Les avancées diagnostiques par l'IRM en oncologie digestive. Métastases hépatiques ; update en 2016

A.BOUHAMAMA



Enjeu

CCR: 20% de métastases hépatiques synchrones

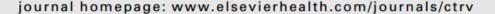
Jusqu'à 70% des patients

Mortalité dues aux métastases



Contents lists available at ScienceDirect

Cancer Treatment Reviews





Hot Topic

Managing synchronous liver metastases from colorectal cancer: A multidisciplinary international consensus



René Adam ^{a,*}, Aimery de Gramont ^{b,1}, Joan Figueras ^{c,2}, Norihiro Kokudo ^{d,3}, Francis Kunstlinger ^{a,4}, Evelyne Loyer ^{e,5}, Graeme Poston ^{f,6}, Philippe Rougier ^{g,7}, Laura Rubbia-Brandt ^{h,8}, Alberto Sobrero ^{i,9}, Catherine Teh ^{j,10}, Sabine Tejpar ^{k,11}, Eric Van Cutsem ^{k,12}, Jean-Nicolas Vauthey ^{l,13}, Lars Påhlman ^{m,14}, of the EGOSLIM (Expert Group on OncoSurgery management of Liver Metastases) group

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Recommandations de la conférence de consensus

Bilan d'extension: - TDM

- IRM: résécabilité

- PET-TDM: maladie extra-hépatique

Réponse: -TDM

Multidisciplinary teams

The last few years have seen a greater awareness of the importance of MDTs. Results from a first prospective study to evaluate the MDT discussion process and its effects on treatment approaches for a variety of gastrointestinal cancers at a US cancer centre have recently been published [99]. Despite 84% of clinicians

centre have recently been published [99]. Despite 84% of clinicians being certain of their original plan, a change was recommended in 36% of cases, 72% of which involved major changes; there was 77%

reduced number of interventions, shorter delays in care, better control of chemotherapy and decreased postoperative mortality [103–105]. This could be of utmost importance in patients with synchronous metastases.

Non-adherence to MDT decisions has been shown to result in a

Consensus recommendations

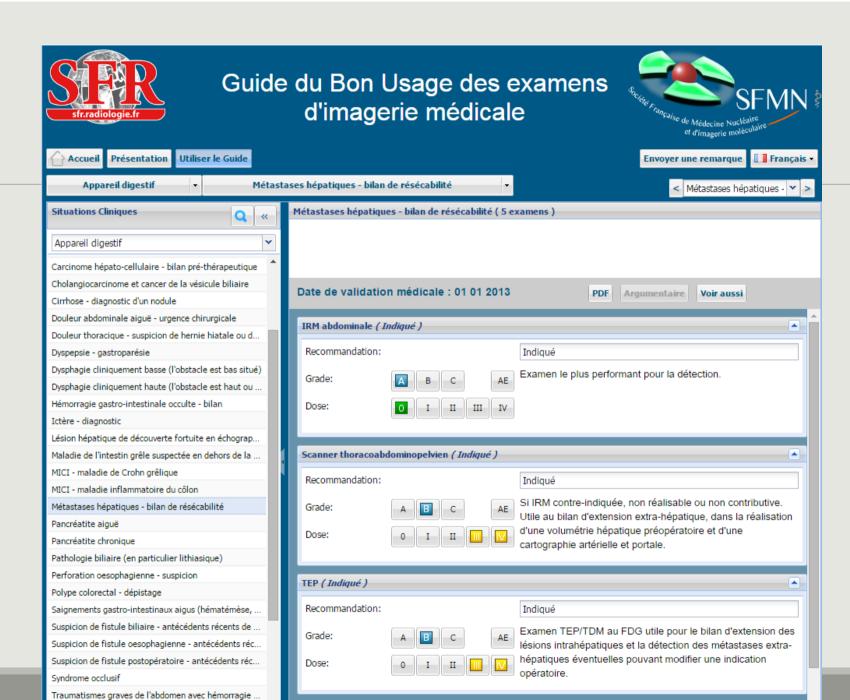
- A proficient MDT consisting of at least a colorectal surgeon, liver surgeon, medical/gastrointestinal and radiation oncologist, radiologist, nuclear medicine physician and pathologist optimizes the treatment of CRCLM.
 - mizes the treatment of CRCLM.
 - The treatment should be considered as a whole, from diagnosis to the last treatment at the same centre.
 - It is important to evaluate and analyze the outcomes from MDTs to assess improvements in treatment goals.



