

Apport de l'imagerie en Médecine Nucléaire dans les Infections Ostéo-Articulaires

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PLAN DU COURS

- LES INFECTIONS SUR MATERIEL DU SQUELETTE PERIPHERIQUE
 - Prothèses ostéo-articulaires
 - Matériel d'ostéosynthèse, Matériel d'arthrodèse
- LES INFECTIONS RACHIDIENNES

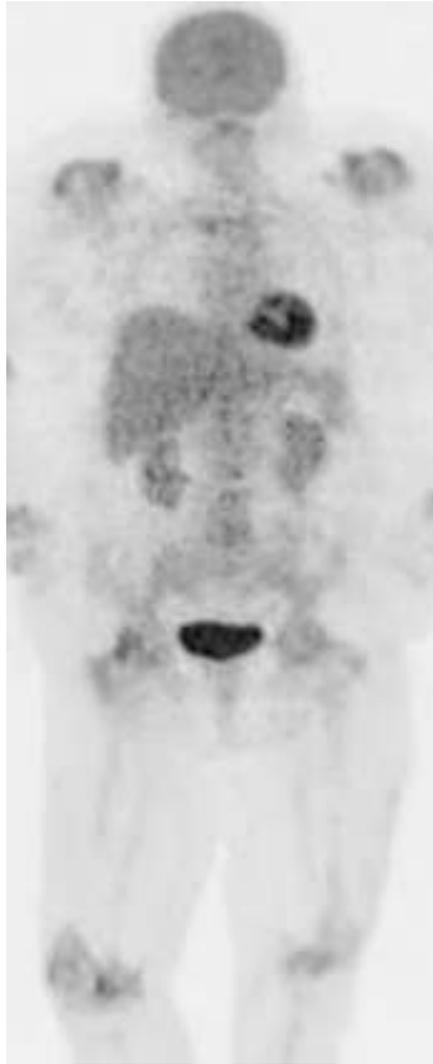
MEDECINE NUCLEAIRE ET IOA



Scintigraphie
Osseuse



Scintigraphie
Leucocytes marqués



TEP
 ^{18}F -FDG

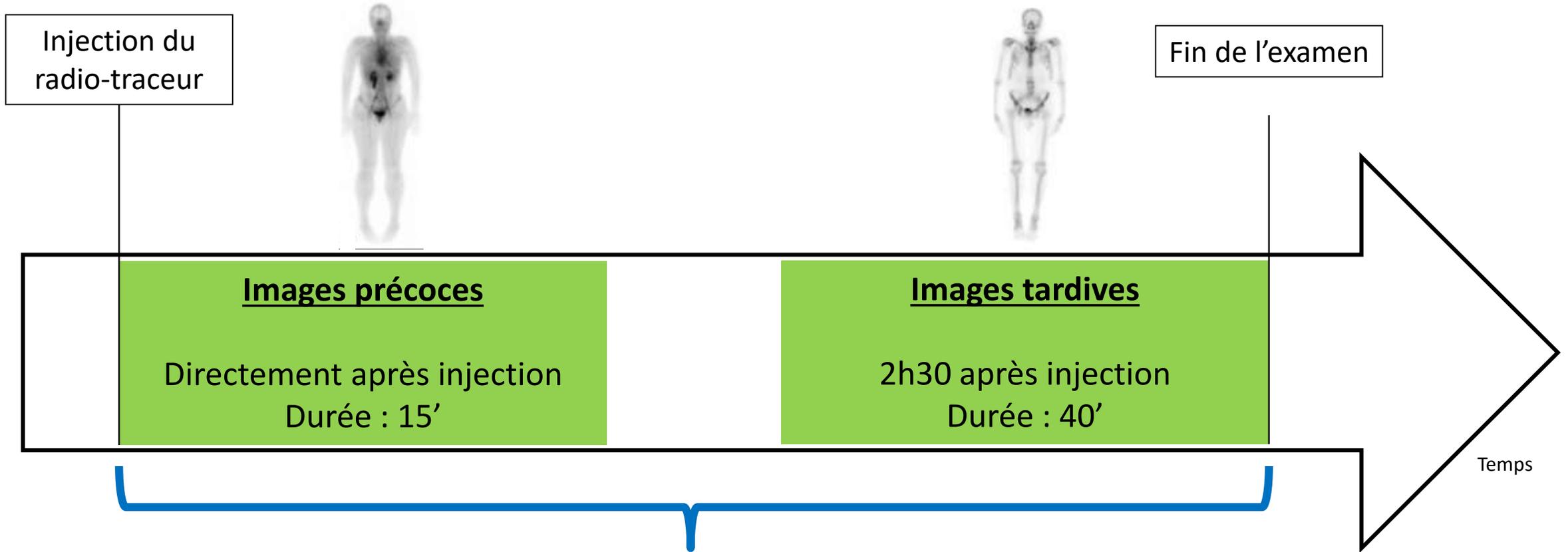


TEP
 ^{18}F -FDG-Leucocytes



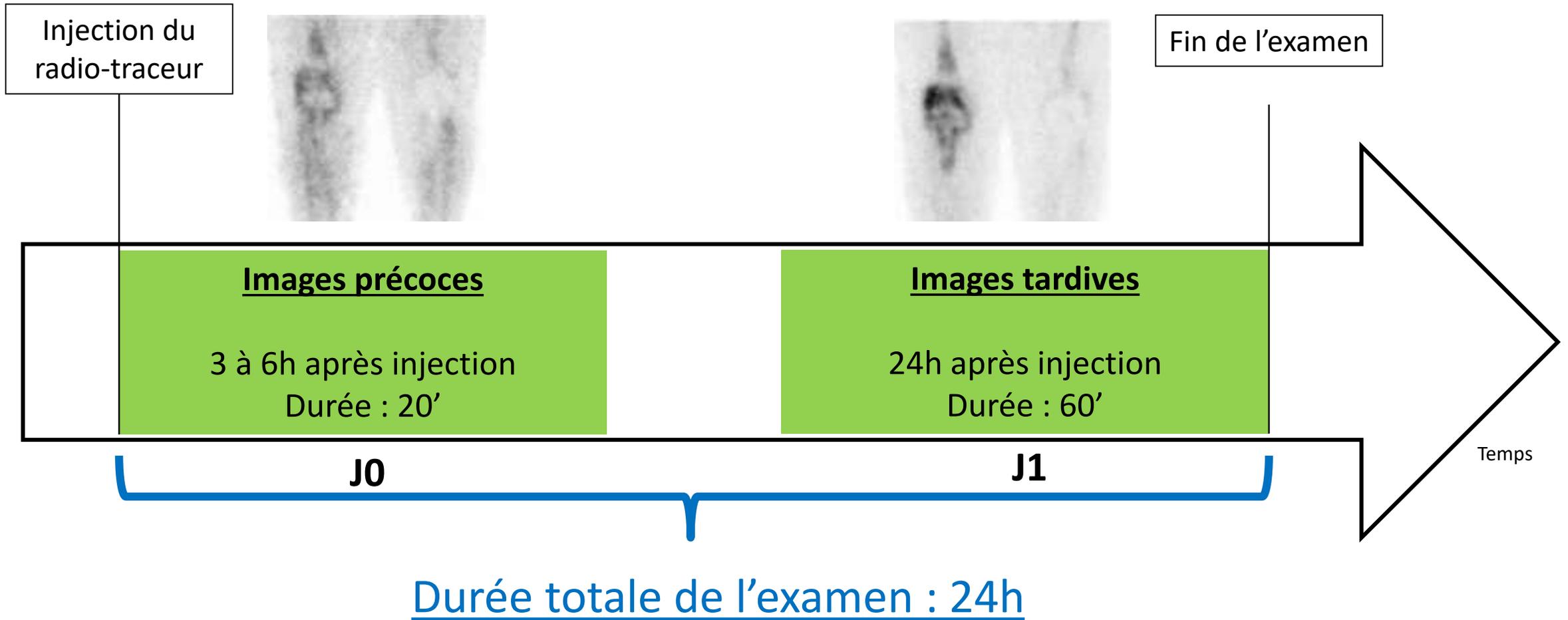
TEP
 ^{68}Ga -Citrate

DEROULEMENT D'UNE SCINTIGRAPHIE OSSEUSE

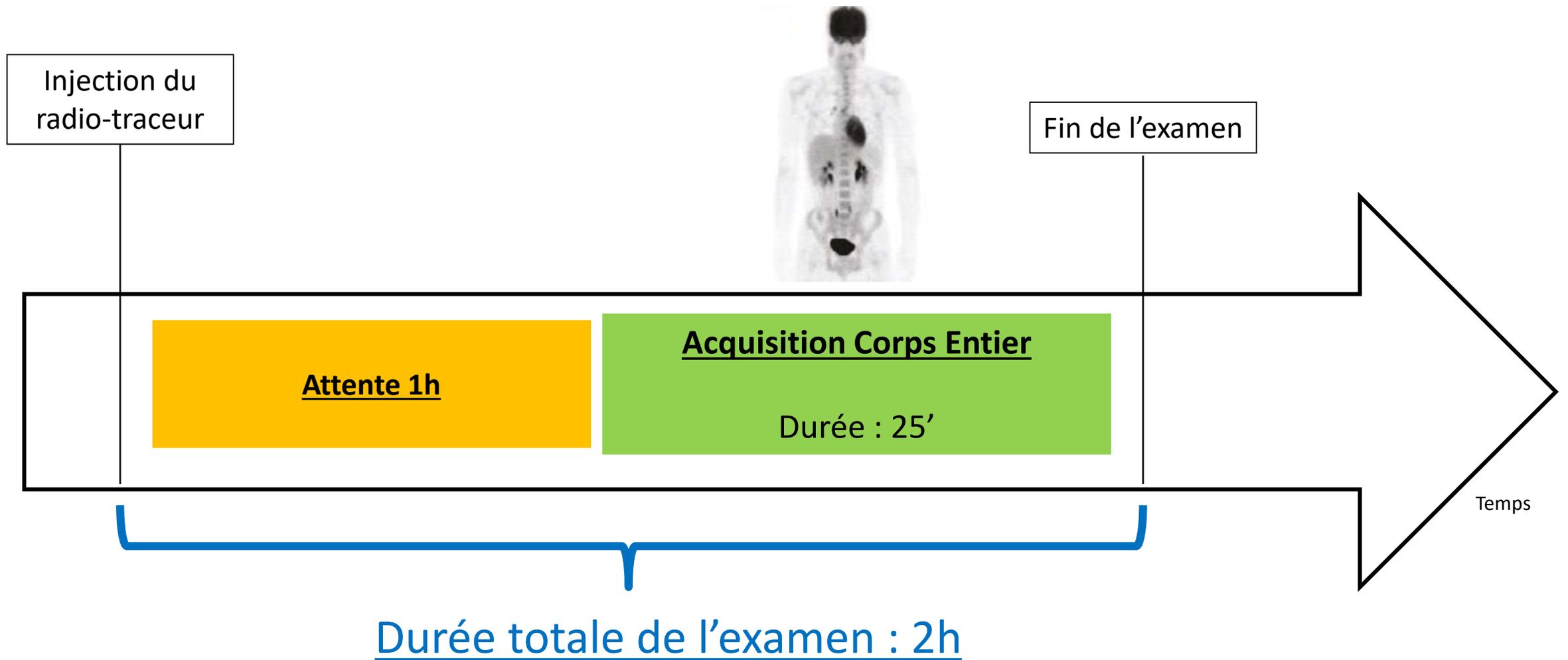


Durée totale de l'examen : 3h-3h30

DEROULEMENT D'UNE SCINTIGRAPHIE AUX LEUCOS MARQUES



DEROULEMENT D'UN TEP/TDM AU 18F-FDG



INFECTIONS SUR MATERIEL DU SQUELETTE PERIPHERIQUE



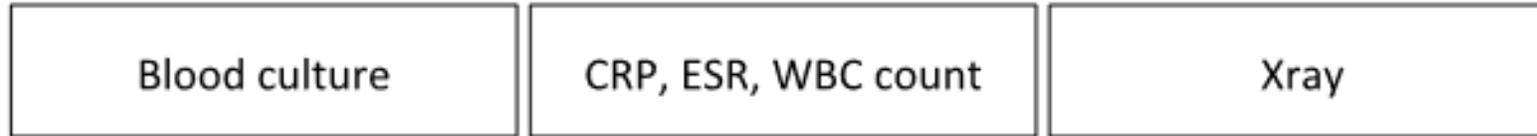


Consensus document for the diagnosis of prosthetic joint infections: a joint paper by the EANM, EBJIS, and ESR (with ESCMID endorsement)

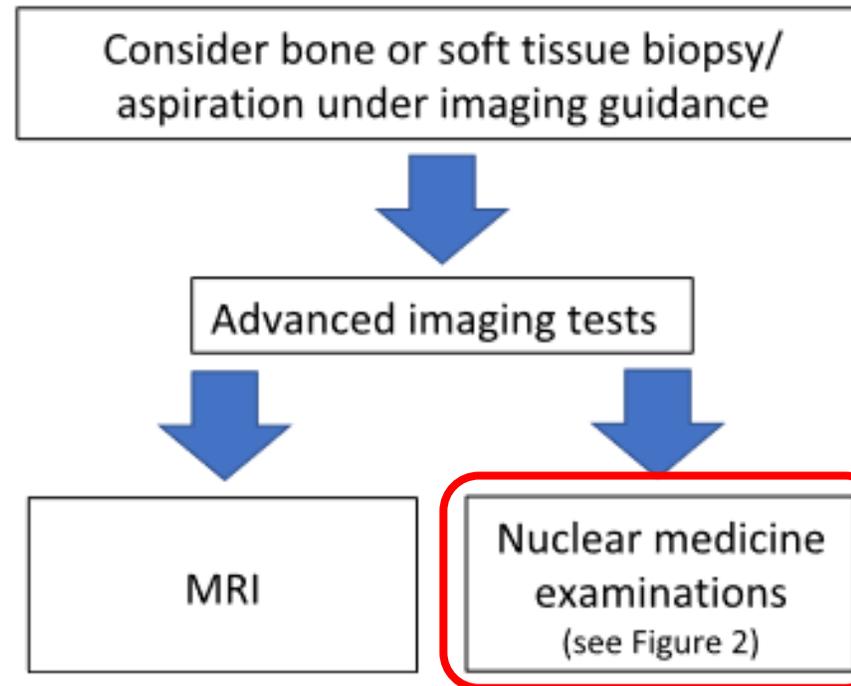
Alberto Signore^{1,5} · Luca Maria Sconfienza^{2,3} · Olivier Borens⁴ · Andor W. J. M. Glaudemans⁵  ·
Victor Casar-Pullicino⁶ · Andrej Trampuz⁷ · Heinz Winkler⁸ · Olivier Gheysens⁹ · Filip M. H. M. Vanhoenacker¹⁰ ·
Nicola Petrosillo¹¹ · Paul C. Jutte¹²

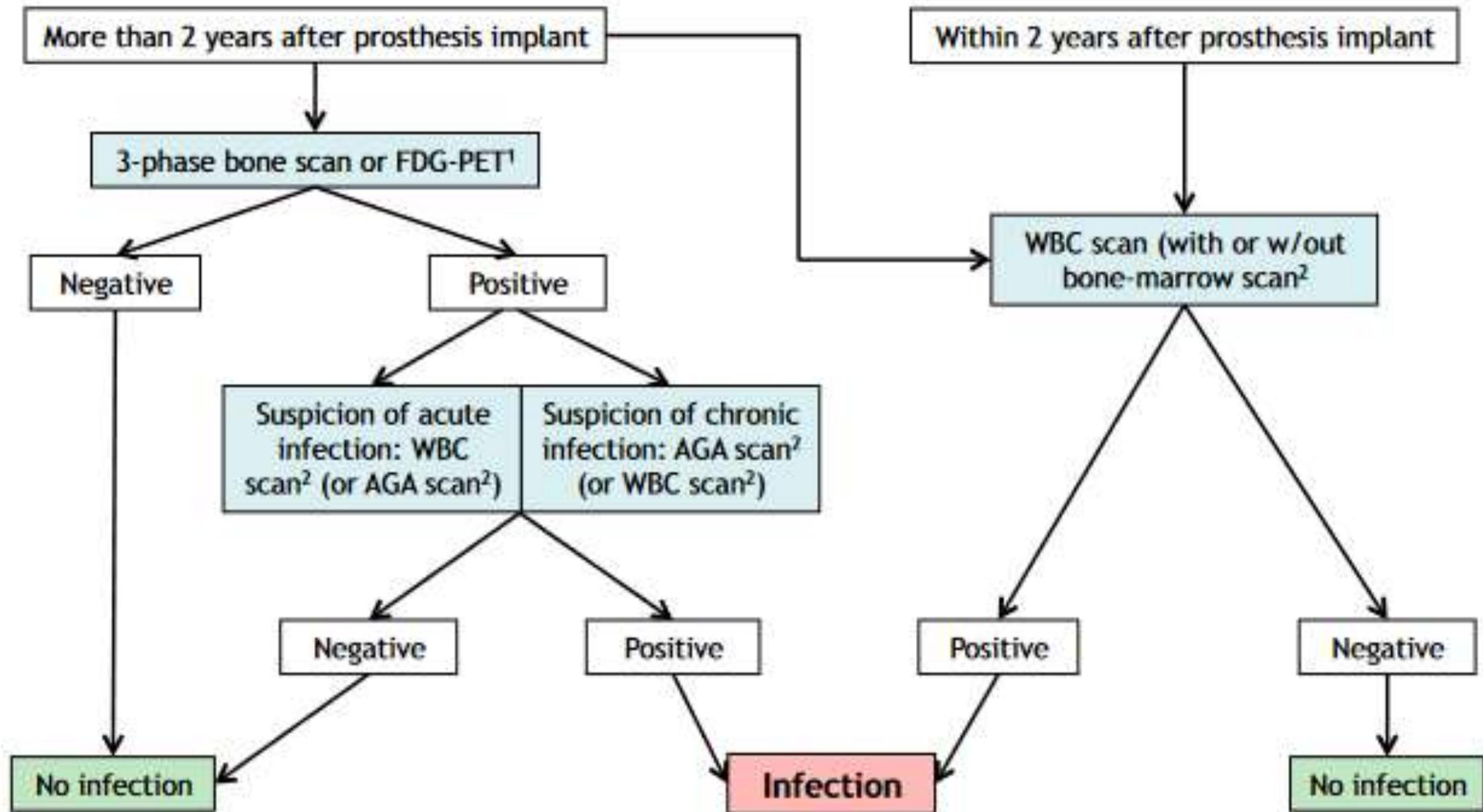
Diagnostic Flowchart Prosthetic Joint Infection

Standard Workup:



If suspicion persists:





RECHERCHE D'INFECTION EN SCINTIGRAPHIE

❖ Scintigraphie aux leucocytes marqués

Utilisation des propres leucocytes du patient

Couplés à un isotope radioactif

Examen de référence

❖ Scintigraphie au AC anti-granulocytes (Scintimum®)

