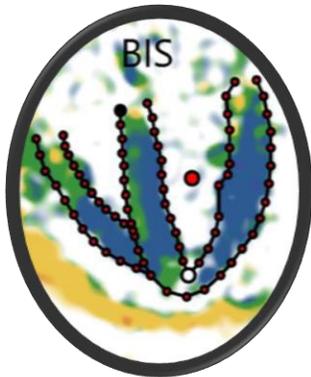
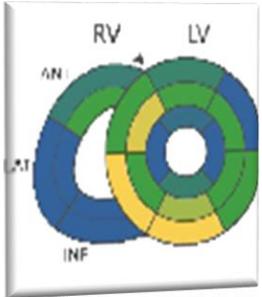
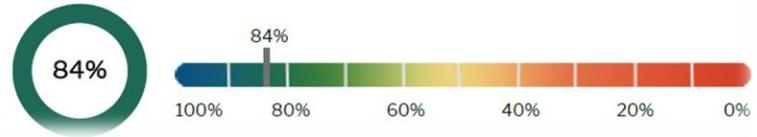


Experiencia inicial en el uso de Myostrain: ¿qué sabemos hasta ahora?



MyoHealth™ (% Segmentos Normales \leq -17 %)



Dr. Eliseo Vañó Galván
Jefe Servicio RM y TC
Hospital Ntra. Sra. Rosario
@eliseovano



Hospital
Nuestra Señora
del Rosario



XV CONGRESO
DE LA SOCIEDAD ESPAÑOLA
DE IMAGEN CARDIORRESPIRATORIA

SEICAT

18-19 noviembre **2021**
MADRID
Hotel Ayre Colón Madrid

Conflictos de interés

- ❑ Speaker para Myocardial Solutions
- ❑ Speaker para Bayer Hispania, S.L.
- ❑ Speaker para Philips Ibérica, S.A.U.

- ❑ En esta presentación hay casos clínicos propios del hospital donde ejerzo, de mi experiencia y opinión personal

¿Qué es el Strain?

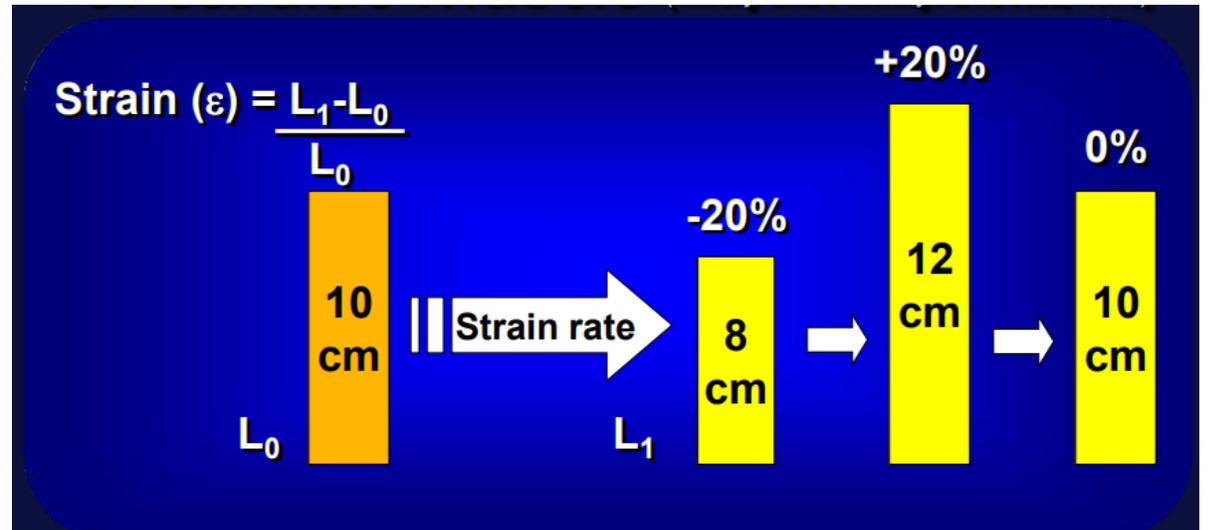
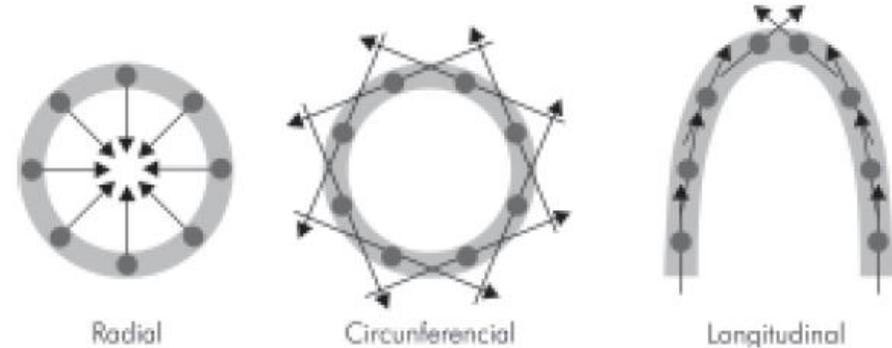
El strain es una medida de deformación miocárdica = cambio relativo en longitud ($\epsilon = \Delta L/L$)