Guide du Bon Usage des examens d'imagerie médicale







Radiology

Quelles sont les performances des examens d'imagerie?

Diagnostic Imaging of Colorectal Liver Metastases with CT, MR Imaging, FDG PET, and/or FDG PET/CT: A Meta-Analysis of Prospective Studies Including Patients Who Have Not Previously Undergone Treatment¹

Maarten Christian Niekel, MSc Shandra Bipat, PhD Jaap Stoker, MD, PhD

Purpose:

To obtain diagnostic performance values of computed tomography (CT), magnetic resonance (MR) imaging, fluorine 18 fluoro-deoxyglucose (FDG) positron emission tomography (PET), and FDG PET/CT in the detection of colorectal liver metastases in

Table 3

Sensitivity Estimates for Each Imaging Modality on a Per-Lesion Basis

Modality*	I ² Index of Sensitivity (%) [†]	Mean Sensitivity (%)†
CT (n = 38)	70.9 (60.0, 78.9)	74.4 (68.7, 79.3)
MR imaging $(n = 61)$	83.4 (79.4, 86.7)	80.3 (74.6, 85.0)
FDG PET $(n = 8)$	86.4 (76.2, 92.2)	81.4 (66.5, 90.6)
FDG PET/CT $(n = 1)$	NA	66.2 (54.5, 76.2)

^{*} Numbers in parentheses are numbers of data sets.

Table 4

Summary of Estimates for Each Imaging Modality on a Per-Patient Basis

Modality*	/2 Index of Sensitivity (%)†	Mean Sensitivity (%)†	/2 Index of Specificity (%)†	Mean Specificity (%)†
CT (n = 9)	92.9 (88.9, 95.4)	83.6 (66.9, 92.8)	52.5 (10.3, 74.9)	94.9 (92.9, 96.3)
MR imaging $(n = 6)$	43.3 (0.0, 69.9)	88.2 (64.8, 96.8)	61.8 (21.3, 81.4)	92.5 (89.5, 94.6)
FDG PET $(n = 6)$	0.0 (0.0, 0.7)	94.1 (91.6, 95.9)	0.0 (0.0, 0.6)	95.7 (92.7, 97.6)
FDG PET/CT (n = 3)	NA	96.5 (94.2, 97.9)	NA	97.2 (92.8, 99.0)
		•		

^{*} Numbers in parentheses are numbers of data sets.

[†] Numbers in parentheses are 95% Cls. NA = not applicable.

[†] Numbers in parentheses are 95% Cls. NA = not applicable.

Sur l'analyse par lésion: toutes les techniques ont une bonne sensibilité.

Pour les lésions de moins d'un cm: Sensibilité de l'IRM+++

Avancé technologique: sensibilité IRM passe de 70,2% à 84,9% après 2004 alors que Se TDM n'a pas changé

APPORT DE L'IMAGERIE DE DIFFUSION

Purpose:

Hepatic Metastases: Diffusion-weighted Sensitivity-encoding versus SPIO-enhanced MR Imaging¹

Radiology

Katsuhiro Nasu, MD Yoshihumi Kuroki, MD Shigeru Nawano, MD Seiko Kuroki, MD

Table 1

To retrospectively compare accuracy of diffusion-weighted (DW) single-shot echo-planar imaging with sensitivity encoding (SENSE) with that of superparamagnetic iron oxide (SPIO)enhanced magnetic resonance (MR) imaging in the evaluation

Tatsuaki Tsul Seiji Yamamı Ken Motoori, Takuya Ueda

Results of Interpretation Sessions

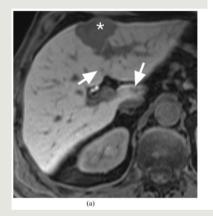
	SPIO-enhanced MR Imaging Interpretation Session			SENSE DW Imaging Interpretation Session			
Reader No.	Sensitivity	Specificity	A ₂	Sensitivity	Specificity	A ₂	P Value
1	0.65 (26/40)	0.91 (52/57)	0.80	0.80 (32/40)	0.91 (51/56)	0.89	.10
2	0.70 (28/40)	0.80 (45/56)	0.77	0.88 (35/40)	0.91 (49/54)	0.89	.03
3	0.63 (25/40)	1.00 (55/55)	0.84	0.78 (31/40)	1.00 (54/54)	0.91	.20
Total	0.66 (79/120)	0.90 (152/168)	0.81	0.82 (98/120)	0.94 (154/168)	0.90	<.001

