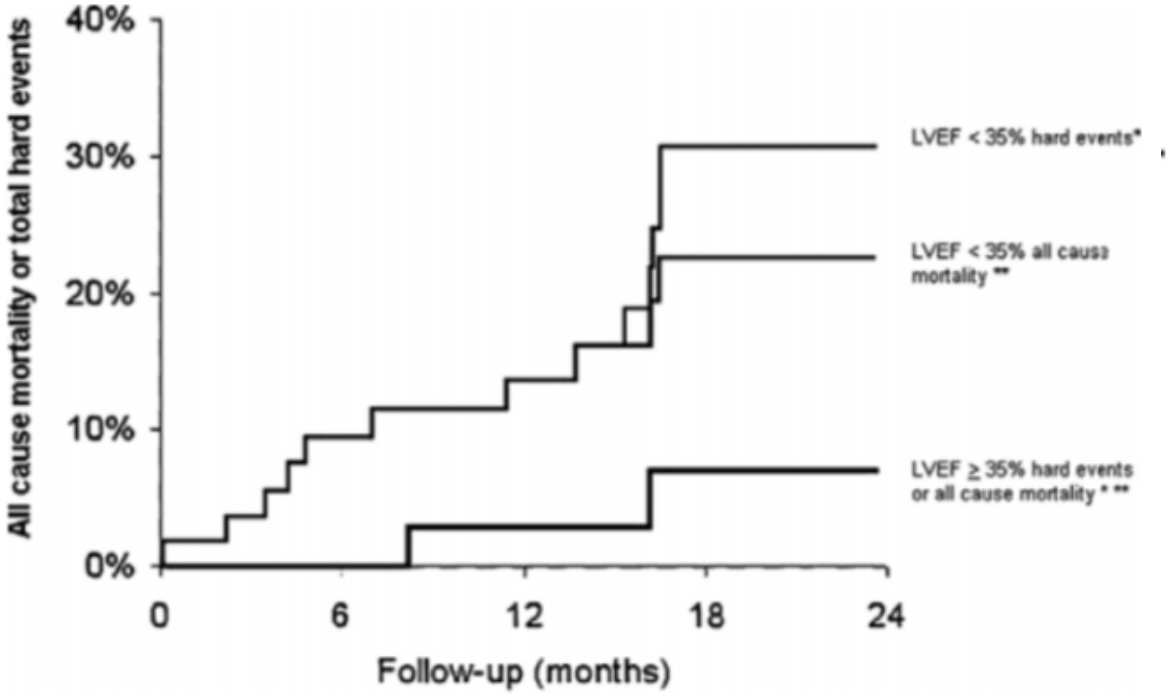
Thomas et al. ASNC 2013

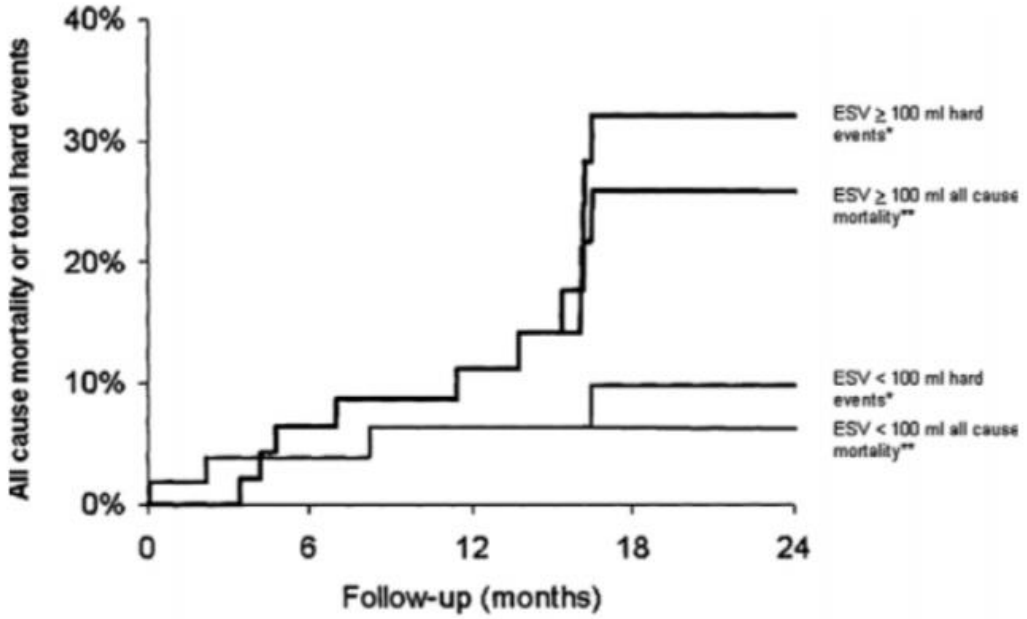
gSPECT

- 101 pts (67% H) BBG+ SPECT Tetrofosmine
- Durée de suivi moyenne 15M (max 30M)

America et al. ASNC 2007



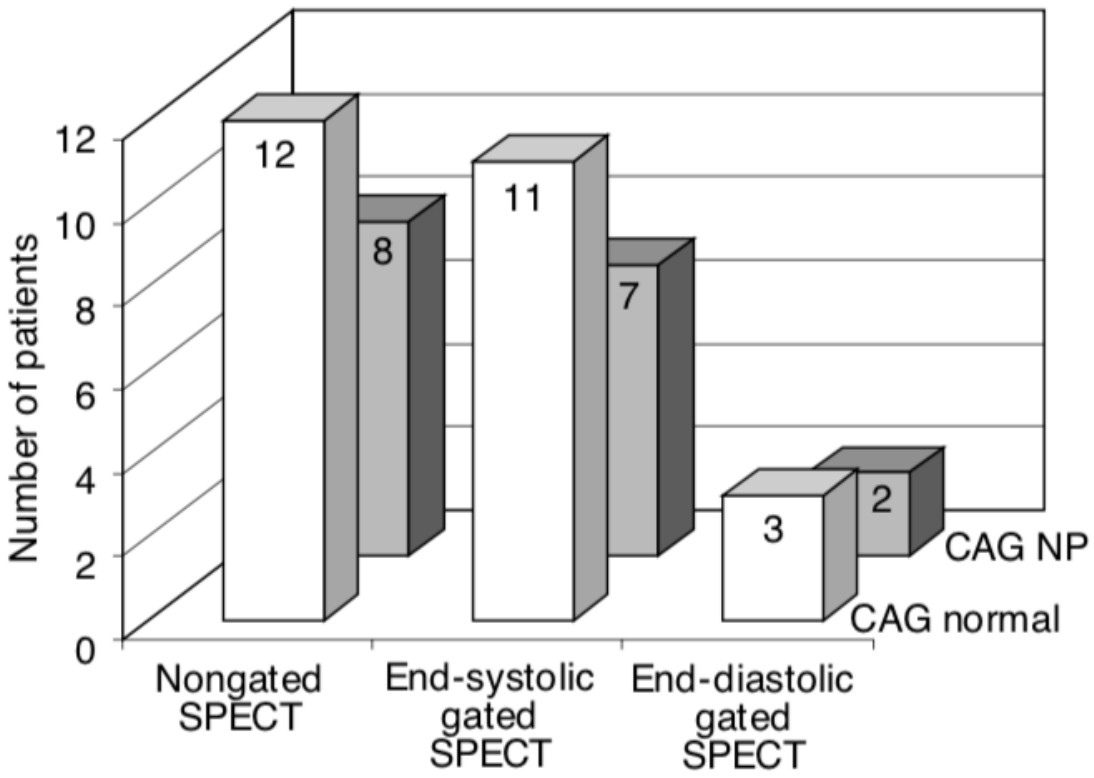




gSPECT

- 25 pts BBG+, dont 15 coronarographies
- 6 pts contrôles BBG-
- Ratio cp septum / latéral pts coro N :
  - Fin de diastole : pas de différence significative entre pts BBG+ (0,86 +- 0,19) et BBG - (0,98+-0,15) p>0,05
  - Fin de systole et non gaté : différence significative p<0,001