Utilisation d'AC anti-granulocytes d'origine murine
(fixation in vivo sur les leucocytes du patient)

Couplés à un isotope radioactif

Risque d'immunisation (AC anti-murine)

❖ DANS TOUS LES CAS :

Examen contre-indiqué chez **femme enceinte ou allaitante**

Pas de contre indication en cas d'insuffisance rénale

Possibilité de prendre ses médicaments (notamment antalgiques!)

Consignes de radioprotection : Aucune !

Table 2 Advanced nuclear medicine techniques

| | ^{99m} Tc-MDP/HDP bone scan | ^{99m} Tc-anti-granulocyte scan (IgG/Fab AGA) | ^{99m} Tc-HMPAO/ ¹¹¹ In-oxine-WBC scan | [¹⁸ F]FDG-PET/CT |
|-------------|---|--|--|---|
| Pros | High sensitivity Useful as screening method in chronic infections Widely available and low cost | High sensitivity and specificity; however, generally lower than for WBC scan Data support the preferential use of IgG over Fab in chronic infections. Widely available and medium cost Often to be used coupled with bone marrow scan and/or bone scan | High sensitivity and specificity Data support preferential use in acute infections Poor availability and medium cost Often to be used coupled with bone marrow scan SPECT/CT images improve accuracy | High sensitivity |
| Cons | Low specificity Moderate radiation exposure | Possible contraindications for IgG and HAMA induction Moderate radiation exposure IgG scan requires a late acquisition at 20 h p.i. | Moderate radiation exposure Always requires a late acquisition at 20 h p.i. Blood manipulation Needs an approved laboratory and method and trained personnel | Low specificity High radiation exposure Difficult interpretation of images Poor availability and high cost |



