

APPORTS DE LA SCINTIGRAPHIE EN RHUMATOLOGIE

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PLAN

① Evolutions de la médecine nucléaire

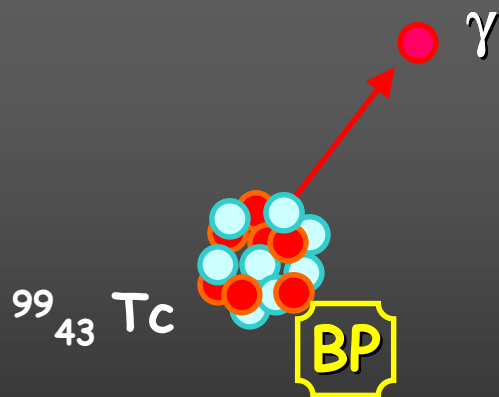
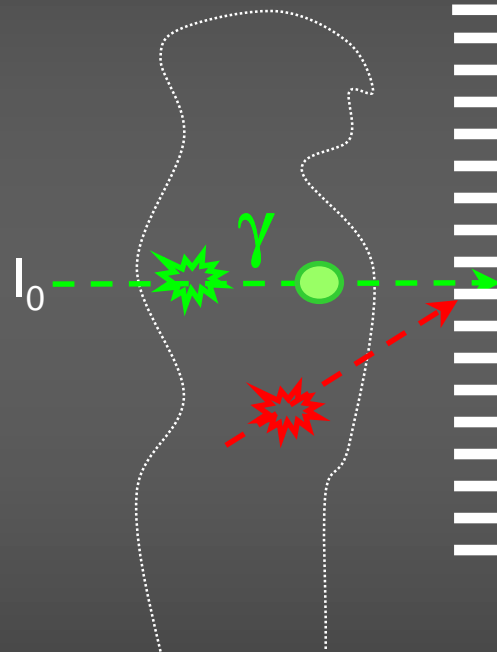
- Les scintigraphies γ et β^+ , SPECT-CT et PET-CT
- Déroulement d'un examen

② Indications

- Fractures, neuroalgodystrophie, ostéonécrose
- Arthrose, arthrites inflammatoires, Paget,
- ostéopathies hypertrophiantes et métaboliques
- Infections osseuses
- Pathologies tumorales osseuses.

③ Bibliographie

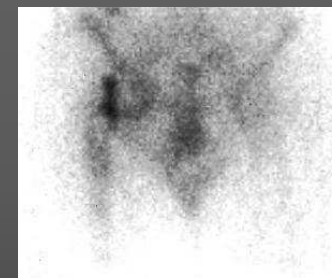
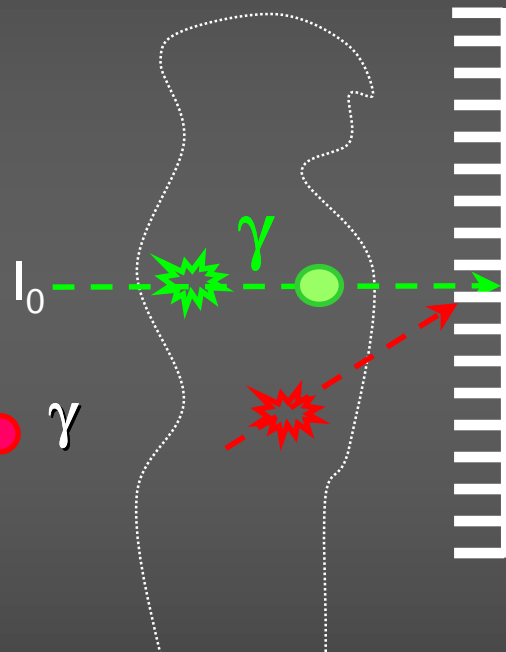
SPECT (γ) : CHU LAPEYRONIE



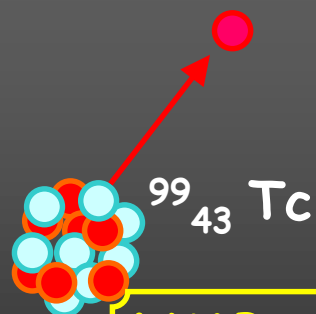
Acti. ostéoblastique

BP

SPECT (γ) : CHU LAPEYRONIE

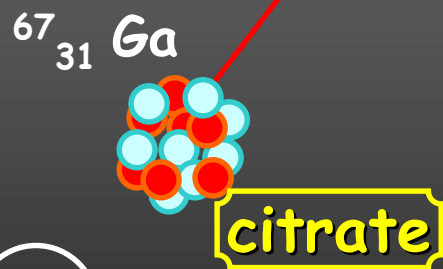


Ga



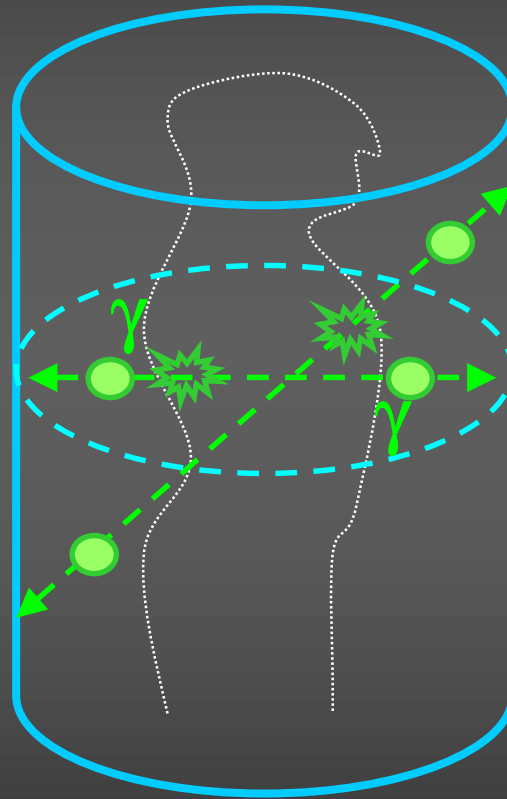
Infection

PN

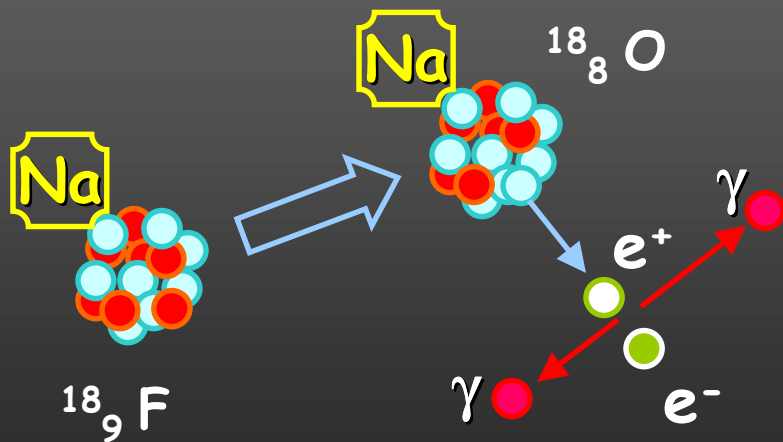


Inflammation

PET (β^+) : CHU GUI DE CHAULIAC

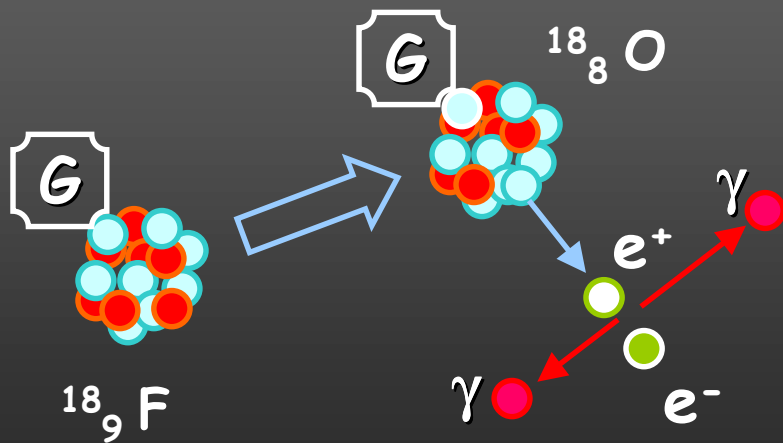
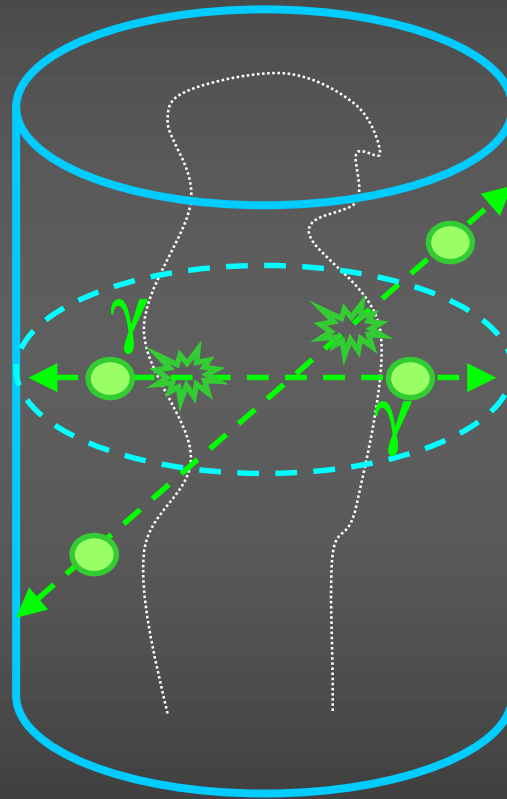


18-FNa



Activité ostéoblastique

PET (β^+) : CHU GUI DE CHAULIAC



18-FDG

Cancers, inflammation (infection), hypoxie

SPECT-CT & PET-CT

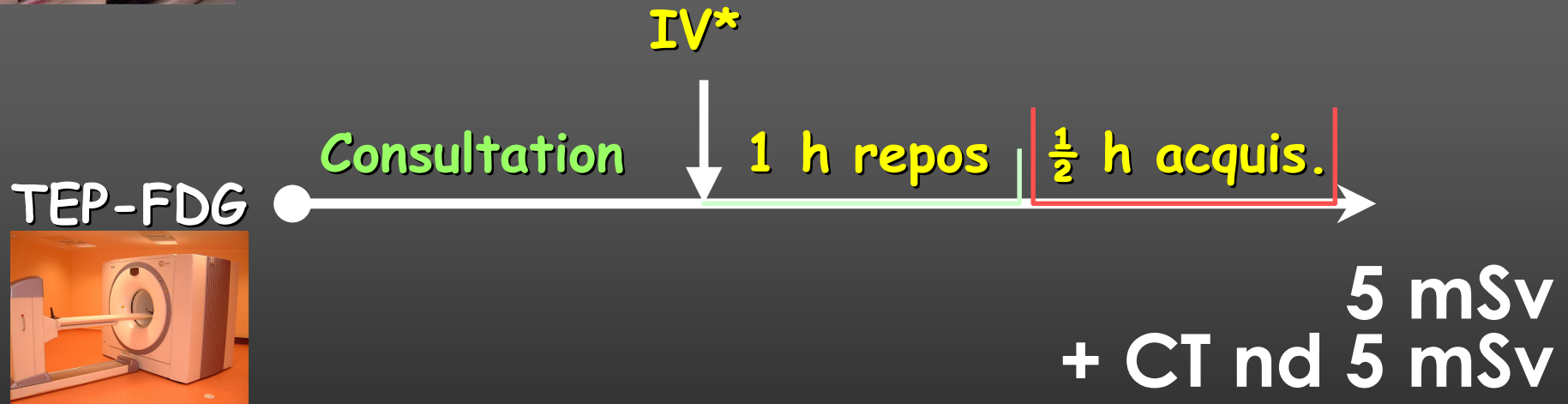
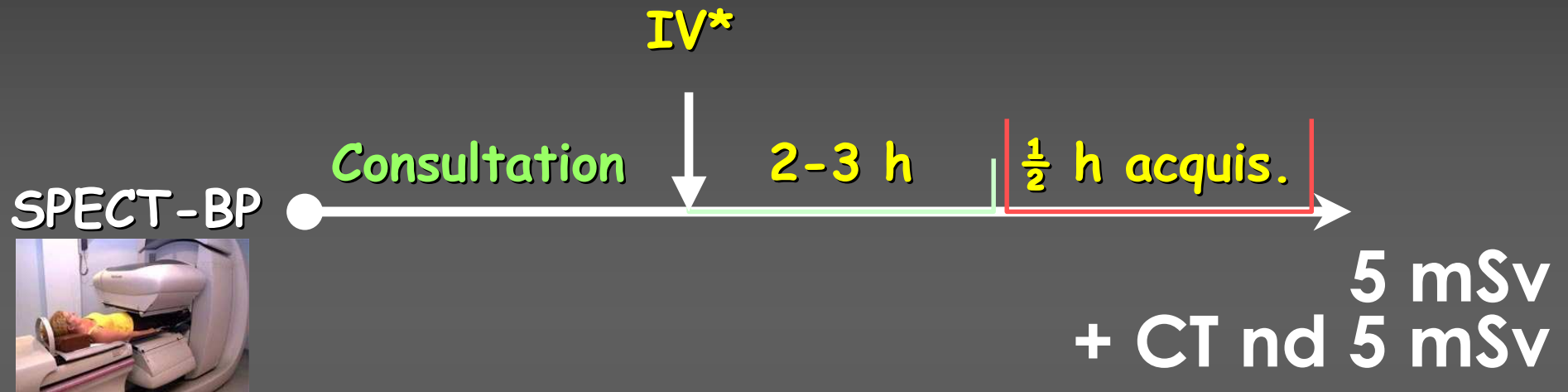