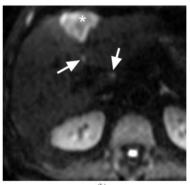
Note.—Data in parentheses are numbers used to calculate sensitivity and specificity.

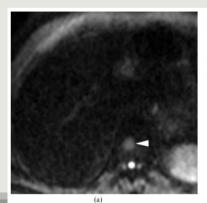
Combining diffusion-weighted MRI with Gd-EOB-DTPAenhanced MRI improves the detection of colorectal liver metastases

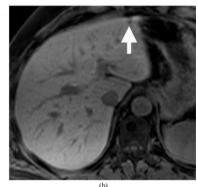
¹D-M KOH, MD, FRCR, ¹D J COLLINS, MSc, ¹T WALLACE, MSc, ²I CHAU, MD, MRCP and ¹A M RIDDELL, MD, FRCR

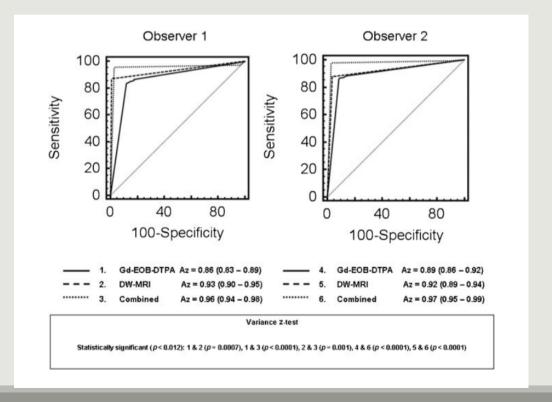
¹Department of Radiology, Royal Marsden NHS Foundation Trust, Sutton, UK, and ²Department of Medical Oncology, Royal Marsden NHS Foundation Trust, Sutton, UK











Quelles sont les performances des examens d'imagerie après chimiothérapie?

Ann Surg Oncol (2012) 19:2805–2813 DOI 10.1245/s10434-012-2300-z

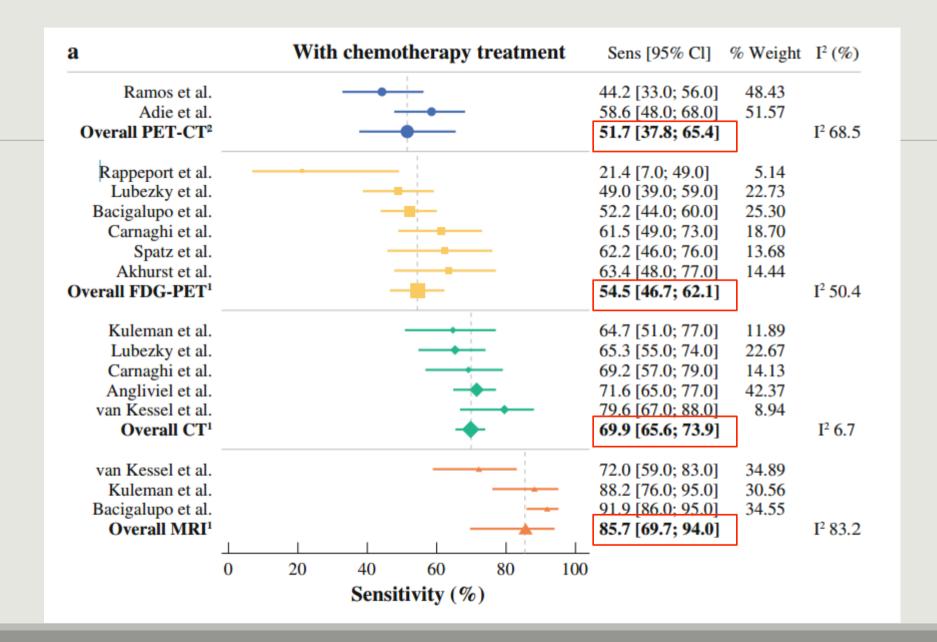
SURGICAL ONCOLOGY
OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