Pts BBG+ avec anomalie de perfusion



Demir et al. Clin cardiol 2003

Critères d'interprétation gSPECT

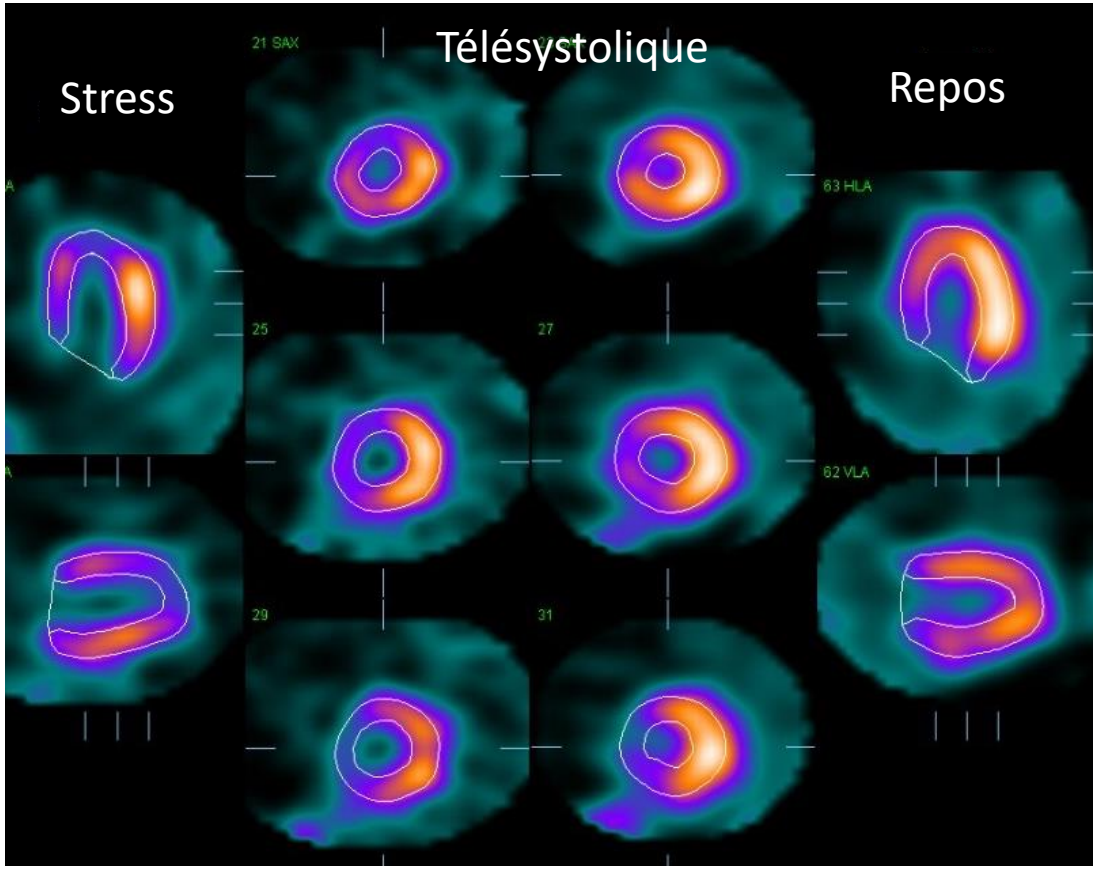
Table II. Findings differentiating artifact (FPs) from ischemia (TPs) in Tc-99m SPECT MPI in patients with LBBB