SPECT(BP)-CT



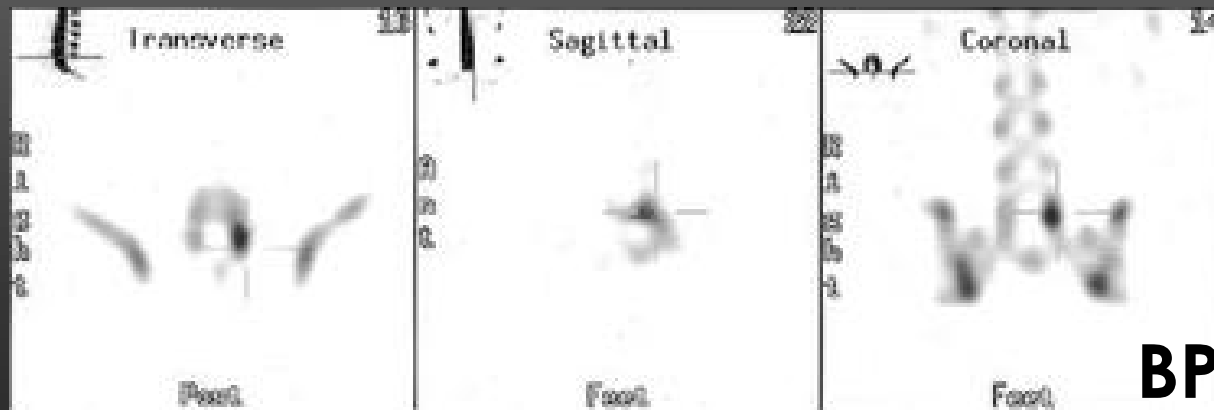
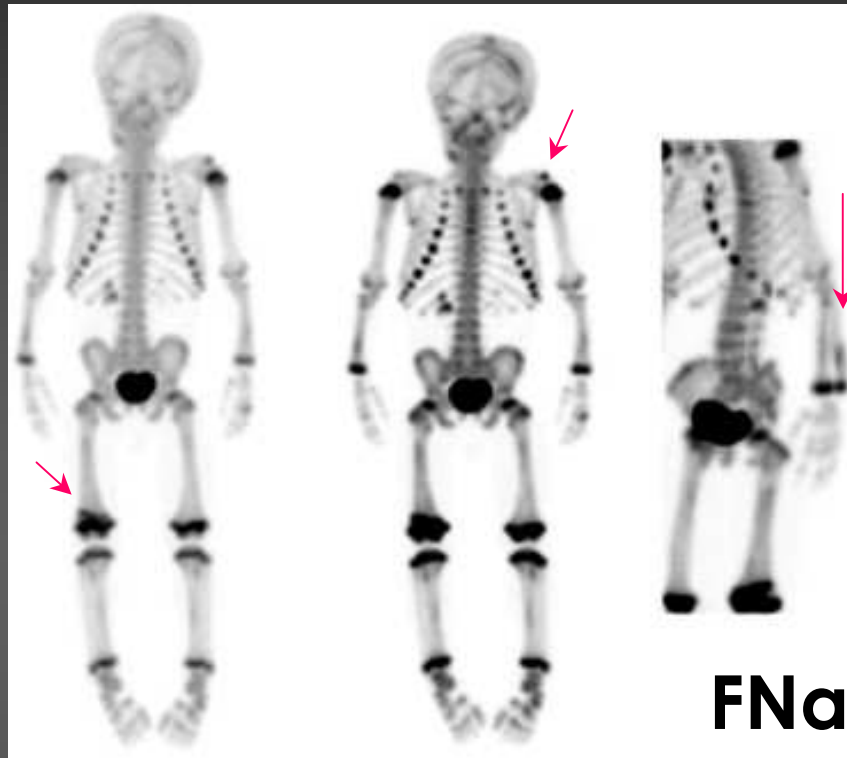
PET(FDG)-CT

Déroulement d'un examen

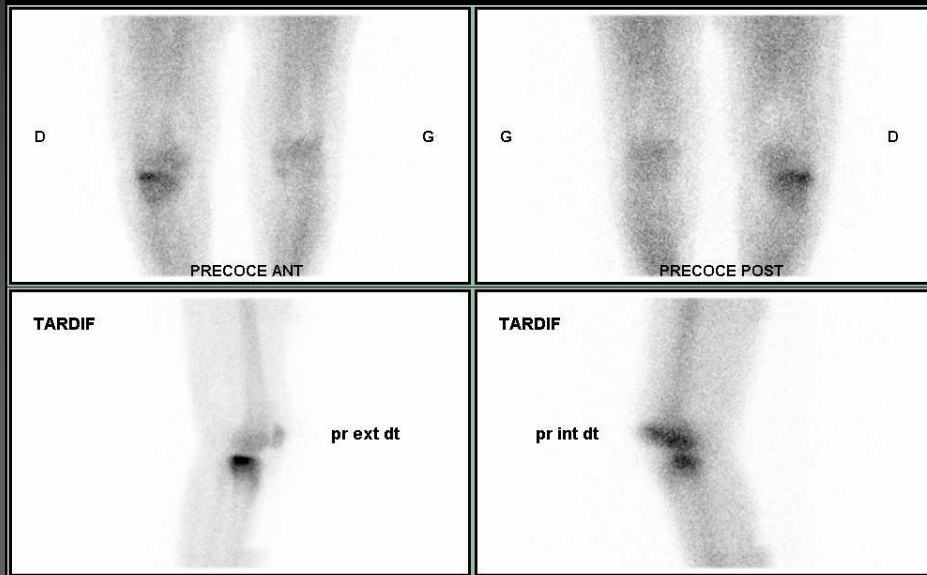


Pour comparaison, CT diagnostique : 10-20 mSv / acquisition

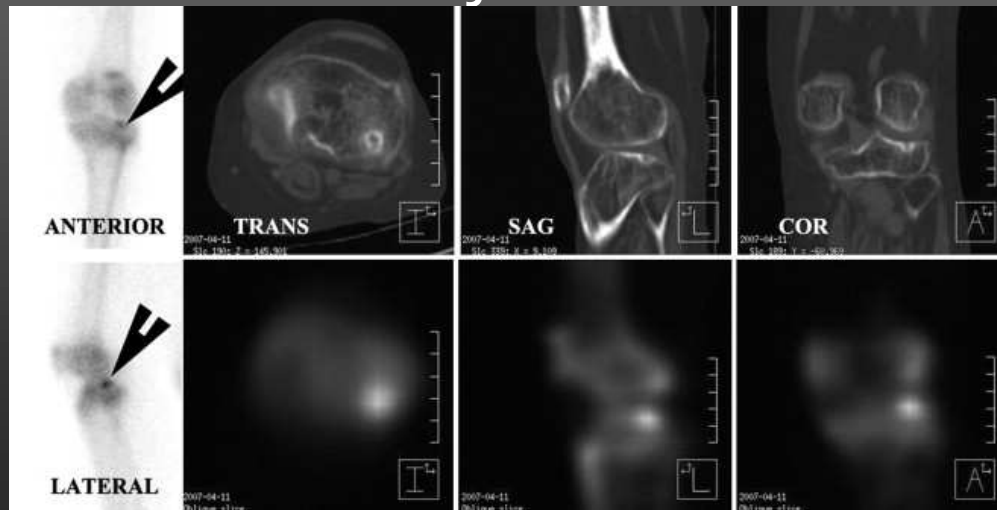
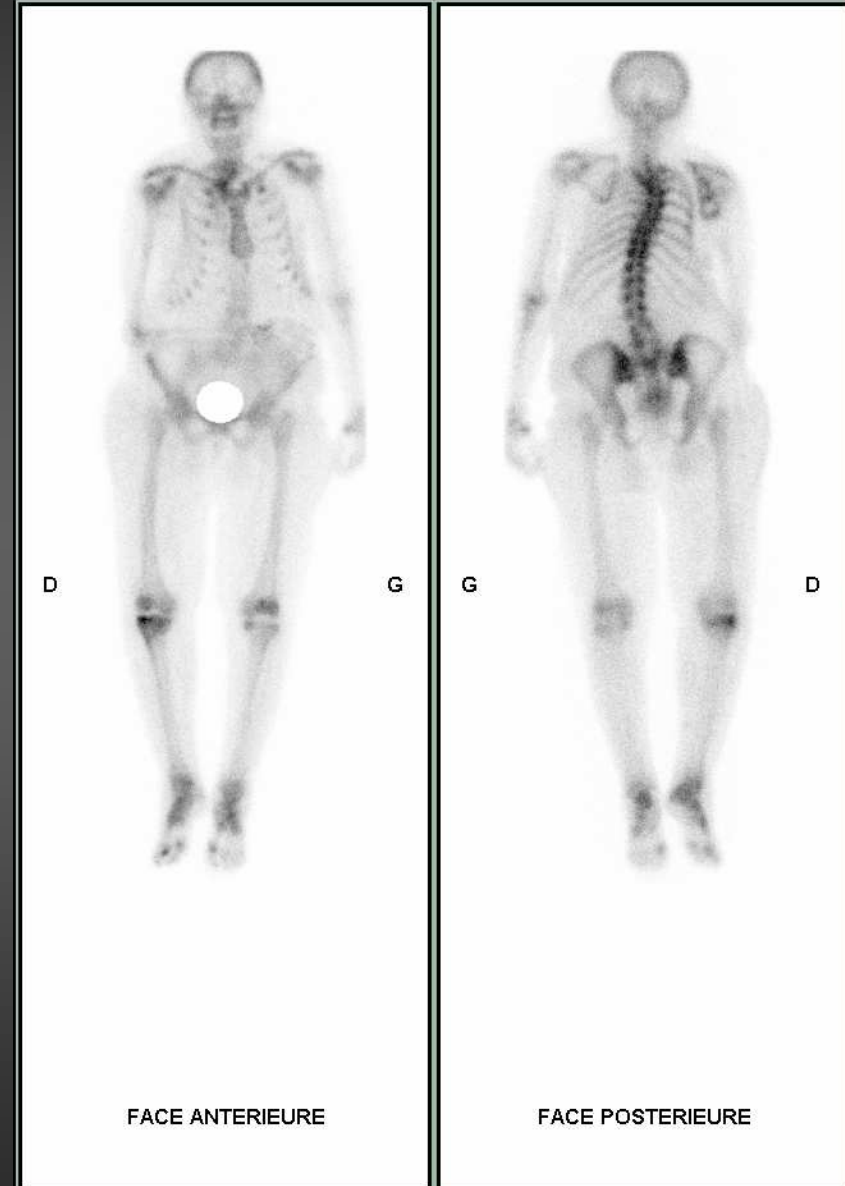
FRACTURES



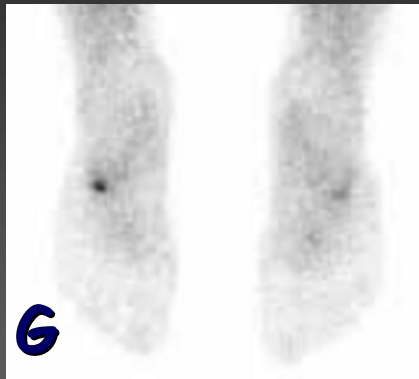
FRACTURE DU PLATEAU TIBIAL EXT



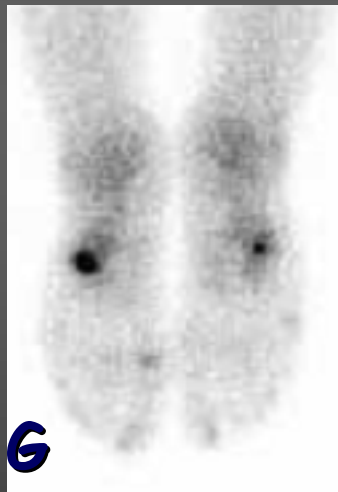
65 ans, chute : # omoplate D
Douleur jambe droite



