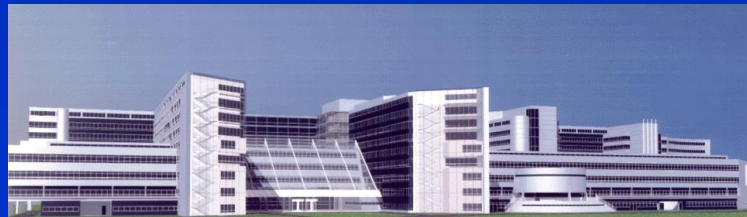


Angio IRM ou Angio Scanner des Artères Rénales?

Arshid AZARINE

Hôpital Européen Georges Pompidou - Paris

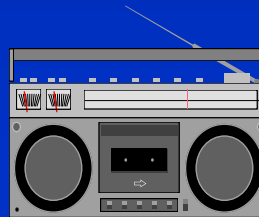
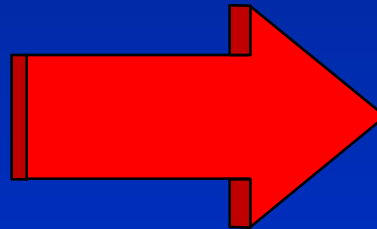
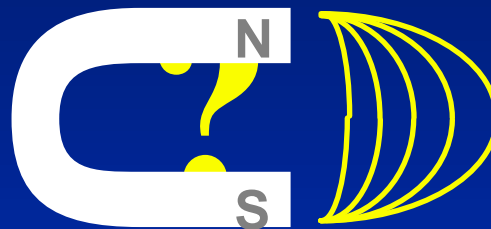
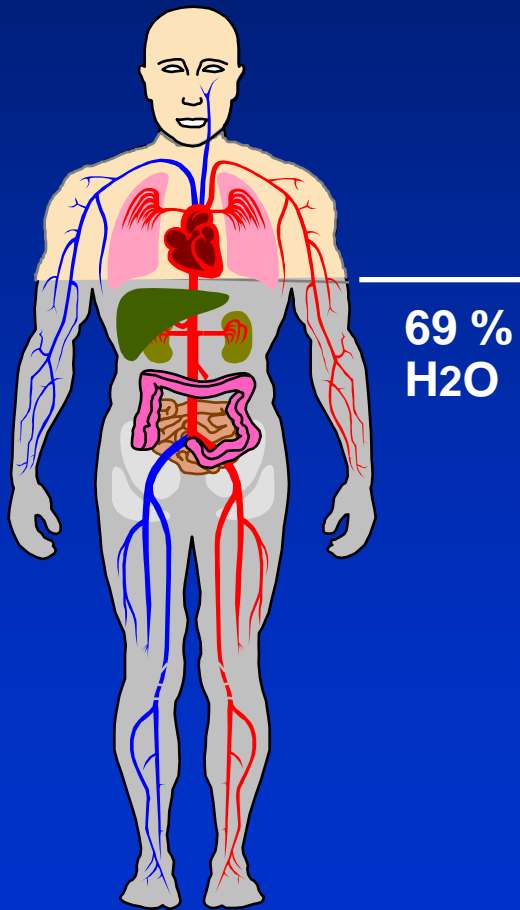


SAR en scanner ou IRM?

30 ans...

- **SAR + MRI:**
 - **820 publications de 1985-2014**
- **SAR + Angio scanner:**
 - **300 publications de 1984-2014**
- **Toujours discuté...**

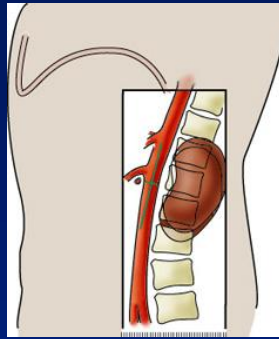
INGREDIENTS DE L'I.R.M.



+/-
Gadolinium

MR Angiography

- Two main categories
 - Non-contrast MRA techniques
 - Contrast-enhanced
- Non-contrast MRA techniques : 1st techniques
 - TOF
 - Phase Contrast
- Contrast enhanced MRA: accuracy +++
- Rebirth of non-contrast MRA
 - Fresh Blood Imaging
 - Contrast-free Improved Angiography
 - Time-Spatial Labeling Inversion Pulse (Time-SLIP)
using SSFP



- Séquences en apnée écho de gradient rapides
- Injection de gadolinium IV à 0.1mmol/kg
- Acquisition coronale
- champs asymétrique
- Meilleur compromis pour une résolution spatiale optimale
- Etat vasculaire général
- Taille du pixel de ces images (en mm) : 0,8 (S/I) x 1,3 (R/L) x 1,8 (A/P)