ORIGINAL ARTICLE - HEPATOBILIARY TUMORS

Preoperative Imaging of Colorectal Liver Metastases After Neoadjuvant Chemotherapy: A Meta-Analysis

Charlotte S. van Kessel, MD^{1,2}, Constantinus F.M. Buckens, MD^{2,3}, Maurice A.A.J. van den Bosch, MD, PhD², Maarten S. van Leeuwen, MD, PhD², Richard van Hillegersberg, MD, PhD¹, and Helena M. Verkooijen, MD, PhD^{2,3}

¹Department of Surgery, University Medical Center Utrecht, Utrecht, The Netherlands; ²Department of Radiology, University Medical Center Utrecht, Utrecht, The Netherlands; ³Julius Center for Health Sciences and Primary Care, University Medical Centre Utrecht, Utrecht, The Netherlands

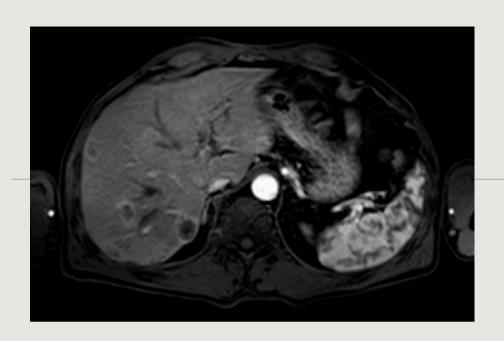


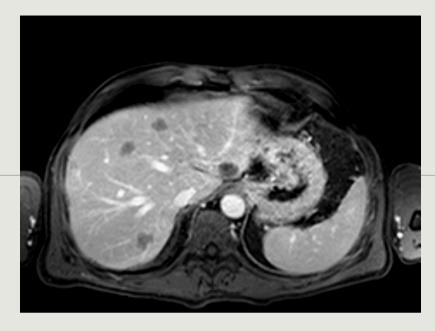
Réponse au traitement

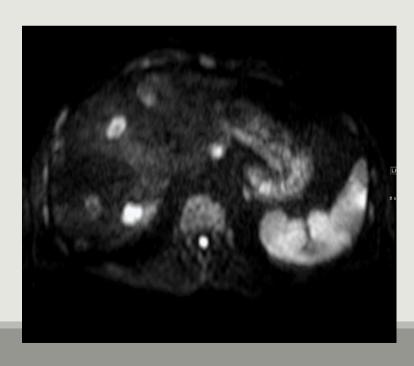
RECIST?

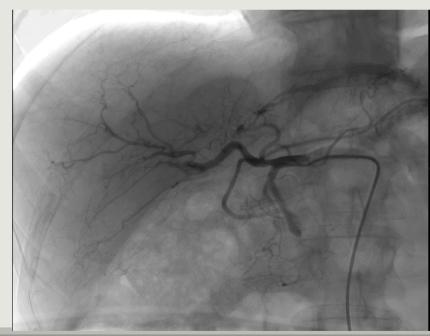
Pas de corrélation avec la survie et la réponse histologique

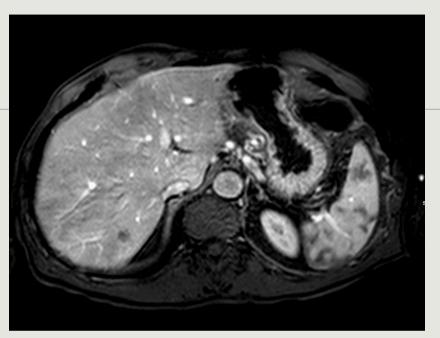
Diffusion? Réhaussement?