FRACTURE DE STRESS DU CUBOÏDE

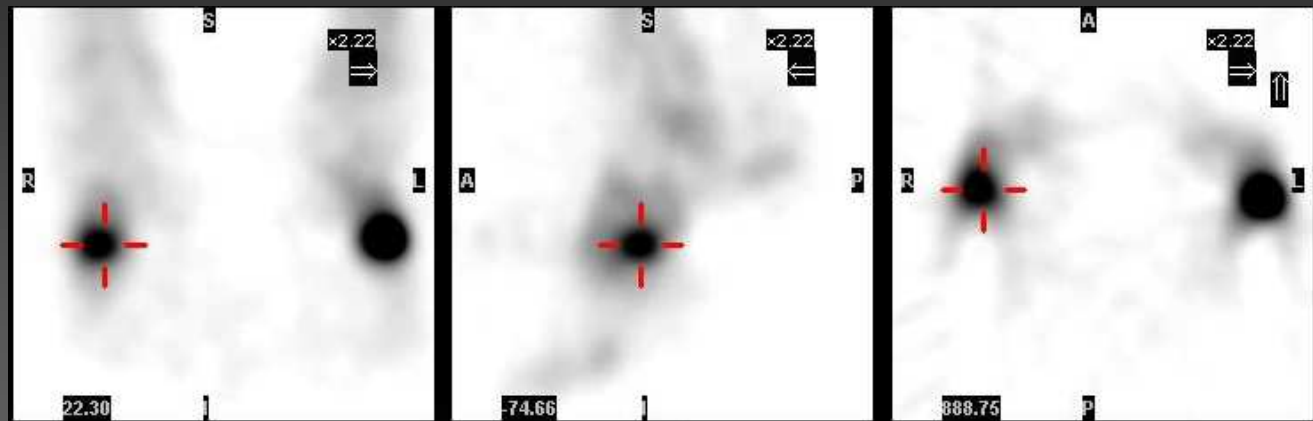


Précoces



Tardifs

Douleur pied G
chez un marcheur



NM Coronals

NM Sagittals

NM Transaxials



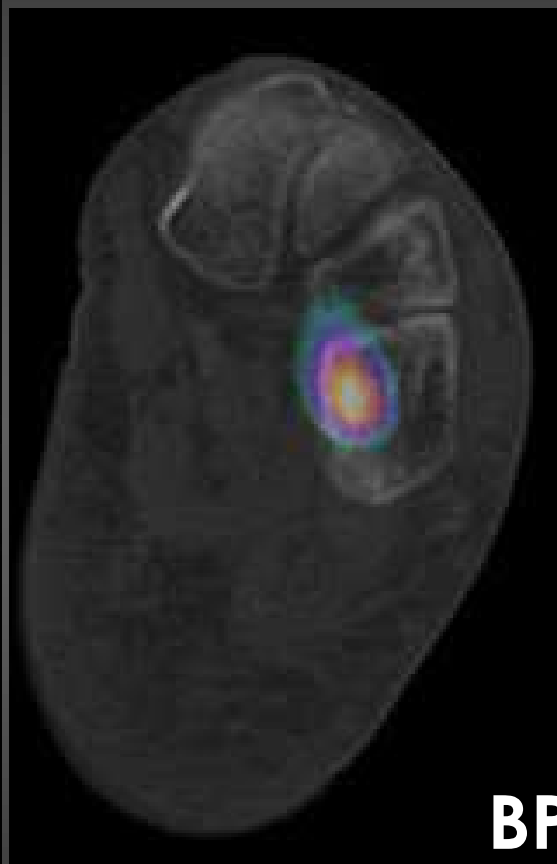
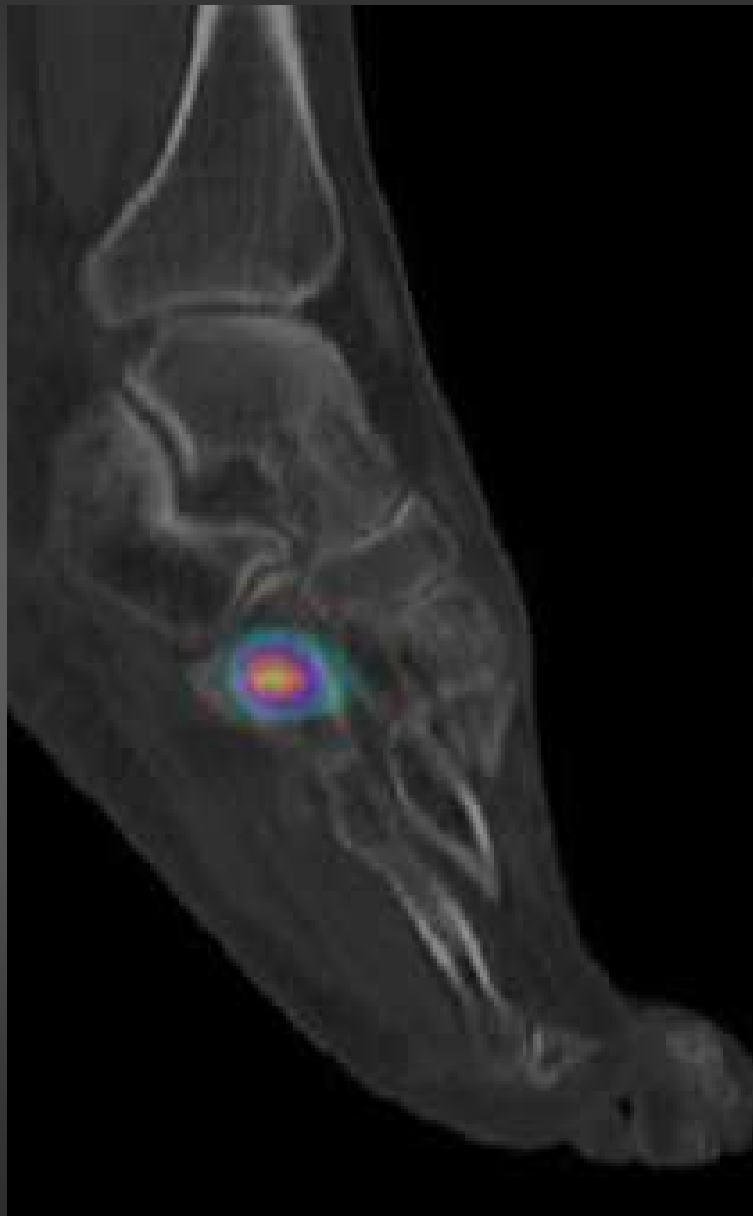
Fused Coronals

Fused Sagittals

Fused Transaxials

Fracture de stress du cuboïde G
arthropathie cuboïde-cunéiforme latéral D

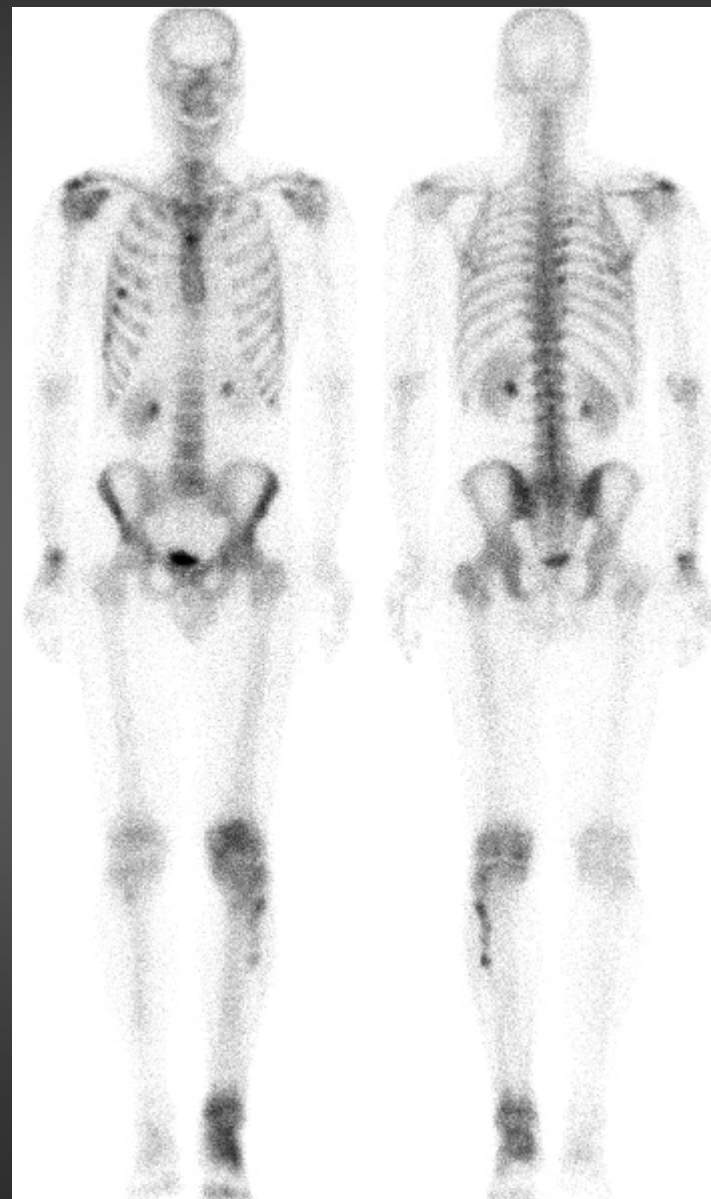
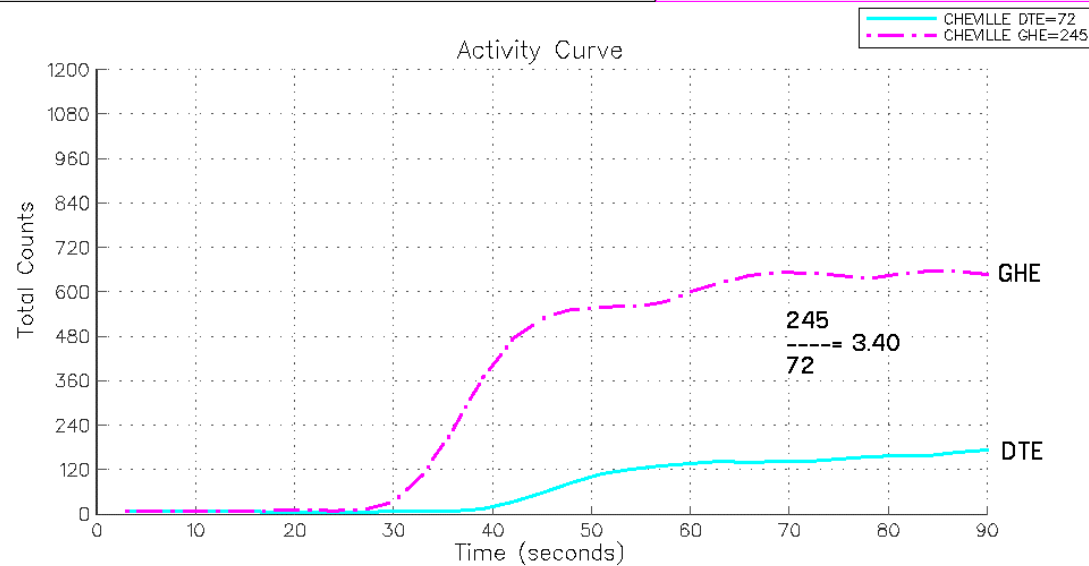
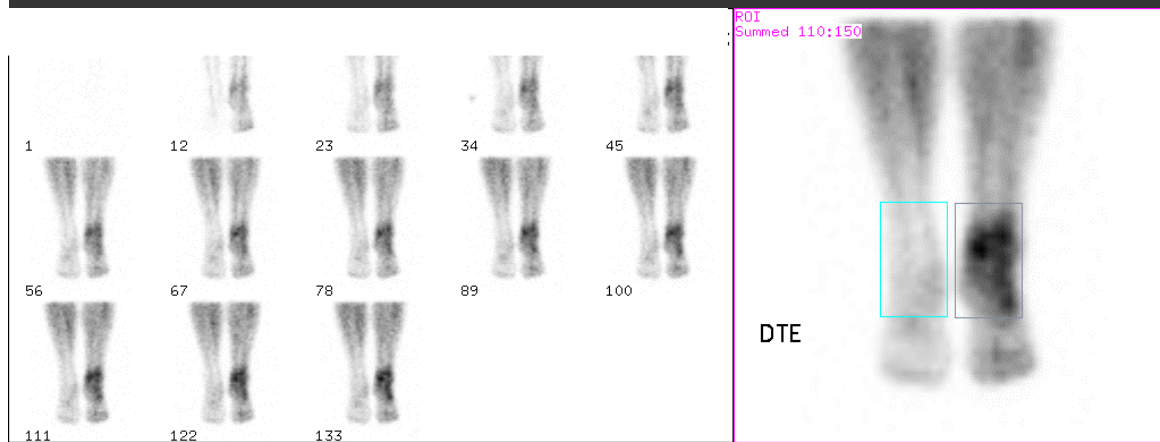
FRACTURE DE STRESS DU CUNEIFORME MEDIAL



SYNTHESE SUR LES FRACTURES

- Sensibilité = 100 %
- Spécificité > 80 % (ostéonécroses)
 - Améliorée par la SPECT-CT
- Devant toute suspicion clinique à Rx normale.
 - Fracture de stress : 80 % de radio normales
 - Silvermann : + 25 à 50 % de fractures versus la radiologie
 - Pour éviter douleur chronique et algodystrophie

ALGODYSTROPHIE



Se = 96 %
Sp = 98 %

OSTEONECROSE

Tête ou condyle fémoral interne
Plateau tibial interne
Talus, calcaneus
Semi-lunaire
Extrémité interne de la clavicule



BP



T1

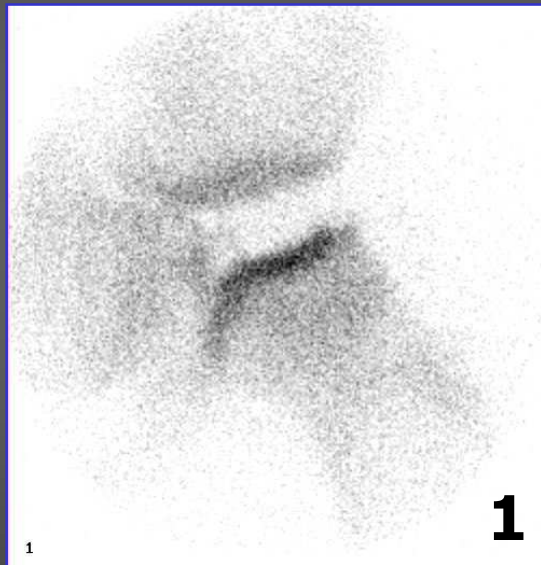


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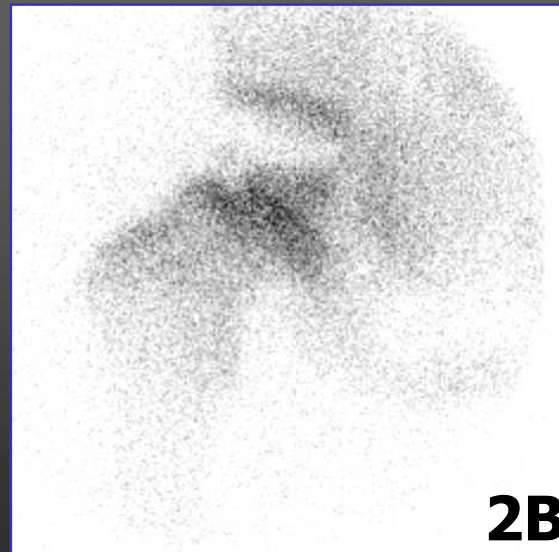
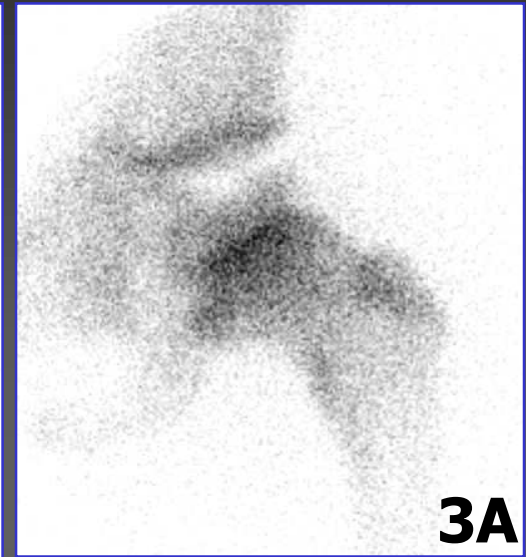
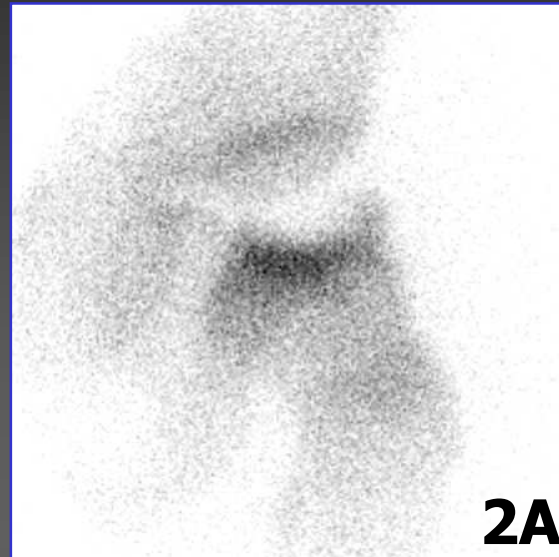