Componentes de la contracción miocárdica:

- acortamiento en las dimensiones longitudinales y circunferenciales (deformación negativa)
- engrosamiento y alargamiento en la dirección radial (deformación positiva).
- Torsión

Rangos de strain:

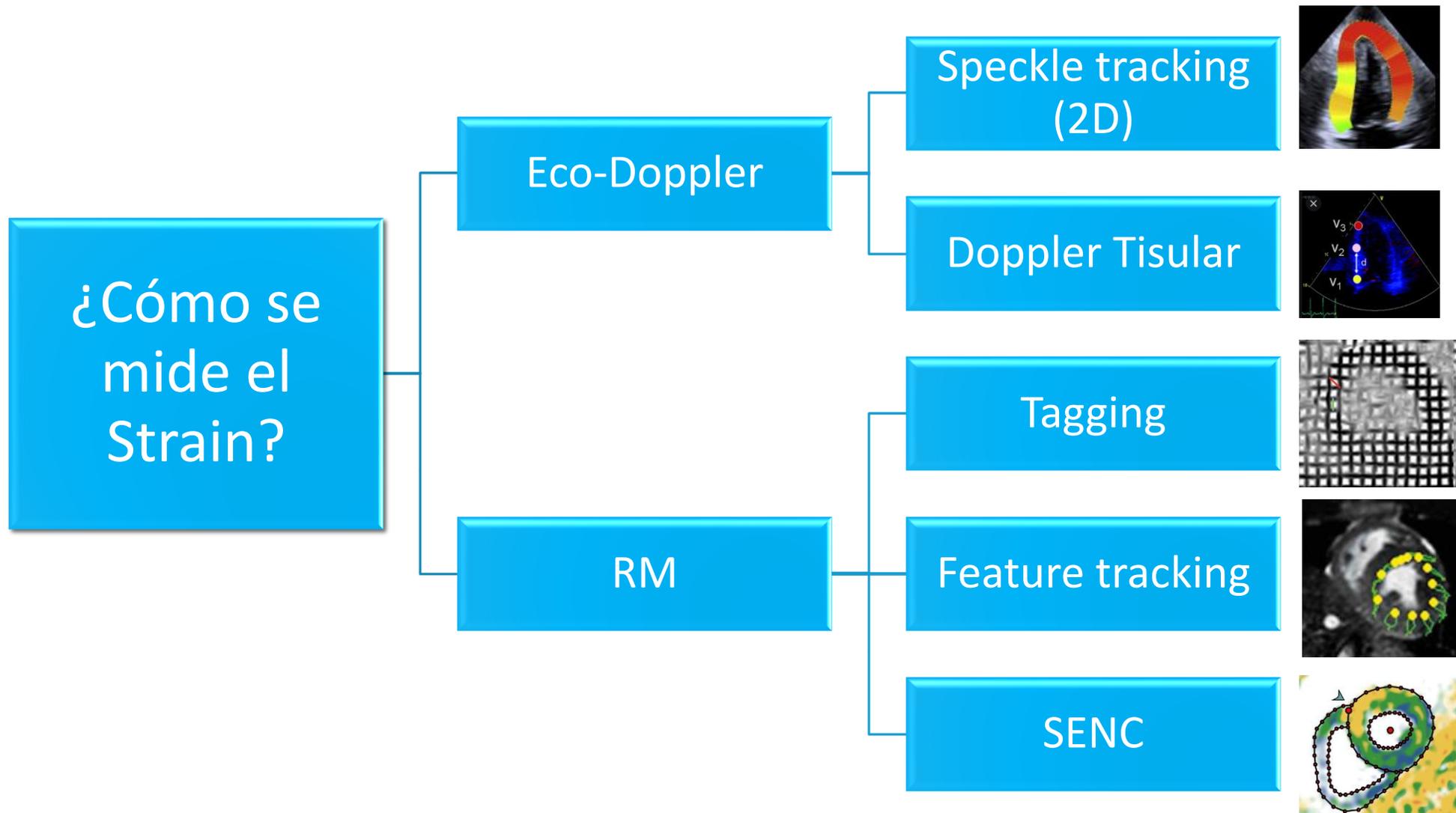
- Normal: < -17%
- Hipocinético: -10 a -17%
- Acinético: > -10