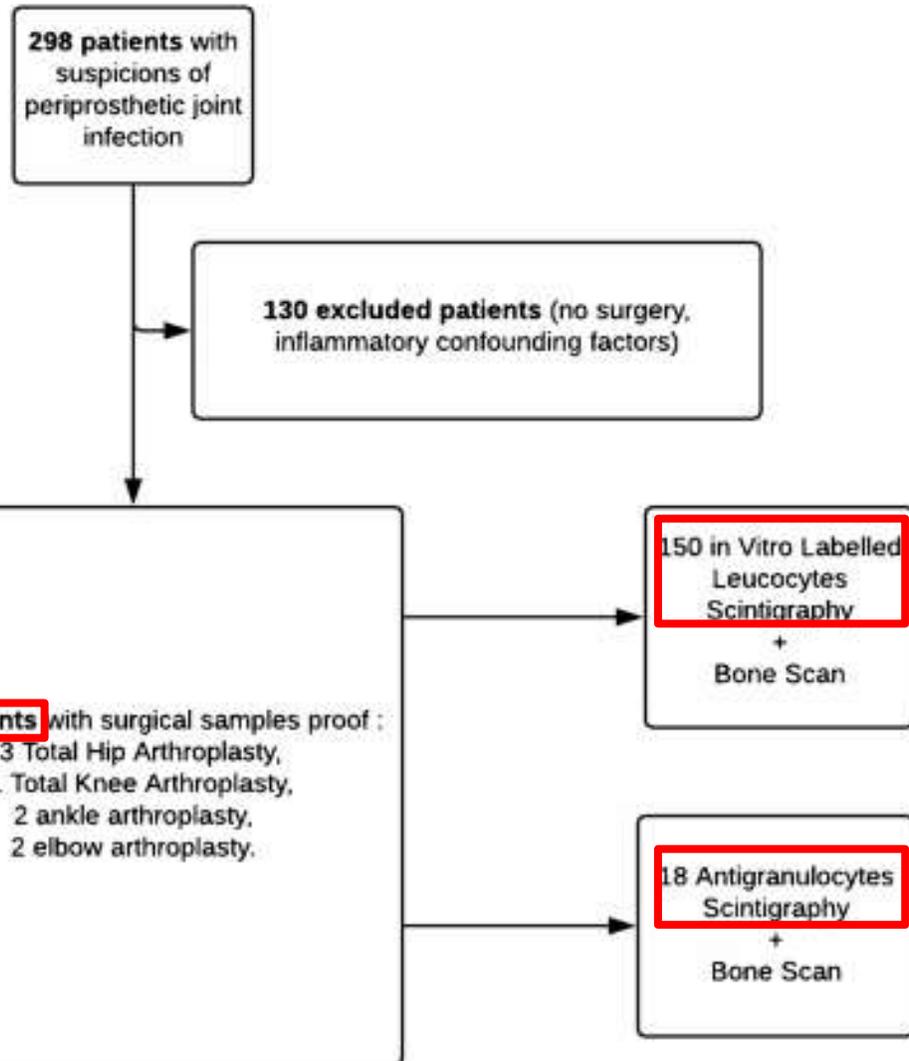
ORIGINAL ARTICLE



The use of labelled leucocyte scintigraphy to evaluate chronic periprosthetic joint infections: a retrospective multicentre study on 168 patients

Philippe Blanc^{1,2}  • Eric Bonnet³ • Gérard Giordano⁴ • Jacques Monteil² • Anne-Sophie Salabert^{1,5} • Pierre Payoux^{1,5}

The use of labelled leucocyte scintigraphy to evaluate chronic periprosthetic joint infections: a retrospective multicentre study on 168 patients



| | | Nb | Sensitivity (%) | Specificity (%) | PPV (%) | NPV (%) | Accuracy (%) |
|-----------|--------|-----|-----------------|-----------------|---------|---------|--------------|
| LLS | Unit 1 | 43 | 72 | 64 | 81 | 53 | 70 |
| | Unit 2 | 107 | 71,6 | 57,6 | 79 | 45 | 66 |
| | Total | 150 | 72 | 60 | 80 | 47 | 67 |
| AGS | Unit 1 | 18 | 25 | 90 | 67 | 60 | 61 |
| LLS + AGS | | 168 | 68 | 65 | 79 | 50 | 67 |
| BS | | 124 | 94 | 11 | 65 | 50 | 64 |

Nb patients number, *PPV* positive predictive value, *NPV* negative predictive value, *LLS* in vitro labelled leucocyte scintigraphy, *AGS* anti-granulocyte scintigraphy, *BS* bone scan

| | Tracers | Number of prostheses | Sensitivity (%) | Specificity (%) |
|----------------------|---------|----------------------|-----------------|-----------------|
| Simonsen et al. [13] | LLS | 76 | 81 | 94 |
| Teller et al. [14] | LLS | 166 | 64 | 78 |
| Larikka et al. [15] | LLS | 30 | 62 | 100 |
| Pelosi et al. [16] | LLS | 95 | 85 | 71 |
| Trevail et al. [17] | LLS | 221 | 80 | 99,5 |
| Erba et al. [18] | LLS | 132 | 93 | 100 |
| Gratz et al. [19] | AGS | 20 | 100 | 83 |
| Sousa et al. [20] | AGS | 27 | 100 | 20 |
| Rubello et al.(21) | AGS | 78 | 93 | 78 |
| Pakos et al.(22) | AGS | 19 | 75 | 86 |

LLS in vitro labelled leucocyte scintigraphy, *AGS* anti-granulocyte scintigraphy

The use of labelled leucocyte scintigraphy to evaluate chronic periprosthetic joint infections: a retrospective multicentre study on 168 patients

- **SPECT/CT : augmentation de la spécificité**

- Passant de 60% à 80%

- Pas d'impact de l'activité administrée
- Pas d'impact du pathogène incriminé

- Pas d'impact de l'antibiothérapie **mais**
 - 37 patients avec ATB : 17 FN (46%)
 - 131 patients sans ATB : 29 FN (22%)

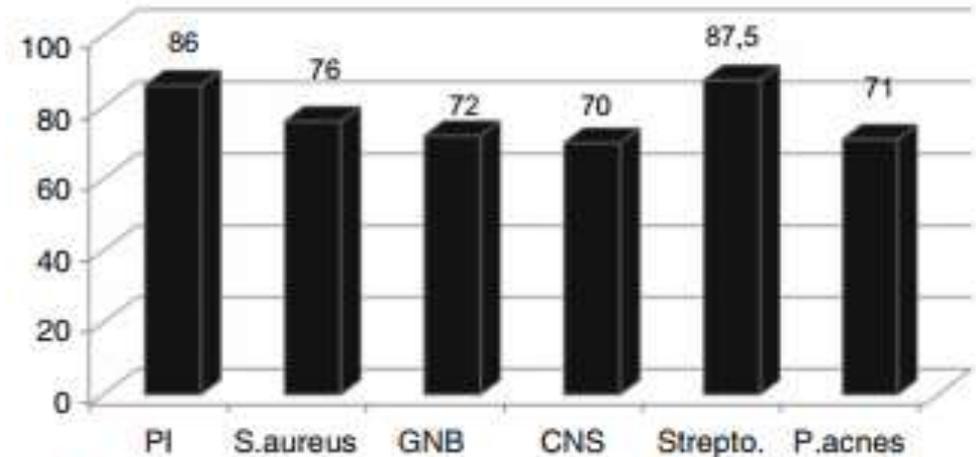


Fig. 3 LLS sensitivity (in %) depending on pathogens. None of the results were statistically different ($p > 0.05$). PI polymicrobial infection, S.aureus *Staphylococcus aureus*, GNB Gram-negative bacilli, CNS coagulase negative staphylococci, Strepto. Streptococcus, P.acnes *Propionibacterium acnes*

Image acquisition and interpretation criteria for ^{99m}Tc -HMPAO-labelled white blood cell scintigraphy: results of a multicentre study

**Paola A. Erba • Andor W. J. M. Glaudemans •
Niels C. Veltman • Martina Sollini • Marta Pacilio •
Filippo Galli • Rudi A. J. O. Dierckx • Alberto Signore**

Image acquisition and interpretation criteria for ^{99m}Tc -HMPAO-labelled white blood cell scintigraphy: results of a multicentre study

ANALYSE VISUELLE

Augmentation de l'intensité de fixation entre les acquisitions précoces (J0) et tardives (J1)