Se = 87 ± 3 % \approx IRM
Sp = 90 ± 10 % = IRM

OSTEOCHONDRITE PRIMITIVE



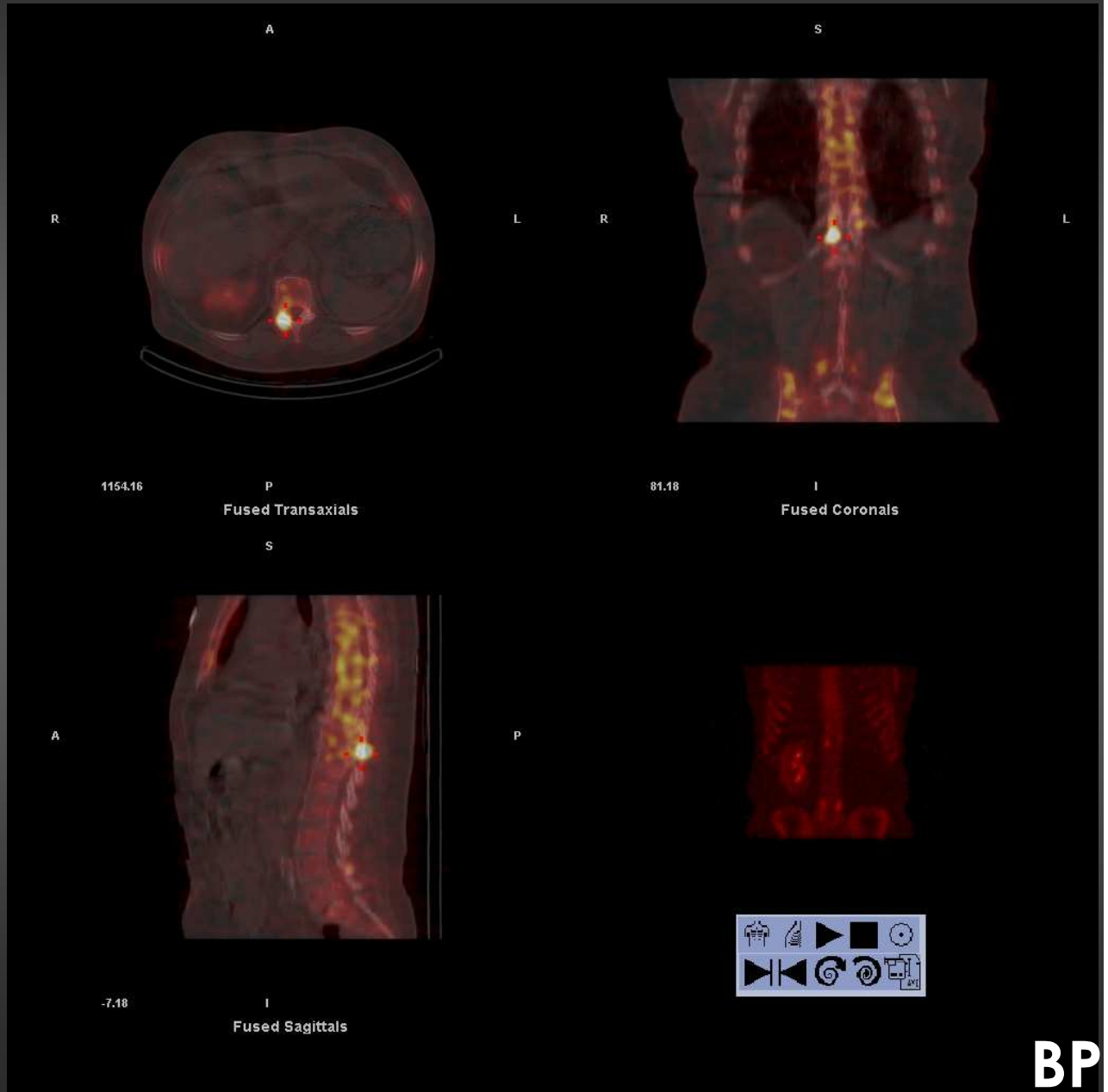
Se = Sp = 95 %
Pronostic
(J Nucl Med 2003; 44)



ARTHROSE



67 ans, dorsalgie
Acromégalie
Atcd: Spondylodiscite
L5-S1



OSTEO-ARTHRITES



ostéo-arthrite infectieuse

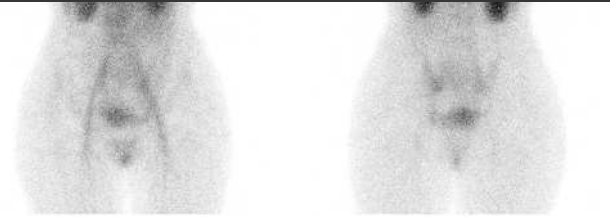
SCINTIGRAPHIE OSSEUSE



DROITE

GAUCHE

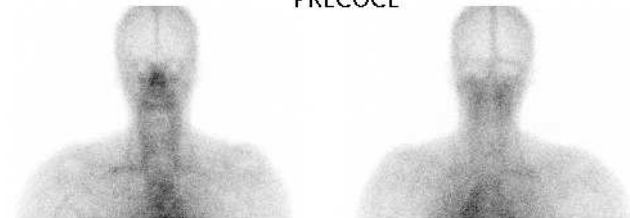
Maladie de Crohn



FA 5MN

FP 5MN

PRECOCE



FA 5MN

FP 5MN

TARDIFS



FA

FP

TARDIFS



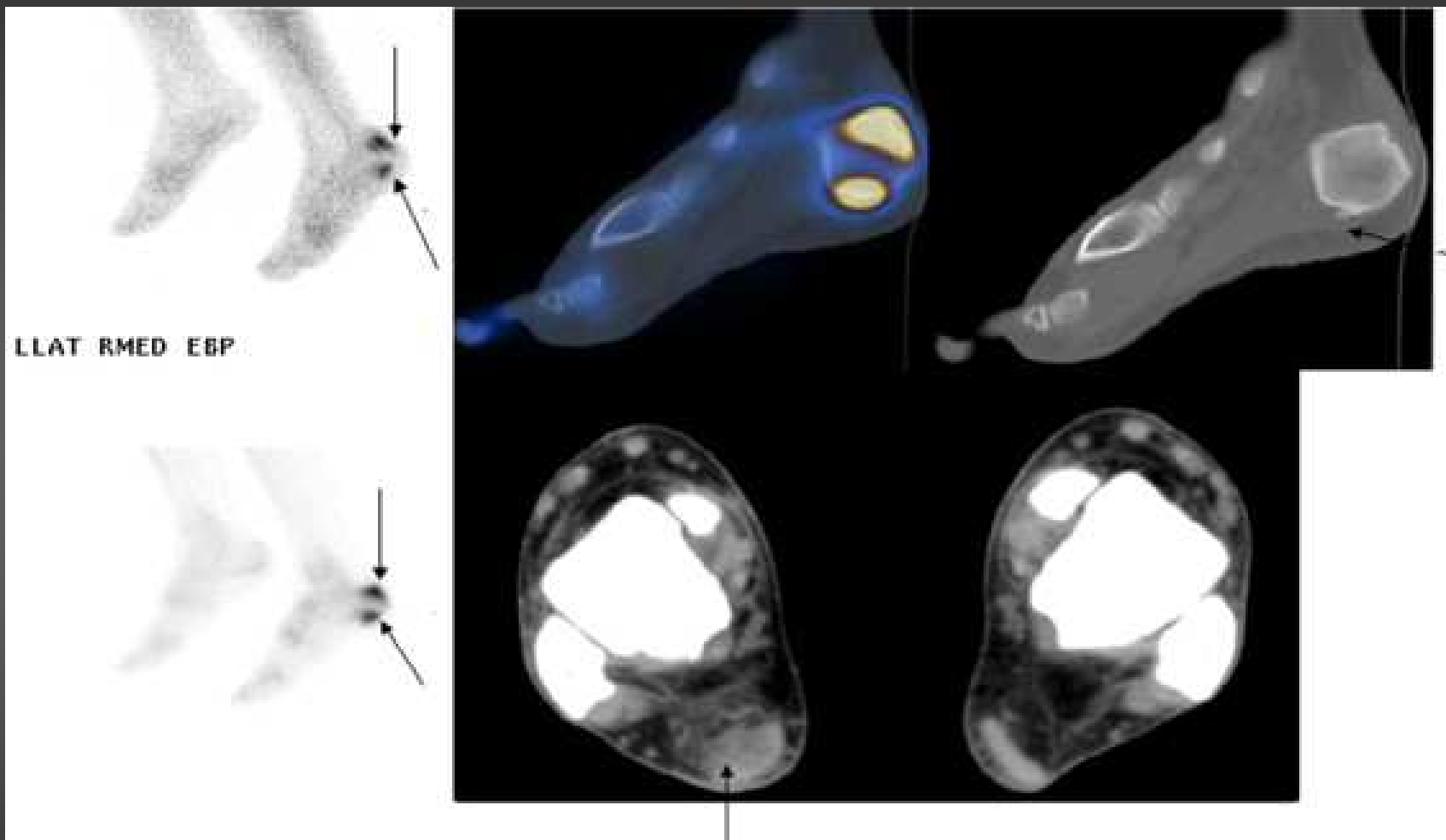
DT



GCHE

BP

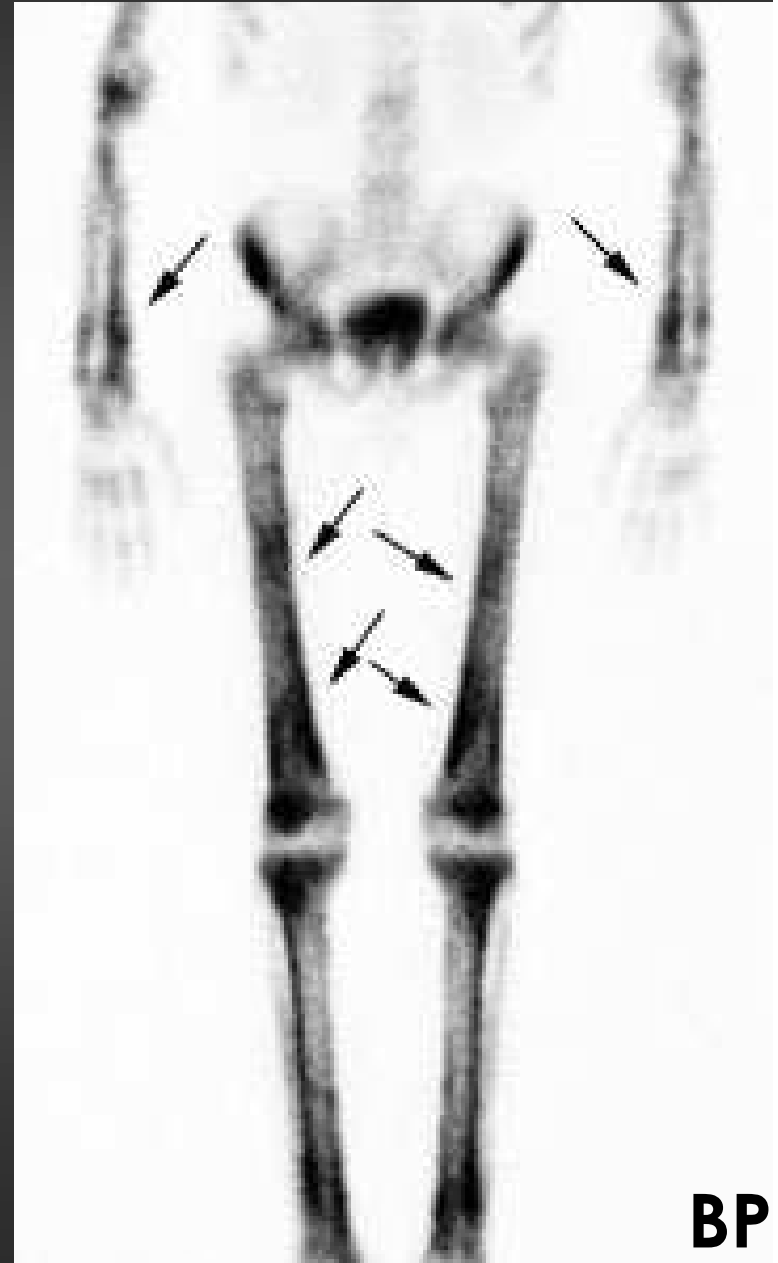
ENTHESOPATHIES



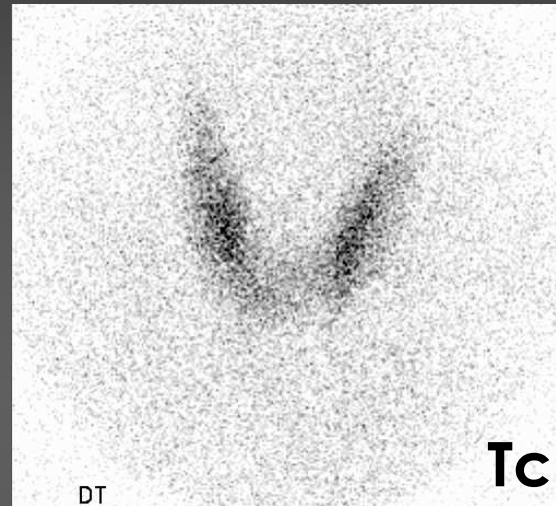
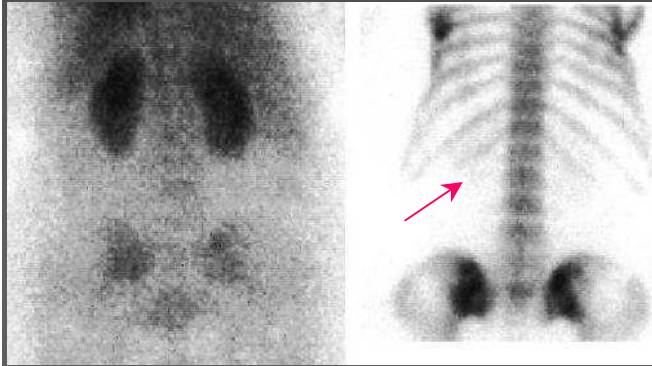
LLAT RMED EBP

