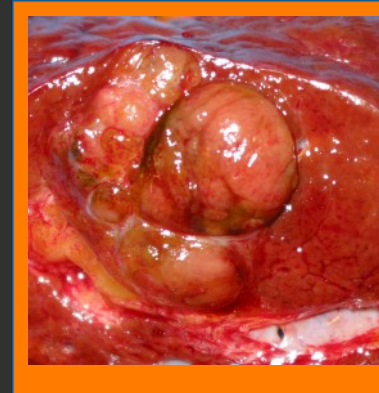
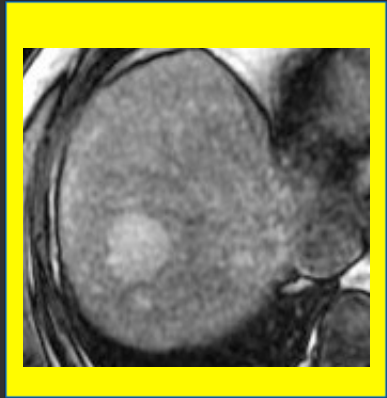


Imagerie et Différenciation du Carcinome hépatocellulaire



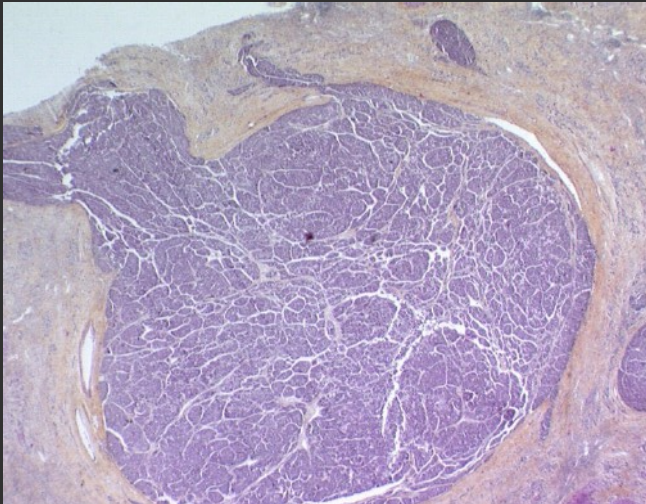
SFR
Rhône Alpes
11 Mars 2017

Agnès Rode
Imagerie Médicale et Interventionnelle
Hôpital Croix Rousse
LYON



Evaluation de l'évolution du CHC:

- Avant décision traitement par RF/chirurgie
- Avant transplantation



Microinvasion vasculaire

Récidive tumorale après chirurgie:

Plus de 50% à 5 ans

Récidive précoce:

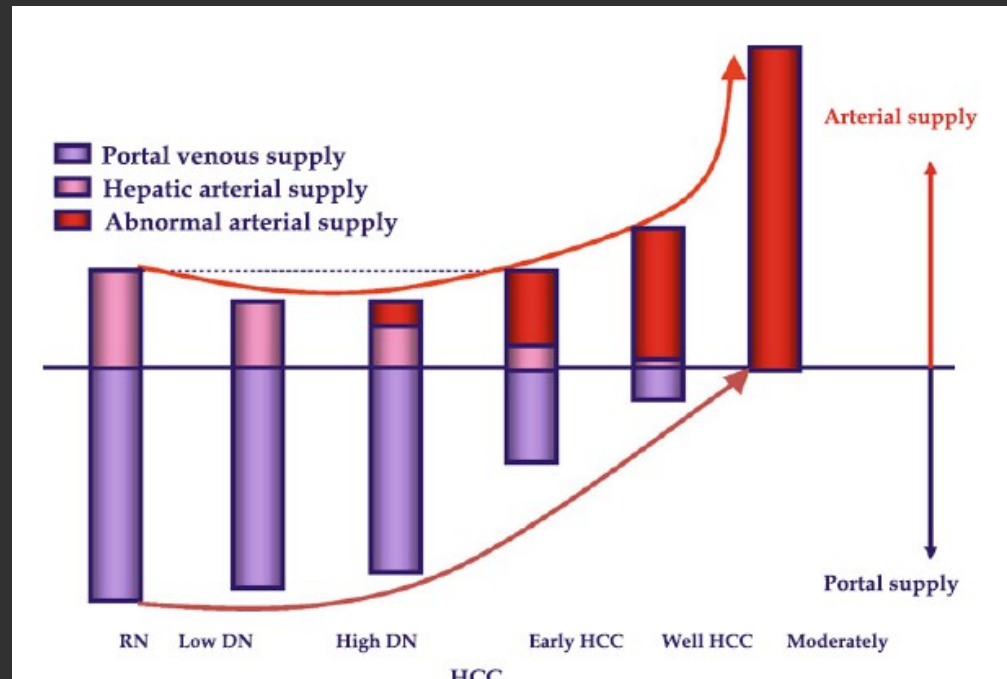
microinvasion vasculaire

mauvaise différenciation

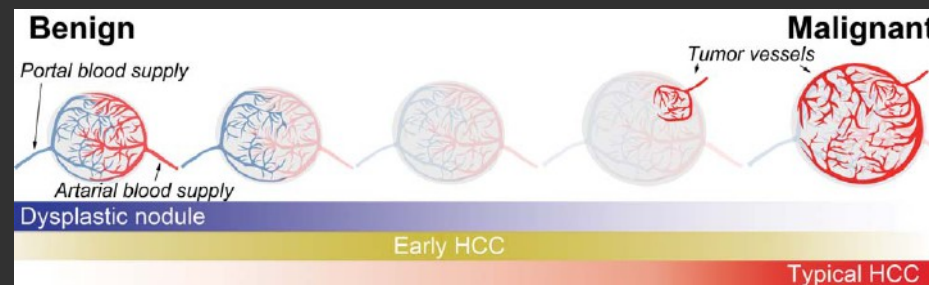
cellulaire

nodules satellites

Evolution de la vascularisation veineuse et artérielle

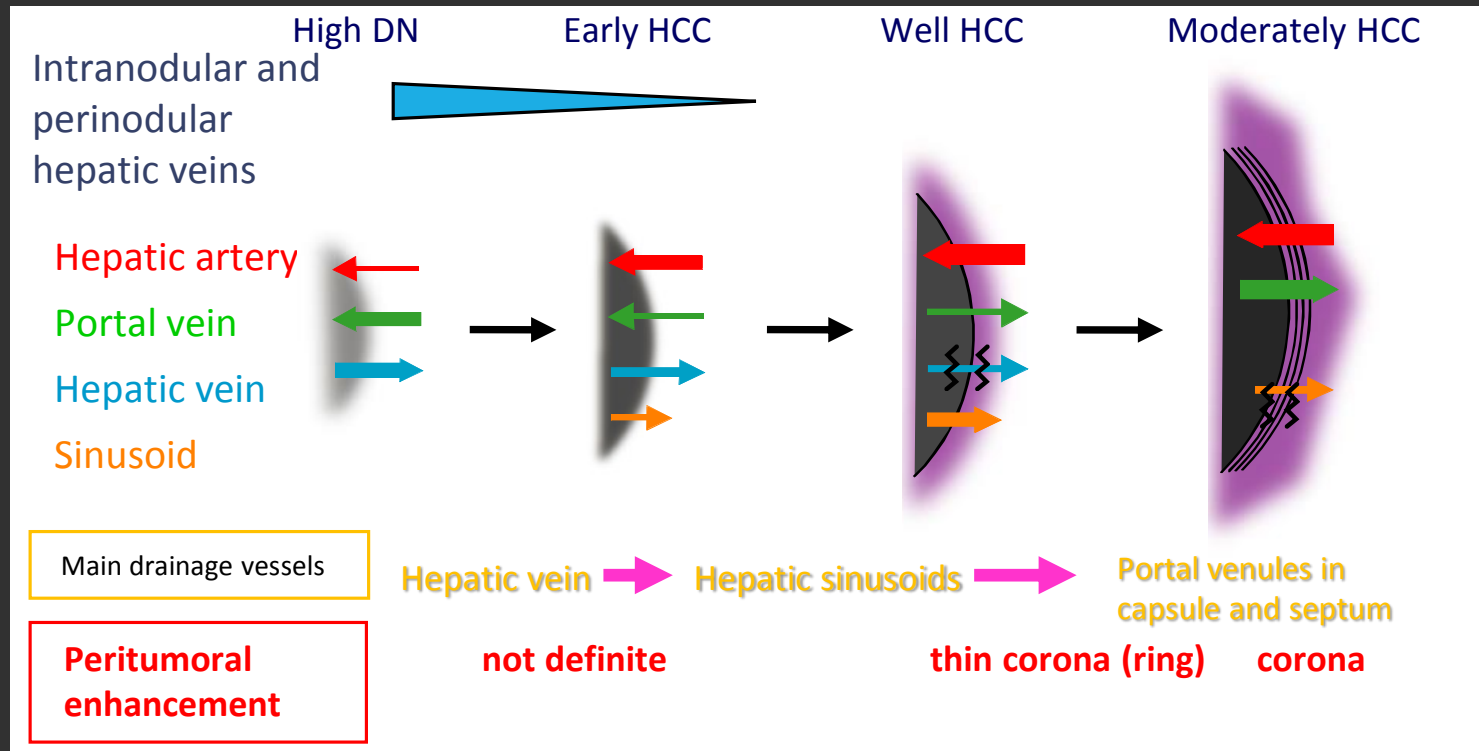


*Matsui,
Abd Imaging 2011*



Motosugi JMRI 2014

Evolution du drainage veineux



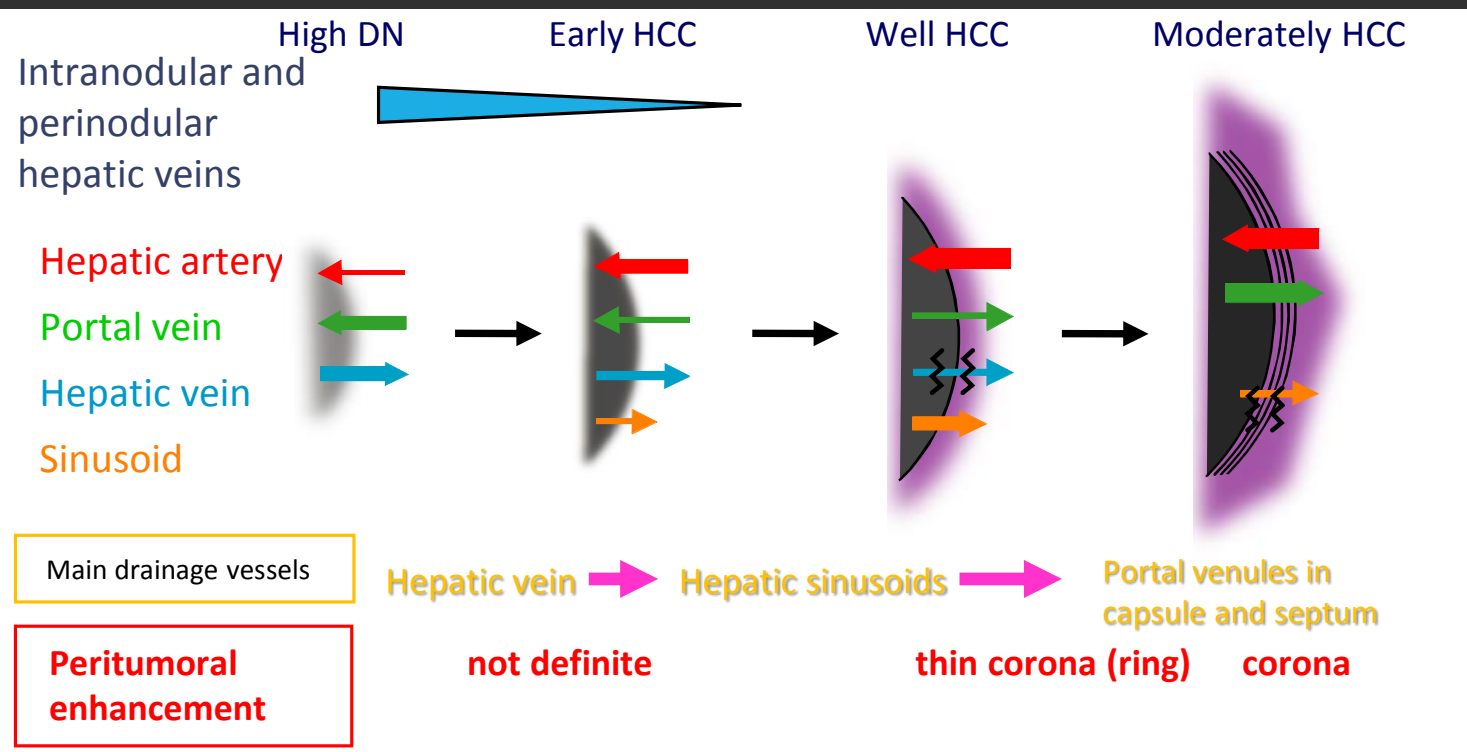
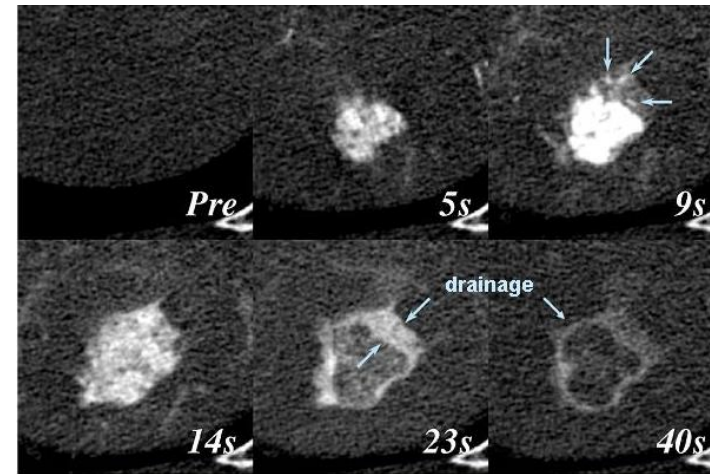
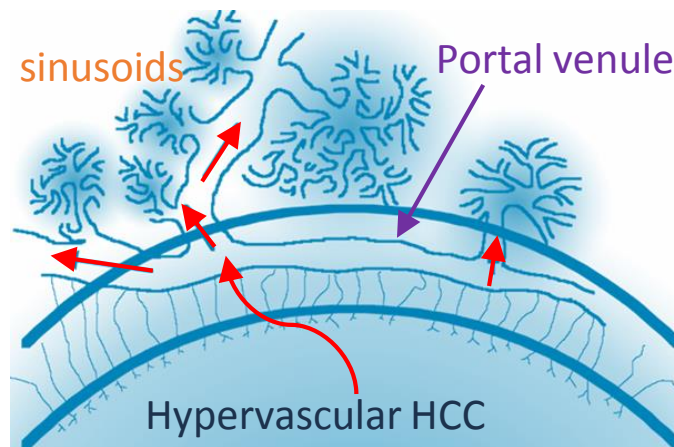
T. MINAMI¹, O. MATSUI¹, S. MIYAYAMA², A. KITAO¹, N. TERAYAMA³, S. KOBAYASHI¹, W. KODA¹, K. KOZAKA¹, D. INOUE¹, K. YOSHIDA¹, N. YONEDA¹, T. MATSUBARA¹, T. GABATA¹