Attention fixation physiologique vasculaire et/ou médullaire

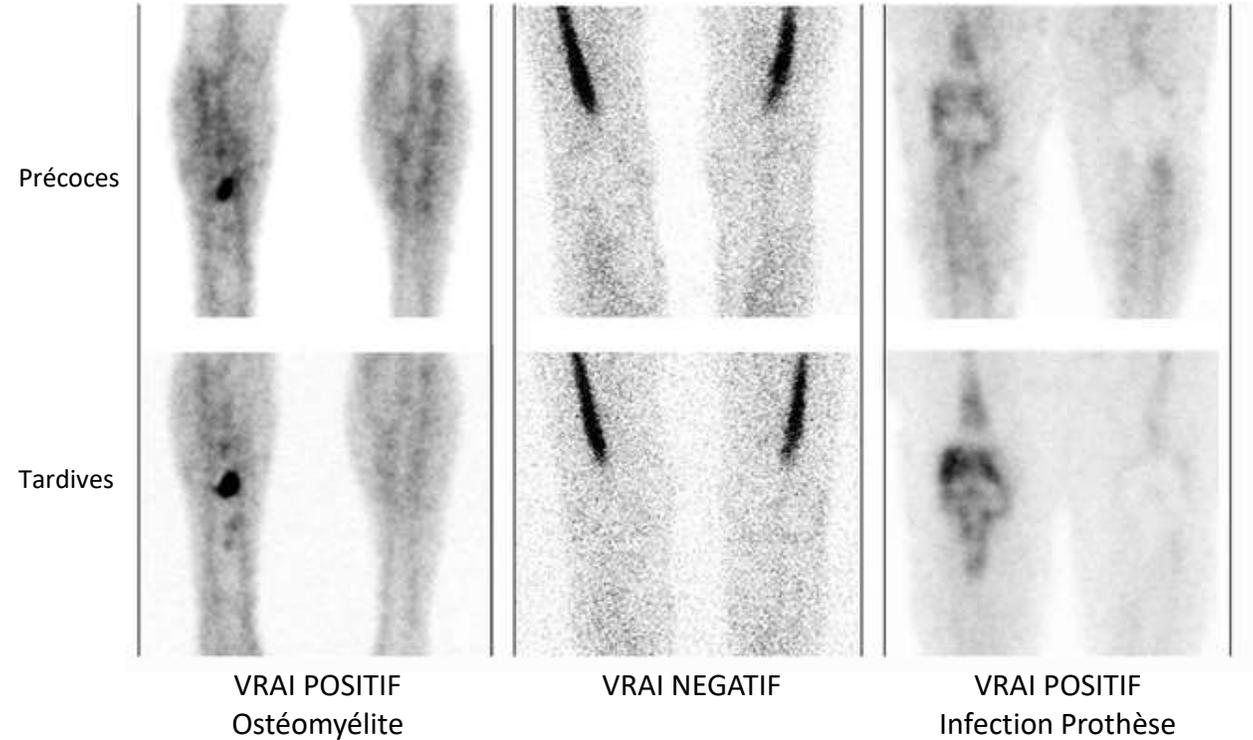
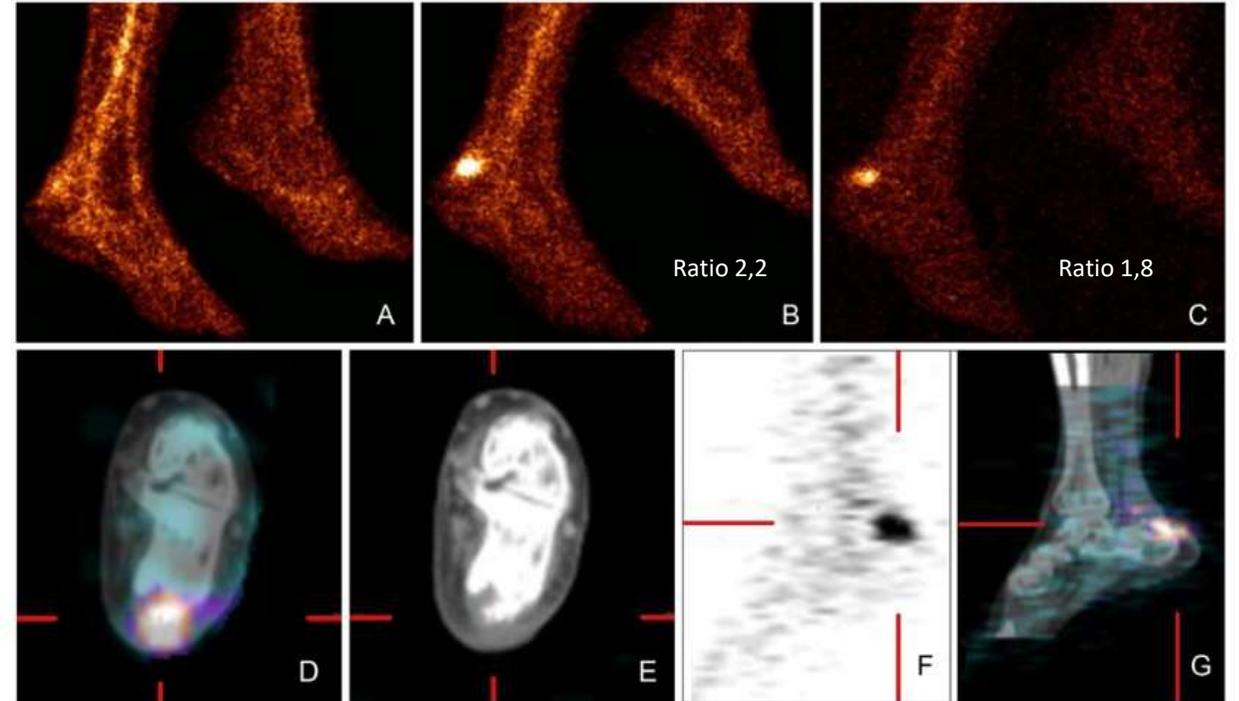


Image acquisition and interpretation criteria for ^{99m}Tc -HMPAO-labelled white blood cell scintigraphy: results of a multicentre study

ANALYSE SEMI-QUANTITATIVE

$$\text{Ratio de fixation} = \frac{\text{Intensité de fixation de la région d'intérêt}}{\text{Bruit de fond médullaire}}$$

Sur les acquisitions précoces (J0) et tardives (J1)

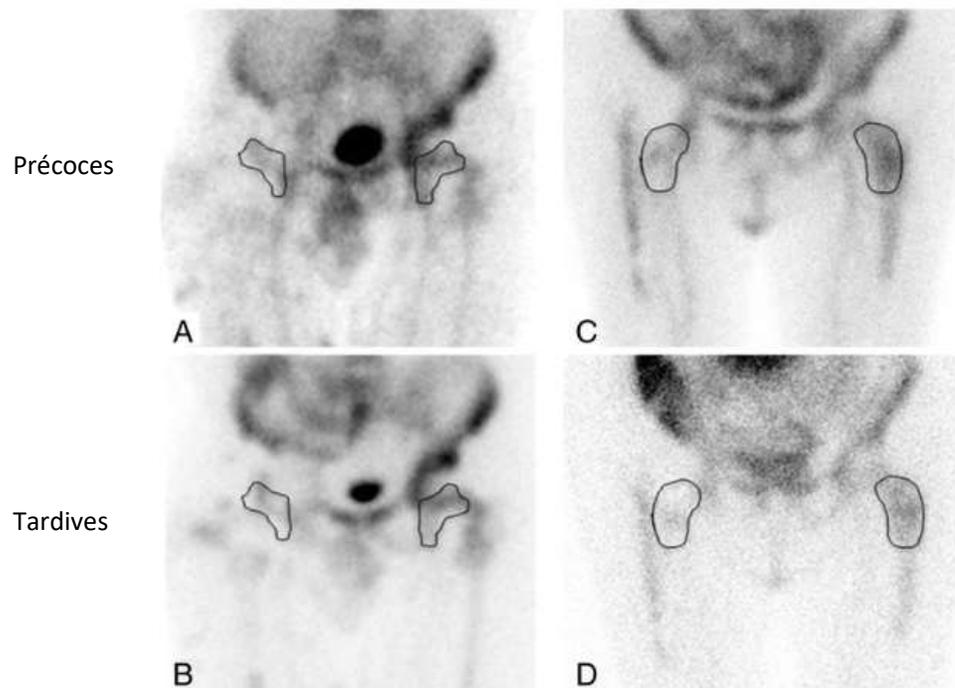


VRAI NEGATIF

Diminution de l'intensité de fixation entre les images précoces et tardives
Analyse semi-quantitative : diminution du ratio de fixation

Image acquisition and interpretation criteria for ^{99m}Tc -HMPAO-labelled white blood cell scintigraphy: results of a multicentre study

ANALYSE SEMI-QUANTITATIVE



FAUX-NEGATIF
(Ratio stable)

VRAI-NEGATIF
(Ratio stable)

| | Any T/B ratio increase | | T/B ratio increase >5 % | | T/B ratio increase >10 % | | T/B ratio increase >20 % | | T/B ratio increase >25 % | |
|-----------------------------|------------------------|-----|-------------------------|-----|--------------------------|-----|--------------------------|-----|--------------------------|-----|
| | FT | DTC | FT | DTC | FT | DTC | FT | DTC | FT | DTC |
| True positive (<i>n</i>) | 56 | 48 | 46 | 38 | 41 | 34 | 30 | 24 | 26 | 18 |
| True negative (<i>n</i>) | 34 | 59 | 40 | 65 | 45 | 69 | 45 | 69 | 45 | 69 |
| False positive (<i>n</i>) | 13 | 20 | 6 | 15 | 2 | 10 | 2 | 10 | 2 | 10 |
| False negative (<i>n</i>) | 2 | 3 | 13 | 12 | 17 | 17 | 28 | 27 | 32 | 33 |
| Sensitivity (%) | 97 | 94 | 78 | 76 | 71 | 67 | 52 | 47 | 45 | 35 |
| Specificity (%) | 72 | 75 | 87 | 81 | 96 | 87 | 96 | 87 | 93 | 87 |
| Accuracy (%) | 86 | 82 | 82 | 79 | 82 | 79 | 71 | 72 | 68 | 67 |
| PPV (%) | 81 | 70 | 87 | 72* | 95 | 77* | 94 | 71* | 96 | 64* |
| NPV (%) | 94 | 95 | 75 | 84 | 73 | 80 | 62 | 72 | 58 | 68 |

PAS DE CUT-OFF DEFINI...

TAKE HOME MESSAGE

- ❖ Suspicion d'infection sur matériel du squelette périphérique
 - ➔ Scintigraphie aux Leucocytes Marqués
 - ➔ +/- Précédée d'une Scintigraphie Osseuse (si chirurgie >2ans)

- ❖ Sensibilité et Spécificité aux alentours de 70-80%

- ❖ En l'absence d'antibiothérapie en cours (fenêtre d'au minimum 3 semaines)

LES EXAMENS ALTERNATIFS

- ❖ TEP/TDM aux Leucocytes marqués au ^{18}F -FDG
- ❖ TEP/TDM au Citrate de Gallium-68

LA TEP/TDM au ^{18}F -FDG-Leucocytes

Eur J Nucl Med Mol Imaging (2014) 41:556–564
DOI 10.1007/s00259-013-2597-2

ORIGINAL ARTICLE

FDG and FDG-labelled leucocyte PET/CT in the imaging of prosthetic joint infection

Sabire Yılmaz Aksoy • Sertac Asa • Meftune Ozhan • Meltem Ocak • M. Sait Sager •
Melih Engin Erkan • Metin Halac • Levent Kabasakal • Kerim Sönmezoglu • Bedii Kanmaz



Spécifique +++
Acquisition TEP (3D, corps entier)
Confort pour le patient



Laboratoire de Radiopharmacie
Radioprotection personnel
Demi vie du ^{18}F
Atteinte du rachis?