EX: 000784611317030
Se: 4
Im: 1+C
Cor: A60.9(coi)
DFOV: 38.0cm

R
1
9
0

M3D/TOF/FSPGR/30 JFL:e
TR:5.1
TE:1.3/Fr
EC:1 /1 50kHz

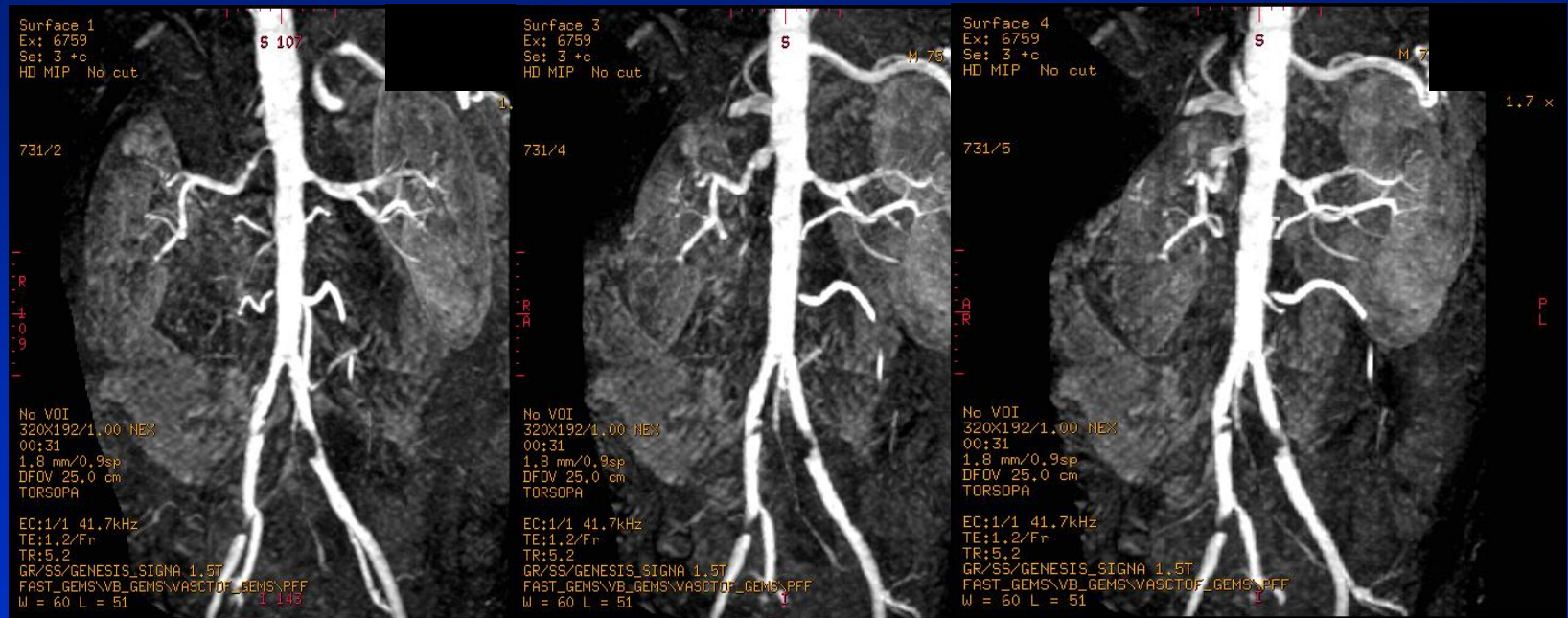
8CARDIAC
FOV:38x38
1.6thk/-1.2ov
40/00:23
352X192/1.00 NEX
VB/ED/Z512/Z4/FTv/AST

1164

WW: 1156

ARM 3D +
Gd IV

ARM des artères rénales : MIP 3D

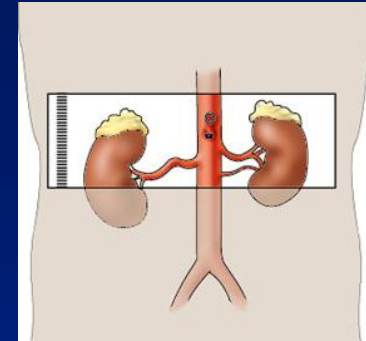
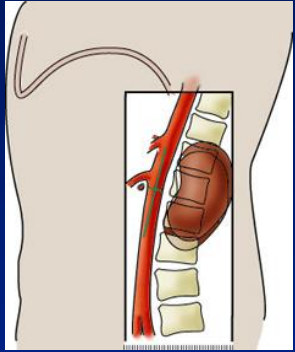


Acquisition Coronale : l'ensemble de l'arbre artériel

Renal Arteries

3D CE-MRA + Gd

Centered Axial Acquisition:



Additional centered axial acquisition
Smaller FOV
Higher spatial Resolution

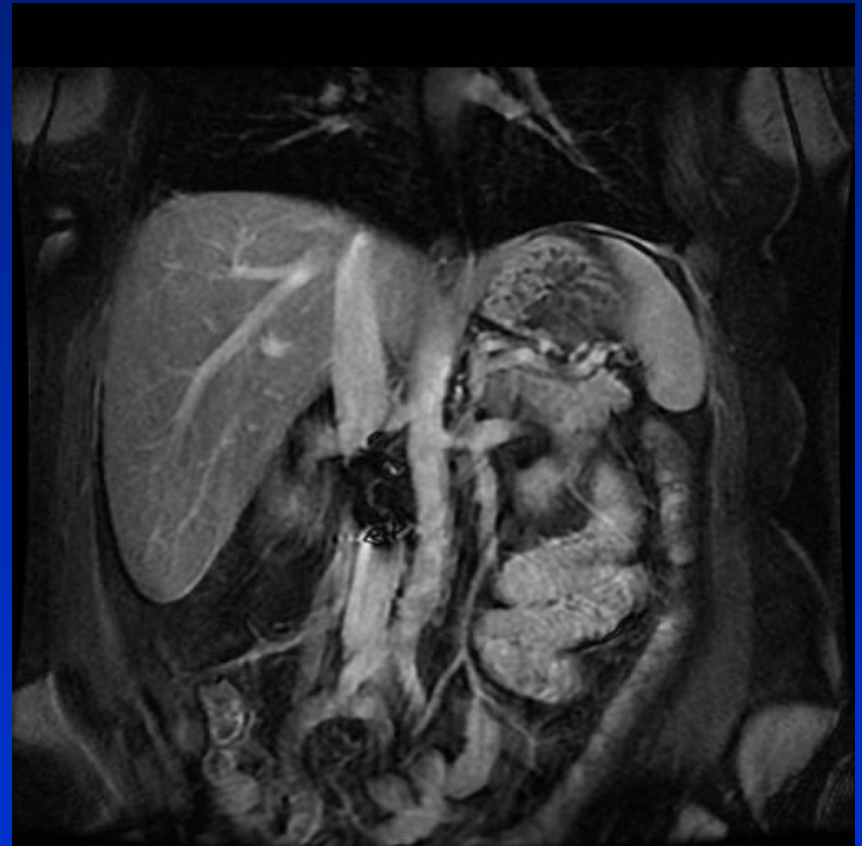
Better quantification of the lesions

Coronal Acquisition : overview of the lesions

Non contrast SSFP Time-SLIP Angio MR Imaging



ARM: attention aux artefacts



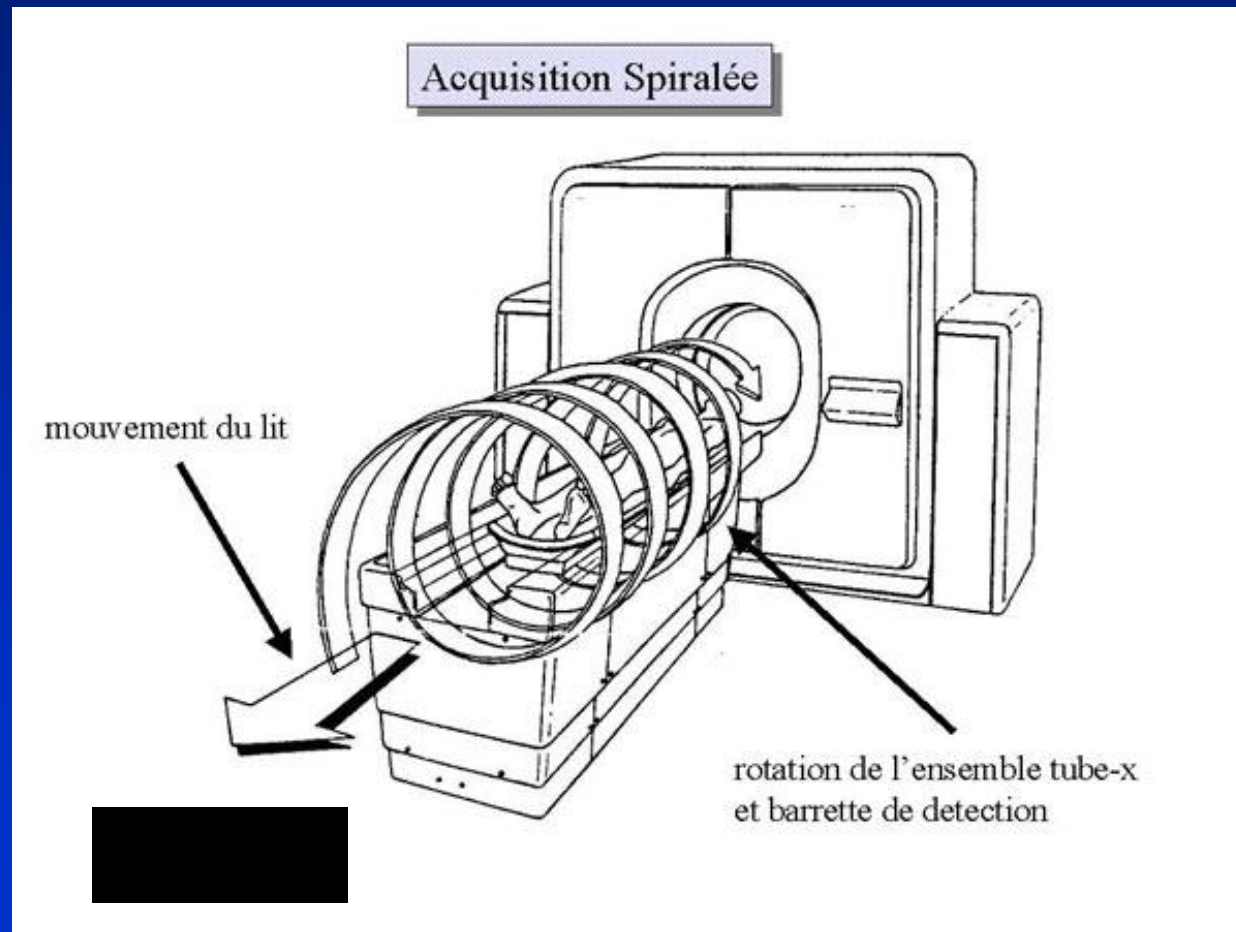
Principe de fonctionnement d'un scanner hélicoïdal