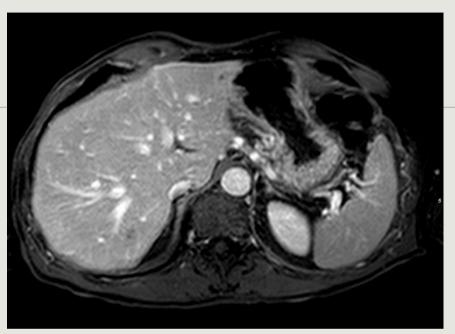


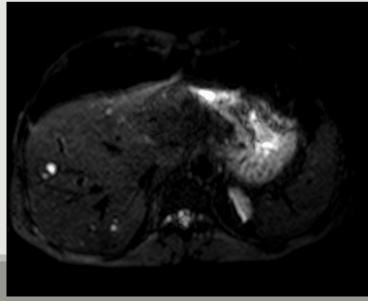








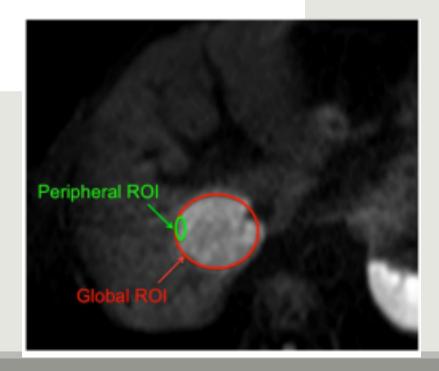


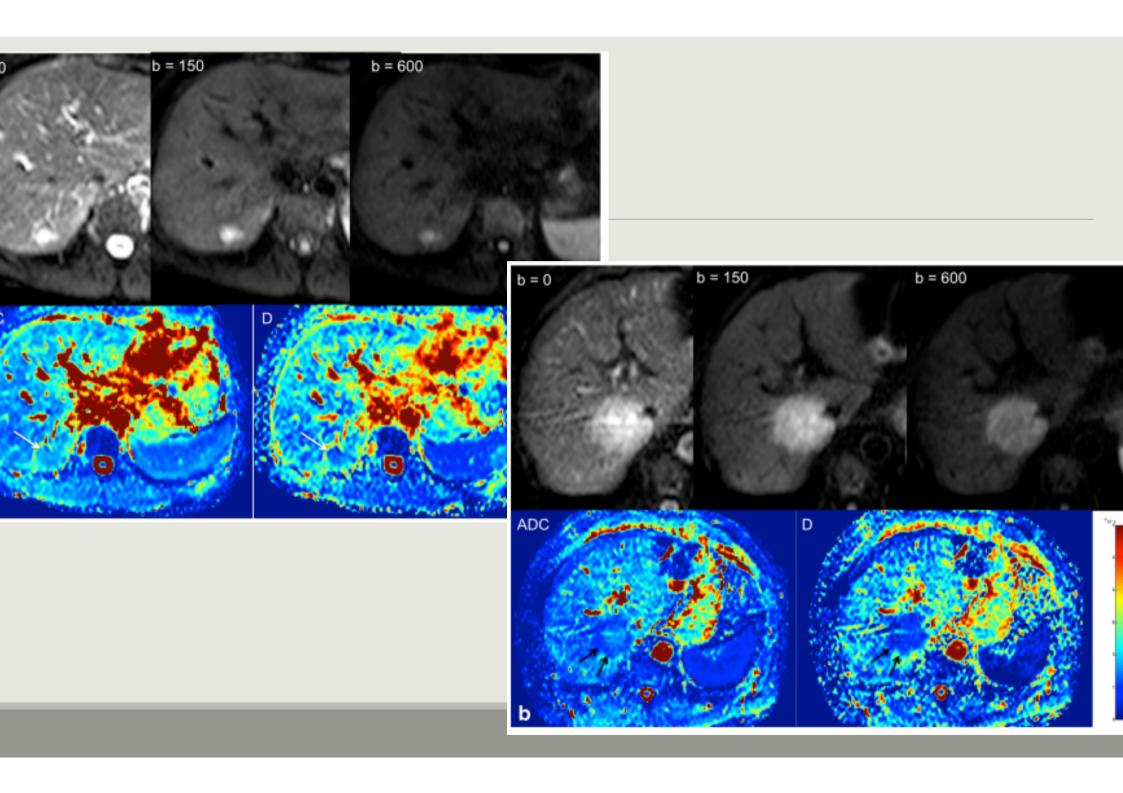


HEPATOBILIARY-PANCREAS

Assessment of the residual tumour of colorectal liver metastases after chemotherapy: diffusion-weighted MR magnetic resonance imaging in the peripheral and entire tumour