46 patients / 54 prothèses (35 PTG et 19 PTH)

- 15 descellements septiques (28%)
- 39 descellements aseptiques (72%)

Gold standard : Suivi clinique (30) ou Prélèvements chirurgicaux (24)

Protocole acquisition TEP/TDM aux ^{18}F -FDG-Leucocytes :

Acquisition unique 3h-3h30 post-ré-injection

PERFORMANCES ^{18}F -FDG

Se 86,6%

Sp 46,1%

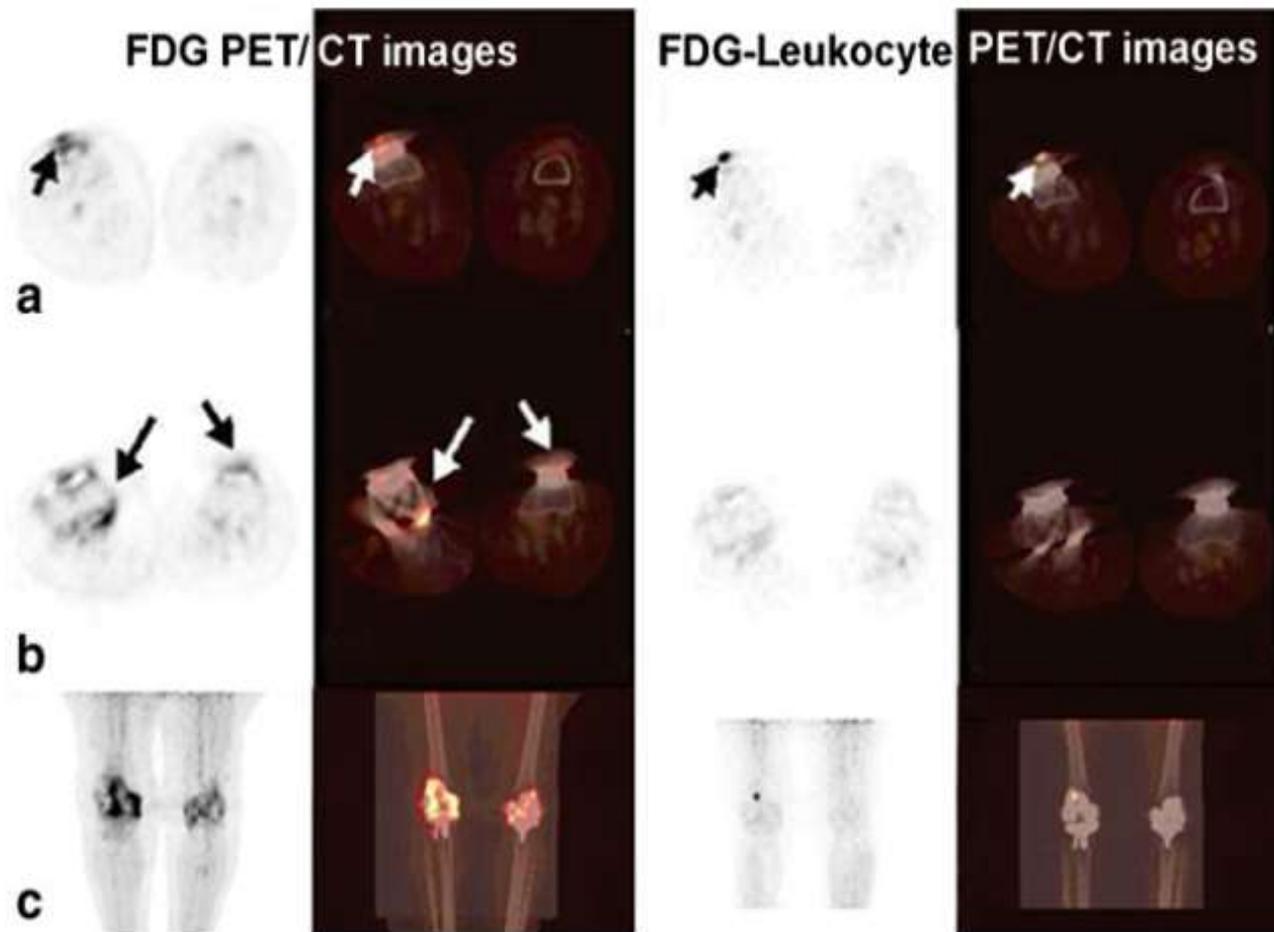
Accuracy 57,4%

PERFORMANCES ^{18}F -FDG-Leucocytes

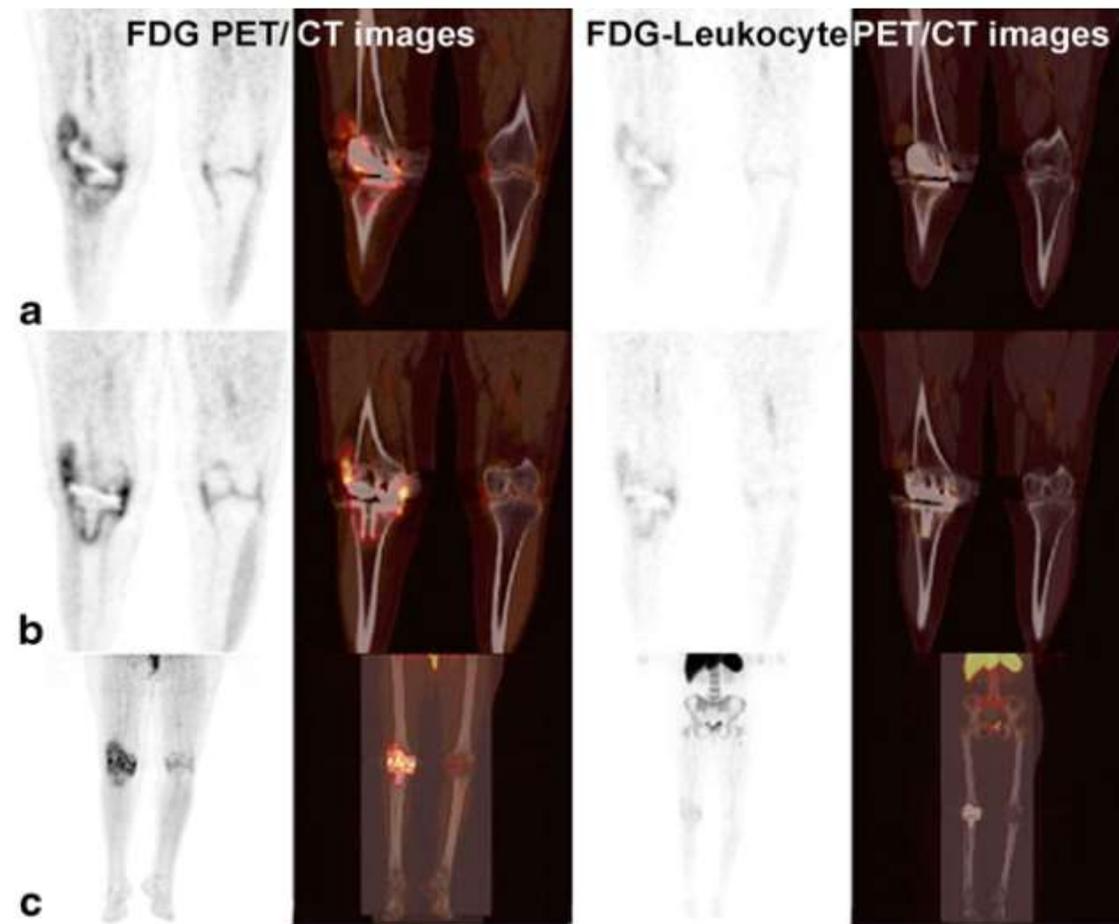
Se 93,3%

Sp 97,4%

Accuracy 96%



Descellement septique PTG Droite
RAS PTG Gauche



RAS PTG Droite

LA TEP/TDM au ^{68}Ga -Citrate

Tseng et al. *EJNMMI Research* (2019) 9:2
<https://doi.org/10.1186/s13550-018-0468-3>

EJNMMI Research

ORIGINAL RESEARCH

Open Access

Potential usefulness of ^{68}Ga -citrate PET/CT in detecting infected lower limb prostheses



Jing-Ren Tseng^{1,2} , Yu-Han Chang³, Lan-Yan Yang⁴, Chen-Te Wu⁵, Szu-Yuan Chen³, Chih-Hsing Wan⁶,
Ing-Tsung Hsiao^{1,2*} and Tzu-Chen Yen^{1,2*}



Acquisition TEP (3D, corps entier)
Confort pour le patient
Radioprotection



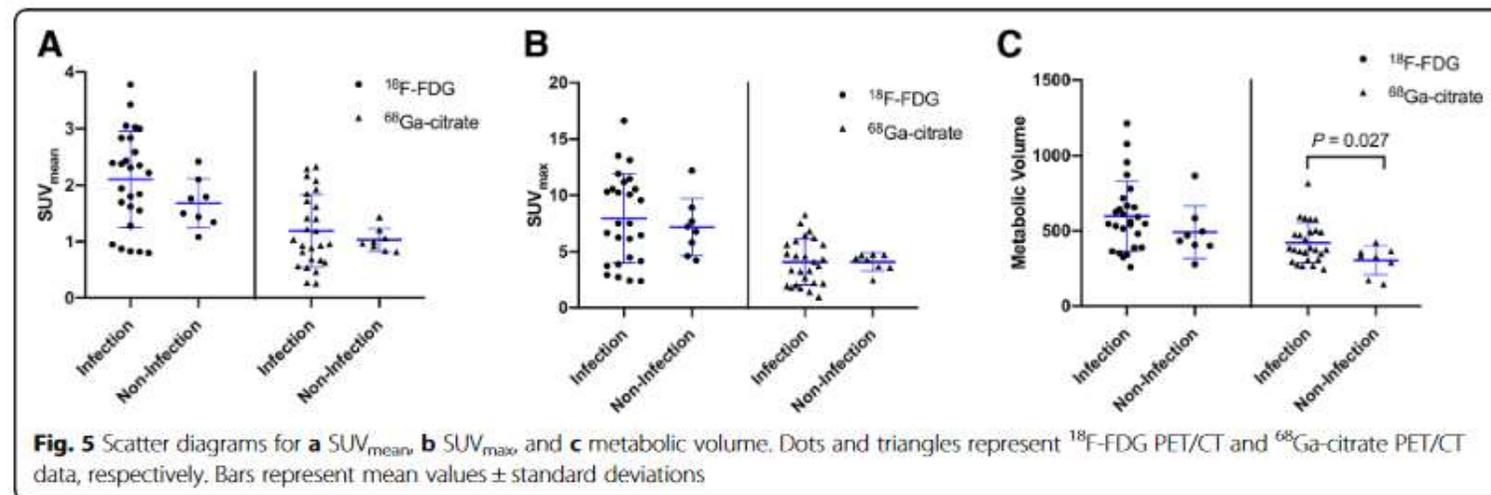
Générateur (cher)
Spécificité
Fixation vasculaire et cardiaque?

| | Entire cohort (n = 34) |
|--|------------------------|
| Age, years | 64 (31–86) |
| Male sex | 19 (55.9%) |
| Clinical presentations | |
| Fever | 1 (2.9%) |
| Joint pain | 30 (88.2%) |
| Joint swelling | 8 (23.5%) |
| Local heat | 5 (14.7%) |
| Secretion | 5 (14.7%) |
| Laboratory findings | |
| C-reactive protein, mg/L | 21.7 (0.2–250.9) |
| White blood cells, 10 ³ /μL | 7.4 (1.8–18.0) |
| Erythrocyte sedimentation rate, mm/h | 39 (2–116) |
| Cause of total joint arthroplasty | |
| Osteoarthritis | 21 (61.8%) |
| Avascular necrosis | 3 (8.8%) |
| Trauma | 6 (17.6%) |
| Fracture | 3 (8.8%) |
| Rheumatoid arthritis | 1 (2.9%) |
| Prosthesis location, hip | 19 (55.9%) |
| Prosthesis age, days | 180 (7–6000) |