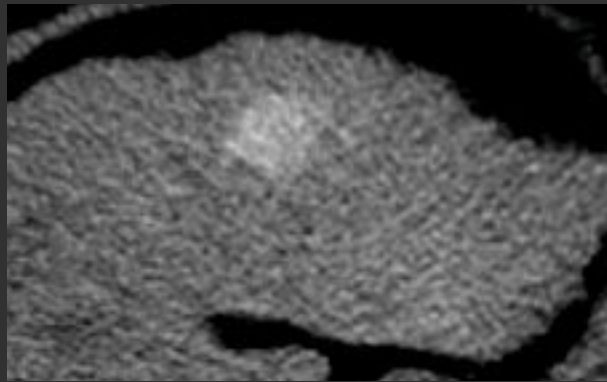
¹ KANAZAWA UNIVERSITY

² FUKUIKEN SAISEIKAI HOSPITAL

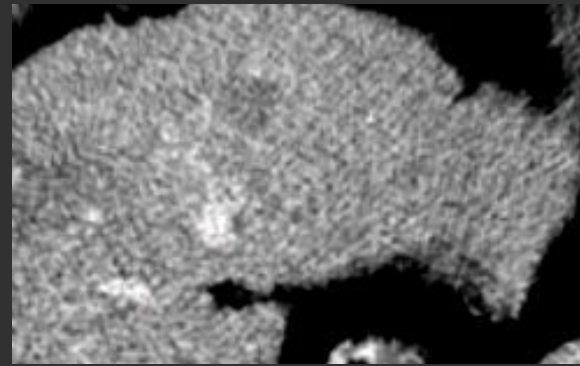
³ TAKAOKA CITY HOSPITAL

Matsui,
Abd Imaging 2011

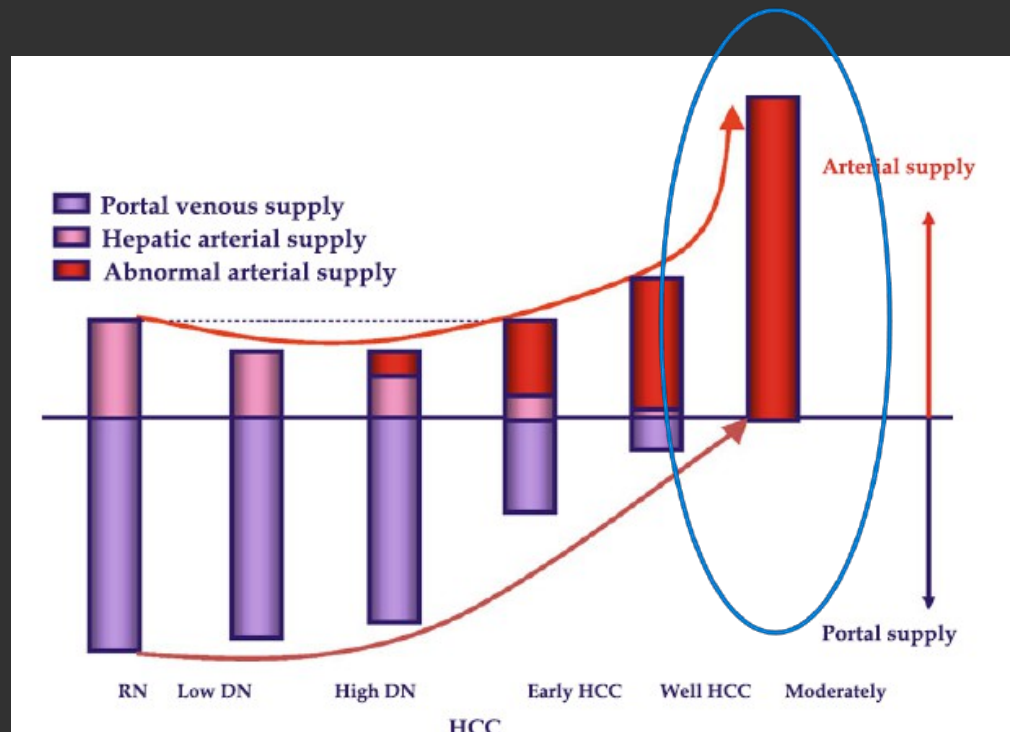




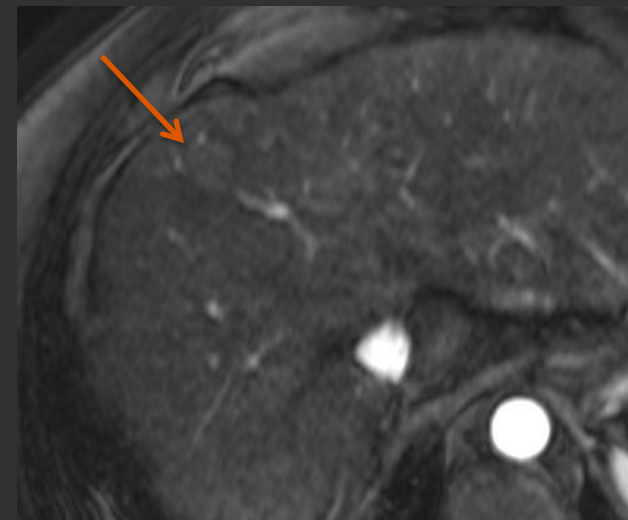
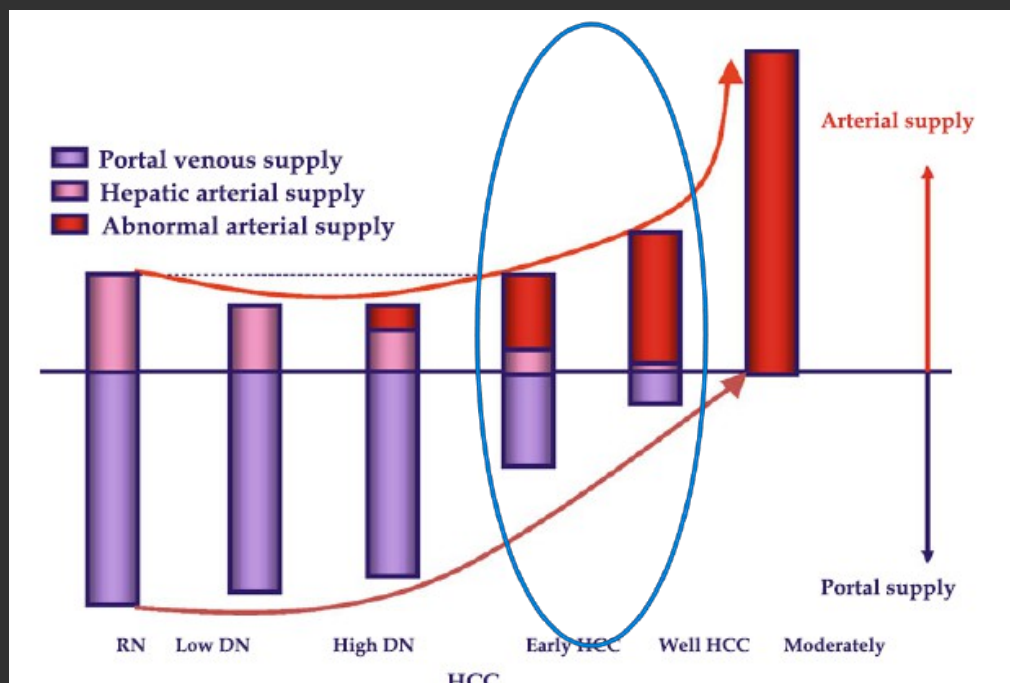
Wash in