Fasciite plantaire
Boursite rétro-calcaneéenne, tendinite du tendon d'Achille

OSTEOARTHROPATHIE HYPERTROPHIANTE

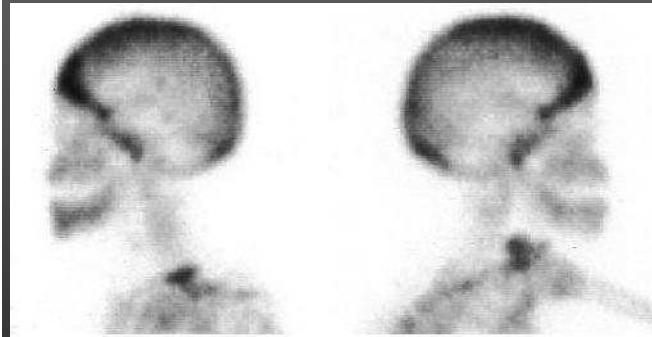


OSTEOPATHIES METABOLIQUES

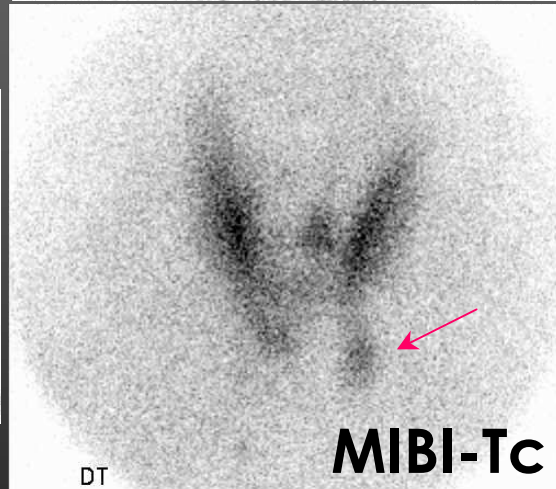


DT

Tc

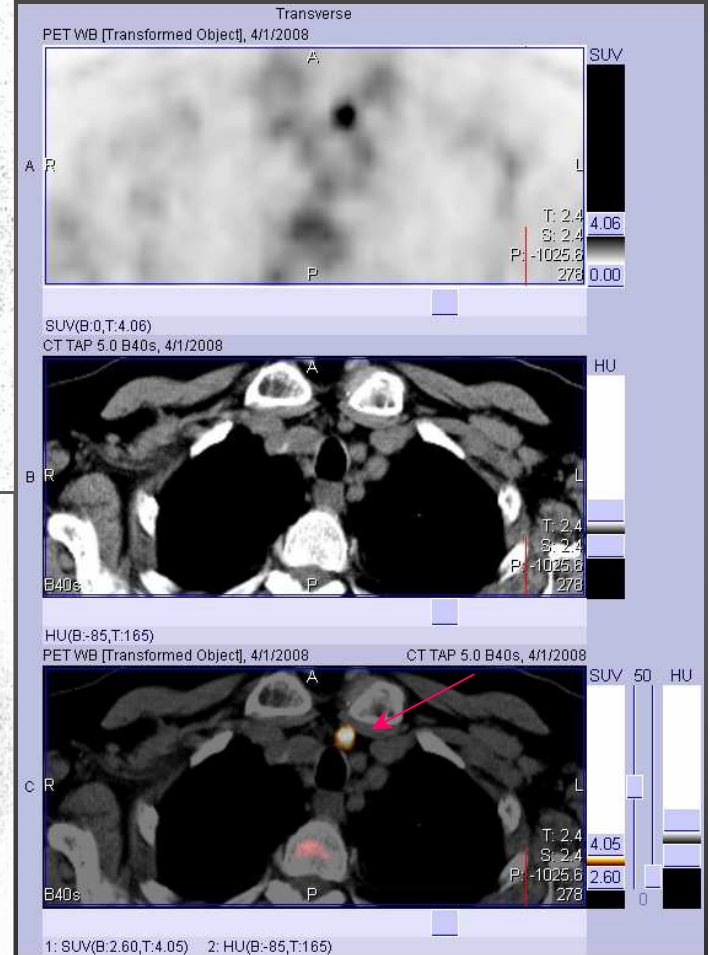


BP



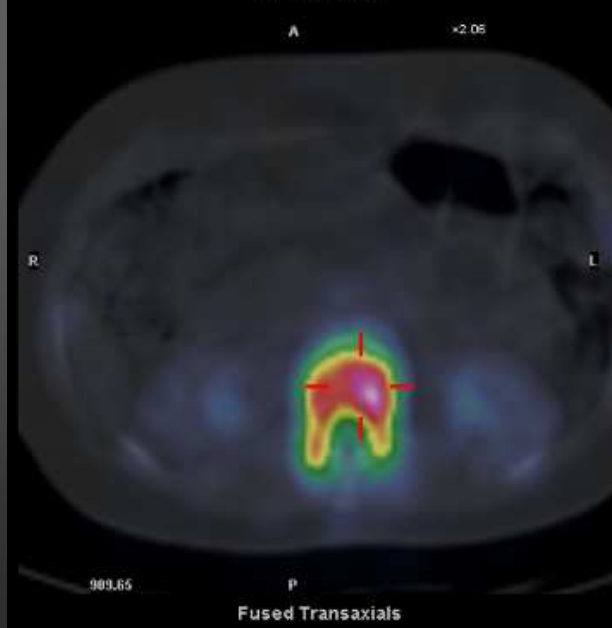
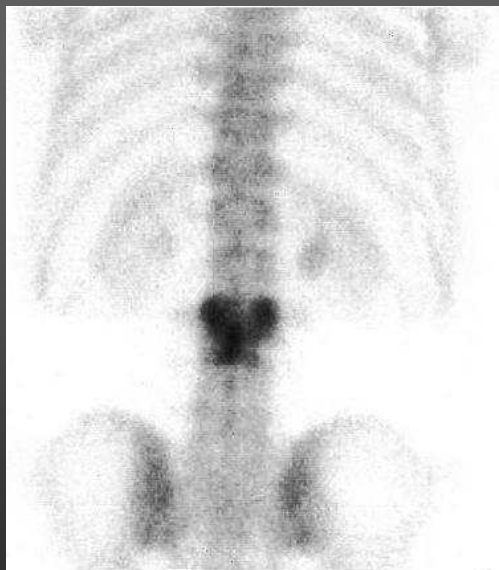
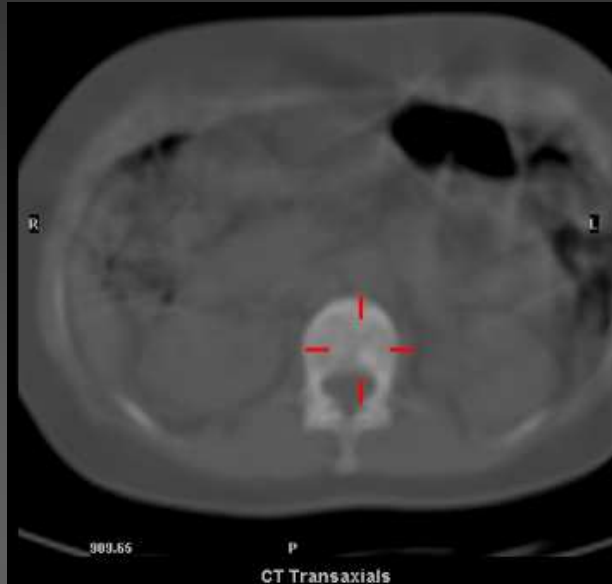
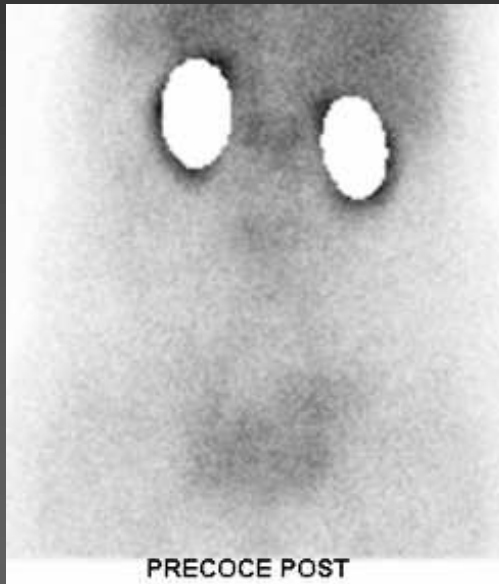
DT