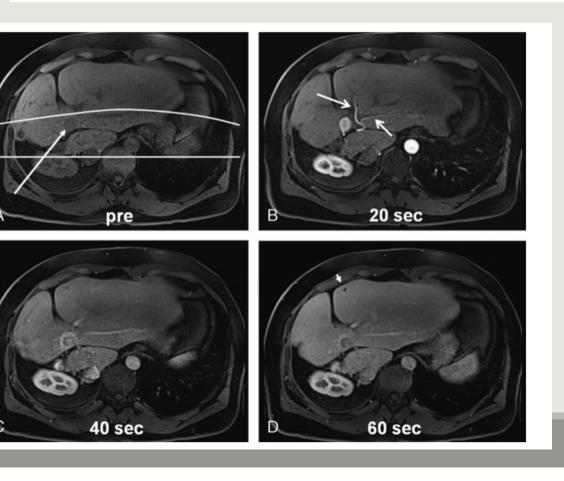
Mathilde Wagner ¹ • Maxime Ronot ^{1,2} • Sabrina Doblas ¹ • Céline Giraudeau ¹ • Bernard Van Beers ^{1,2} • Jacques Belghiti ³ • Valérie Paradis ⁴ • Valérie Vilgrain ^{1,2}

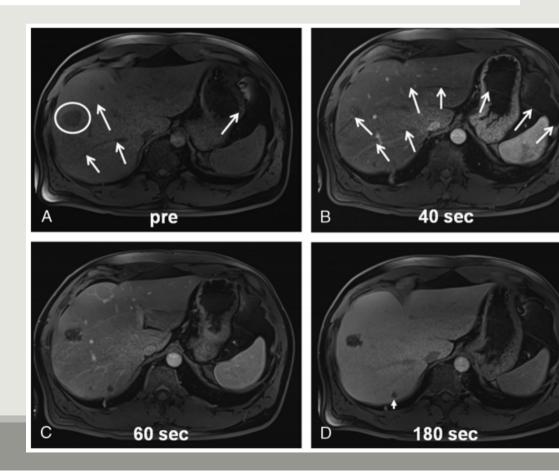


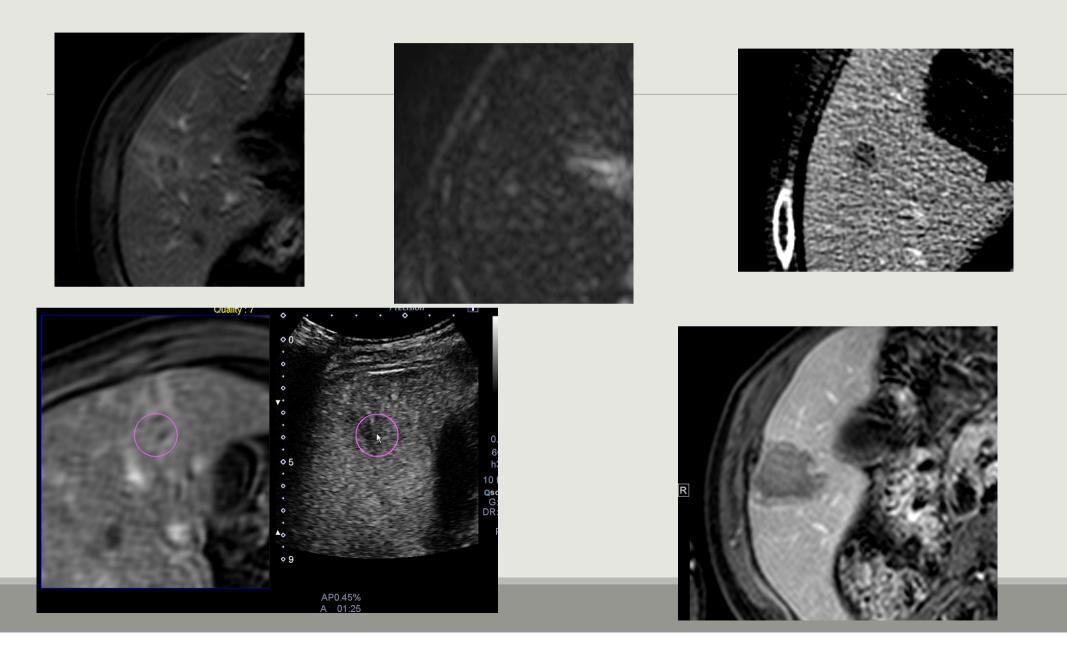


Novel Dynamic Hepatic Magnetic Resonance Imaging Strategy Using Advanced Parallel Acquisition, Rhythmic Breath-Hold Technique, and Gadoxetate Disodium Enhancement