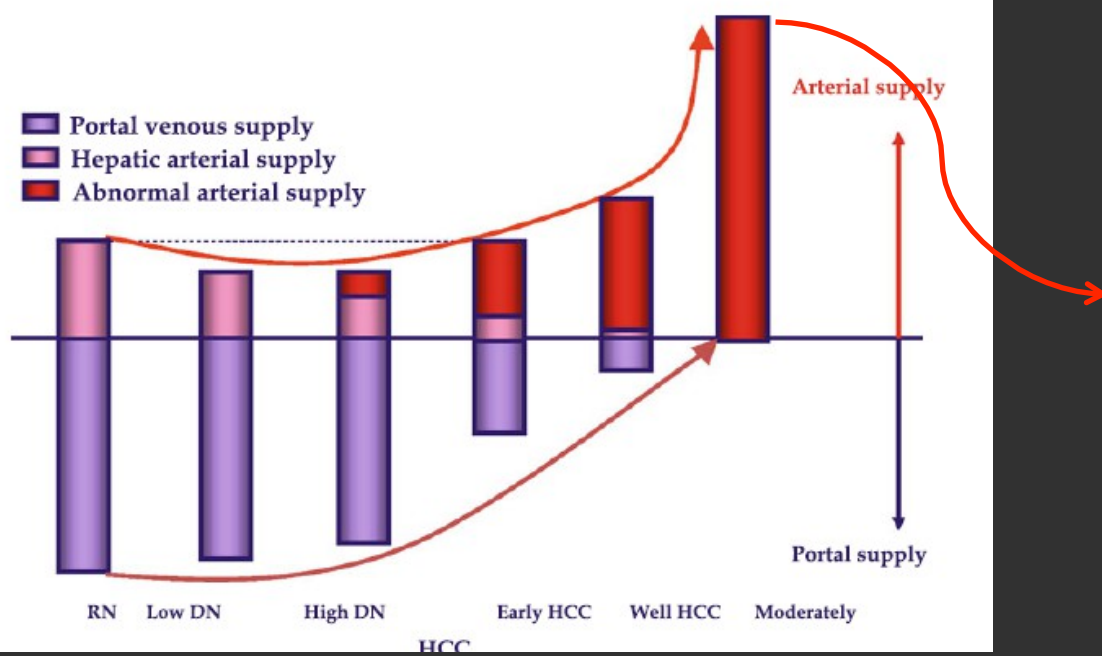
wash out

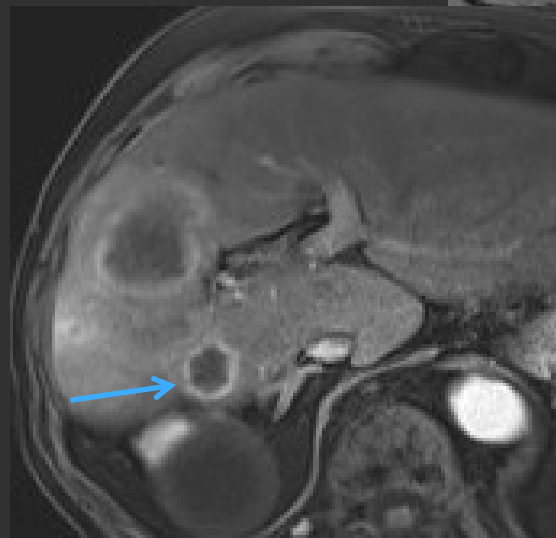
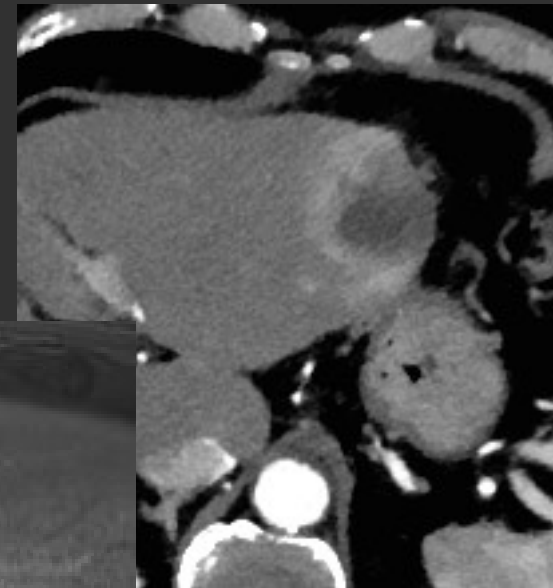
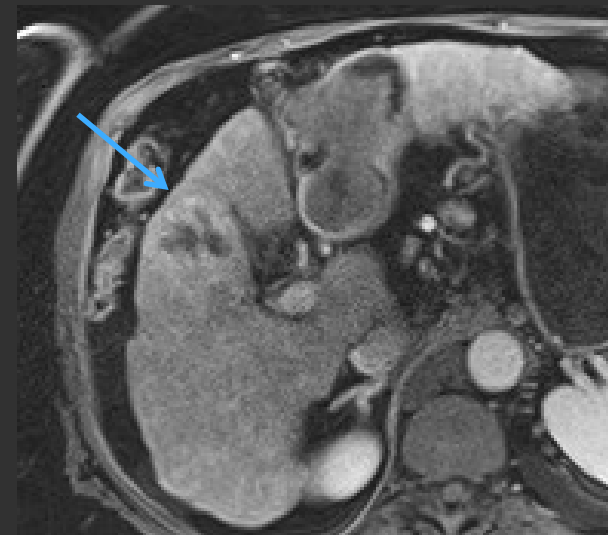
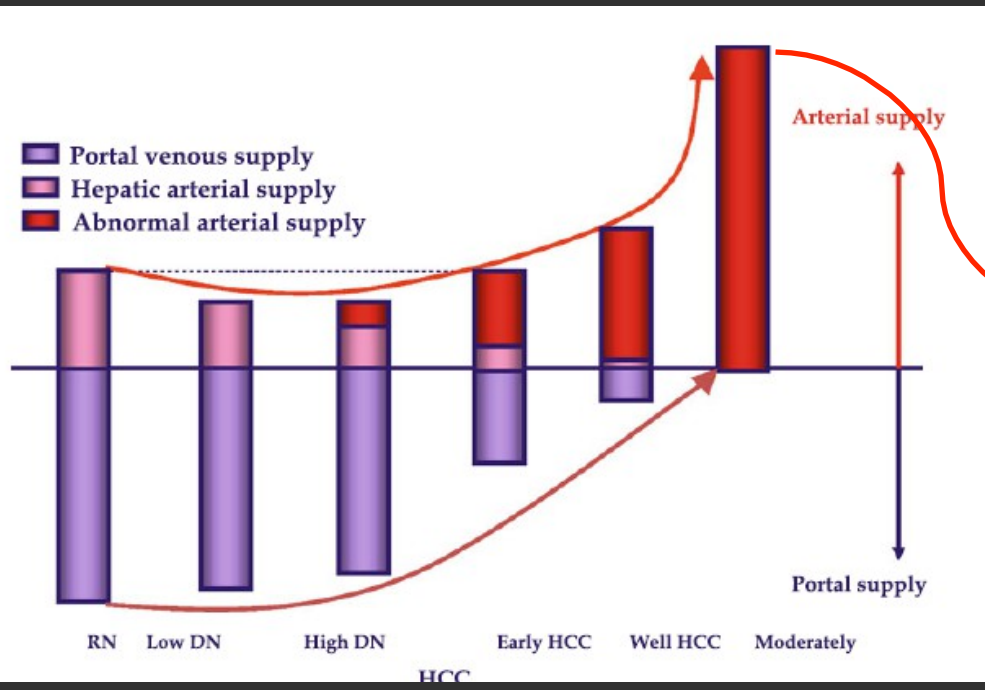


CHC avancé
moyennement
différencié



Nodule non ou faiblement
hypervasculaire :
Biopsie = CHC grade 1



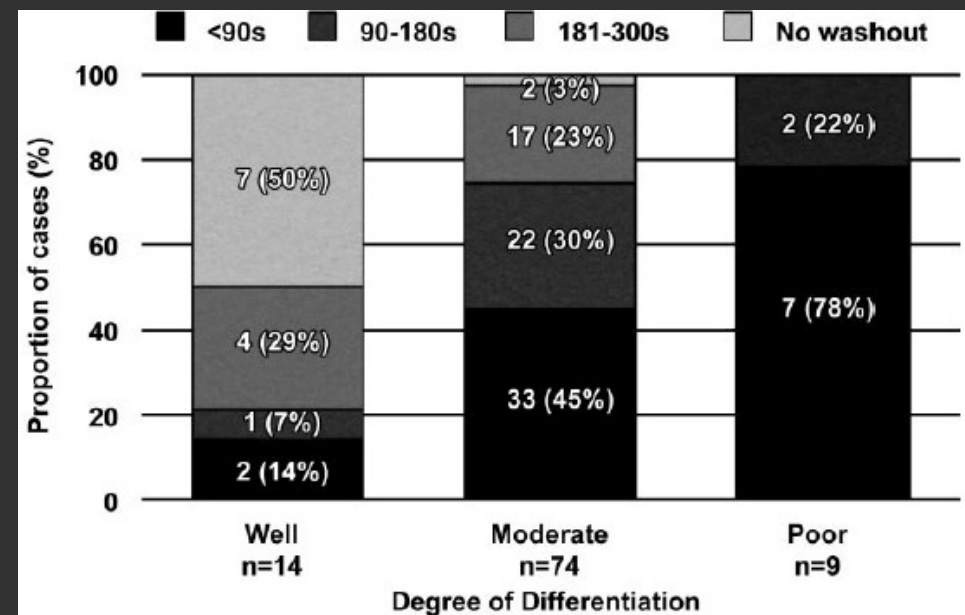
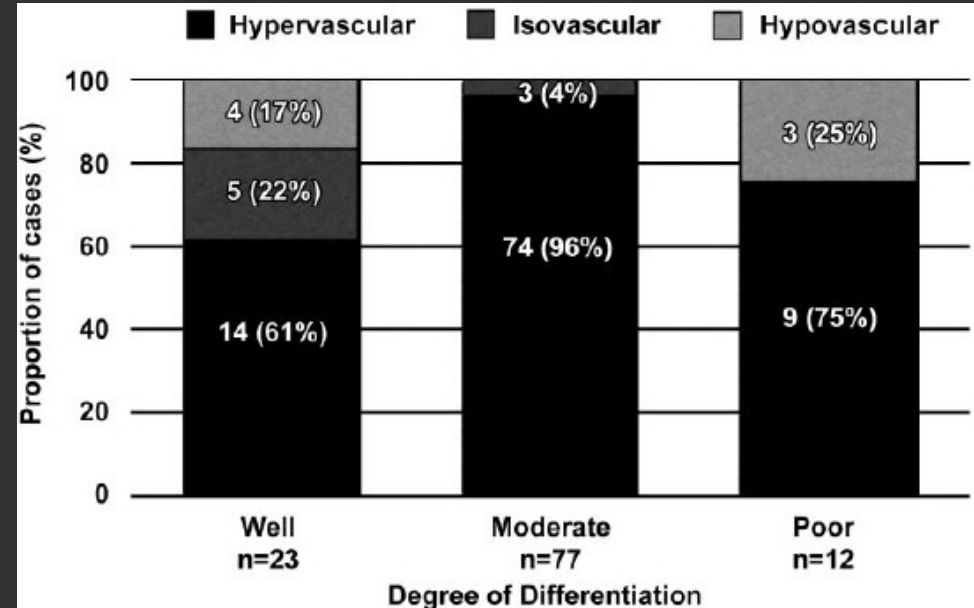


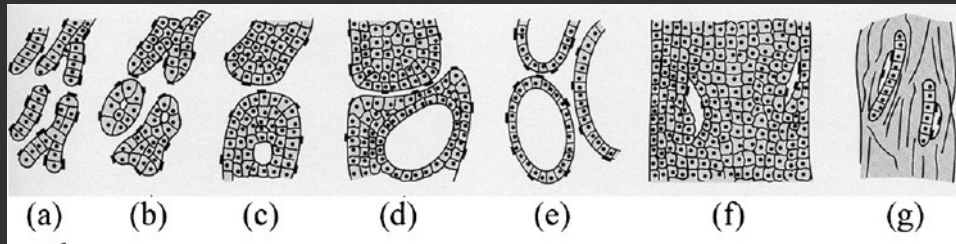
Enhancement Patterns of Hepatocellular Carcinoma at Contrast-enhanced US:

Comparison with Histologic Differentiation¹

Radiology

JANG Radiology 2007

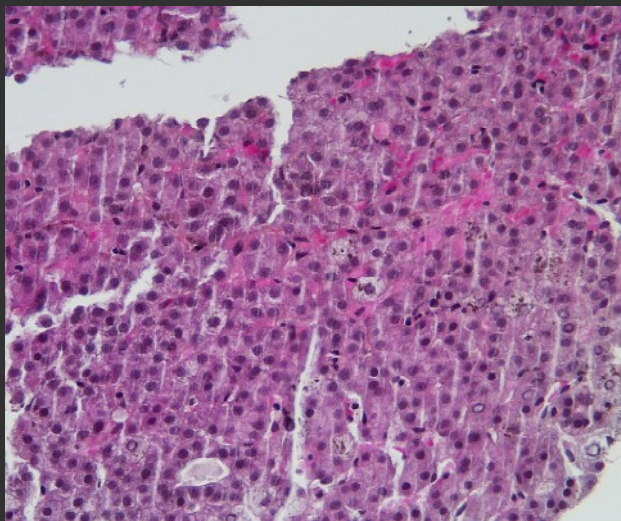




Okamoto Eur J Radiol 2010

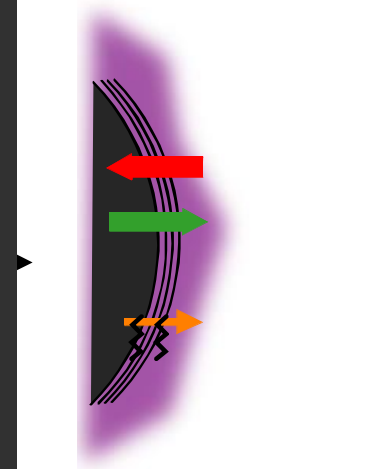
- Augmentation de la vascularisation artérielle
- Augmentation de l'épaisseur des travées cellulaires
- Diminution du nombre de sinusoides