Introducción

- Está bien descrita la insuficiencia cardíaca con FEVI baja hasta el 50%!
 - Elevación BNP (alto VPN)
 - FEVI > 50%, VI no dilatado con HVI, r
 - FEVI muy influida por mecánica
- El SLG (Strain Longitudinal Global) es un predictor independiente de mortalidad en pacientes con insuficiencia cardíaca con FEVI media y reducida.
 - Cada incremento de 1% en el SLG se asoció con un incremento de un 5% la mortalidad.
- Se requiere todavía mayor evidencia estratificada por SLG.

FEVI baja → FEVI aceptable factor pronóstico
FEVI normal → Strain buen factor pronóstico



MyoStrain®



- Detecta disfunción subclínica precoz
- 10-15 minutos
- Alta reproducibilidad

Echocardiogram



- Detecta más tardíamente la disfunción
- 30-40 minutos
- Operador-dependiente

¿Qué se necesita para hacer Myostrain?

1. Equipo de RM (Philips a día de hoy)
2. Secuencia Fast-SENC (Philips)
3. Software Myostrain (Myocardial Solutions) para post-procesado
 - Realizar entrenamiento para certificación (2 días)



Hospital Ntra. Sra. Rosario:

Primer centro en España en implantar Myostrain
Comienzo 13 de Septiembre de 2021 (**¡POCA EXPERIENCIA!**)
2 días de training on-site, 30 voluntarios
¡¡No se recomienda training en RM cardiacas citadas!!
Exploraciones en menos de 15 minutos
Post-procesado sobre la marcha en 5 minutos (3D lab)

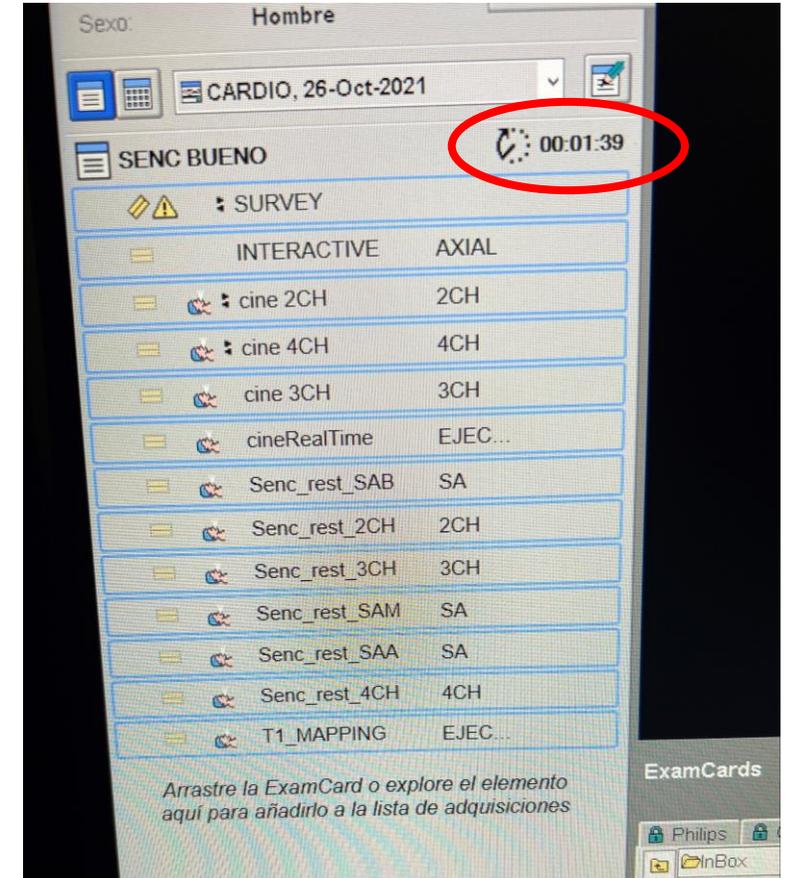
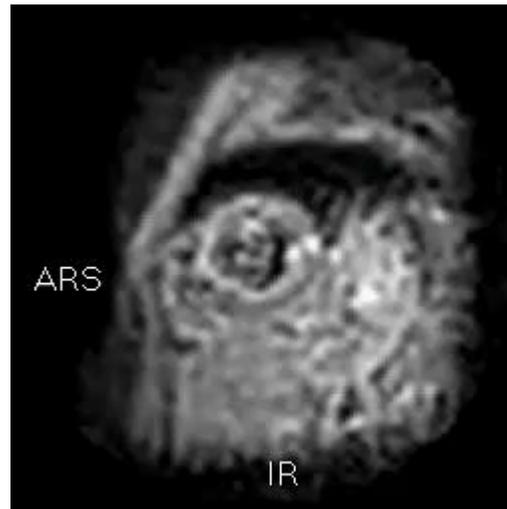
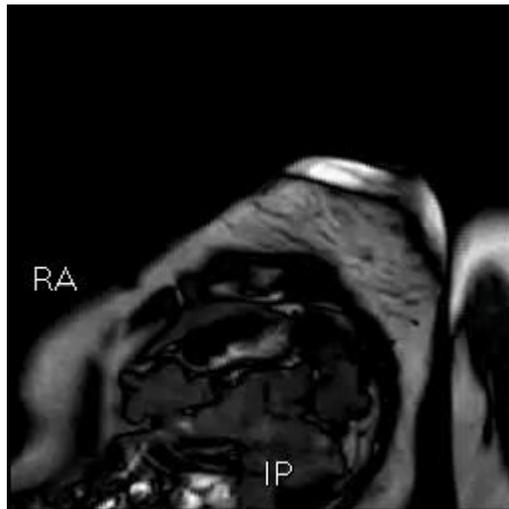
¿Cómo se adquiere Myostrain?