Prothèse infectée
n=26

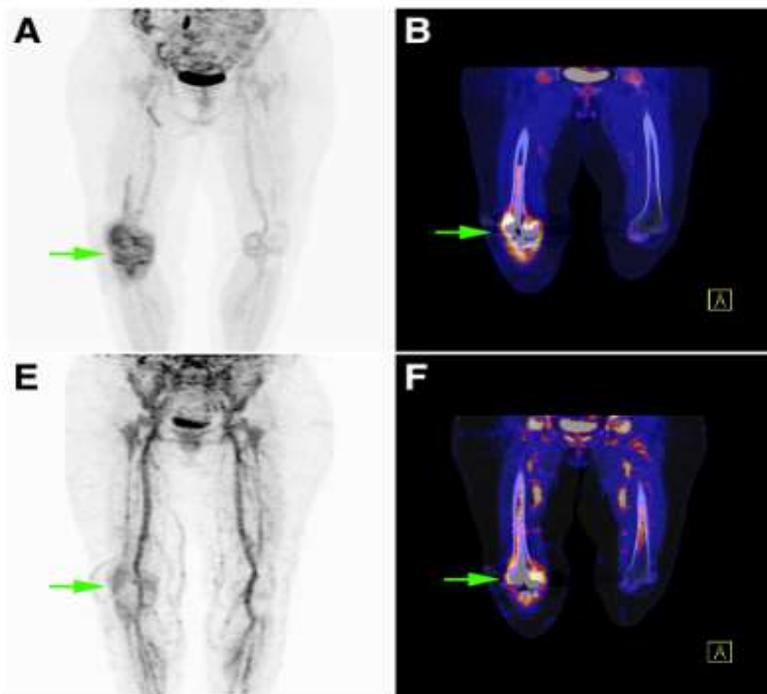
Gold Standard
Prélèvements chir

| | Sensitivity (%) | Specificity (%) | Accuracy (%) |
|---------------------------------|--------------------------|------------------------|--------------|
| Entire cohort (n = 34) | | | |
| ¹⁸ F-FDG PET/CT | 100 (26/26) ^a | 38 (3/8) ^a | 85 |
| ⁶⁸ Ga-citrate PET/CT | 92 (24/26) ^a | 88 (7/8) ^a | 91 |
| Hip prosthesis (n = 19) | | | |
| ¹⁸ F-FDG PET/CT | 100 (12/12) ^a | 43 (3/7) ^a | 79 |
| ⁶⁸ Ga-citrate PET/CT | 92 (11/12) ^a | 86 (6/7) ^a | 89 |
| Knee prosthesis (n = 15) | | | |
| ¹⁸ F-FDG PET/CT | 100 (14/14) ^a | 0 (0/1) ^a | 93 |
| ⁶⁸ Ga-citrate PET/CT | 93 (13/14) ^a | 100 (1/1) ^a | 93 |



VP $^{18}\text{F}/\text{FDG}$
VP $^{68}\text{Ga}\text{-Citrate}$

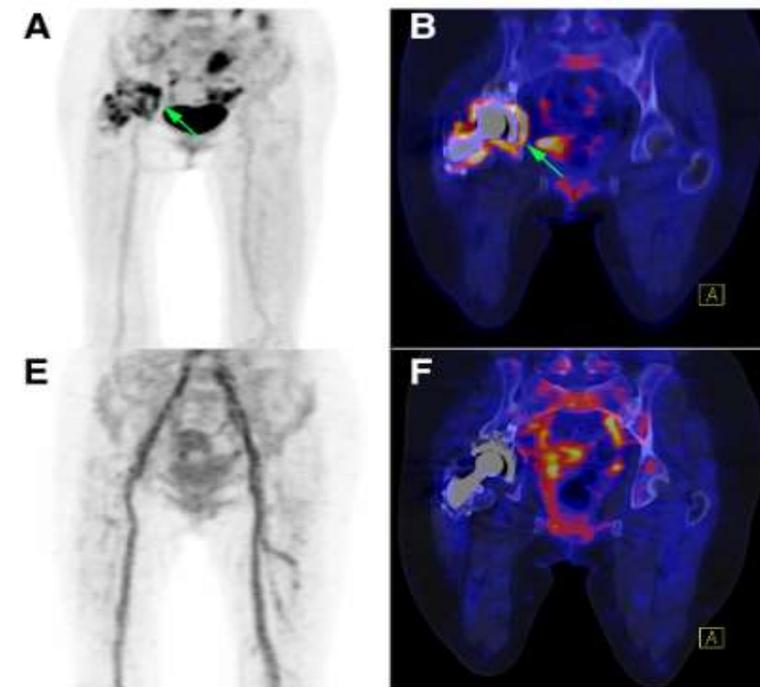
$^{18}\text{F}\text{-FDG}$



$^{68}\text{Ga}\text{-Citrate}$

FP $^{18}\text{F}\text{-FDG}$
VN $^{68}\text{Ga}\text{-Citrate}$

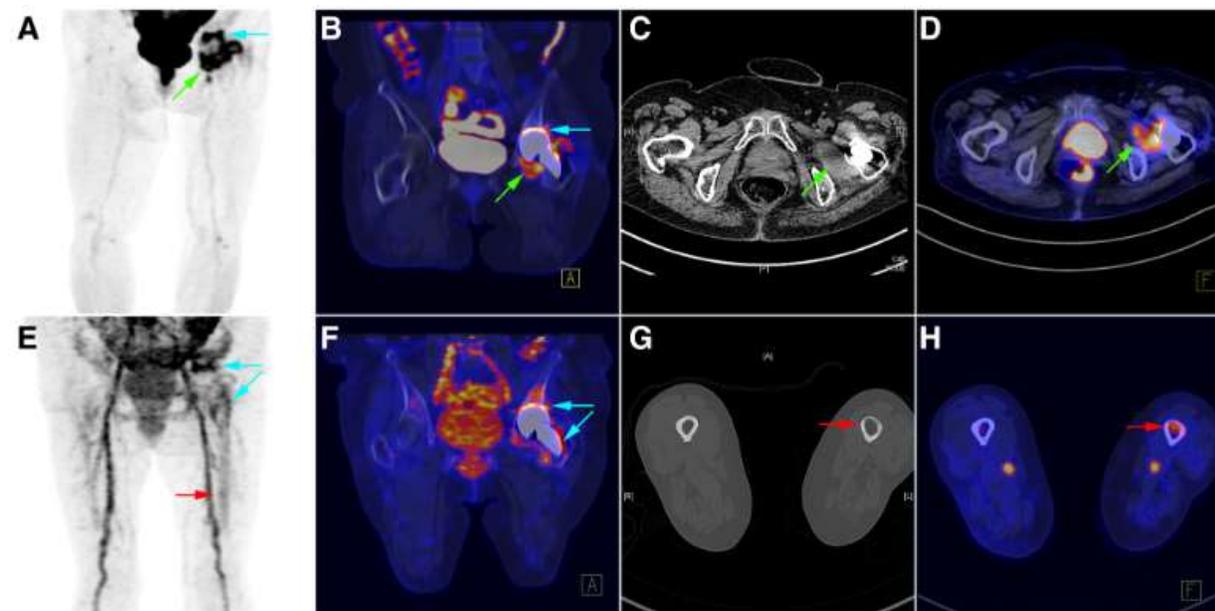
$^{18}\text{F}\text{-FDG}$



$^{68}\text{Ga}\text{-Citrate}$

VP $^{18}\text{F}/\text{FDG}$
VP $^{68}\text{Ga}\text{-Citrate}$

$^{18}\text{F}\text{-FDG}$



$^{68}\text{Ga}\text{-Citrate}$

INFECTIONS RACHIDIENNES



CAS CLINIQUE



- ❖ M. G. MAL, 68ans
- ❖ ATCD d'arthrodèse lombaire L3-L5 il y a 1 an
- ❖ Douleurs lombaires invalidantes permanentes associées à l'apparition d'une radiculalgie type cruralgie gauche
- ❖ Sub-fébrile : Température 37,8°
- ❖ Bilan biologique : CRP 30 mg/L, Pas d'hyperleucocytose.
- ❖ Radiographie standard : RAS

Vous suspectez une infection du rachis lombaire.

CAS CLINIQUE

❖ Quel examen demandez-vous en première intention?

❖ A – Je ne sais... Je demande l'avis de mes collègues!

❖ B – Une IRM rachidienne.

❖ C – Une scintigraphie osseuse.

❖ D – Une TEP/TDM au ^{18}F -FDG.

❖ E – Un TDM avec injection de produit de contraste.