RX

Acquisition volumique



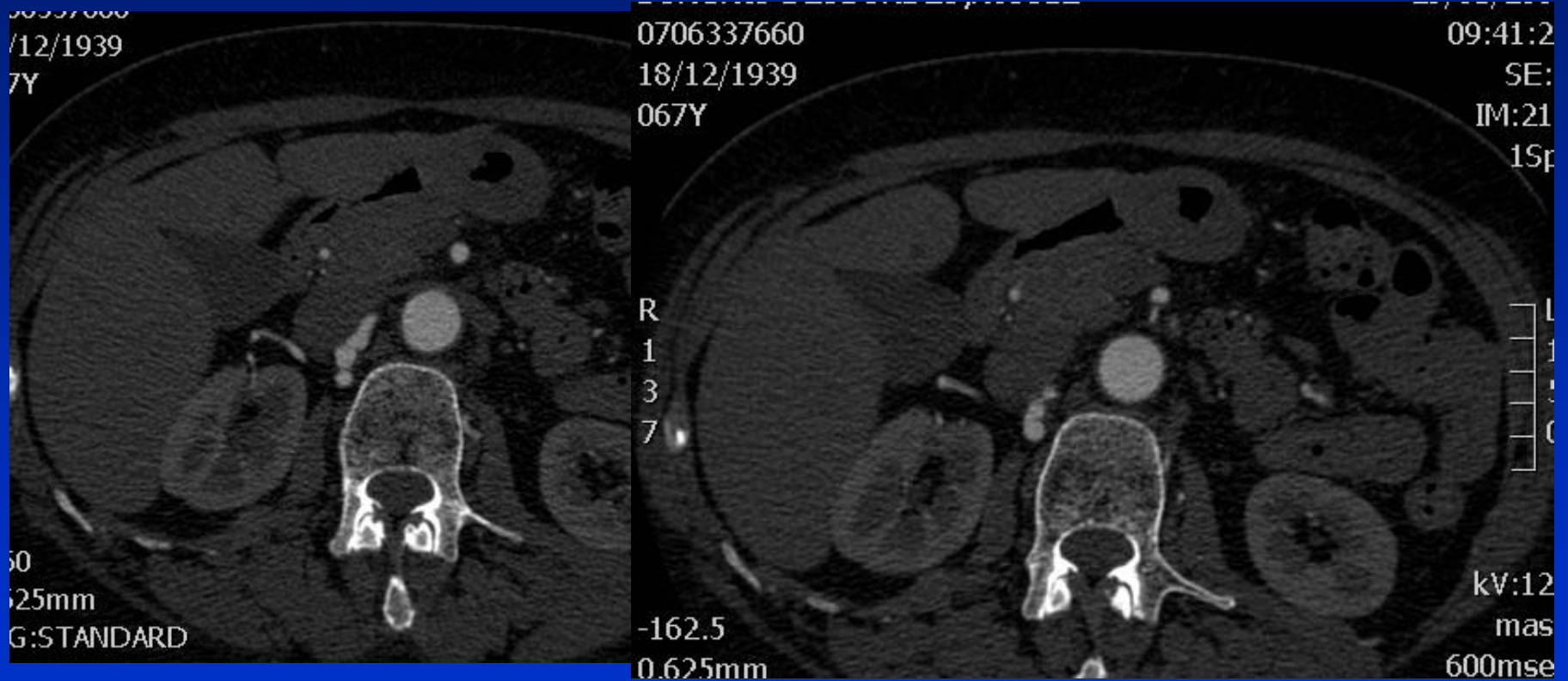
PDC
Iode



Scanner multi detecteur : 4-16-32-40-64...double tube...