Sencillo protocolo **10-15 minutos “door-to-door”**

Sin gadolinio

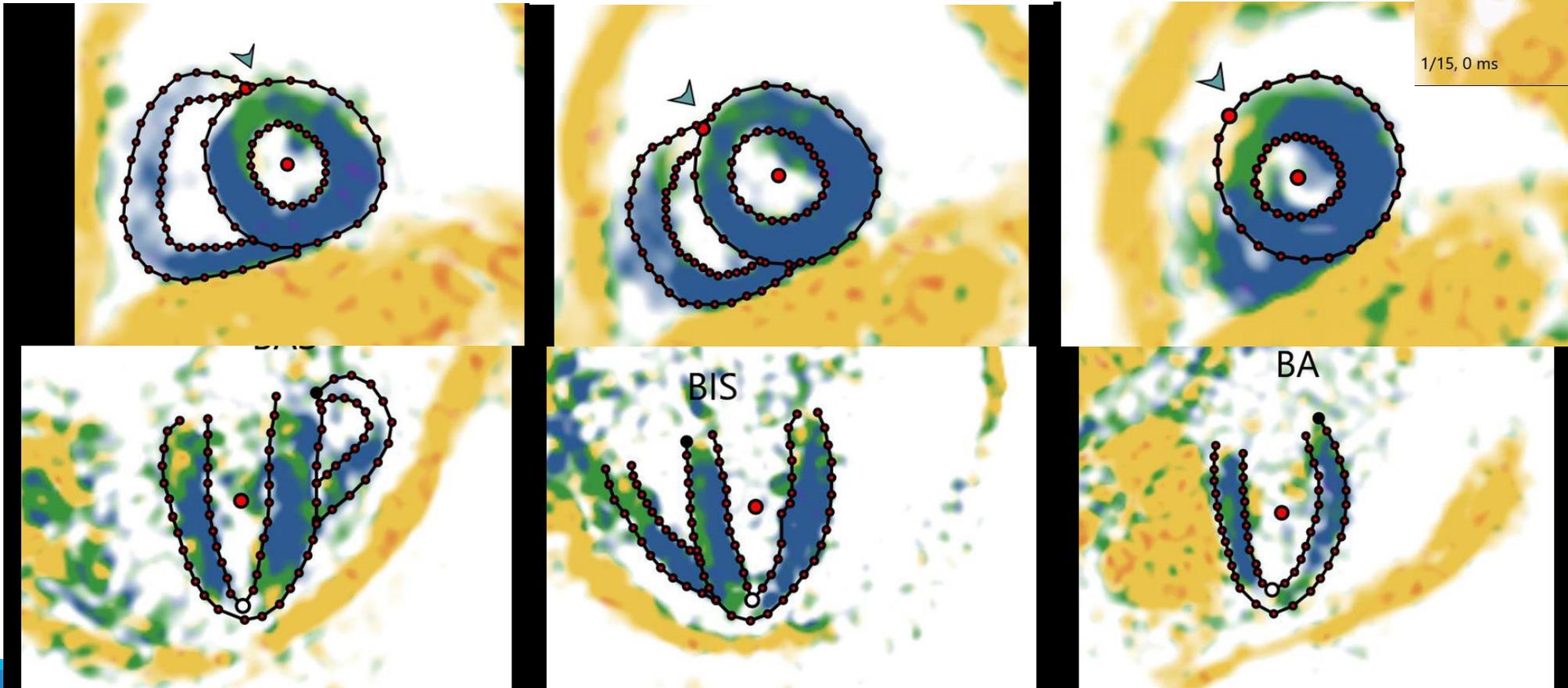
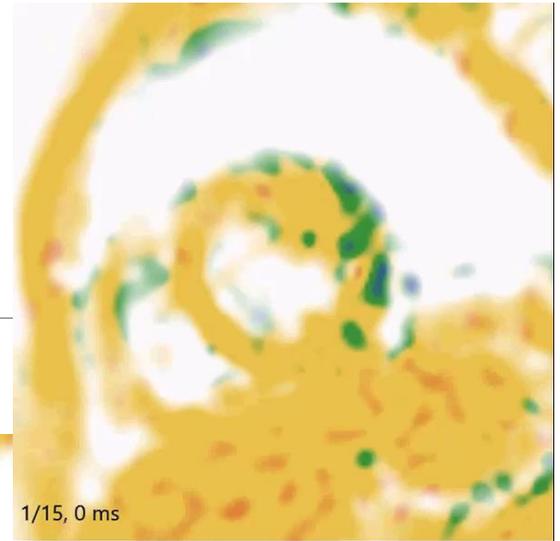
Localizadores cine de 1 apnea (4 apneas): EC, 2C, 3C, 4C