Ute Lina Fahlenkamp, MD,* Moritz Wagner, MD,* Dominik Nickel, PhD,† Ulrich Adam, MD,‡ Karsten Krueger, MD,§ Matthias Taupitz, MD,* Carsten Schwenke, PhD, and Alexander Huppertz, MD¶







Avenir?

RESEARCH ARTICLE

Accuracy of [18F]FDG PET/MRI for the Detection of Liver Metastases

Karsten Beiderwellen¹*, Llanos Geraldo², Verena Ruhlmann³, Philipp Heusch⁴, Benedikt Gomez³, Felix Nensa¹, Lale Umutlu¹, Thomas C. Lauenstein¹

1 Department of Diagnostic and Interventional Radiology and Neuroradiology, University Hospital Essen, University of Duisburg-Essen, Essen, Germany, 2 Department of Nuclear Medicine, University Hospital Santa Creu i Sant Pau, Barcelona, Spain, 3 Clinic for Nuclear Medicine, University Hospital Essen, University of Duisburg-Essen, Essen, Germany, 4 Department of Diagnostic and Interventional Radiology, University of Duesseldorf, Duesseldorf, Germany

Table 4. Sensitivity, Specificity, Accuracy (area under the curve, AUC), PPV, NPV with 95% CI for each reader as well as in combination. Significant differences between PET/CT and PET/MRI are indicated (*: p<0.05; **: p<0.01, ***:p<0.001).

PET/CT

PET/MRI

		reader 1			
		Sensitivity	71.1% (55.5–83.2%)	93.3% (80.7–98.3%)*	
		Specificity	97.1% (88.8–99.5%)84.1% (75.6–	100% (93.3–100%)96.7%	% (92.4–100%)
Overall					
Sensitivity	67.8% (57.0% - 77.0%)		92.2% (84.1% - 96.5%)*	**	
Specificity	97.1% (92.2% - 99.1%)82.4%	(76.2–	100% (96.6% - 100%)96	6.1% (92.9–	0.6–100%)
•		Accuracy	89.9%)	**	
		PPV	93.5% (77.2–98.9%)	100% (89.3-100%)	
		NPV	80.5% (70.0–88.1%)	94.4% (85.7–98.2%)	
		Overall			
		Sensitivity	67.8% (57.0% - 77.0%)	92.2% (84.1% - 96.5%)*	*
		Specificity Accuracy	97.1% (92.2% - 99.1%)82.4% (76.2– 88.7%)	100% (96.6% - 100%)96. 99.4%)***	.1% (92.9–
		PPV	93.8% (84.2% - 98.0%)	100% (94.5% - 100%)	
		NPV	82.0% (75.0% - 87.4%)	95.1% (89.8% - 97.8%)*	
		doi:10.1371/journa	l.pone.0137285.t004		

reader 1

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Futur?

Radioimmunoimaging of Liver Metastases with PET Using a ⁶⁴Cu-Labeled CEA Antibody in Transgenic Mice

Stefanie Nittka^{1,3}, Marcel A. Krueger^{5,3}, John E. Shively⁶, Hanne Boll², Marc A. Brockmann^{2,3}, Fabian Doyon⁴, Bernd J. Pichler⁵, Michael Neumaier¹

1 Institute for Clinical Chemistry, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany, 2 Department of Neuroradiology, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany, 3 Department of Diagnostic and Interventional Neuroradiology, University Hospital of the Rheinisch-Westfaehlische Technical University Aachen, Aachen, Germany, 4 Department of Surgery, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany, 5 Department of Preclinical Imaging and Radiopharmacy, Werner Siemens Imaging Center, University of Tuebingen, Tuebingen, Germany, 6 Department of Immunology, Beckman

Research Institute, City of Hope, Duarte, California, United States of America