MIBI-Tc

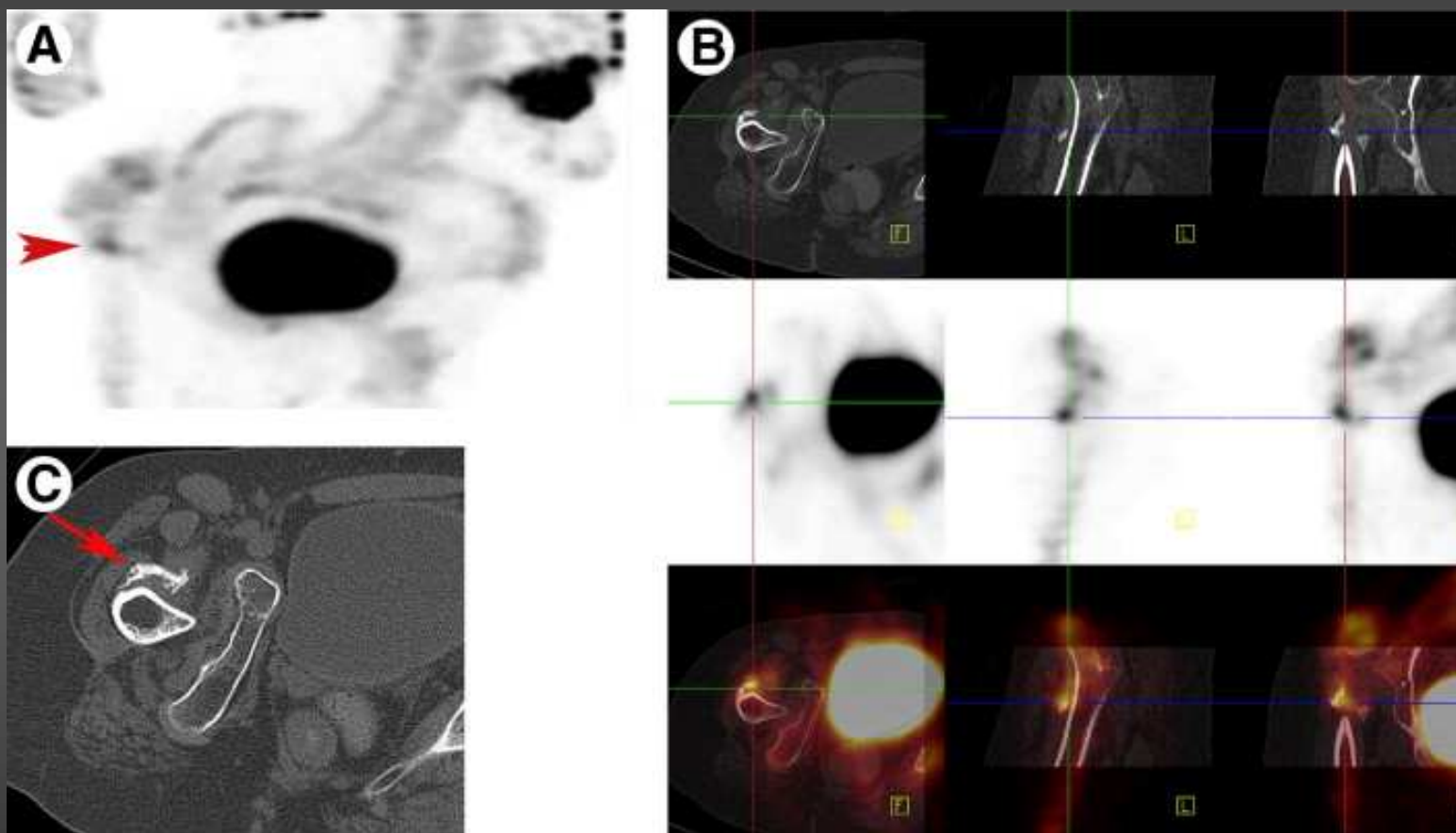


FDG

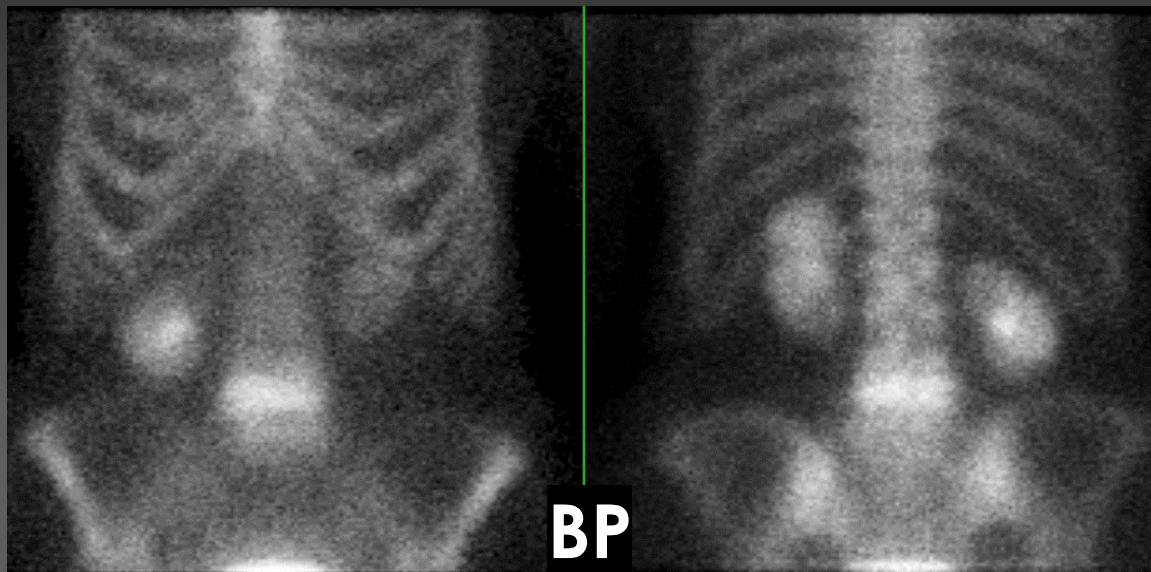
PAGET



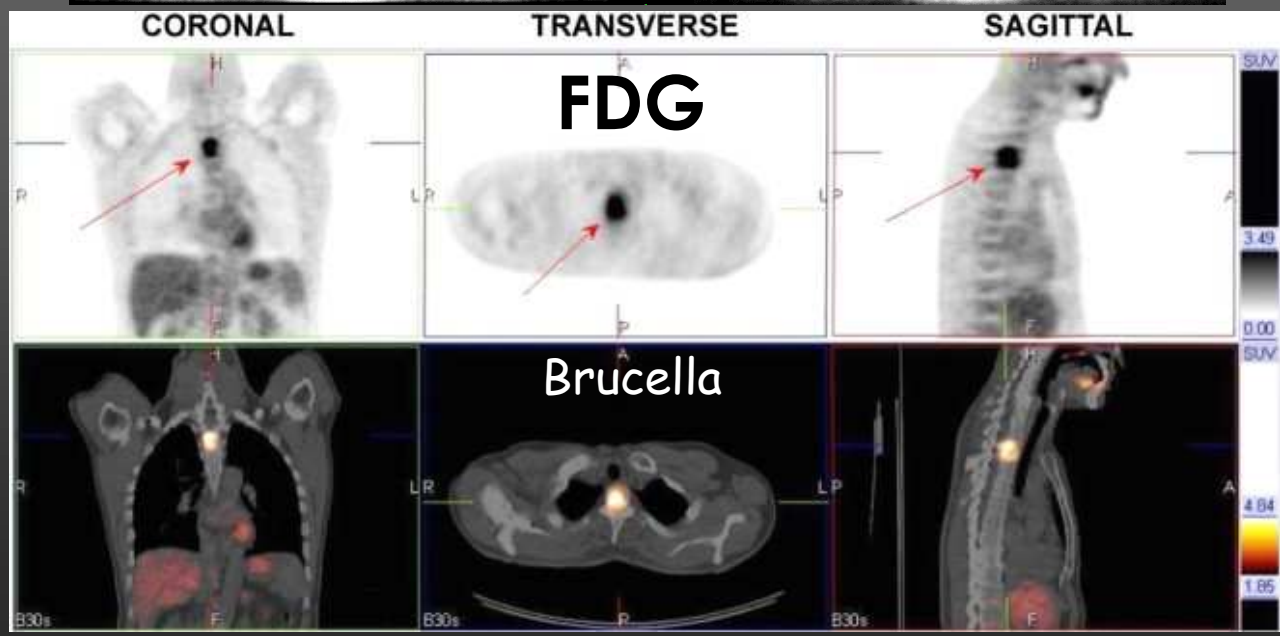
OSSIFICATIONS HETEROTOPIQUES



SPONDYLODISCITE ET SPONDYLITE



Pas d'indication de PN
car
Se ≈ 50 %
MO + encapsulation



Se = 100 %
Sp = 75 % (Sdiscite)
Sp = 90 % (Site)
FDG > SPECT (Ga, BP)
FDG > IRM

INFECTIONS DE PROTHESES

SPECT-CT: PN+Colloïdes

Se = 100%

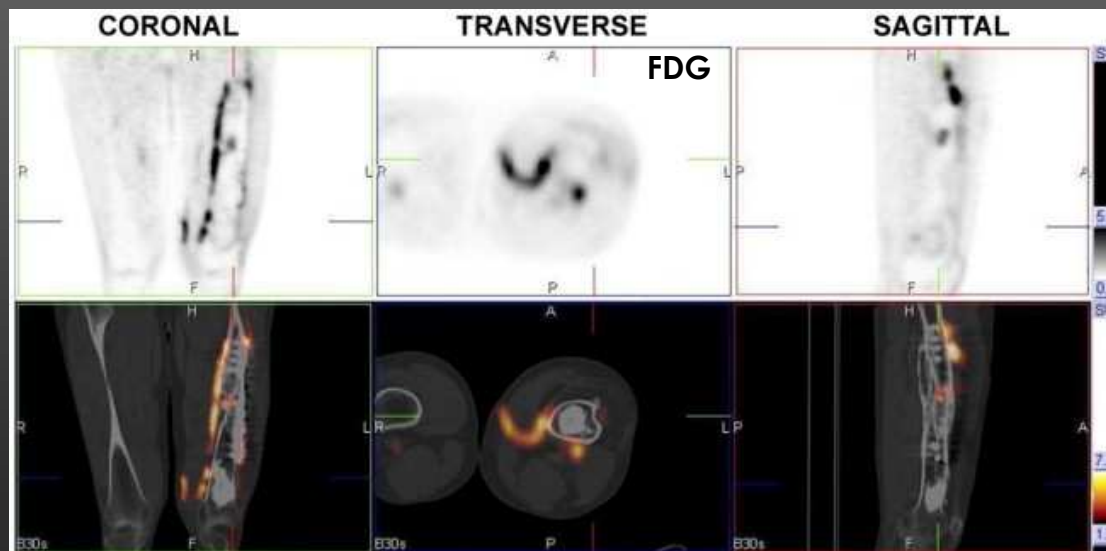
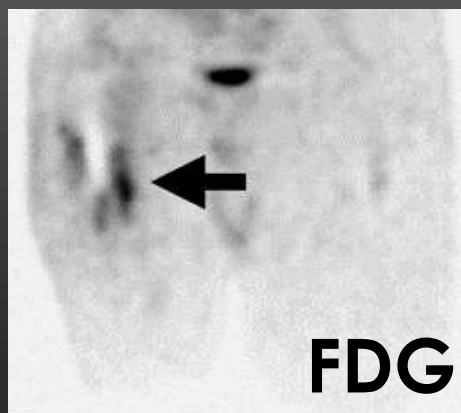
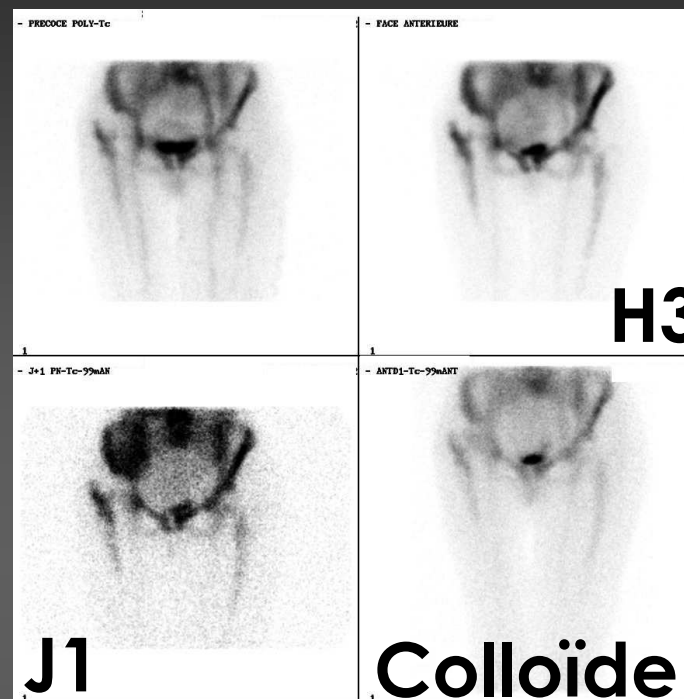
Sp = 96 ± 4 %

PET-CT FDG: critères ?

Se = 90%

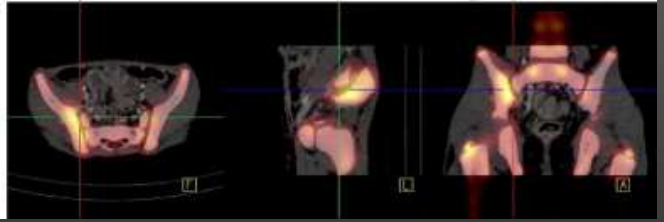
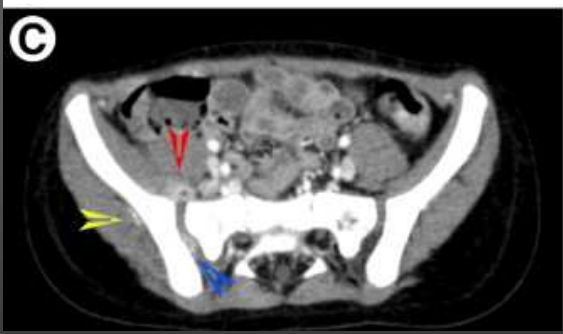
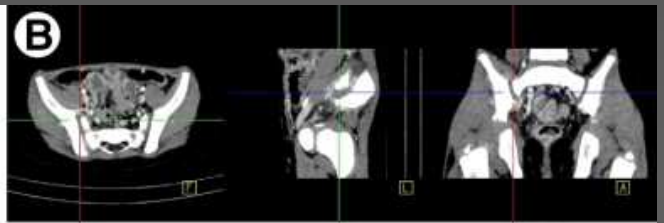
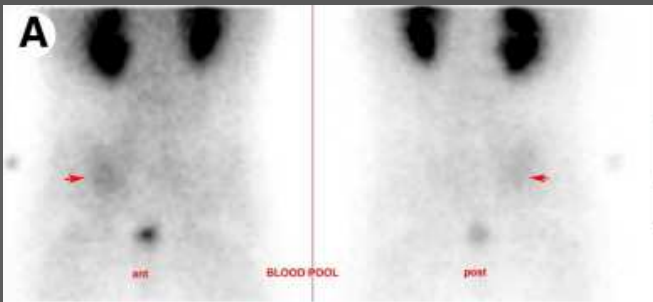
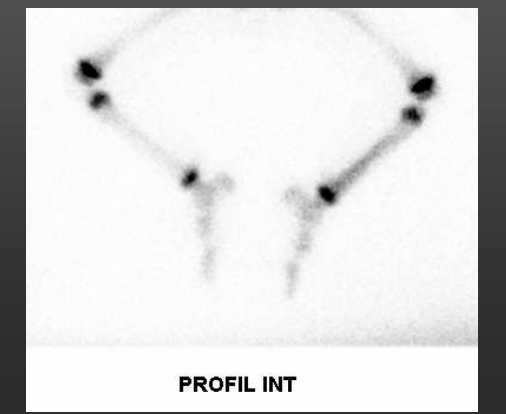
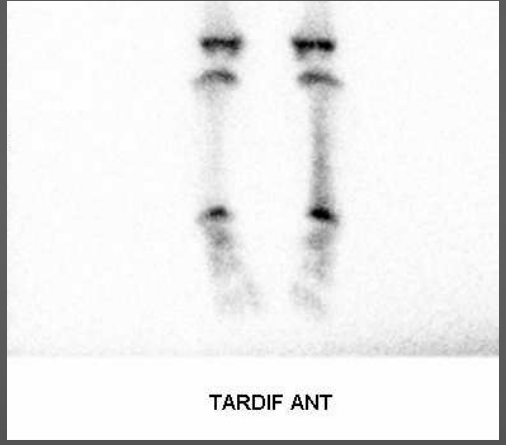
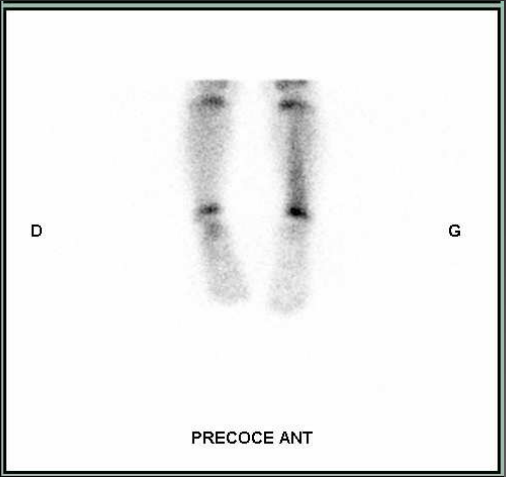
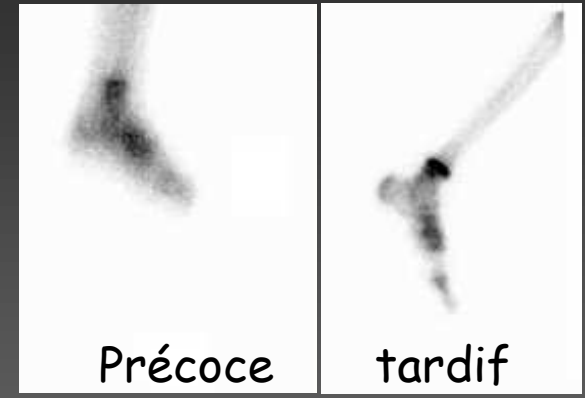
Sp = 89 % (PTH)

Sp = 72 % (PTG)



OSTEOMYELITE

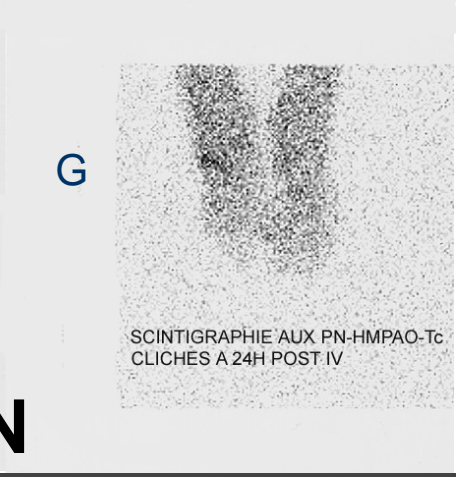
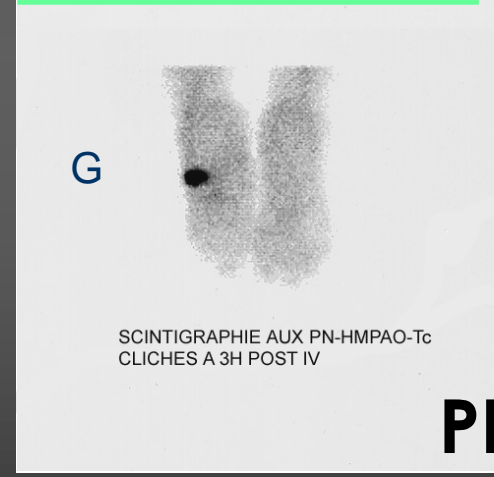
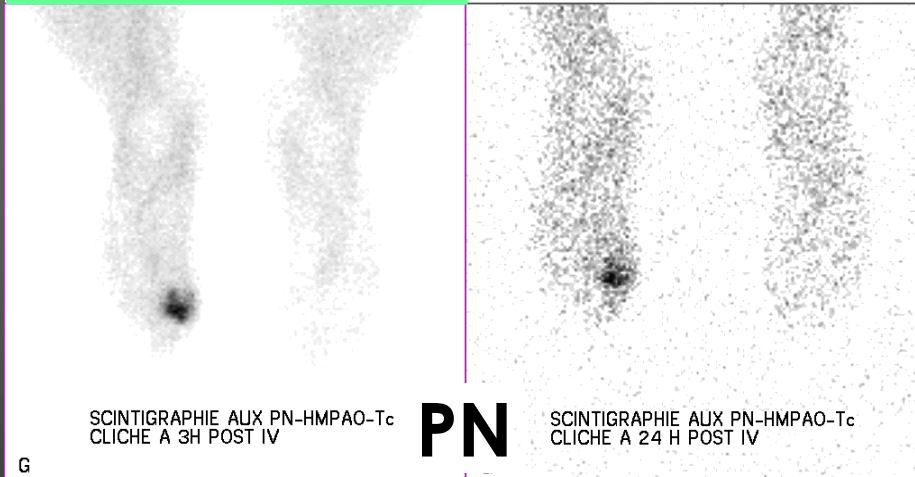
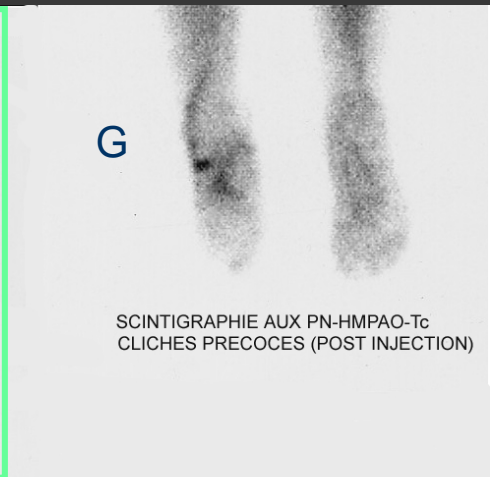
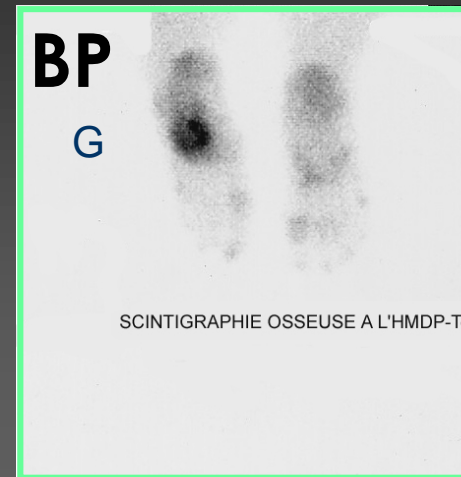
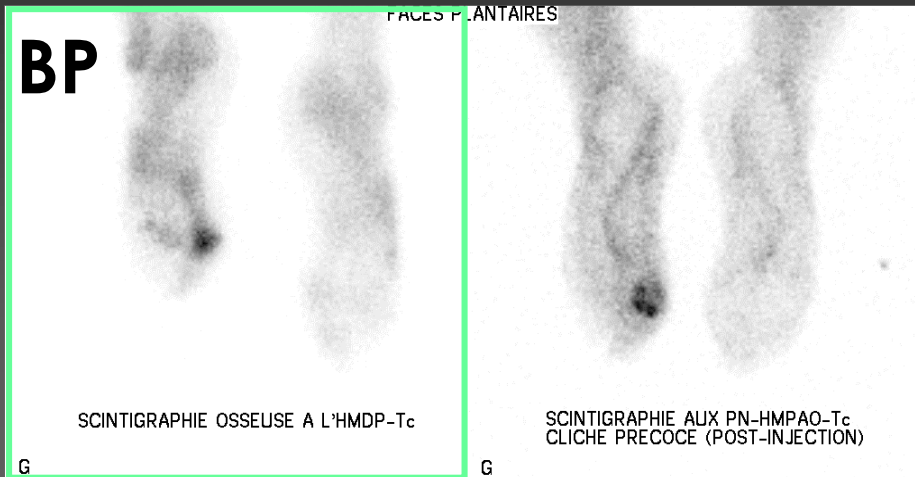
Se = $91 \pm 4 \%$
 Sp = 86 % avec CT
 Sp = 99 % avec PN
 Radio normale < M1



FDG-PET : { Se = $97 \pm 3 \%$
 Sp = $93 \pm 7 \%$

BP

OSTEOMYELITE DU PIED DIABETIQUE



Ostéite de l'hallux gauche.