Adquisiciones fSENC de 1 latido (6 apneas): EC x 3, 2C, 3C, 4C



¿Cómo se procesa Myostrain?

Contornos en SÍSTOLE. 5 minutos. 6 imágenes

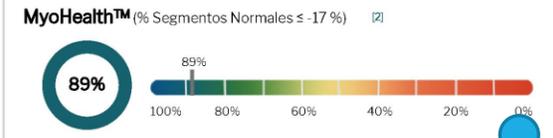




Paciente:	Accession #: 789682011
ID:	Fecha de escaneo: 09/14/2021
Sexo:	Médico solicitante: SIN DEFINIR
Fecha de nacimiento:	Técnico radiólogo:
Edad: 36 años	Tipo de examen: CARDIO
Altura: NA	Indicación:
Peso: 55.0 kg (121.2 lbs)	Calidad del estudio:
BSA: NA	

Segmentos disfuncionales VI (37/37 segmentos analizados)

Cant. de segmentos >-10%	1
Cant. de segmentos >-17%	4



Mediciones globales MyoStrain

MyoStrain® Global	Result	Normal (U)
MyoStrain (GLS) LV	-21 %	(<-17)
MyoStrain (GCS) LV	-21.2 %	(<-17)
MyoStrain (GLS) RV	-23 %	(<-17)
MyoStrain (GCS) RV	-21.4 %	(<-17)

Mediciones regionales de MyoStrain®

MyoStrain Longitudinal

	Basal	Medio	Apical
Anterior	-23.4 %	Anterior -18.4 %	Anterior -15.6 %
Anteroseptal	-15.4 %	Anteroseptal -17.9 %	Septal -21 %
Inferoseptal	-22.4 %	Inferoseptal -18.7 %	Inferior -24.2 %
Inferior	-27.5 %	Inferior -17.1 %	Lateral -17.5 %
Inferolateral	-27.4 %	Inferolateral -23.3 %	
Anterolateral	-27.4 %	Anterolateral -21.1 %	
RV	Anterior -24.1 %	Lateral -23.8 %	Inferior -20.8 %
	Lateral -27 %		
	Inferior -24.3 %		