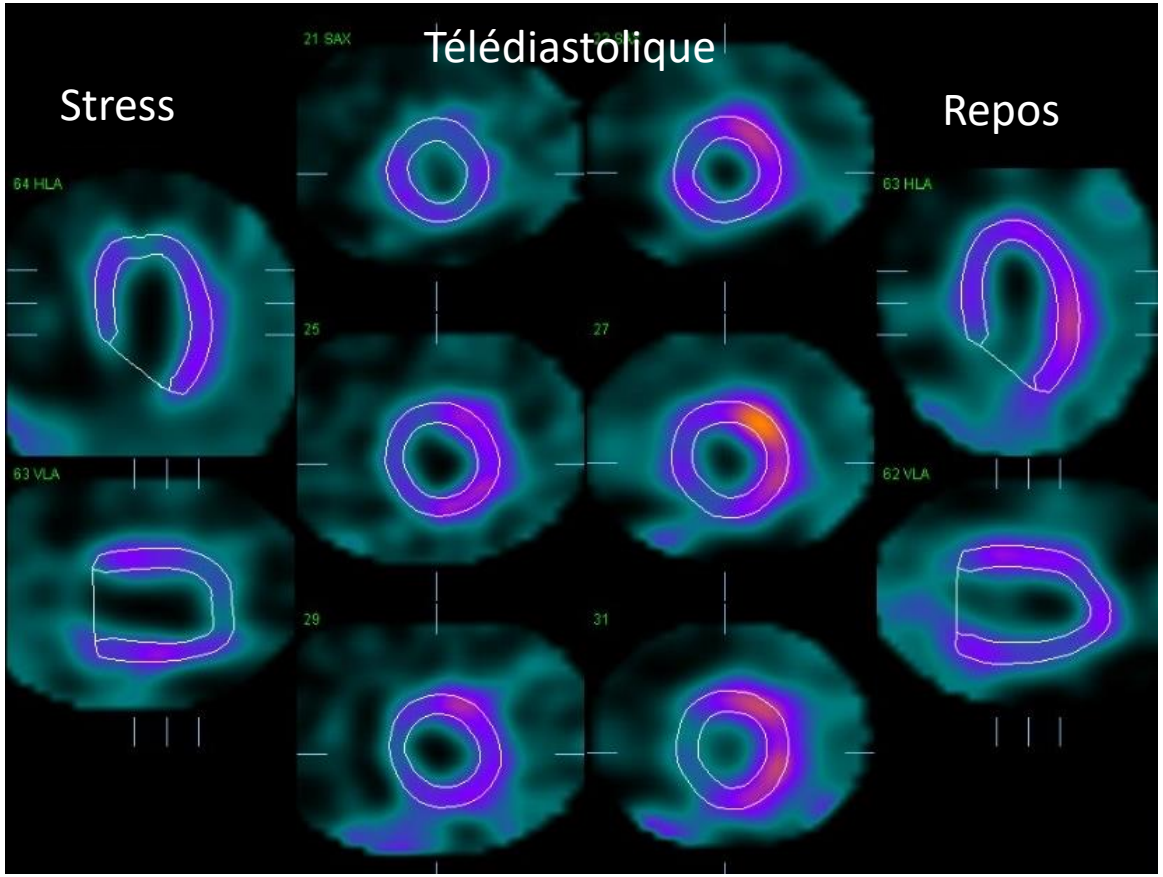
Finding	FP (Figure 2)	TP (Figure 3)
1. Gated SPECT findings	Fixed anteroseptal, septal, or inferoseptal wall perfusion defect especially end-systolic images	Reversible (complete or partial) anteroseptal wall perfusion defects especially end-diastolic images
2. Apical perfusion	Normal or isolated fixed apical defect	Reversible defect (with concomitant reversible anterior and/or septal defect)
3. Systolic dysfunction	Yes or no; perfusion defect—wall motion abnormality mismatch	Yes or no; perfusion defect—wall motion abnormality match
4. Septal wall motion	Abnormal (paradoxical or dyskinetic) and impaired wall thickening	Normal but with perfusion defect

Higgins et al. American Heart Journal 2006

En pratique ?