Wash out
de plus en plus
précoce



CHC très bien
différencié

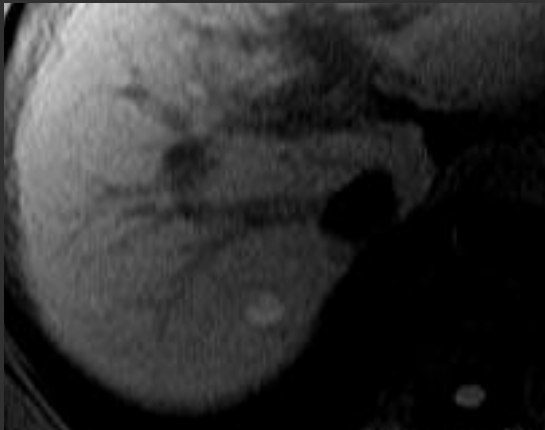
Moderately HCC



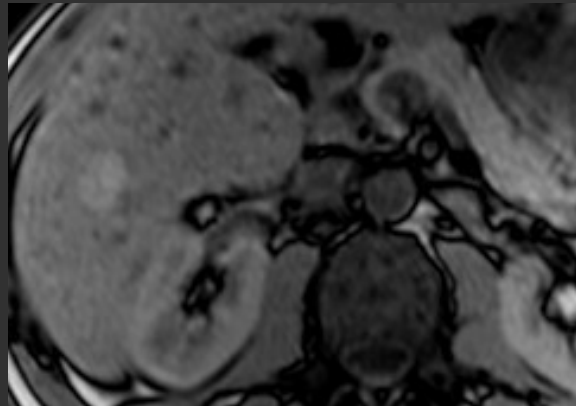
CHC bien différencié:

- Absence de washout
- *Hyper T1*

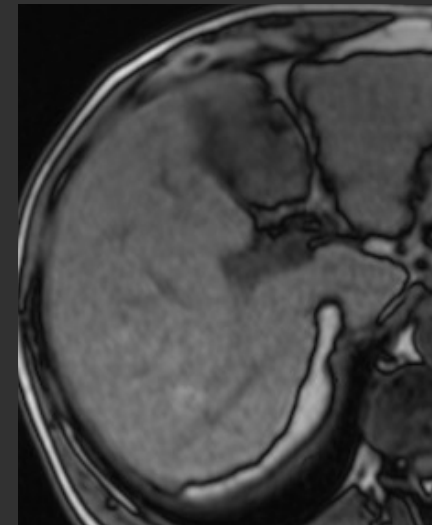
MNR



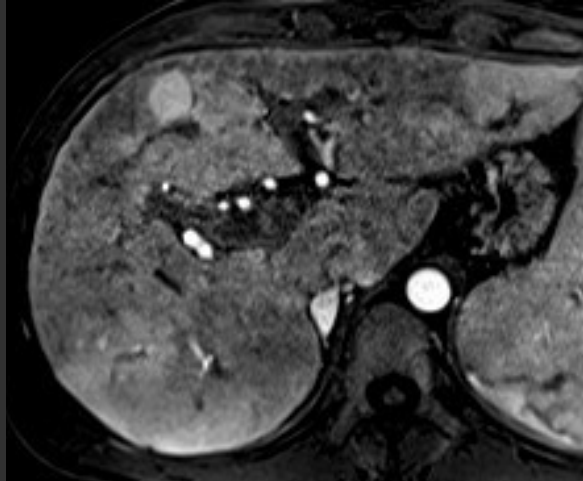
N Dysplasique



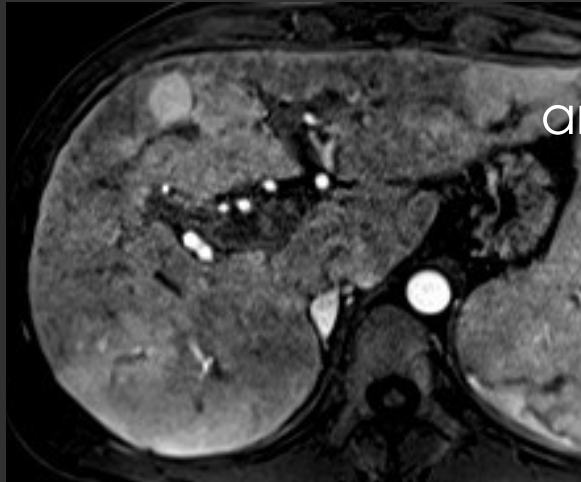
CHC



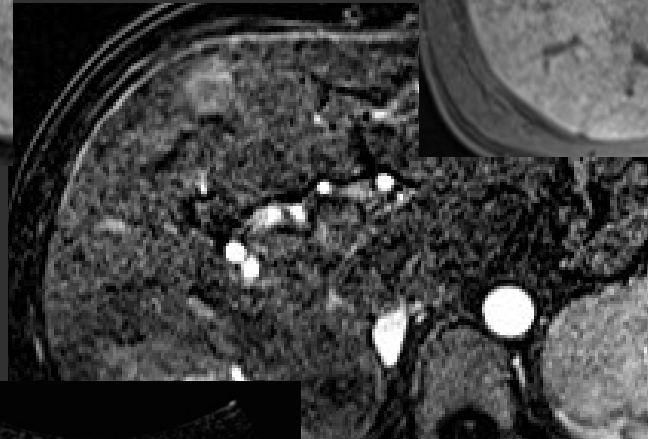
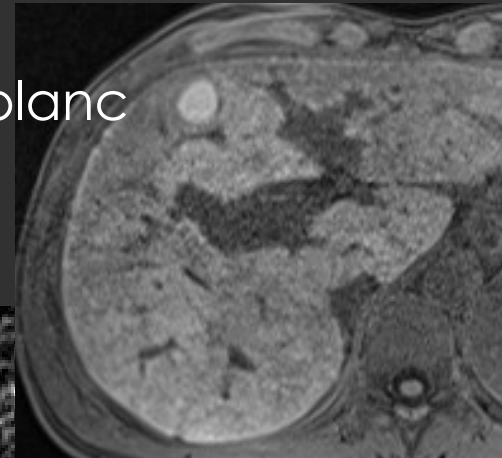
LE CHC HYPER T1: réhaussement ?



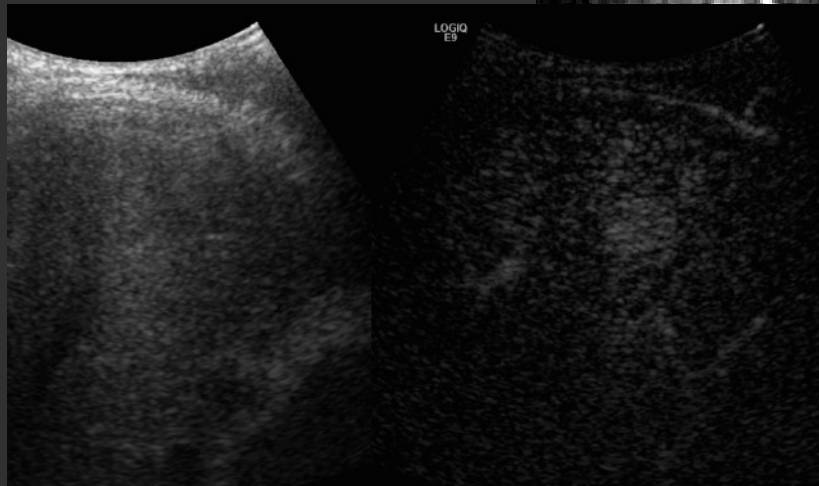
LE CHC HYPER T1: réhaussement ?



artériel — T1 à blanc

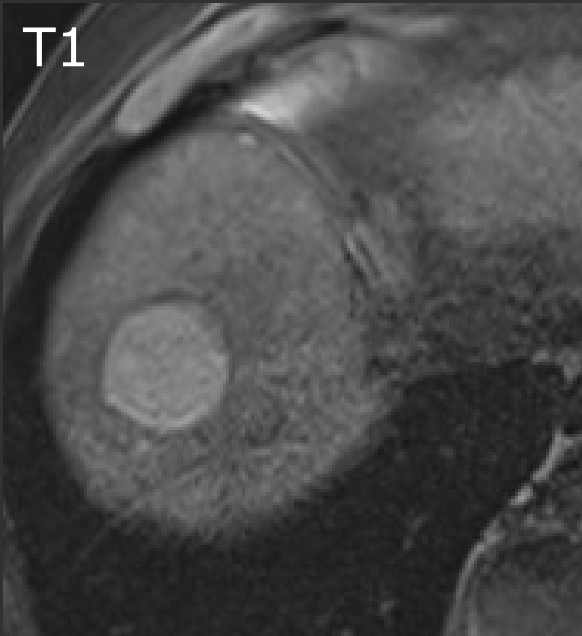


soustraction



Echo de contraste +++

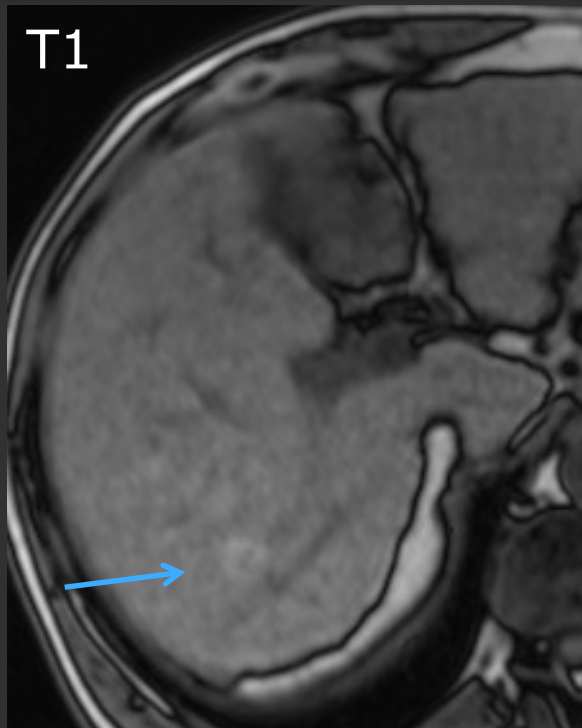
T1



T1 gado artériel



T1



T1 gado artériel



CHC grade 1

CHC bien différencié:

- Absence de washout
- Hyper T1
- *Absence d'hyperintensité T2*

CHC HYPER T2

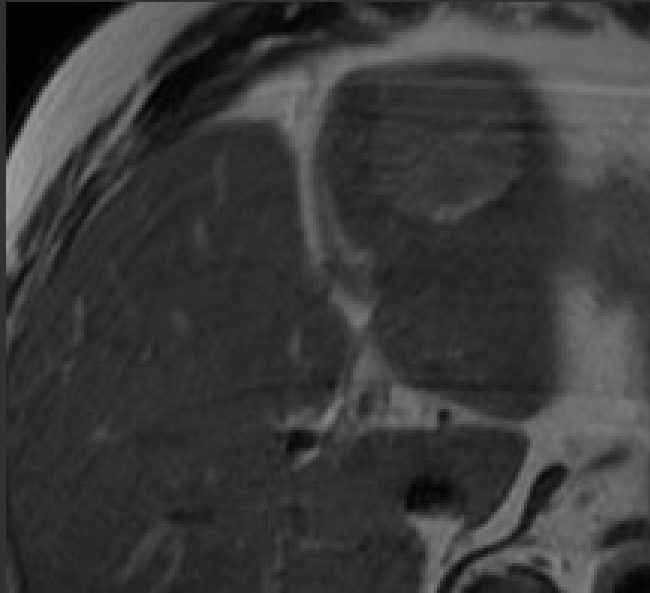
Corrélation entre hyperintensité T2 et

- augmentation de la néoangiogénèse
- augmentation du volume du stroma
- Remaniements péliotiques