MyoStrain Circunferencial

	3CH	4CH	2CH
Basal Inferolateral	-22.8 %	Basal Inferoseptum -18 %	Basal Inferior -17.7 %
Mid Inferolateral	-26.2 %	Mid Inferoseptum -20.6 %	Mid Inferior -20 %
Apical Lateral	-22.8 %	Apical Septum -14.9 %	Apical Inferior -23.4 %
Apical Cap	-20.8 %	Apical Cap -20.1 %	Apical Cap -19.9 %
Apical Anterior	-23.7 %	Apical Lateral -23.8 %	Apical Anterior -26.2 %
Mid Anteroseptum	-23.7 %	Mid Anterolateral -25.2 %	Mid Anterior -25.3 %
Basal Anteroseptum	-22.3 %	Basal Anterolateral -20 %	Basal Anterior -7.5 %
RV	Basal Anterior -21.8 %	Basal Lateral -20.6 %	Mid Lateral -24.7 %
	Mid Anterior -20.5 %	Apical Lateral -19.5 %	

Hallazgos



MyoHealth: basado en % segmentos disfuncionales. Detecta anomalías que pasan desapercibidas en medidas globales

REFERENCES

1. Neizel M, et al. Circ Cardiovasc Imaging. 2020;13(12):e009101.
2. Korosoglou, G et al. J Am Coll Cardiol. 2020;75(12):1411-1420. DOI: 10.1016/j.jacc.2020.10.024

All trademarks are property of Myocardial Solutions, Inc. MyoStrain® has received FDA 510(k) clearance and CE mark certification and is available for commercial use in the United States and EU.



Posibles aplicaciones de Myostrain

- ❑ ASINTOMÁTICOS = PREVENCIÓN. Detección precoz riesgo de IC
 - ❑ Se estima una prevalencia global de enfermedad cardiovascular del 50% de la población¹
 - ❑ 56% de los pacientes con IC no son diagnosticados hasta el primer ingreso²
- ❑ SINTOMÁTICOS:
 - ❑ Seguimiento cardiopatía con FEVI intermedia o normal
 - ❑ Cardiotoxicidad: estudio PREFECT
 - ❑ Valvulopatías: decisión momento de la cirugía
 - ❑ Cardiopatía isquémica (pronóstico post-IAM)
 - ❑ COVID-19 y otras miocarditis
 - ❑ Cualquier otra etiología: HTA, MCH vs corazón atleta....
 - ❑ Seguimiento de insuficiencia cardiaca: optimizar tratamiento y manejo (trasplante, resincro..)
 - ❑ Dolor torácico: isquemia miocárdica.