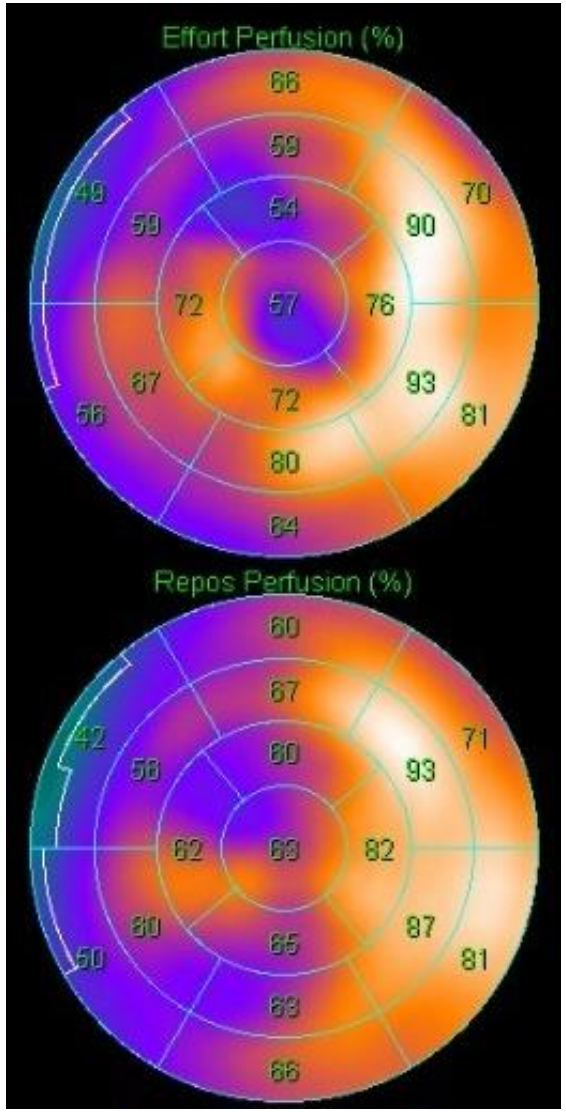
- Mme B. 61 ans, douleurs thoraciques atypiques, BBG sur l'ECG de repos
- Dépistage d'ischémie (IQ-SPECT Persantine / repos)