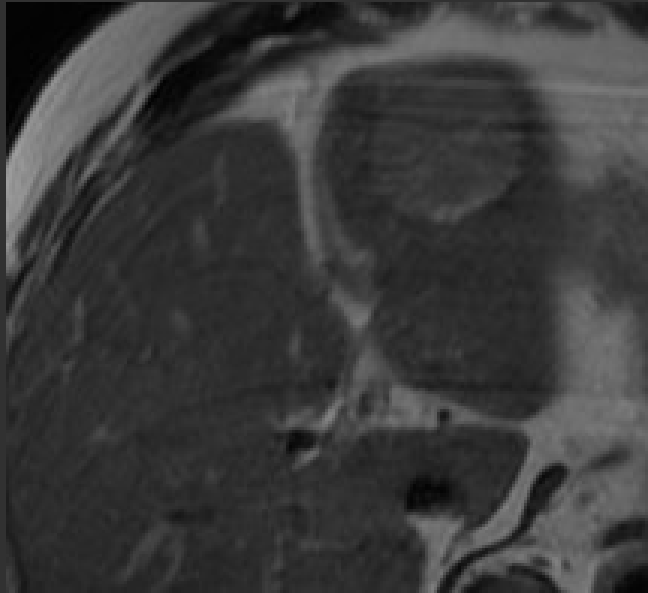
SHINMURA Radiology 2005

WINTER Radiology 1994

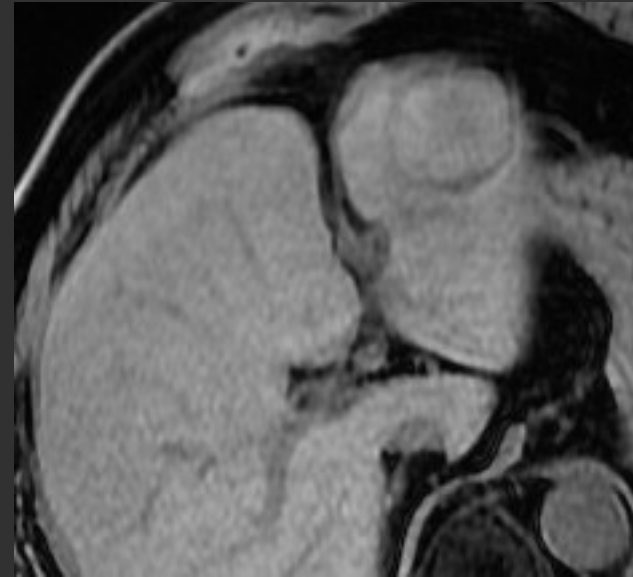
T2



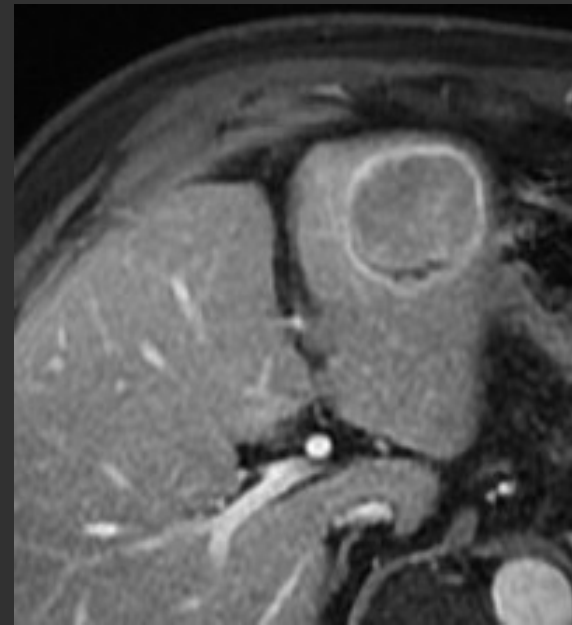
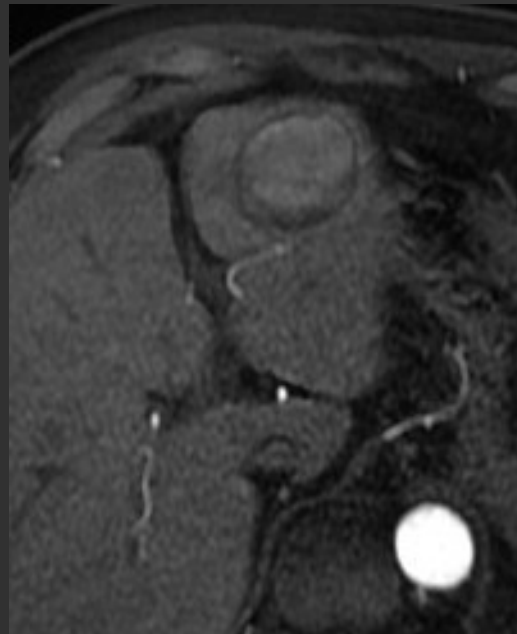
T2



T1

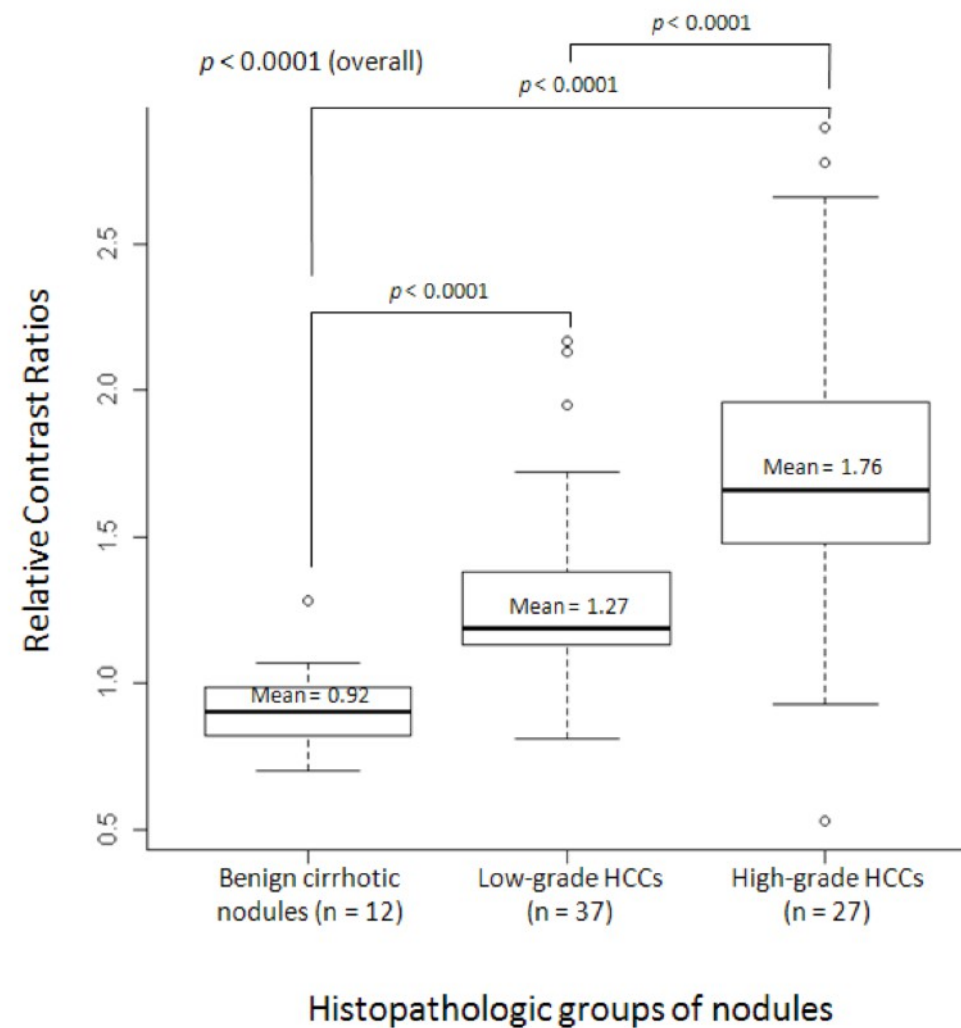


injection

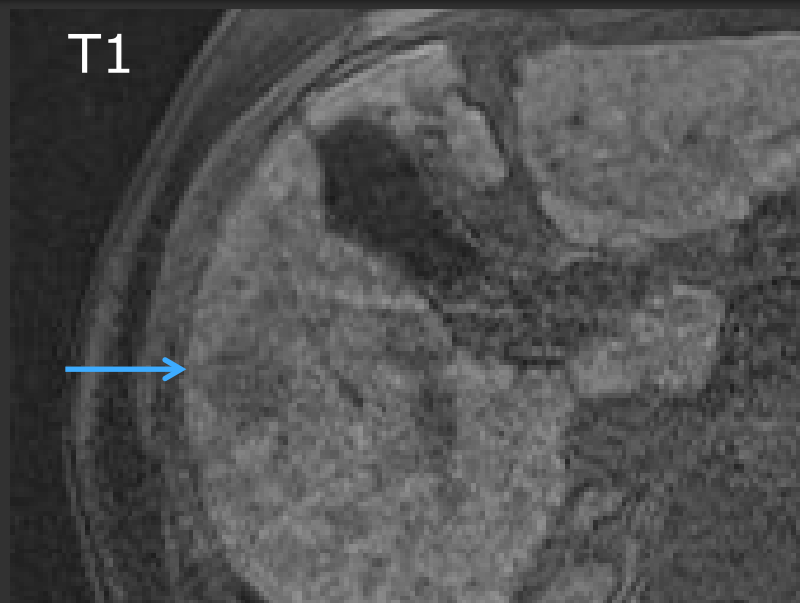
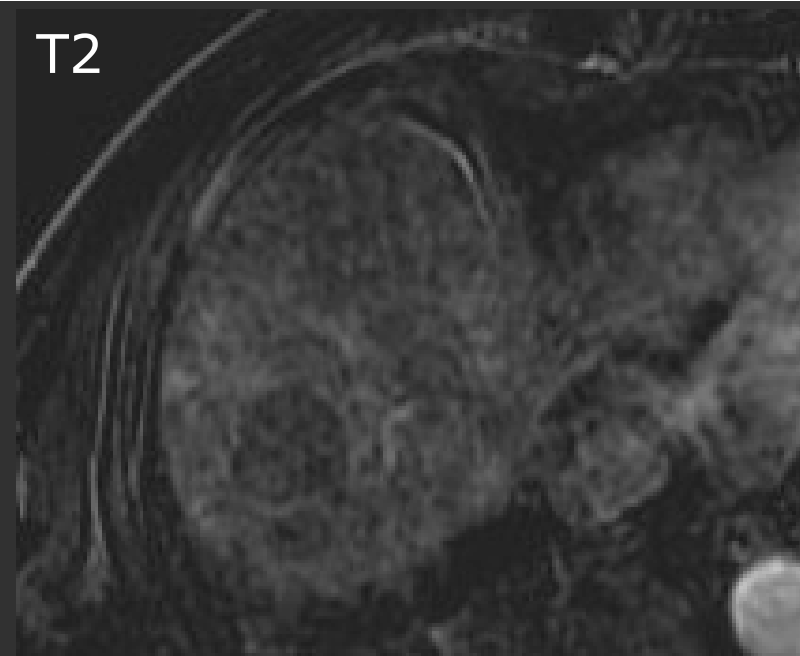
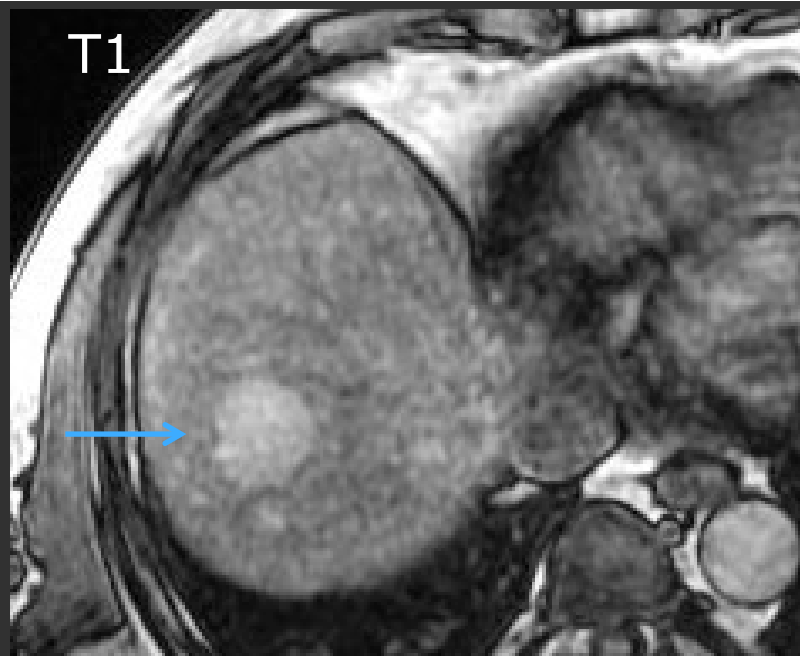




$$\text{RCR b800} \\ (\text{Relative Contrast Ratio}) \\ = \\ \frac{SI_{\text{lesion}}}{SI_{\text{liver}}}$$