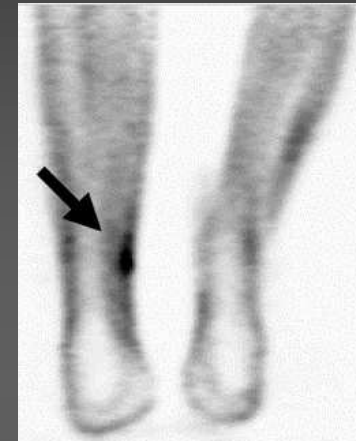
Neuroarthropathie

Se = 80 ± 8 %
Sp = 80 ± 11 %

OSTEOMYELITE DU PIED DIABETIQUE



Ostéomyélite



Cellulite

Se = 100 %

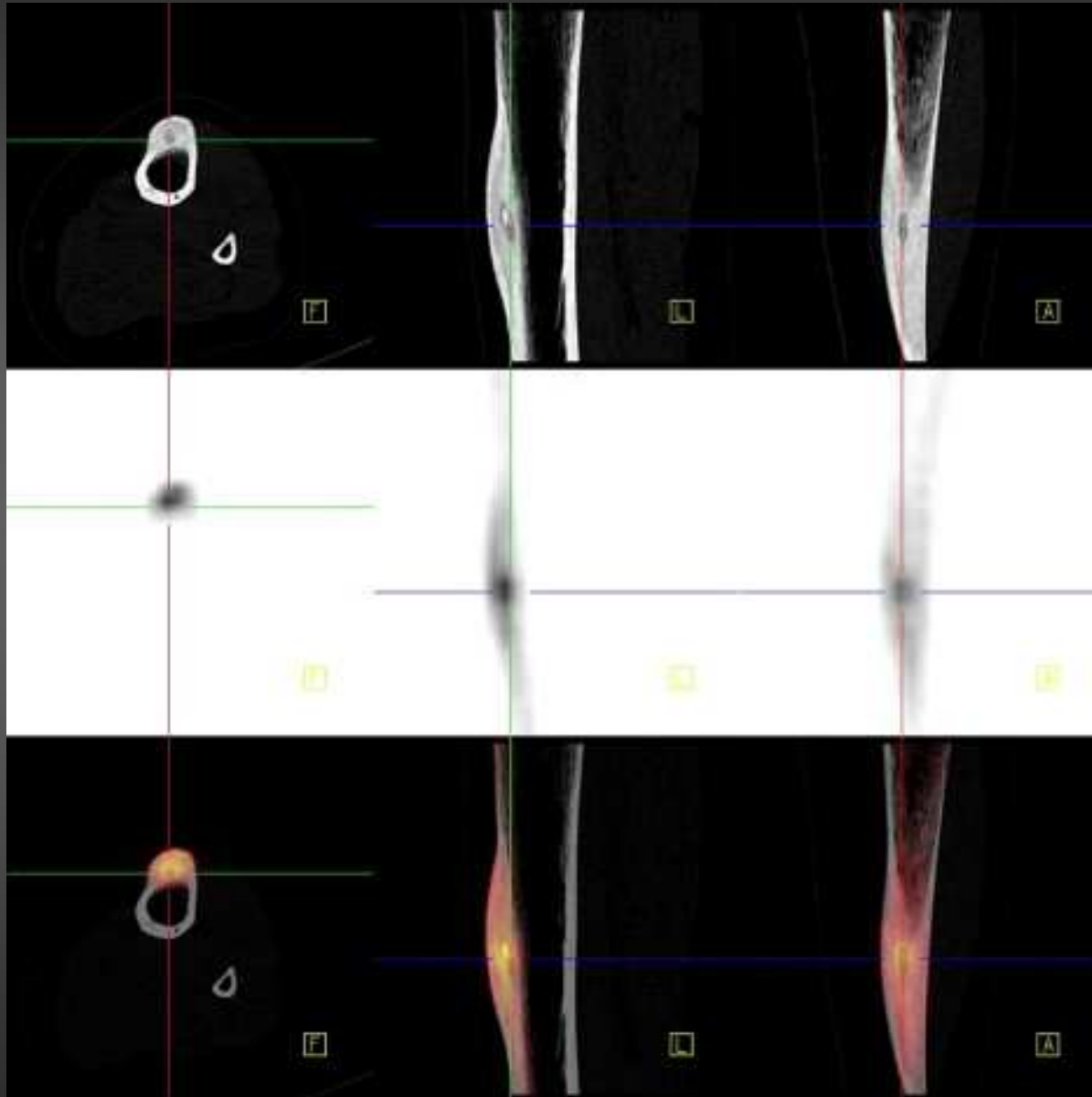
Sp = 86 %

- ✓ Moins sensible à l'activation médullaire: FDG > DP+PN*
- ✓ Moins longtemps fixant sur fractures
- ✓ Meilleure résolution

SYNTHESE SUR LES INFECTIONS OSSEUSES

	Tc-HDP	Tc-PN	Tc-Colloïdes	Ga-Citrate	F-DG
SPONDYLITES	+	- -	-	+/-	++
SPONDYLODISCITES	++				+
INFECTION DE PROTHESE	++	++	++	-	+
OSTEOMYELITE	++	++	++	+/-	++
PIED DIABETIQUE	+/-	+	+/-	-	++
SACRO-ILEITE	++	-	-	-	+/-

OSTEOME OSTEOIDE

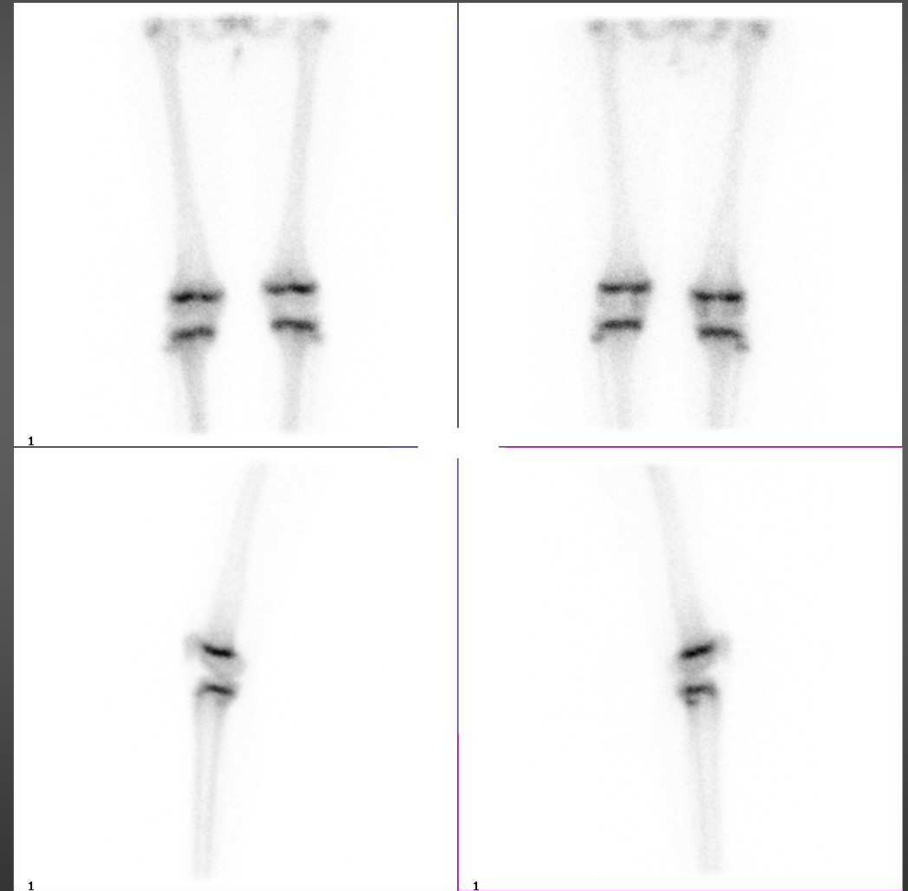


Se = 100 %
Sonde per-opératoire
Idem ostéoblastome

KYSTE OSSEUX



IRM



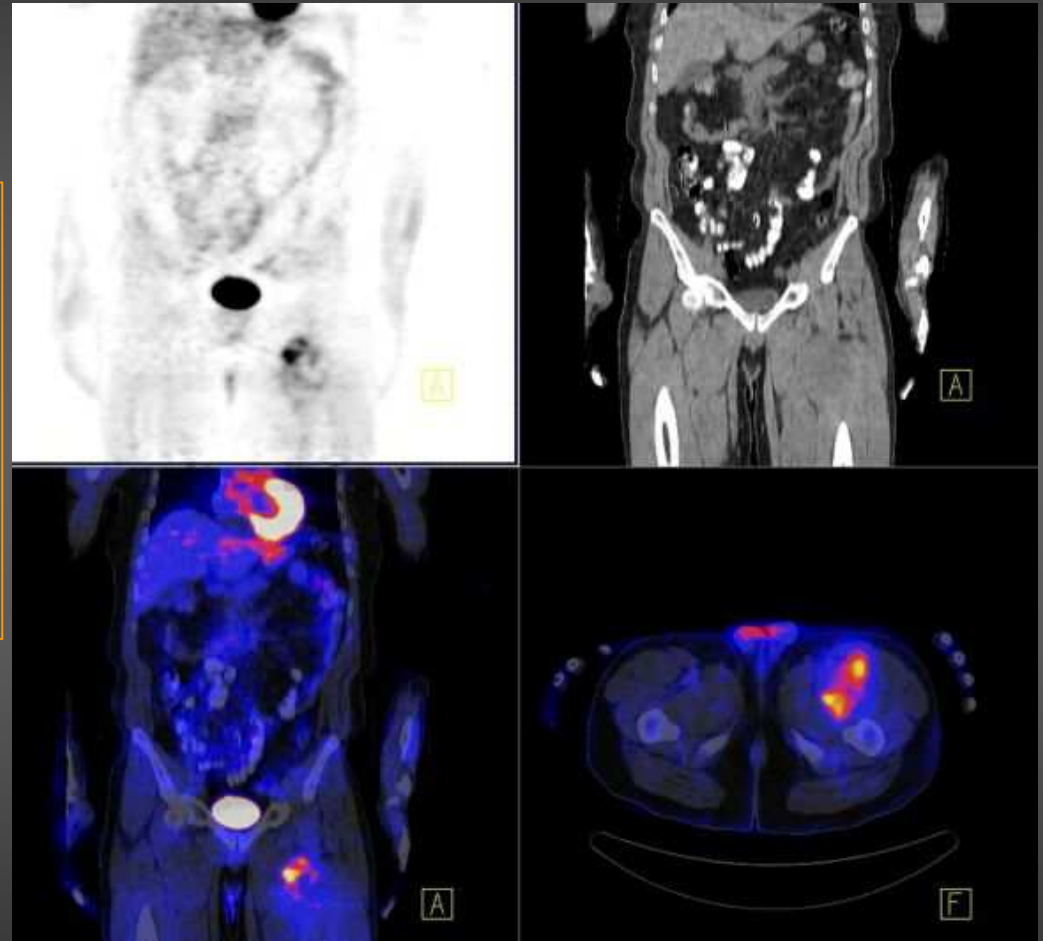
SARCOMES DES TISSUS MOUS

PET-CT au 18-FDG pour :

- Guidage de biopsies (B2)
- Recherche de récurrence locale (B2)

Se = 90 %

Sp = 80 %



liposarcome

SARCOMES OSSEUX

Diagnostic : clinique, radio, biopsie

FDG pronostique ?