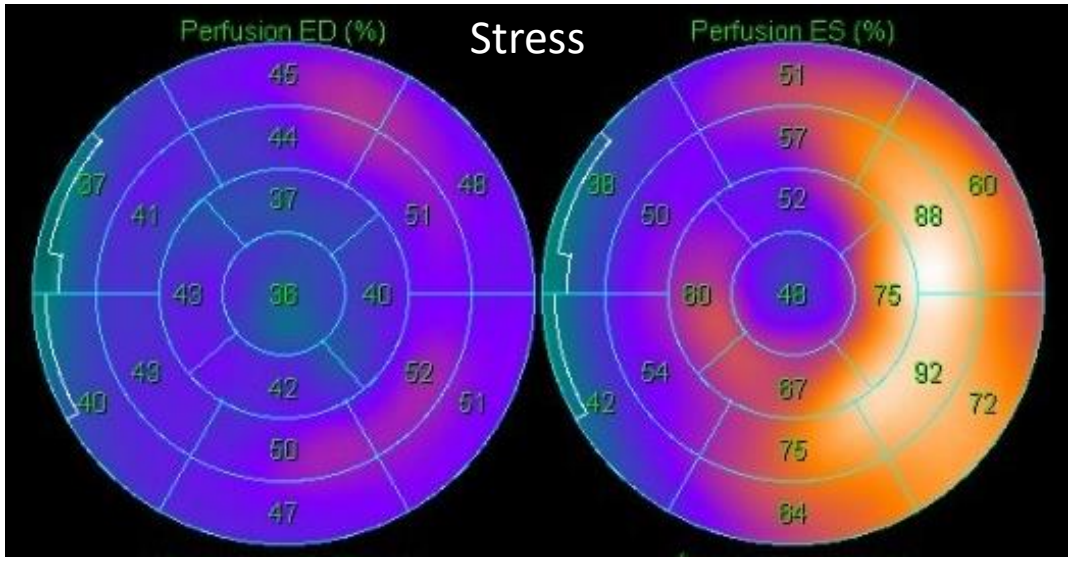




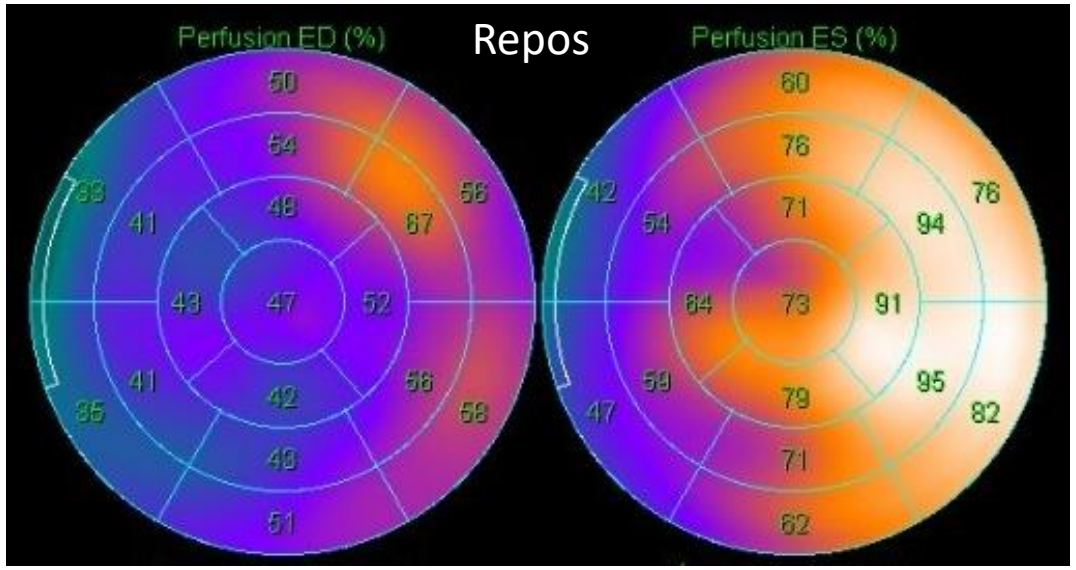
En pratique ?

Coronarographie normale





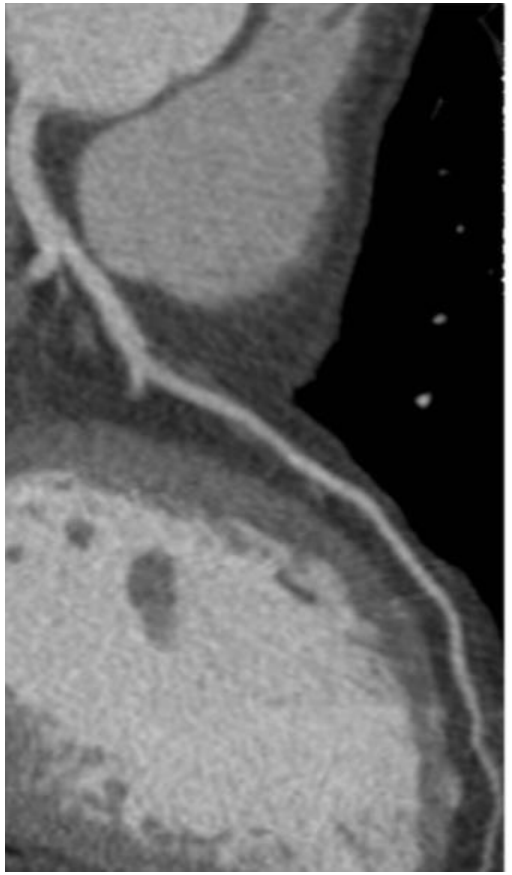
Étude	COEUR
Ensemble d	Q Effort Ventral-Gated [Recon]
Date	2017-12-22 09:51:44
Volume	52ml [5]
DEV	97ml [1]
SEV	52ml [5]
EF	46%