Le Moigne BJR 2013



T2



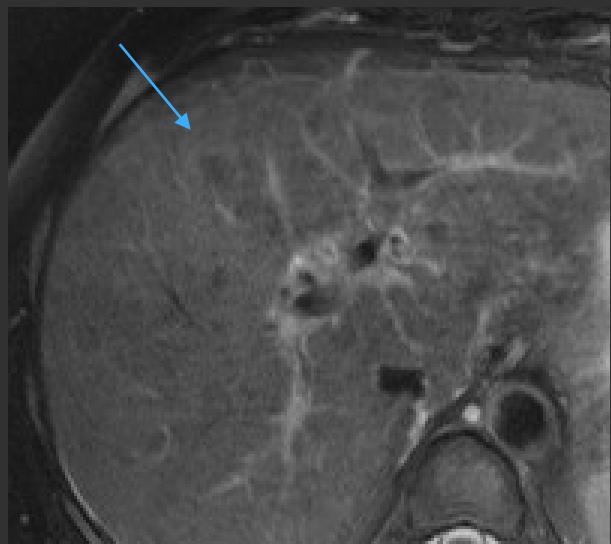
T1 GADO

21



Grade 3 à nodules satellites

T2



T1 GADO

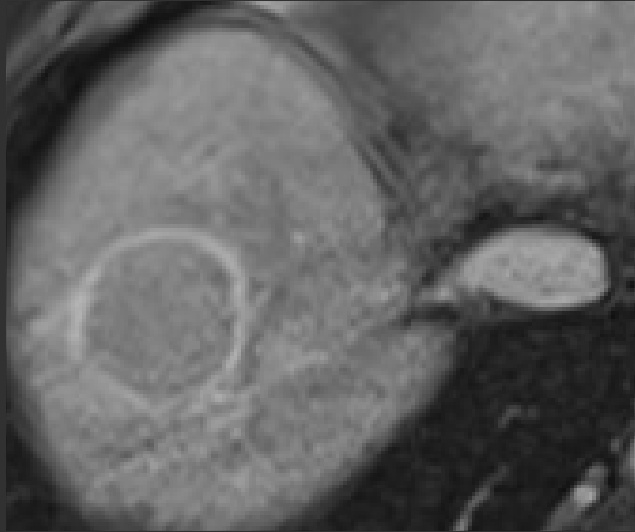


Pas de wash out

Grade 1

CHC bien différencié:

- Absence de washout
- Hyper T1
- Absence d'hyperintensité T2
- *Capsule*



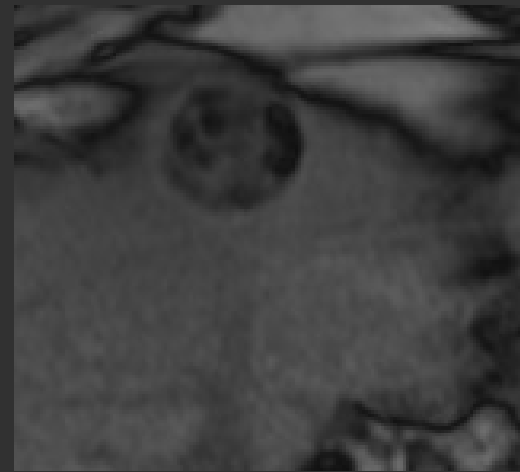
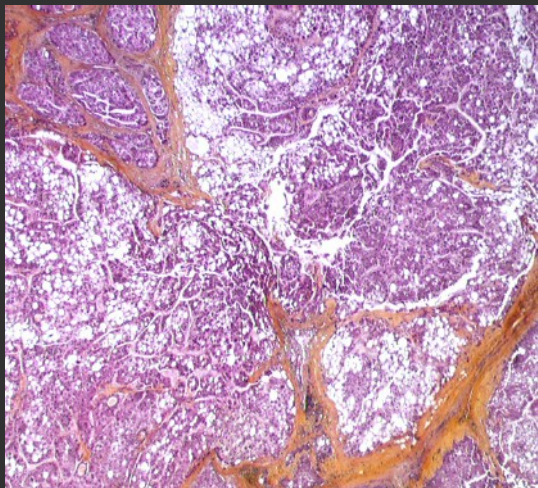
- Capsule: tumeur moins invasive, moins d'envahissement vasculaire, augmentation de la survie pour Tumeurs > 5 cm
- Meilleure efficacité de la chimioembolisation

CHC bien différencié:

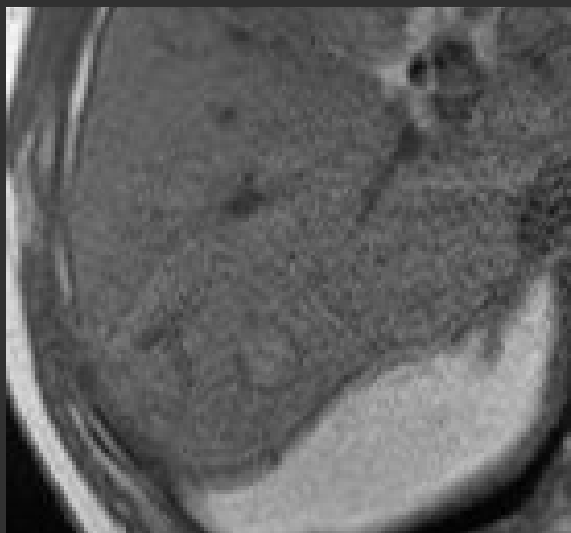
- Absence de washout
- Hyper T1
- Absence d'hyperintensité T2
- Capsule
- *stéatose*

HCC et stéatose:

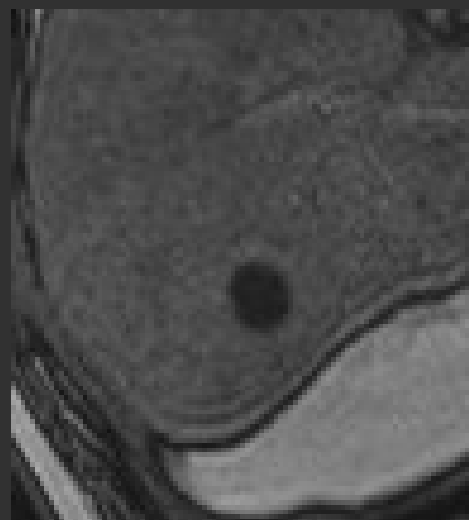
Élément diagnostique
ou pronostique ?



IN



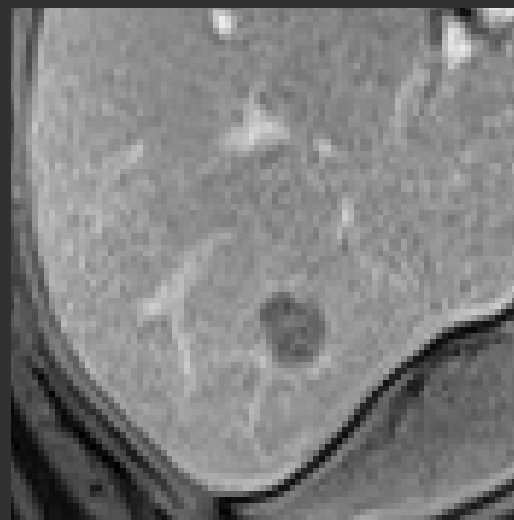
OUT



artériel



portal





Prediction of microvascular invasion of hepatocellular carcinomas with gadoxetic acid-enhanced MR imaging: Impact of intra-tumoral fat detected on chemical-shift images

Ji Hye Min^a, Young Kon Kim^{a,*}, Sanghyeok Lim^b, Woo Kyoung Jeong^a,
Dongil Choi^a, Won Jae Lee^a

20% des CHC

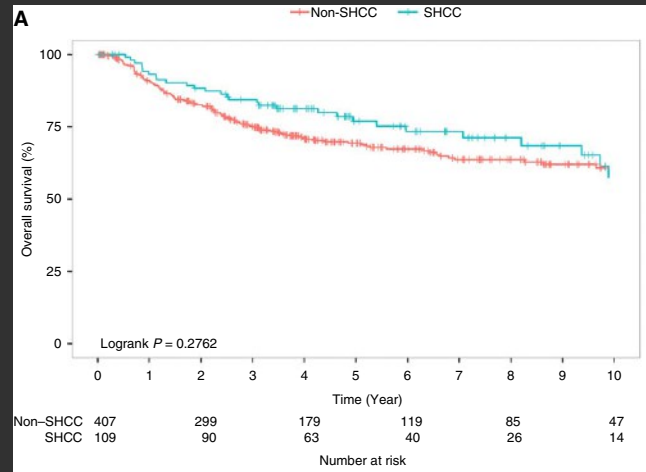
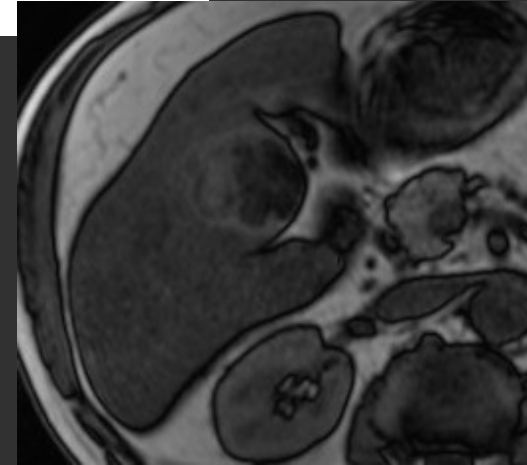
CHC stéatosiques: grade 1 ou 2 d'Edmonson dans 93% cas

CHC avec composante grasseuse importante présentent moins de microinvasion vasculaire que CHC non stéatosiques ou faiblement stéatosiques

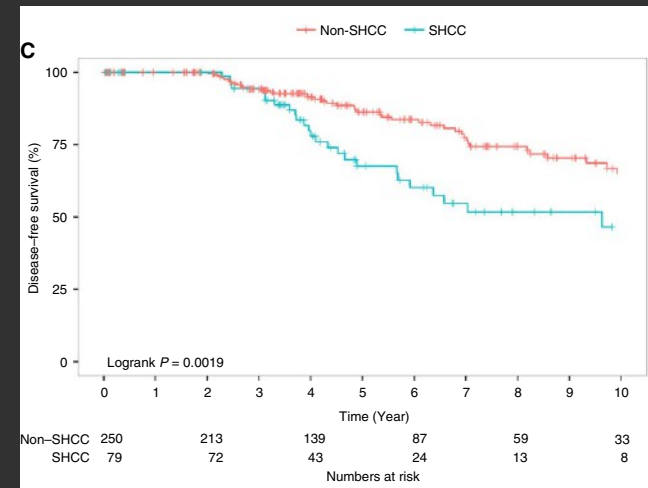
Steatotic hepatocellular carcinoma: a variant associated with metabolic factors and late tumour relapse

Chan , 2016

Association avec NASH,
stéatose hépatique
et facteurs dysmétaboliques



Survie globale



Reprise évolutive tardive

Chansik,
Radiology 2015

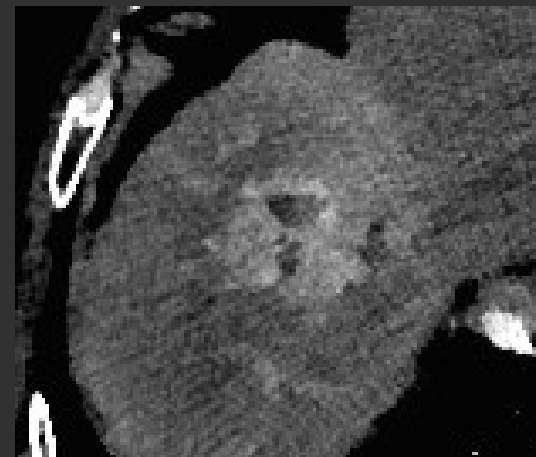
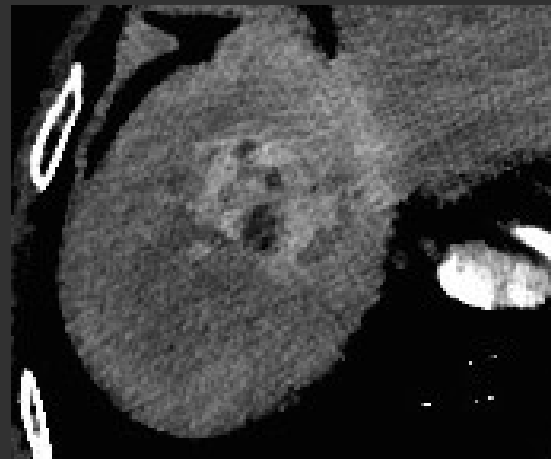
Single Hepatocellular Carcinoma: Preoperative MR Imaging to Predict Early Recurrence after Curative Resection¹