Angio-scanner des artères rénales



Coupes axiales

SAR

Bilan athérome

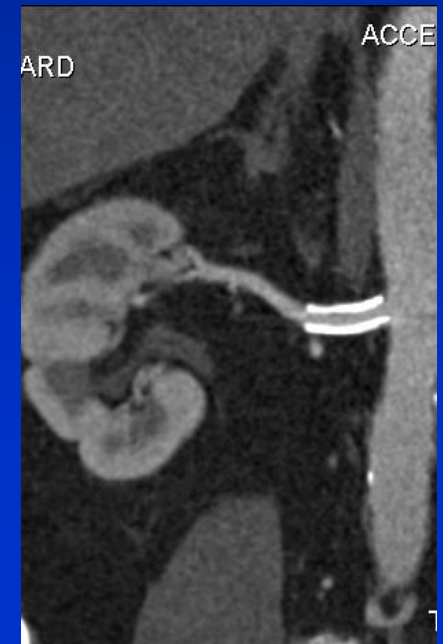
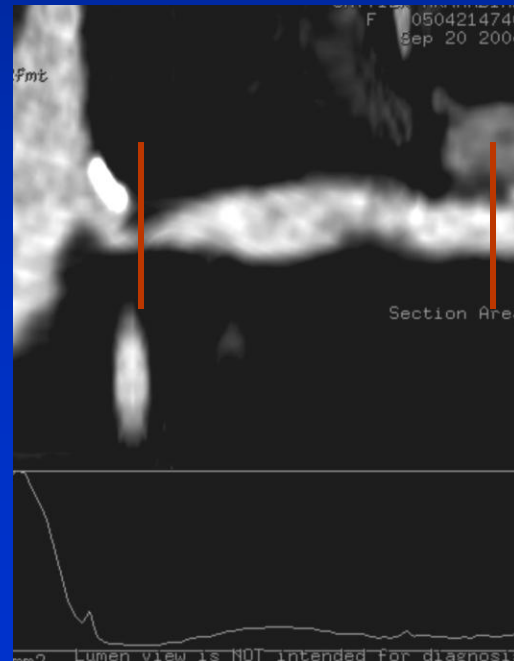
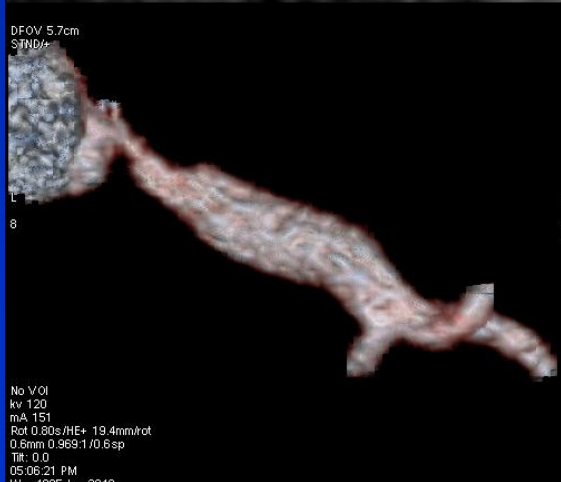
Diagnostic ← *athéromateuse*

Angio CT



Evaluation sténose

Suivi post thérapeutique



TDM : Surveillance post-AEP

1504216526
7/03/1930
75Y

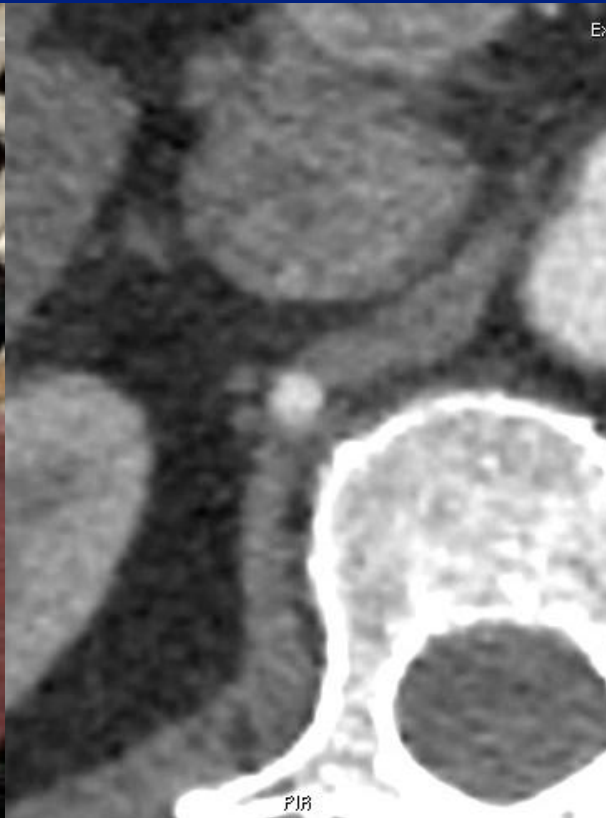
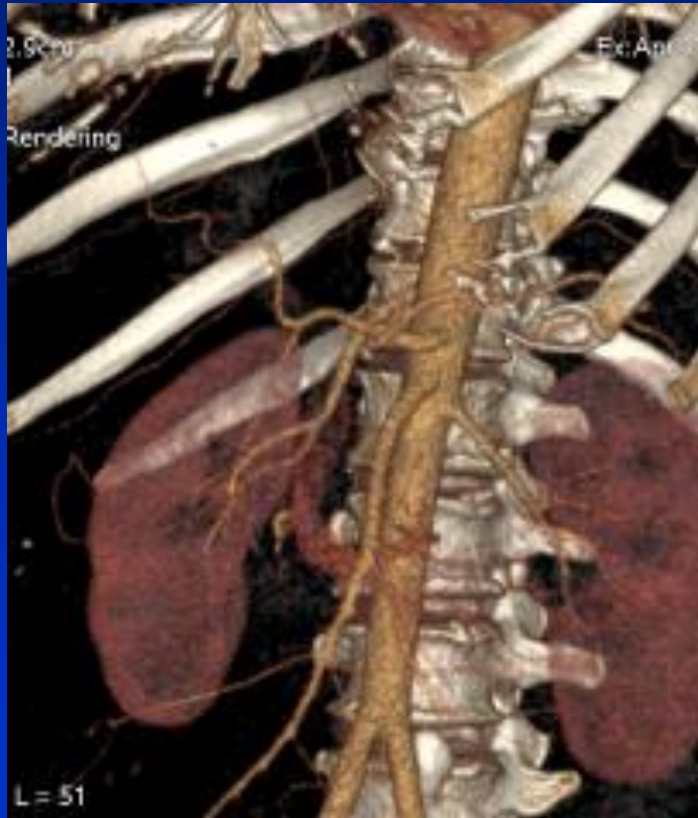
11:37:07
SE:3
IM:190
1Spi