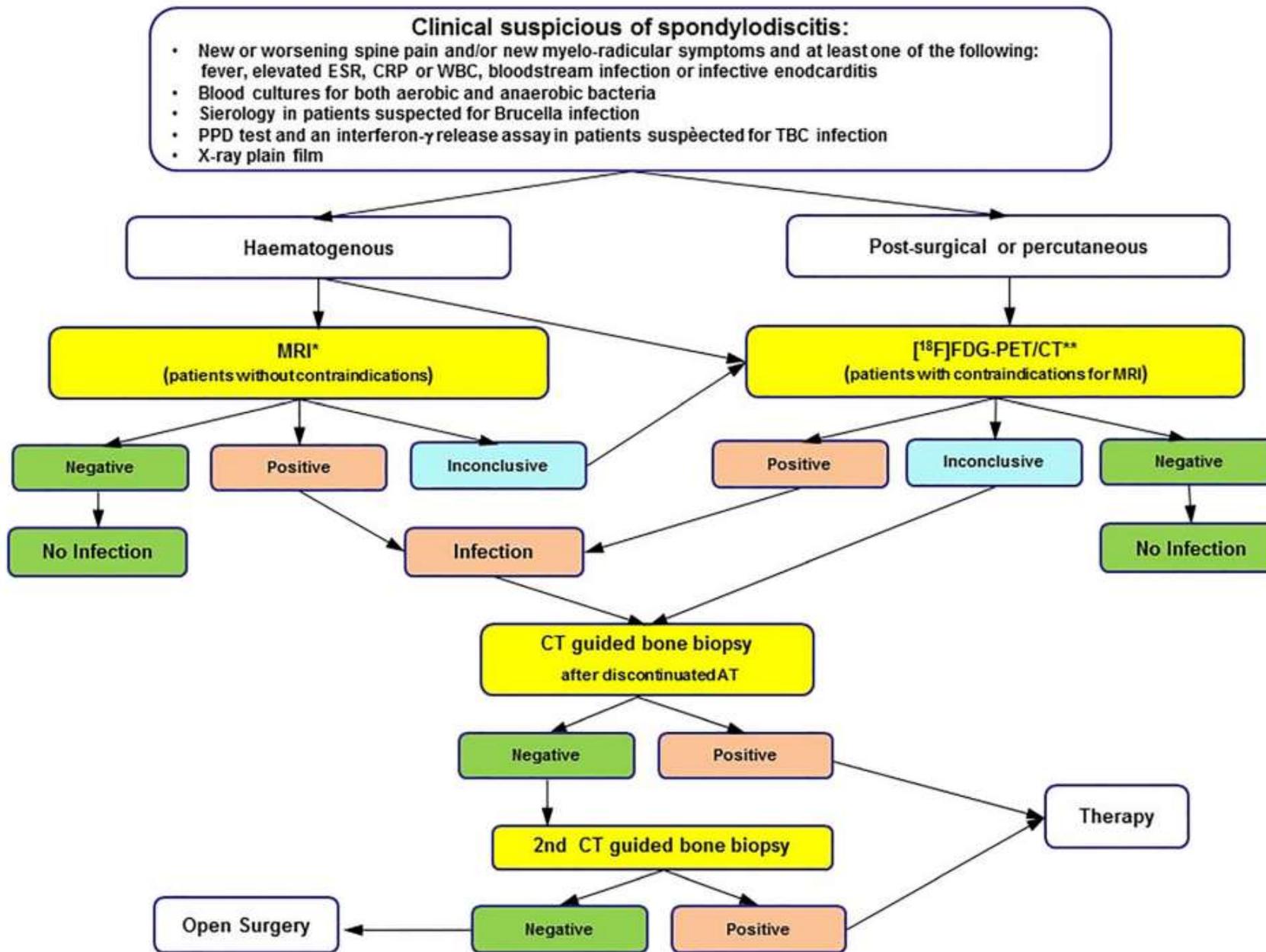


Joint EANM/ESNR and ESCMID-endorsed consensus document for the diagnosis of spine infection (spondylodiscitis) in adults

Elena Lazzeri^{1,2,3}  • Alessandro Bozzao^{4,5} • Maria Adriana Cataldo^{6,7} • Nicola Petrosillo^{6,7} • Luigi Manfrè^{4,8} • Andrej Trampuz^{6,9} • Alberto Signore^{1,10} • Mario Muto^{3,11}

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**Although indicated, in the case of PET/CT unavailability, MRI can be performed instead, with lower diagnostic accuracy.

Infection du Rachis
et Médecine Nucléaire

=

TEP/TDM au ^{18}F -FDG



AVANT DE REALISER L'EXAMEN

- ❖ Equilibre glycémique dans les 6h qui précèdent l'examen
 - ❖ **A jeun**
 - ❖ Pour les patients diabétiques :
 - ❖ Pas d'injection d'insuline rapide ou ultra-rapide
 - ❖ Pas de prise d'anti-diabétique oral
- ❖ Examen contre-indiqué chez **femme enceinte ou allaitante**
- ❖ Pas de contre indication en cas d'insuffisance rénale
- ❖ Possibilité de prendre ses médicaments (notamment antalgiques!)
- ❖ **Consignes de radioprotection : AUCUNE!**

AVANTAGES ET INCONVENIENTS DE LA TEP/TDM

❖ AVANTAGES

- ❖ VPN+++
- ❖ Haute qualité d'image,
- ❖ Courte dure d'acquisition

❖ INCOVENIENTS

- ❖ Faible spécificité (35,8% - 87,9%)
- ❖ Différenciation Infection/Inflammation/Tumeur
- ❖ Disponibilité, Irradiation, Coût



Délai d'au moins 3-4 mois entre
Chirurgie et TEP/TDM

TEP/TDM ET SPONDYLODISCITE HEMATOGENE



Journal of
Clinical Medicine



Article

Comparison of the Diagnostic Value of MRI and Whole Body ^{18}F -FDG PET/CT in Diagnosis of Spondylodiscitis

Corinna Altini ¹, Valentina Lavelli ¹, Artor Niccoli-Asabella ², Angela Sardaro ³, Alessia Branca ¹, Giulia Santo ¹, Cristina Ferrari ^{1,*} and Giuseppe Rubini ¹

Received: 22 April 2020; Accepted: 19 May 2020; Published: 22 May 2020



56 patients avec suspicion de spondylodiscite

Gold standard : Suivi clinico-Biologique

| | MRI (+) | MRI (+) | MRI (-) | MRI (-) |
|---------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| | ¹⁸ F-FDG PET/CT (+) | ¹⁸ F-FDG PET/CT (-) | ¹⁸ F-FDG PET/CT (+) | ¹⁸ F-FDG PET/CT (-) |
| All patients (n = 56) | 47 | 6 | 0 | 3 |
| Subgroup I (whole-spine MRI) | 19 | 4 | 0 | 2 |
| Subgroup II (two-districts MRI) | 9 | 2 | 0 | 1 |
| Subgroup III (one-district MRI) | 19 | 0 | 0 | 0 |

Note: MRI (+), ¹⁸F-FDG PET/CT (+), positive concordance; MRI (+/-), ¹⁸F-FDG PET/CT (-/+), discordance; MRI (-), ¹⁸F-FDG PET/CT (-), negative concordance.

PERFORMANCES ¹⁸F-FDG

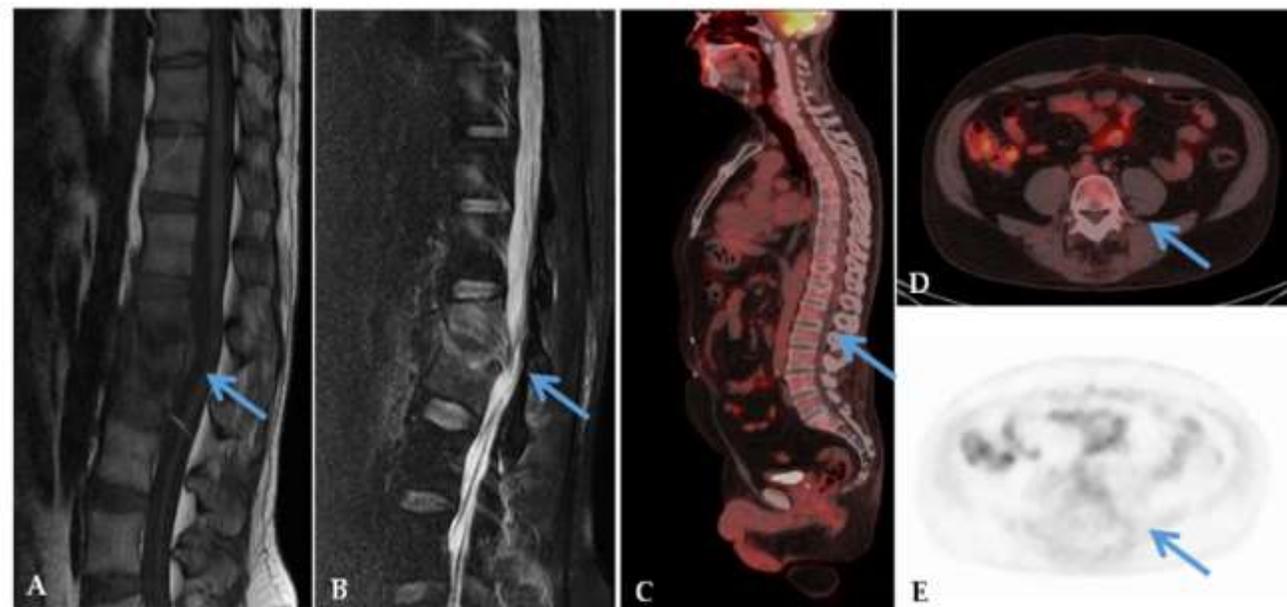
Se 92%
Sp 100%
Accuracy 94%

PERFORMANCES IRM

Se 100%
Sp 60%
Accuracy 97%



VP ^{18}F -FDG et IRM



FP IRM et VN ^{18}F -FDG
Remaniements dégénératifs

TEP/TDM au ^{18}F -FDG ET RACHIS OPERE

[Eur J Nucl Med Mol Imaging](#). 2021; 48(6): 1864–1875.

PMCID: PMC8113215

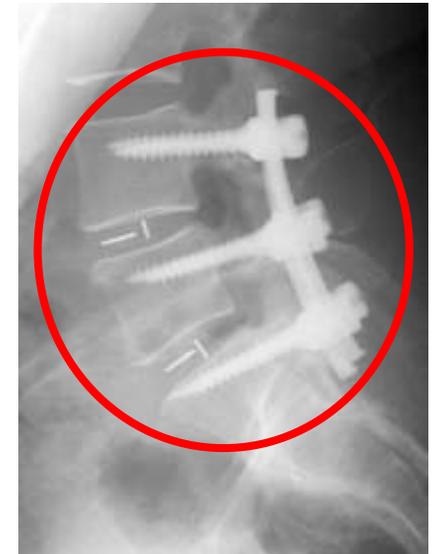
Published online 2020 Nov 18. doi: [10.1007/s00259-020-05109-x](https://doi.org/10.1007/s00259-020-05109-x)

PMID: [33210240](https://pubmed.ncbi.nlm.nih.gov/33210240/)

Comparison of MRI, [^{18}F]FDG PET/CT, and $^{99\text{m}}\text{Tc}$ -UBI 29-41 scintigraphy for postoperative spondylodiscitis—a prospective multicenter study

[Diana Paez](#),¹ [Mike M. Sathekge](#),² [Hassan Douis](#),³ [Francesco Giammarile](#),¹ [Shazia Fatima](#),⁴ [Anil Dhal](#),⁵ [Sunil K. Puri](#),⁶ [Paola A. Erba](#),⁷ [Elena Lazzeri](#),⁷ [Rodolfo Ferrando](#),⁸ [Paulo Almeida Filho](#),⁹ [Vincent Peter Magboo](#),¹⁰ [Olga Morozova](#),¹ [Rodolfo Núñez](#),^{1,11} [Olivier Pellet](#),¹ and [Giuliano Mariani](#)⁷