Taille
Nodules satellites
Réhaussement parenchymateux péri-tumoral

Risque de récurrence
après chirurgie

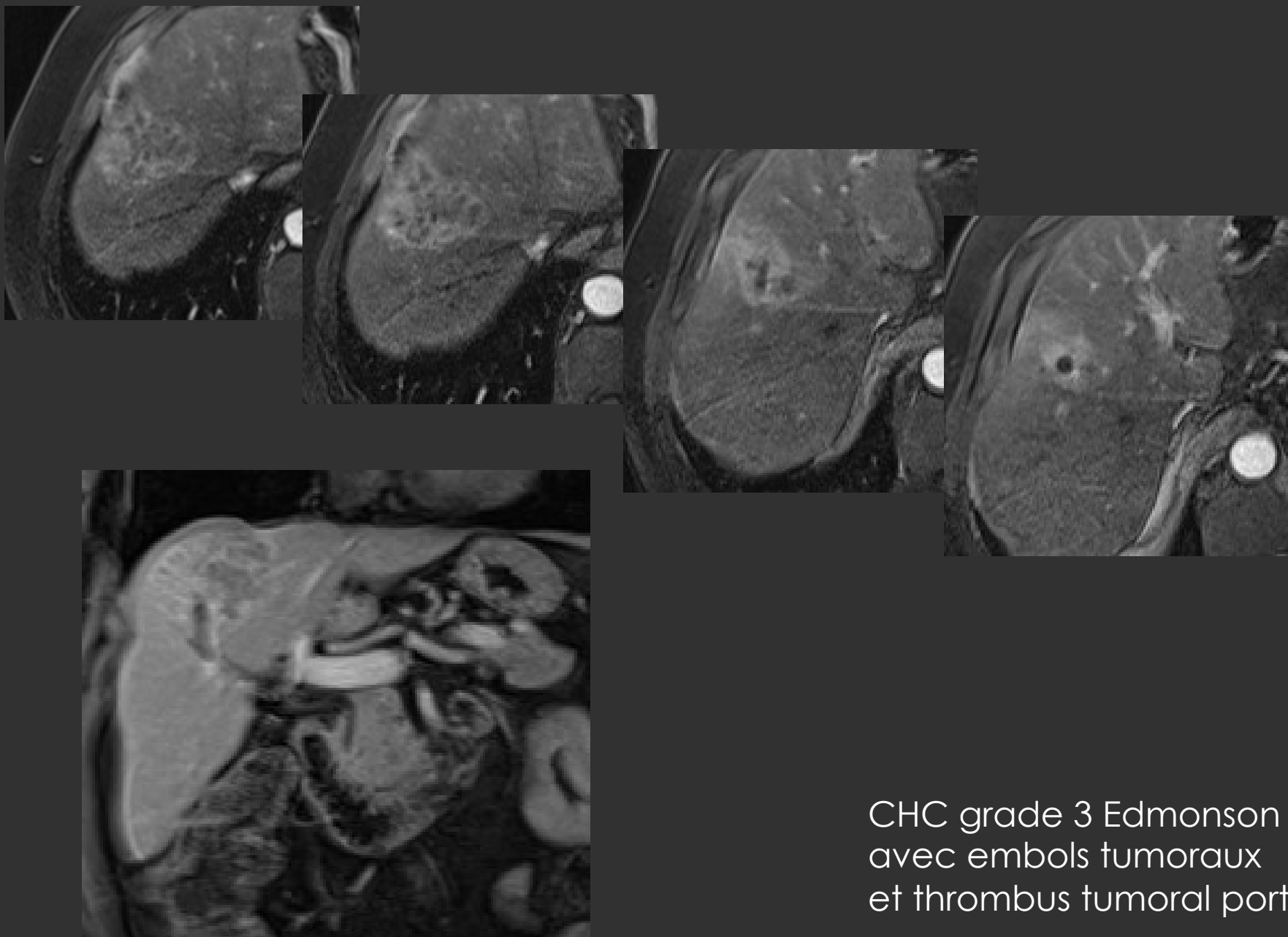


Tumeur grade 3 Edmonson, avec nodules satellites et microinvasion vasculaire



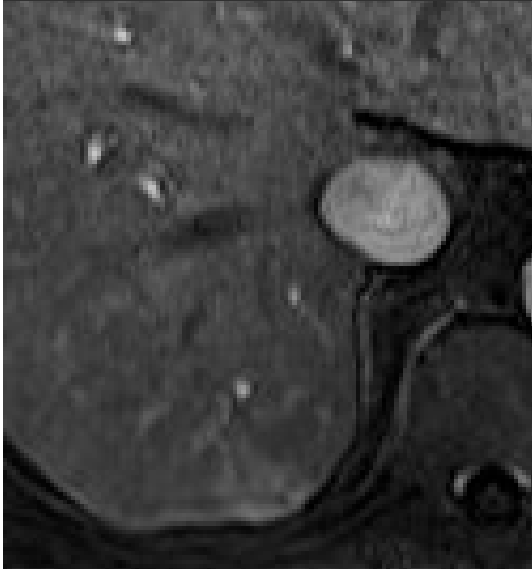
Récidive moins de 6 mois après
exérèse chirurgicale

CHC et microinvasion tumorale



CHC grade 3 Edmonson
avec embols tumoraux
et thrombus tumoral portal

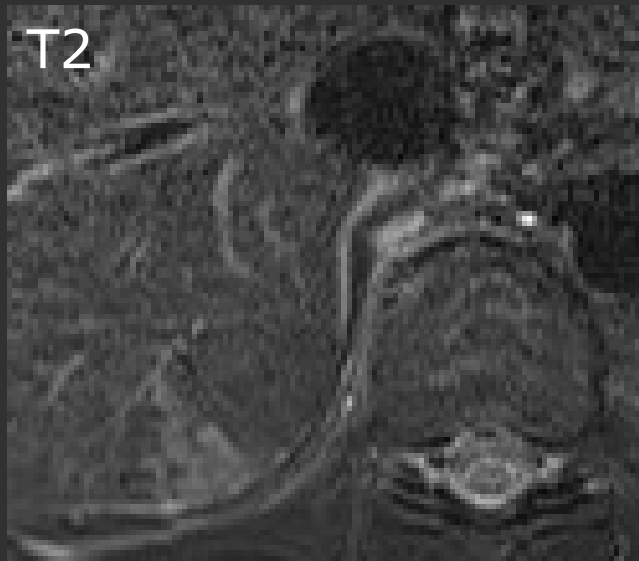
T1 gado artériel



T1 gado portal



T2



diffusion



Matteo Renzulli, MD
Stefano Brocchi, MD
Alessandro Cucchetti, MD
Federico Mazzotti, MD
Cristina Mosconi, MD
Camilla Sportoletti, MD
Giovanni Brandi, MD
Antonio Daniele Pinna, MD
Rita Golfieri, MD

Can Current Preoperative Imaging Be Used to Detect Microvascular Invasion of Hepatocellular Carcinoma?¹

Taille de la tumeur
Bords flous
Réhaussement péri tumoral

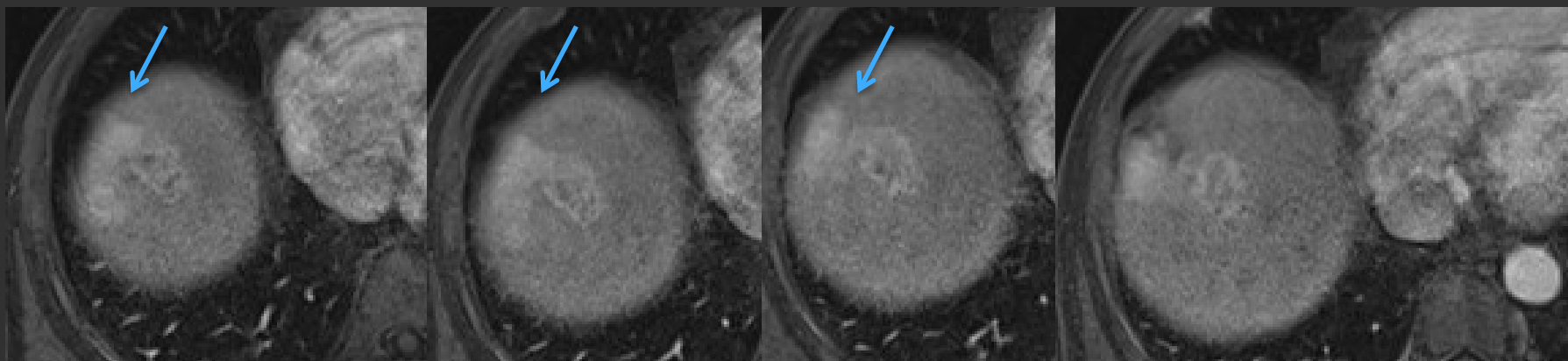
Risque plus élevé
de microinvasion tumorale

Matteo Renzulli, MD
Stefano Brocchi, MD
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Cristina Mosconi, MD
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Can Current Preoperative Imaging Be Used to Detect Microvascular Invasion of Hepatocellular Carcinoma?¹

Taille de la tumeur
Bords flous
Réhaussement péri tumoral

Risque plus élevé
de microinvasion tumorale

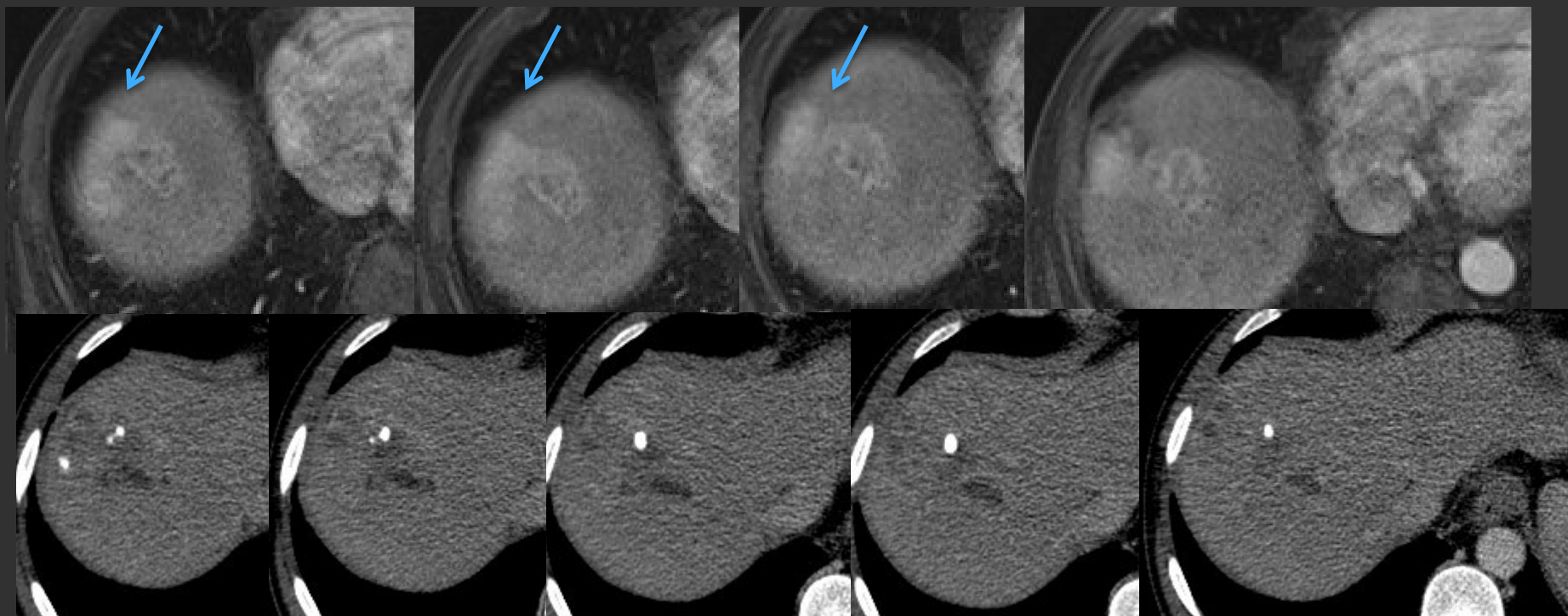


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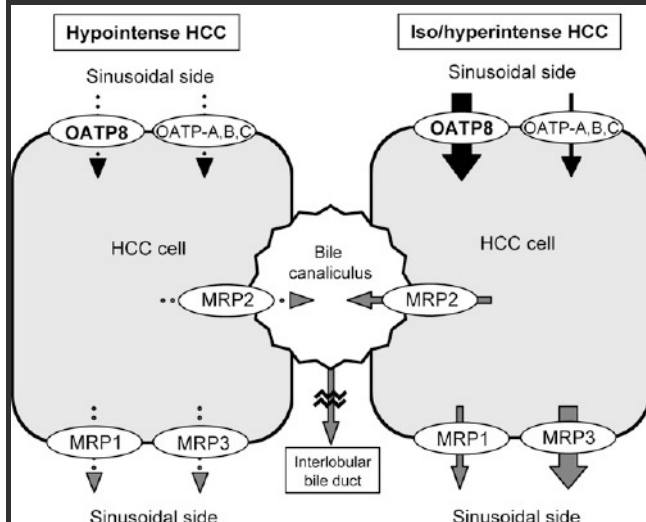
Can Current Preoperative Imaging Be Used to Detect Microvascular Invasion of Hepatocellular Carcinoma?¹