R
1
5
8



1
0
C
M

Artère rénale passant le diaphragme

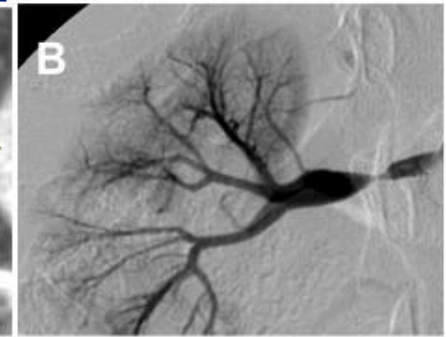
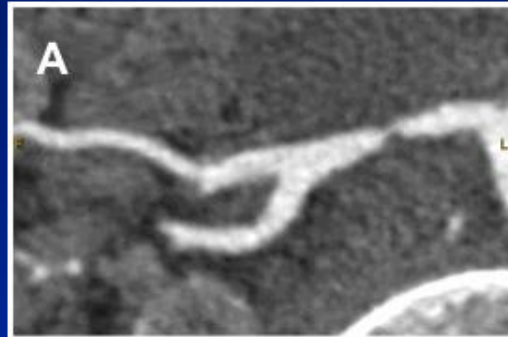


Dysplasie Fibro musculaire

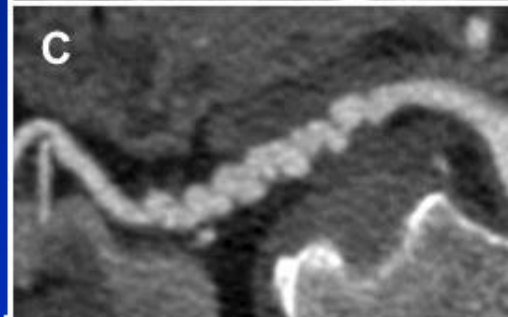
Angio CT

DS Angio

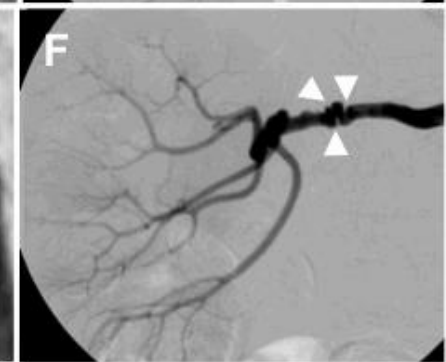
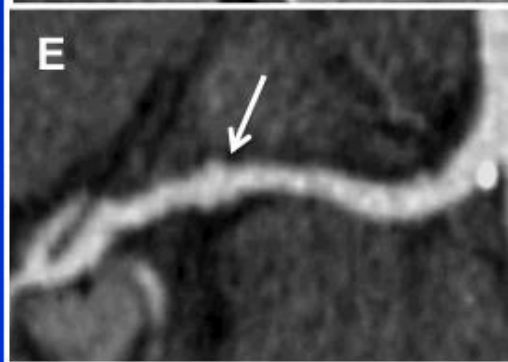
Unifocale