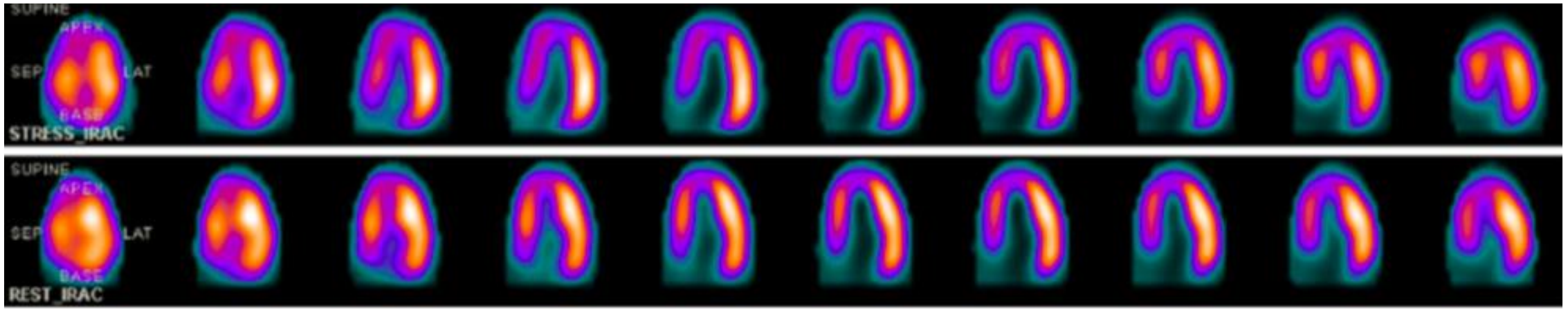
Étude	COEUR
Ensemble d	Q Repos Ventral-Gated [Recon]
Date	2017-12-22 12:47:57
Volume	40ml [5]
DEV	100ml [1]
SEV	40ml [5]
EF	60%

BBG et Coroscanner ?

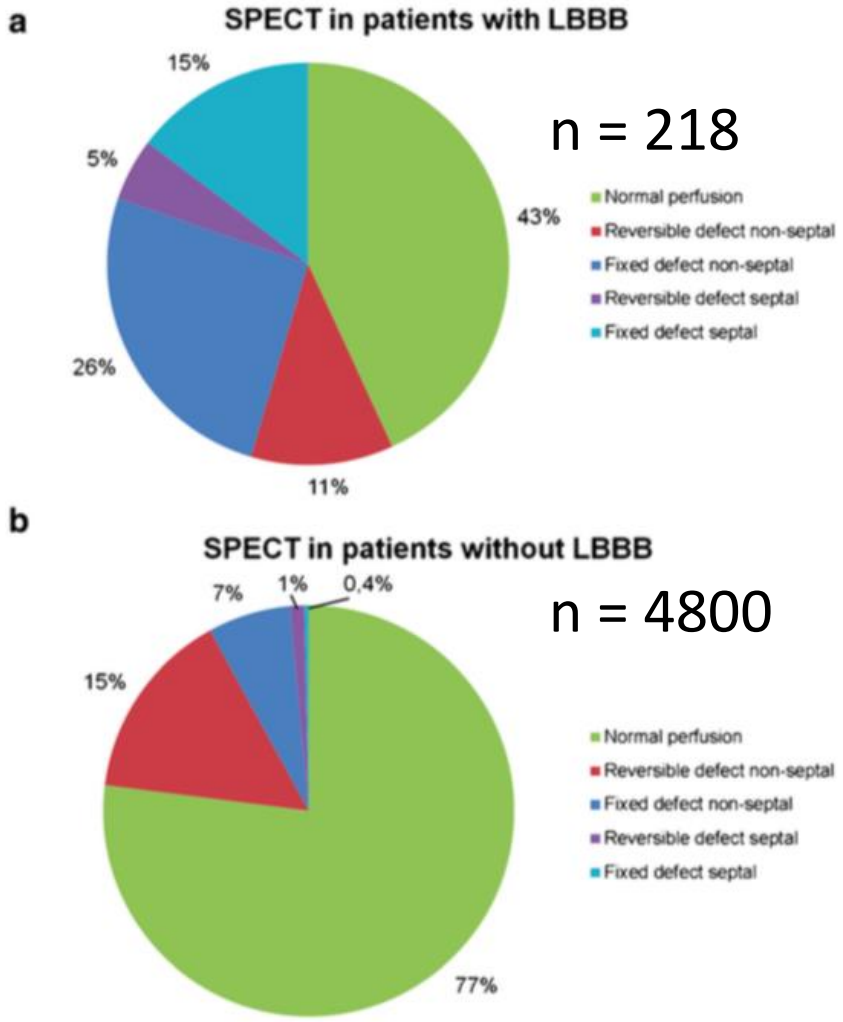
- Imagerie anatomique non artefactée par BBG
- Performance CT 66 pts BBG+ pour détection sténose >50% vs coronarographie (Ghostine et al. JACC 2006) :
  - Se : 97% ; Sp : 95%
  - VPP : 93% ; VPN : 97%