Taille de la tumeur
Bords flous
Réhaussement péri tumoral

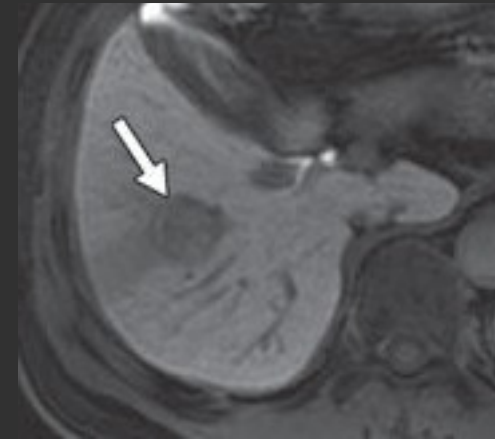
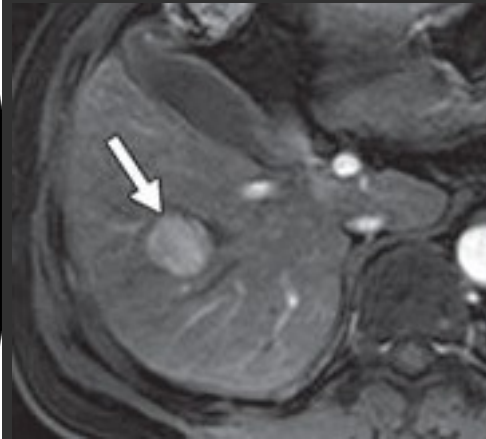
Risque plus élevé
de microinvasion tumorale



Primovist (Gd-EOB-DTPA)



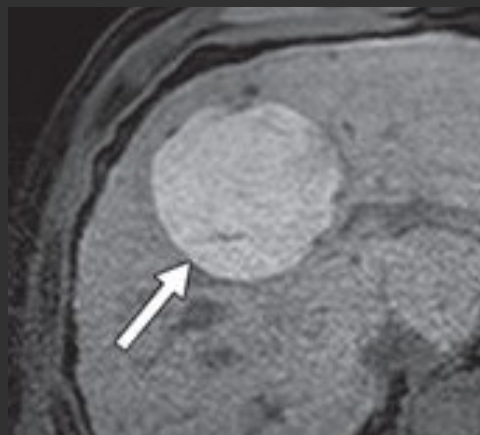
Kitao Radiology 2010



CHC

phase hépatobiliaire

phase hépatobiliaire



MNR

Lee AJR 2011

Primovist (Gd-EOB-DTPA)

Captation hépatocytaire des CHC décroît parallèlement à l'augmentation du grade tumoral

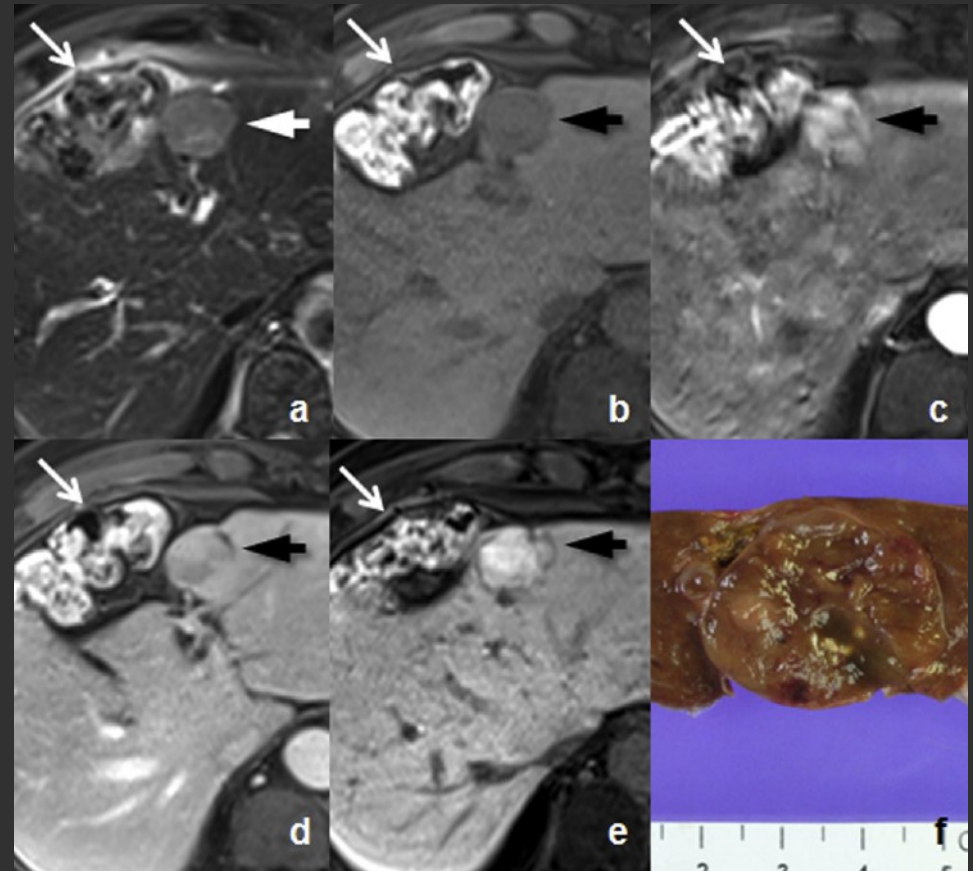
CHANSIC Eur Radiol 2012

CHC hyperintenses à la phase hépatobiliaire existent ! (4 à 10%)

Histologie :

- Peu d'évolution infiltrante
- Moins de microinvasion vasculaire
- + de sinusoides

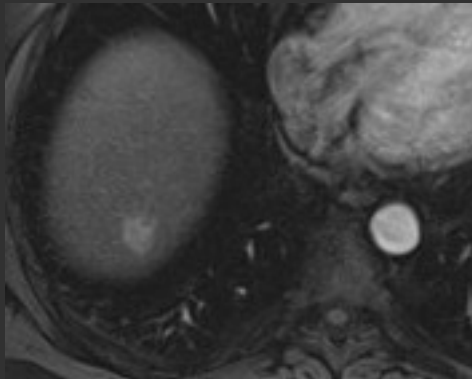
Kim Eur J Radiol 2012



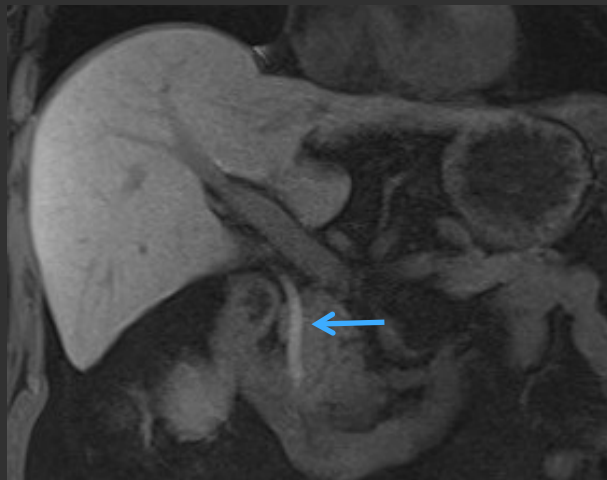
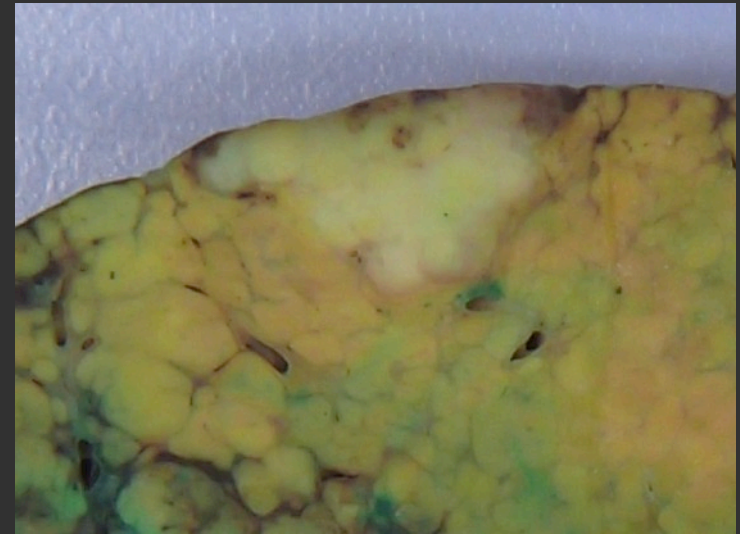
Kim JMRI 2012

Quand on n'a pas de Primovist...

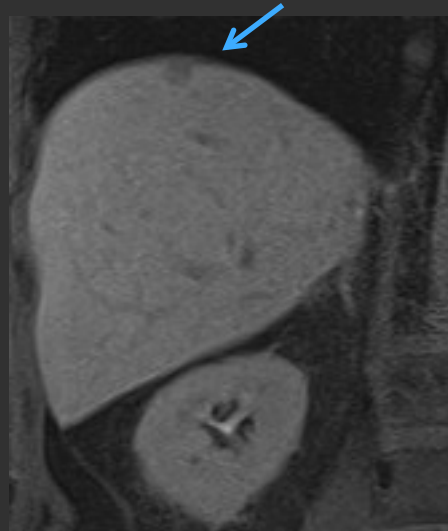
Multihance



Pas de wash out



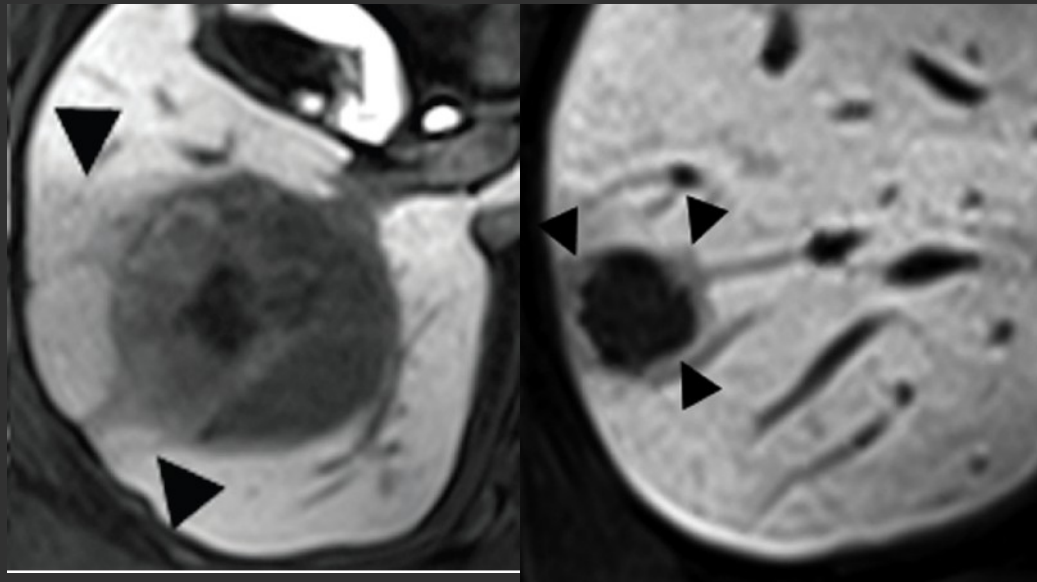
Phase excréto-biliaire



Primovist (Gd-EOB-DTPA)

Phase hépatobiliaire: hypointensité pérítumorale
révélatrice d' une microinvasion tumorale .

Sens. 38,3% Sp 93,2% VP+ 88,5% VP- 52,6%



Kim JMRI 2012

Take home message

Il faut regarder
attentivement les
contours d'un CHC