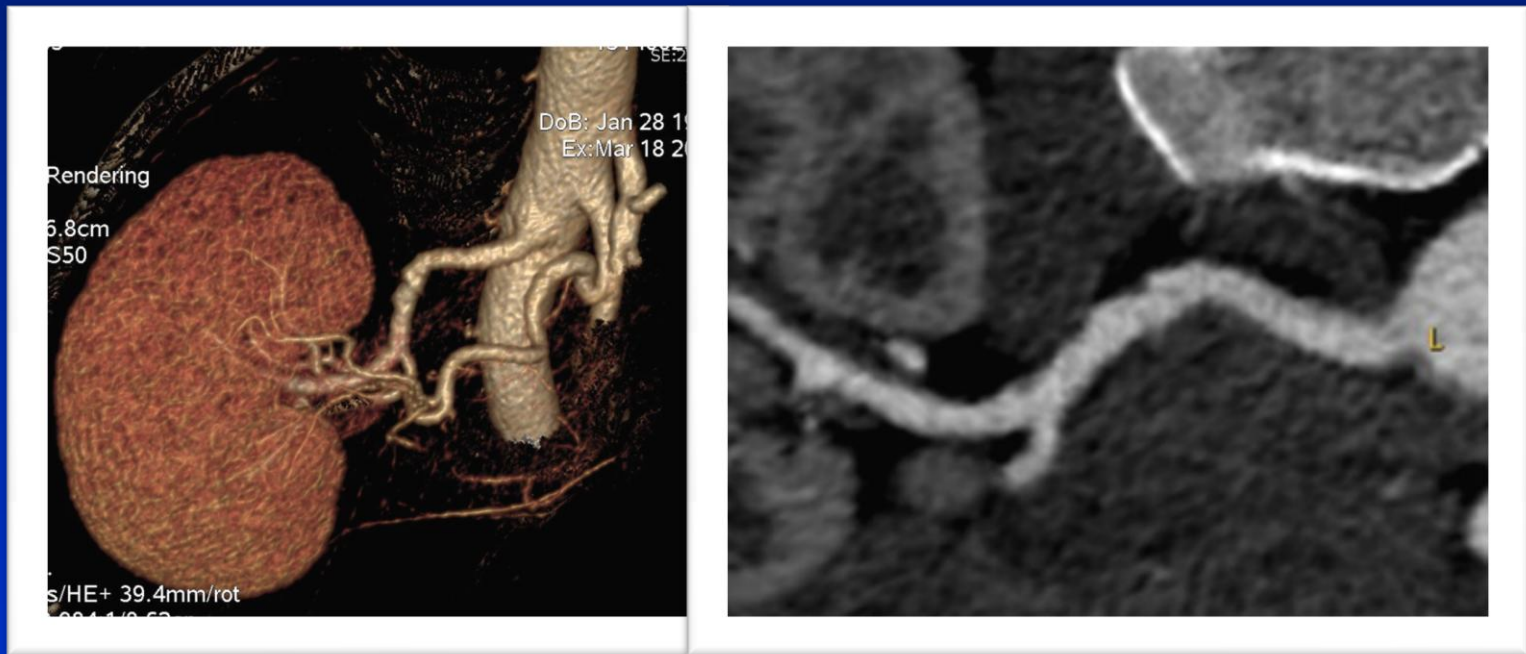
Multifocale
Collier de perles



Multifocale



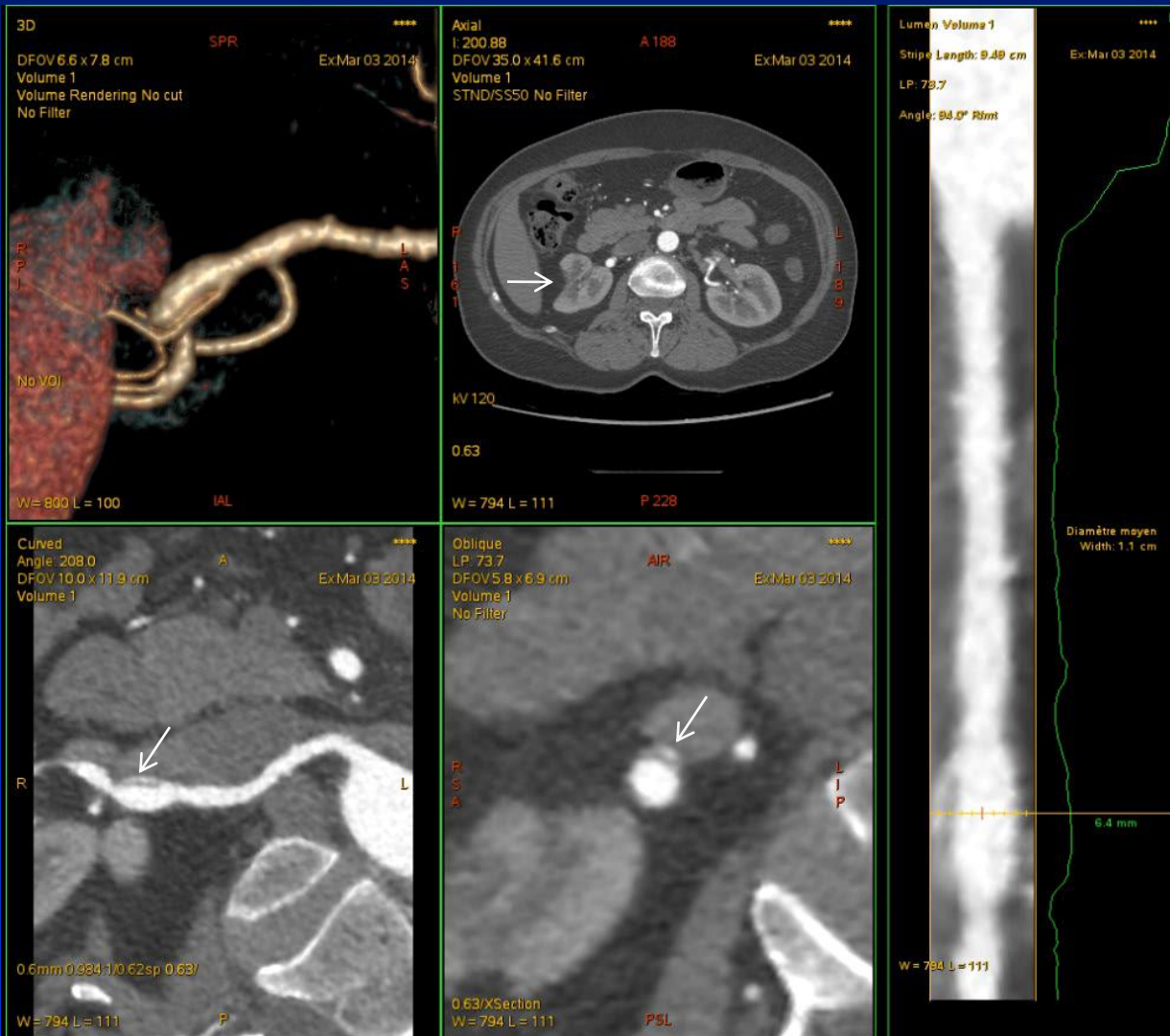
DFM lésions fines a minima



Angio CT: DFM unifocale

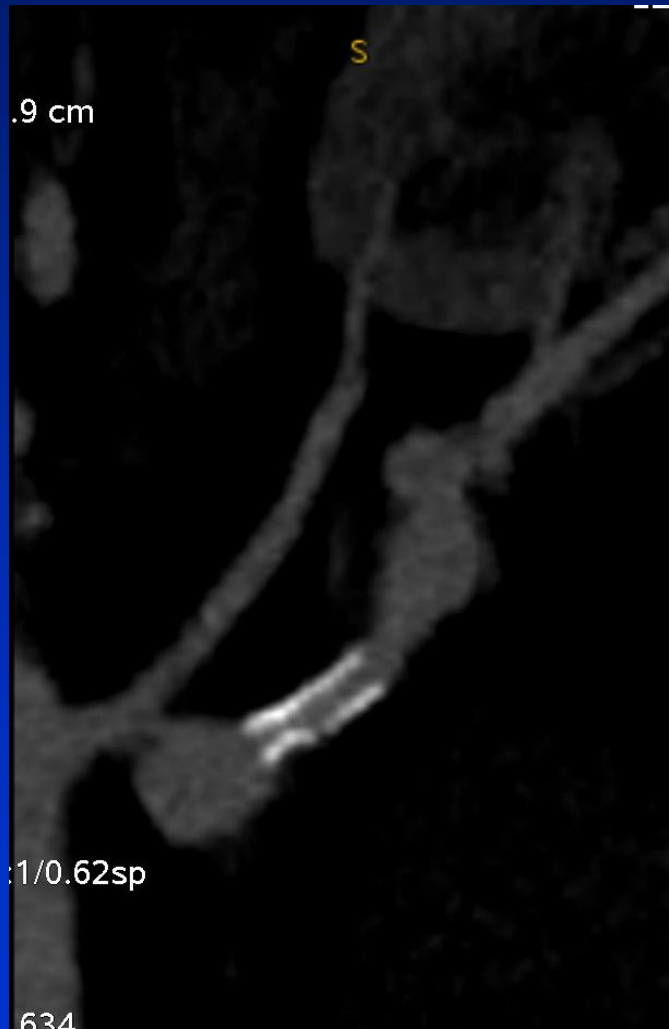


Hématome Disséquant de l'artère rénale



NF1

- *Sténose*
- *Anévrysme*
- *Suivi post stent*



MRI/CT accuracy to detect Renal artery stenosis >50%

	Se	Sp	VPP	VPN	κ	>60 y - Se
CTA	64%	92%	68%	91%	0,61	77%
MRA	62%	84%	49%	90%	0,45	79%

B. C. Vasbinder et al. Ann Intern Med 2004;141:674-682.

En Pratique: SAR et IRM / TDM

	Angio TDM (A)	Angio RM (B)
Resolution spatiale	+++ isotropique Precision+++	Antenne spécifique
Résolution temporelle		Sequences Cine Angio dynamique
Calcifications	Ca visibles mais peuvent gêner l'analyse	Ca invisibles mais analyse plus facile
Couverture	Large, on voit tout	Focused = precision
Rayons x	!!! Adapter le S/B	0
Pdt de contraste?	Indispensable Potentiel Toxique	Nouvelles séquences ss injection: depistage...
Suivi post therapeutique?	Stent, Pontage	Artefacts avec les stents!
Communication	Lecture Bcp plus facile	Reconstructions + faciles
Quantification flux	0	++ phase contraste

Conclusion

- *Angio Scanner:*
 - *1^{re} intention chez groupe haute probabilité SAR*
 - *Diagnostic précis*
 - *Athérome, dissection, lésions distales et fines de DFM.*
 - *Bilan vasculaire Global, reins*
 - *Suivi post thérapeutique*
- *Angio IRM:*
 - *Plutôt chez insuffisant rénal*
 - *Suivi de maladies chroniques (DFM, Takayasu...)*

Haute probabilité de SAR

Table 77. Clinical Clues Suggesting the Presence of Renal Artery Disease as the Cause of Hypertension and CKD

- Age at onset of hypertension <30 yr or >55 yr
- Abrupt onset of hypertension
- Acceleration of previously well-controlled hypertension
- Hypertension refractory to an appropriate three-drug regimen
- Accelerated hypertensive retinopathy
- Malignant hypertension
- History of Tobacco Use
- Systolic-diastolic abdominal bruit
- Flash pulmonary edema
- Evidence of generalized atherosclerosis obliterans
- Asymmetry in kidney size on imaging studies
- Acute kidney failure with treatment with an angiotensin-converting enzyme inhibitor or angiotensin receptor blocker