Engbers et al. Eur Radiol 2016



BBG et Coroscanner ?



n = 218

Anomalie de perfusion

n = 124

n = 64

n = 4800

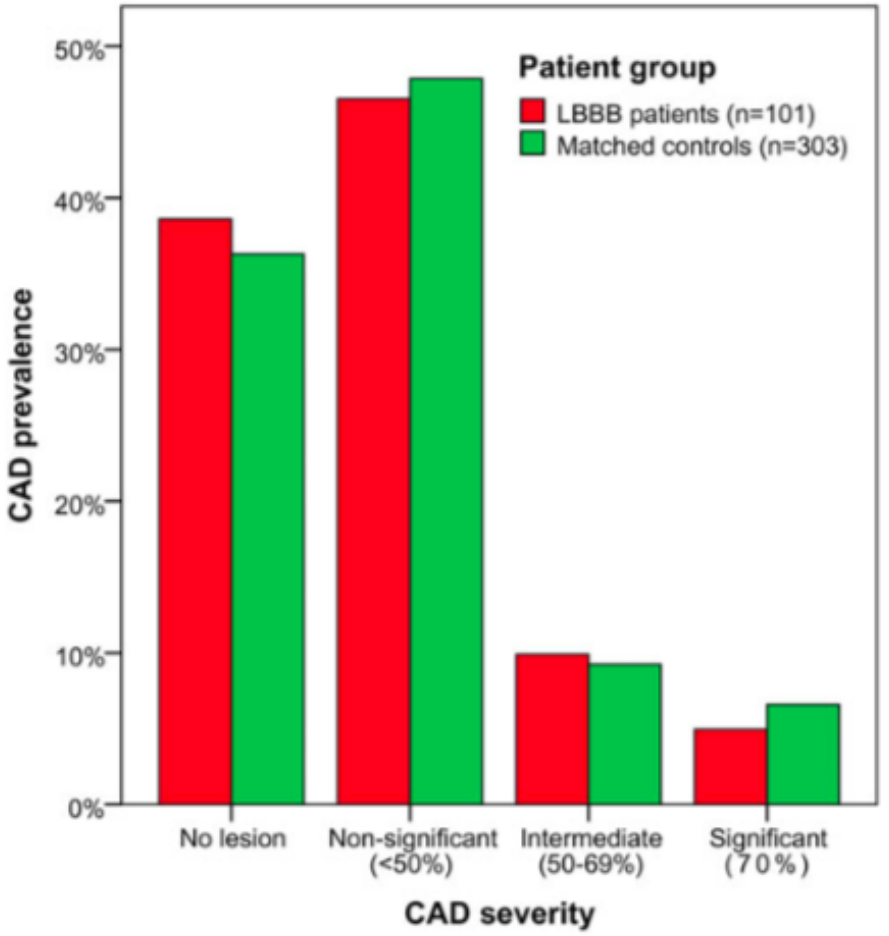
46/64 = 72% coroscanner N

« First-line testing using CCTA may be more appropriate in low- to intermediate-risk patients with LBBB »

Engbers et al. Eur Radiol 2016

BBG et maladie coronaire ?

- CT chez 101 pts BBG+ et 303 contrôles BBG- (Clerc et al. European Heart Journal 2015)
- Pas de différence significative de prévalence des sténoses coronaires > 50% entre les 2 groupes (15% vs 16% P=0,88)



Clerc et al. European Heart Journal 2015

Conclusion

- Interprétation difficile SMP dans le contexte de BBG (FP)
- gSPECT ++
  - FEVG, Volumes
  - Images télédiastoliques
- Malgré tout il reste difficile de conclure dans le territoire antéro-septo-apical
- Intérêt du coroscanner ?

Merci de votre attention