Bilan d'extension métastatique :

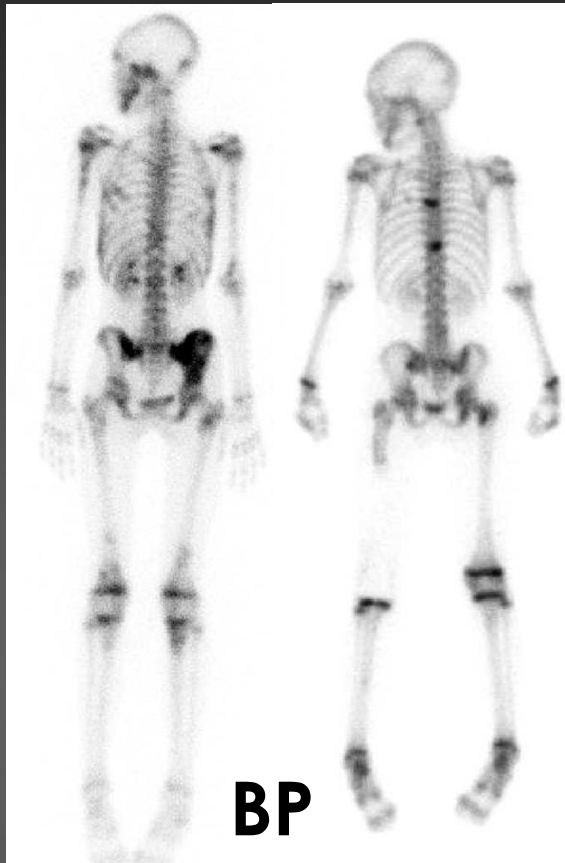
métastase pulmonaire: $Se(FDG) \leq CT$ (résolution)

Ewing : $Sp(FDG) > BP$

Ostéosarcome : $Se(BP) > FDG ?$

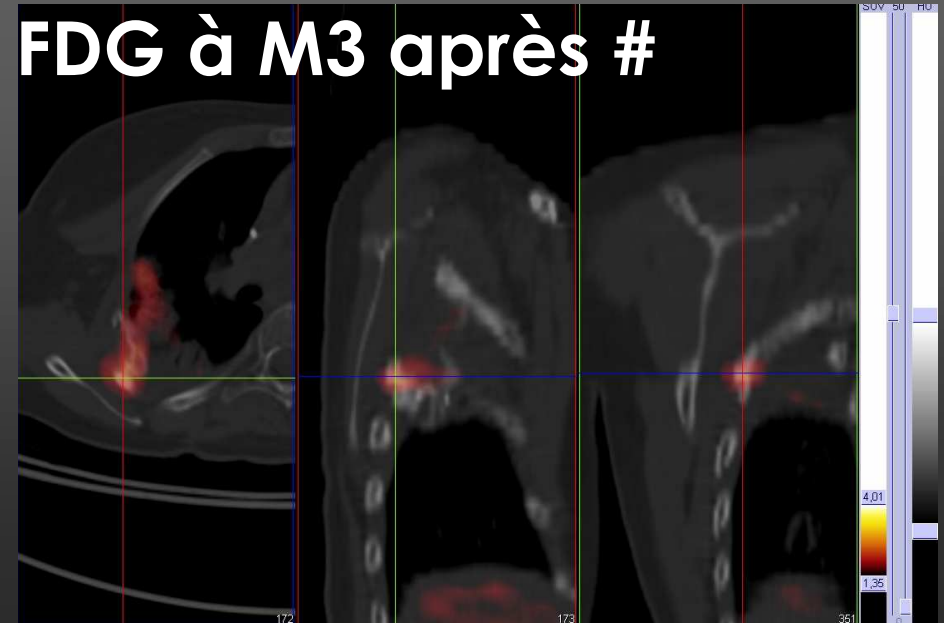
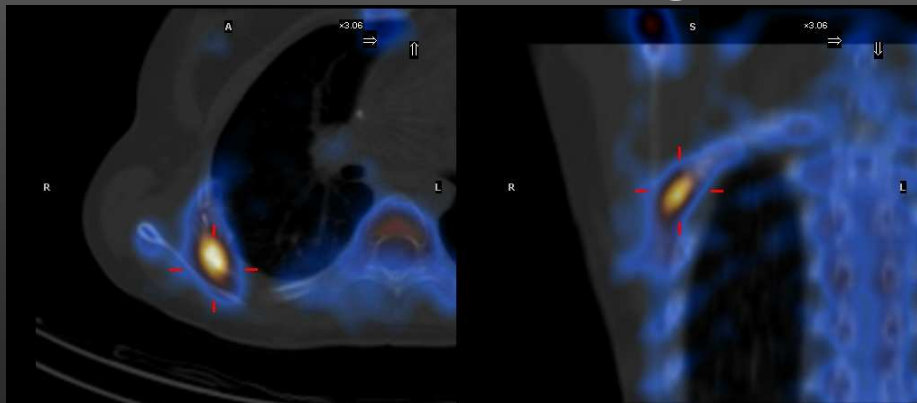
Efficacité thérapeutique :

$FDG > BP$ (Flare), CT et IRM

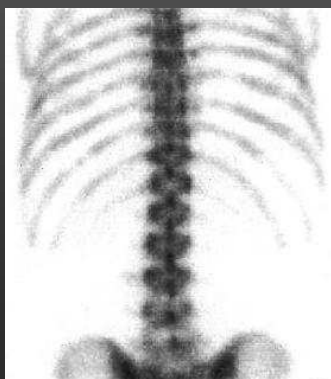
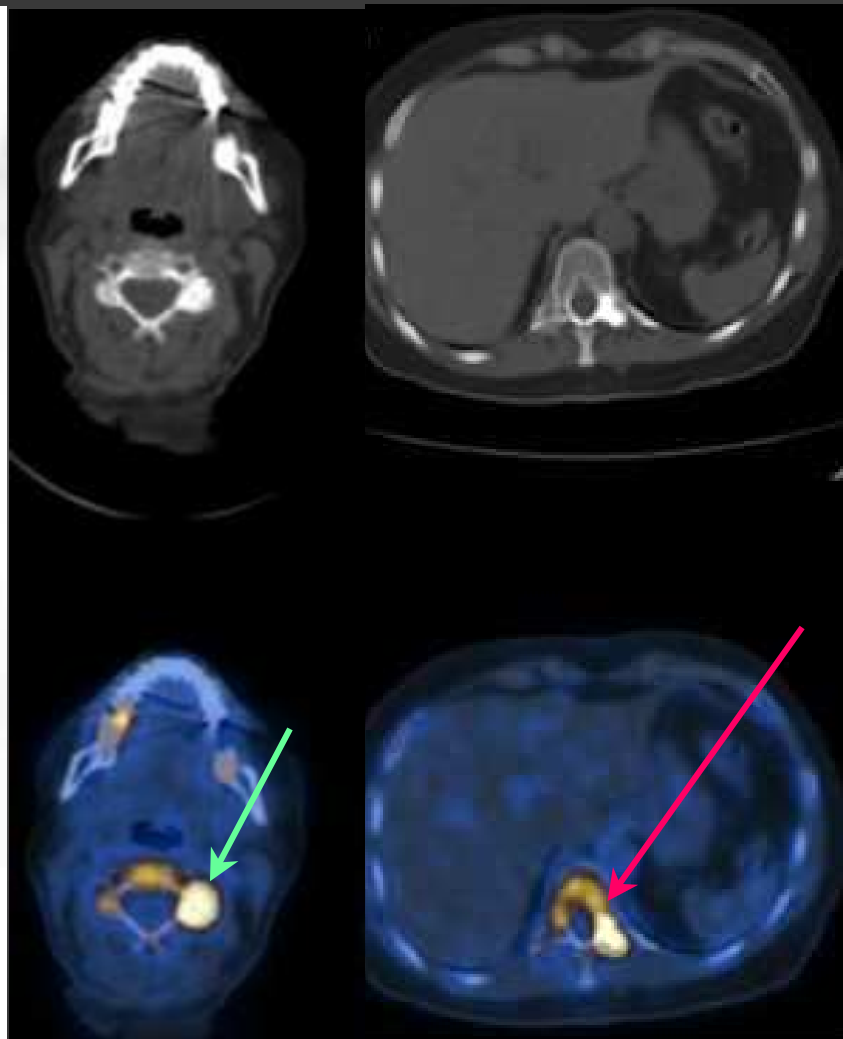


BP

BP fin de ttt d'Ewing : K5

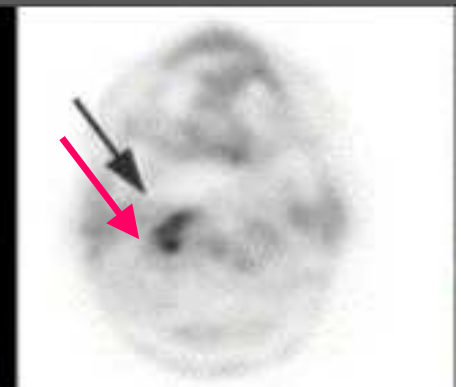
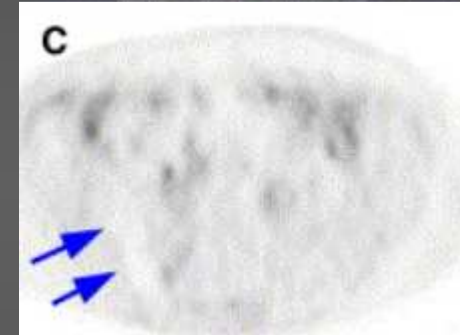
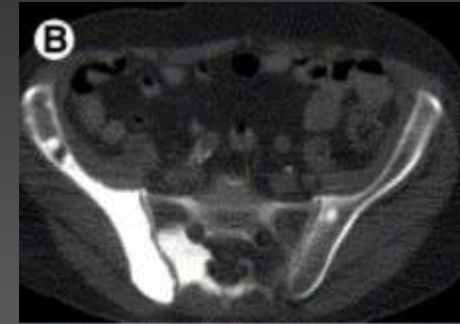
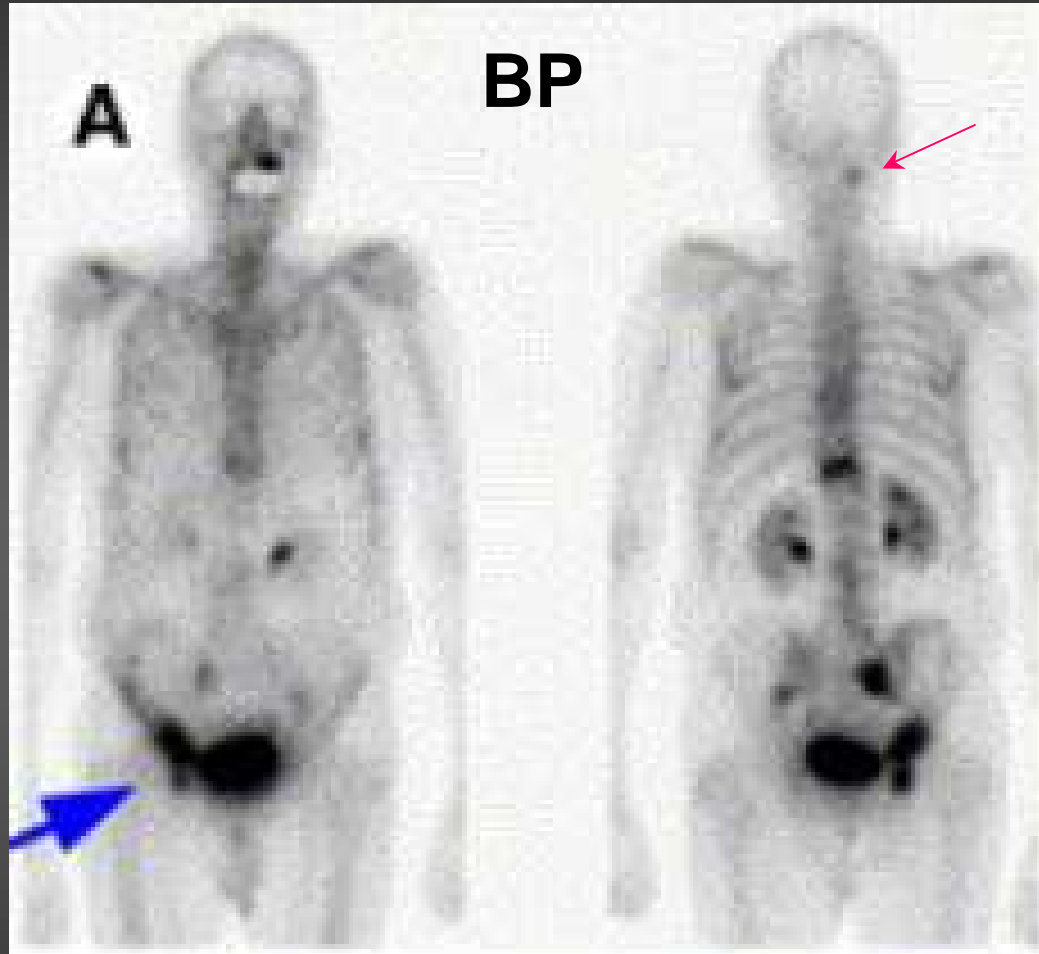


CANCER DU SEIN



FNa

CANCER DE PROSTATE



Se (DP) >> Se(FDG)
18FDG-PET + si méta agressive

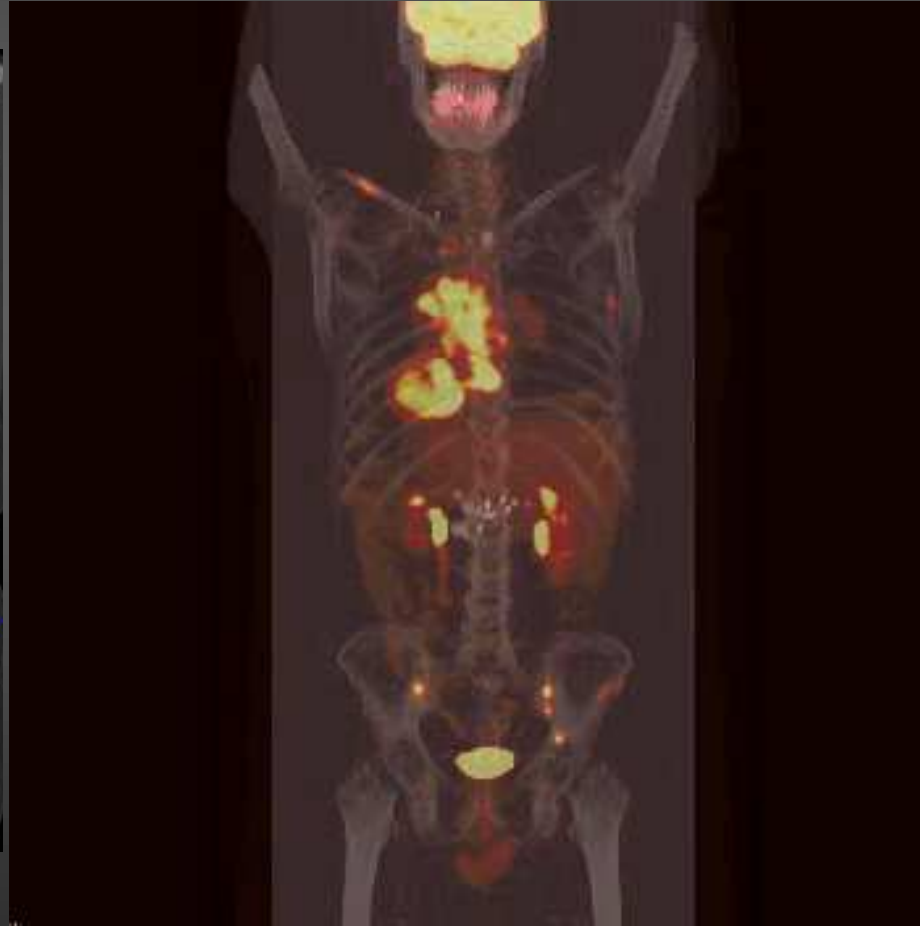
FDG

HODGKIN, MYELOMES, LMNH FOLLICULAIRES OU AGRESSIFS



MYELOME

FDG



HODGKIN



MYELOME Ig D

SYNTHESE SUR LES METASTASES OSSEUSES

	Tc-HDP ou FNa	F-DG
prostate, carcinoïde, CMT (ostéocondensant)	+	FN sauf si agressif
Thyroïde (lytique, sauf rein), MH, LMNH agressif ou folliculaire, myélome		+
Sarcomes (BE, suivi)	+/-	+
poumon, sein, col de l'utérus, ovaire, testicule, digestif	+ (Se sein ?)	+ (Sp ?)
Résolution	1 cm	1/2 cm
Tissus mous	- sauf ossification	+
Flare, fractures	6 mois	3 mois

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Merci de votre attention...