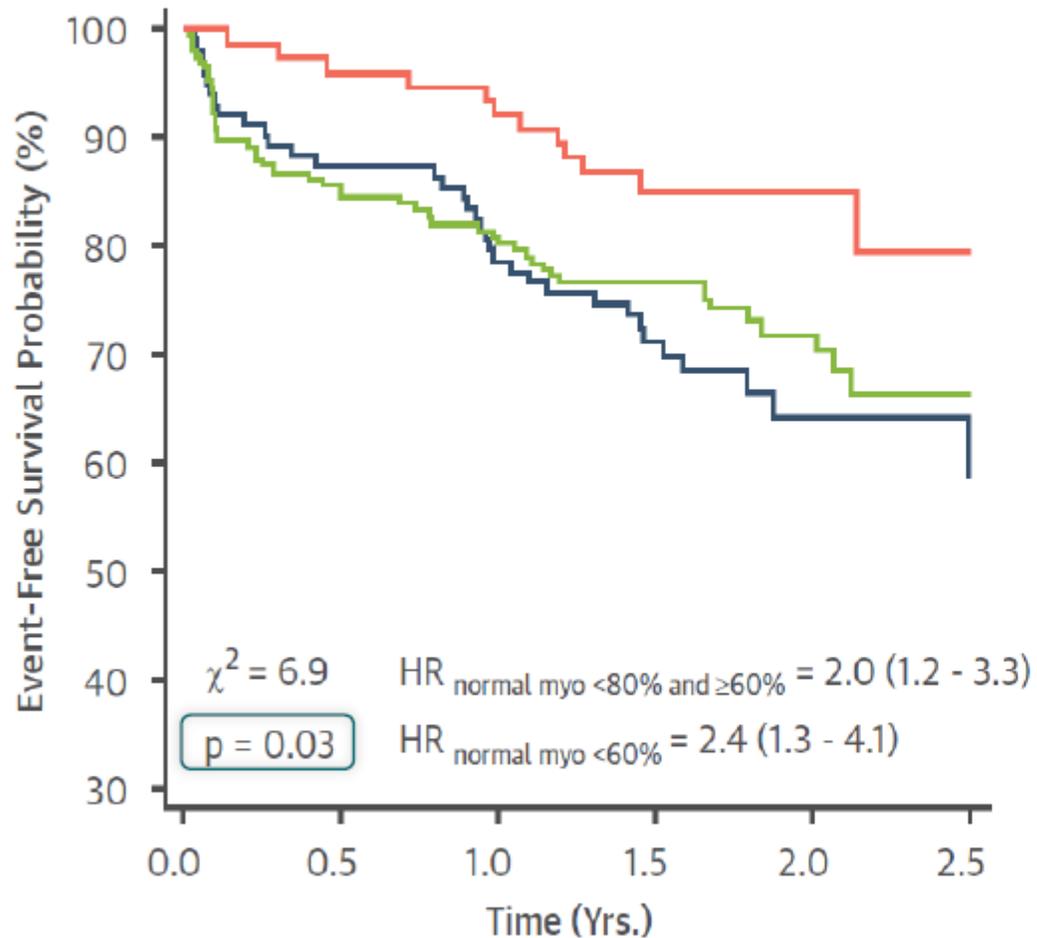


1 Heart Disease and Stroke Statistics—2019 Update: A Report From the American Heart Association. Benjamin et al. Circulation. 2019;139:e56–e528

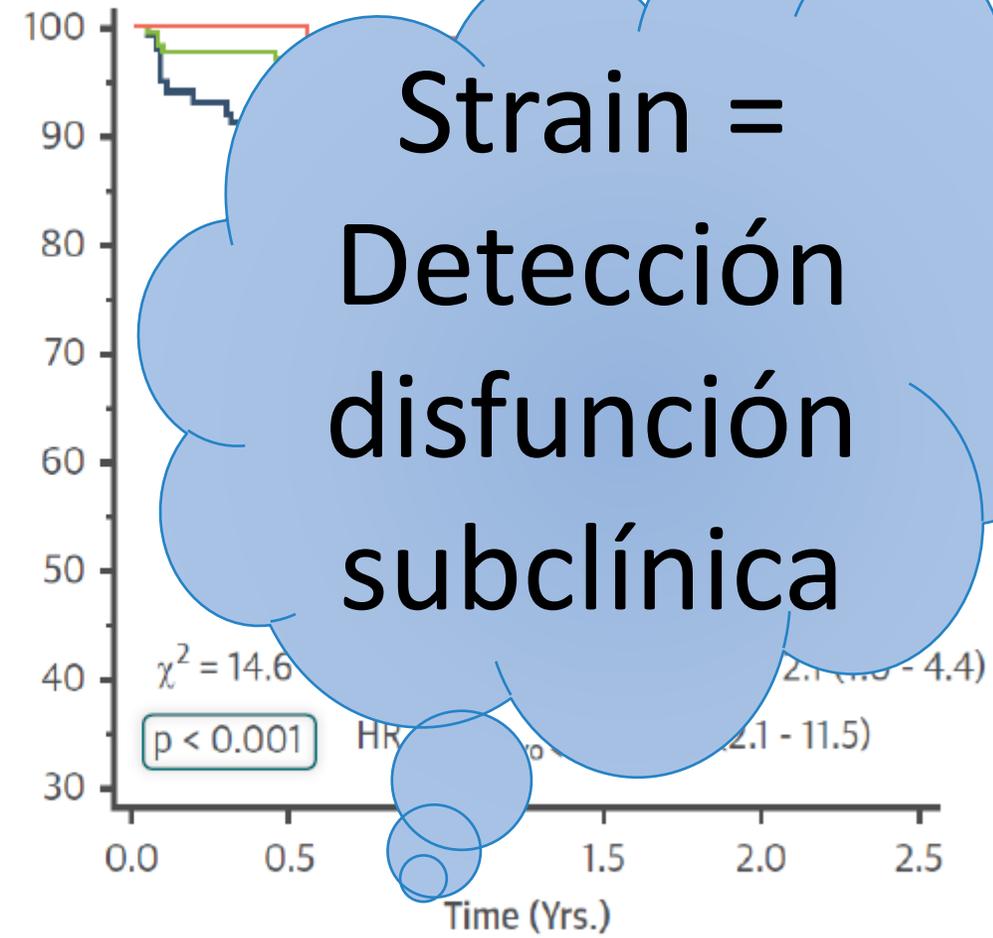
2 Lifetime costs of medical care after heart failure diagnosis. Dunlay SM, Shah ND, Shi Q, Morlan B, VanHouten H, Long KH, Roger VL. Circ Cardiovasc Qual Outcomes. 2011 Jan 1;4(1):68-75