Paez et al. 2021



TEP/TDM au ^{18}F -FDG ET RACHIS OPERE

Paez et al. 2021

63 patients

Gold standard : Biopsie ou Suivi clinico-biologique

| | MRI (n = 48) | PET/CT (n = 44) |
|---------------------------|-------------------------------|----------------------------------|
| Sensitivity | 0.71 (0.51–0.87) | 0.63 (0.35–0.85) |
| Specificity | 0.83 (0.59–0.96) | 0.89 (0.67–0.99) |
| Positive predictive value | 0.87 (0.70–0.95) | 0.83 (0.56–0.95) |
| Negative predictive value | 0.65 (0.50–0.78) | 0.74 (0.60–0.84) |
| Diagnostic accuracy | 0.76 (0.61–0.87) | 0.77 (0.70–0.90) |
| Positive likelihood ratio | 4.29 (1.49–12.36) | 5.94 (1.52–23.24) |
| Negative likelihood ratio | 0.34 (0.18–0.64) | 0.42 (0.22–0.80) |
| Diagnostic odds ratio | 12.5 (2.83–55.26) | 14.17 (2.39–84.07) |
| Area under ROC curve * | 0.78 (0.64–0.92) | 0.80 (0.64–0.98) |

PERFORMANCES IRM
=
PERFORMANCES TEP/TDM

TEP/TDM au ^{18}F -FDG ET RACHIS OPERE

Paez et al. 2021



FN IRM mais artéfacts +++

Arthodèse
T12-L4

Diagnostic final
d'infection par
biopsie



VP TEP/TDM

TEP/TDM au ^{18}F -FDG ET RACHIS OPERE

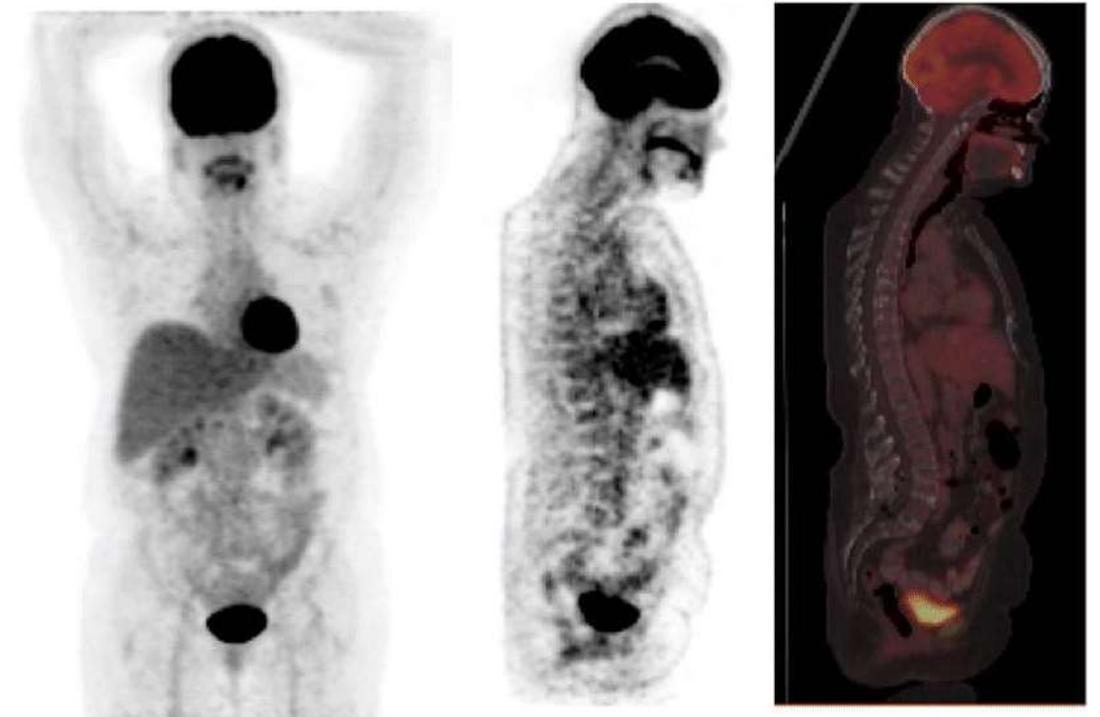
Paez et al. 2021



VN IRM

Arthodèse
L4-S1

Diagnostic final
d'absence d'infection
sur suivi à 7 mois



VN TEP/TDM



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Original article

Added value of [^{18}F]fluorodeoxyglucose positron emission tomography/computed tomography for the diagnosis of post-operative instrumented spine infection

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Michel Dupon^{a,b}, Jean-Marc Vital^{b,f}, Pierre Delobel^{b,g}, H el ene Durox^{b,h},
Henri de Clermont-Gallerande^{b,c,d}, Philippe Fernandez^{b,c,d},
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TEP/TDM au ¹⁸F-FDG ET RACHIS OPERE

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N=49 patients

*22 patients avec infection

*27 patients sans infection

Etude rétrospective mono-centrique

Table 2

Diagnostic values for the different diagnostic methods.

| | MRI | CRP ≥ 60 mg/L | Semi-quantitative PET/CT | Visual PET/CT | Visual PET/CT – CRP combined evaluation ^a |
|-----------------|-------------|---------------|--------------------------|---------------|--|
| Sensitivity (%) | 66.7 | 50.0 | 40.9 | 86.4 | 90.9 |
| Specificity (%) | 75.0 | 92.6 | 85.2 | 81.5 | 77.8 |
| PPV (%) | 66.0 | 84.6 | 69.2 | 79.2 | 76.9 |
| NPV (%) | 75.0 | 69.4 | 63.9 | 88.0 | 91.3 |
| Accuracy | 71.4 | 73.4 | 65.3 | 83.7 | 83.7 |
| AUC | 0.71 | 0.71 | 0.63 | 0.84 | 0.84 |
| (95% CI) | (0.57-0.85) | (0.56-0.86) | (0.47-0.79) | (0.73-0.95) | (0.73-0.95) |
| P-value | 0.16 | 0.09 | 0.001 | – (ref) | 0.88 |

MRI: magnetic resonance imaging; PET/CT: positron emission tomography/computed tomography; CRP: C-reactive protein; PPV: positive predictive value; NPV: negative predictive value; AUC: area under the curve; CI: confidence interval; P-value refers to the comparison by ROC curve of the different exams to the visual analysis of PET/CT.

^a Patients with positive visual PET/CT or CRP ≥ 60 mg/L were considered as having a positive evaluation.

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Table 3

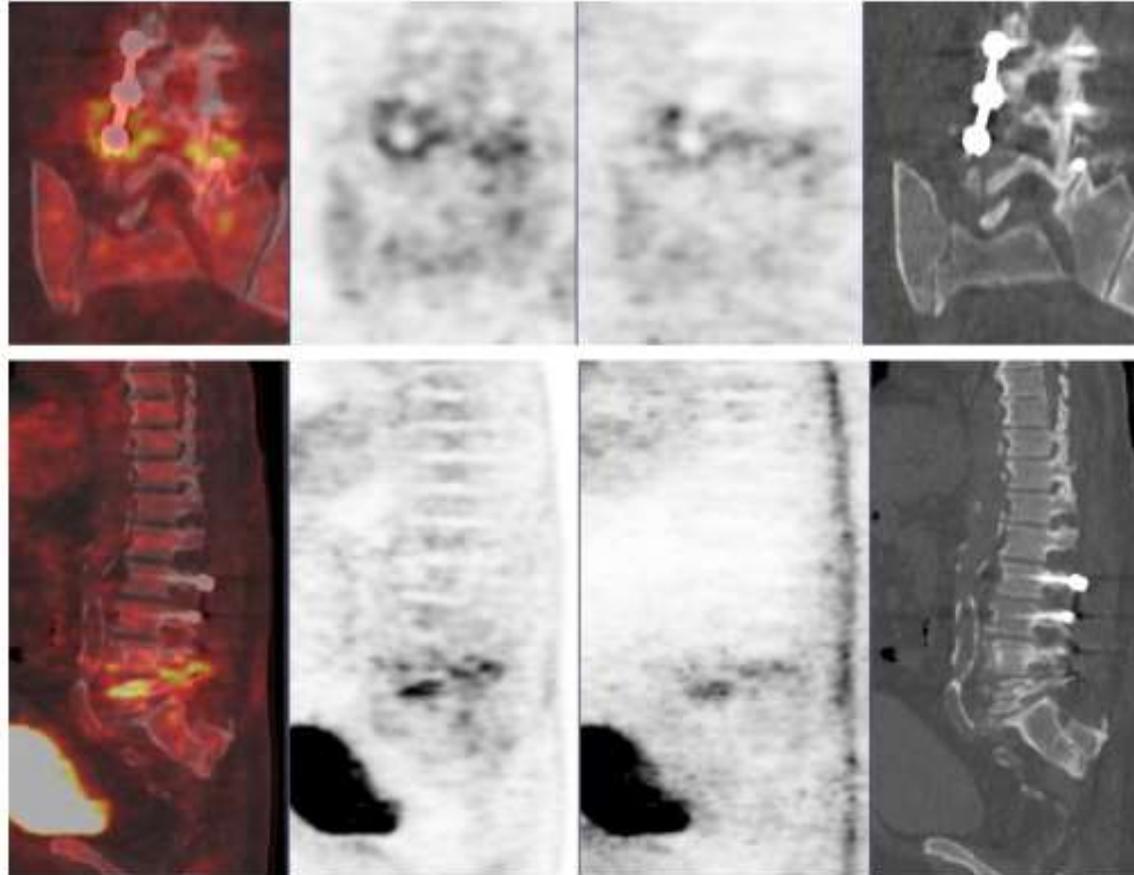
diagnostic values of visual PET/CT according to the number of fused levels.

| | 1 (n = 13) | 2 (n = 8) | ≥ 3 (n = 28) | All levels (n = 49) |
|-----------------|------------|-----------|--------------|---------------------|
| Sensitivity (%) | 100 | 100 | 79 | 86 |
| Specificity (%) | 100 | 75 | 64 | 81 |
| PPV (%) | 100 | 80 | 69 | 79 |
| NPV (%) | 100 | 100 | 75 | 88 |

PET/CT: positron emission tomography/computed tomography; PPV: positive predictive value; NPV: negative predictive value.

TEP/TDM au ^{18}F -FDG ET RACHIS OPERE

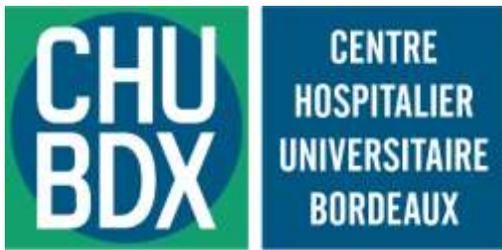
Follenfant et al. 2019



Spondylodiscite L4-L5

TAKE HOME MESSAGE

- ❖ Suspicion d'infection sur rachis opéré avec matériel en place
 - ➔ TEP/TDM au ^{18}F -FDG = examen de première intention
- ❖ Délai d'au moins 3-4 mois entre chirurgie et TEP/TDM
- ❖ Spécificité +++



Merci de votre attention

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