©
P

Primary Endpoint (All-Cause Death and Hospital Stay Due to Heart Failure)



Secondary Endpoint (New Onset of Heart Failure Medication)



— % Normal Myocardium ≥80% — % Normal Myocardium <80% and ≥60% — % Normal Myocardium <60%

C
T
E

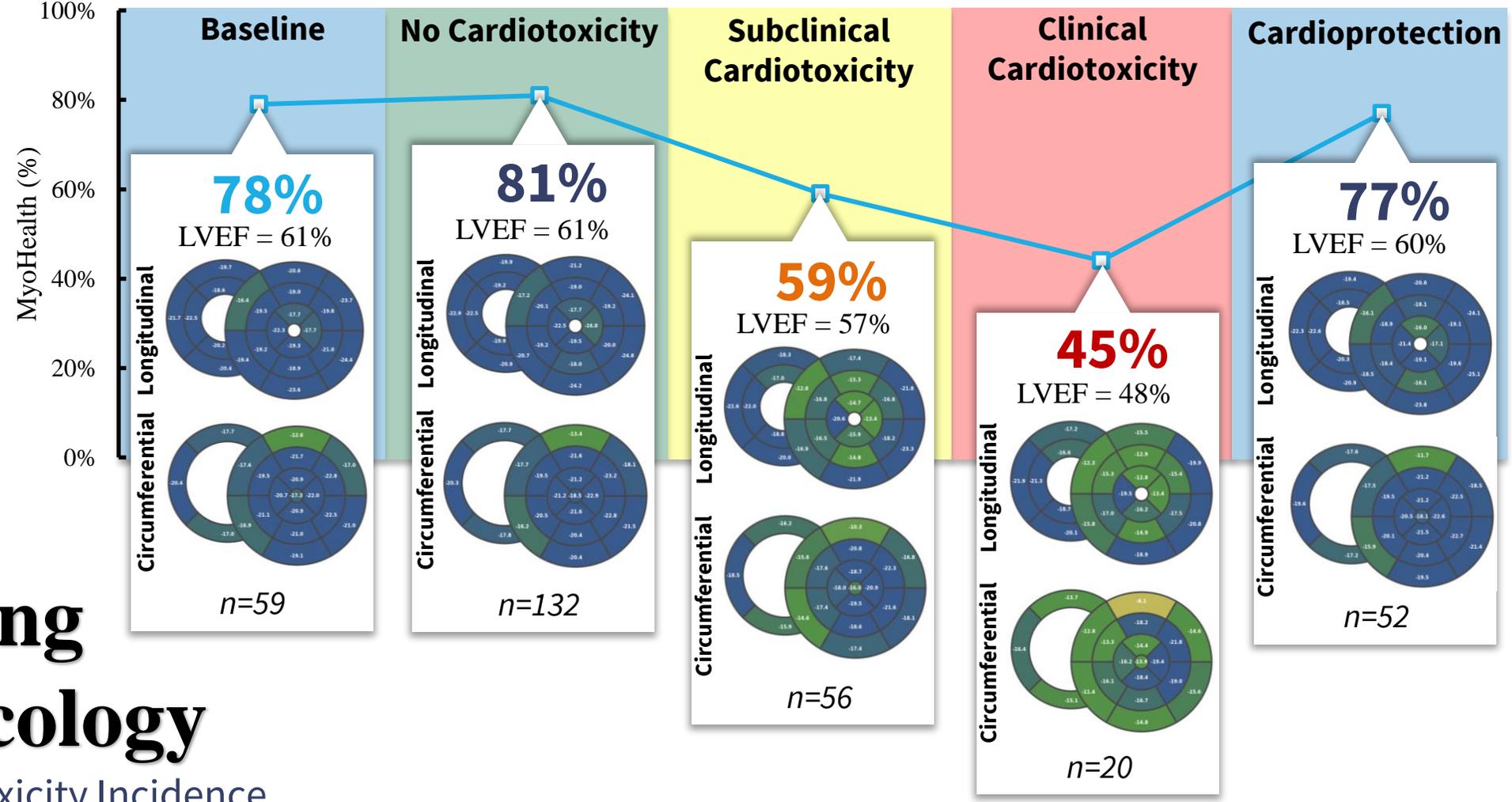
MyoHealth Monitors Cardiotoxicity Treatment with Cardioprotective Agents

PREFECT Study (NCT03543228)

PREDICT
DETECT
MANAGE

Transforming Cardio-Oncology

MyoHealth by Cardiotoxicity Incidence
61 patients, 319 scans, 2 years follow-up



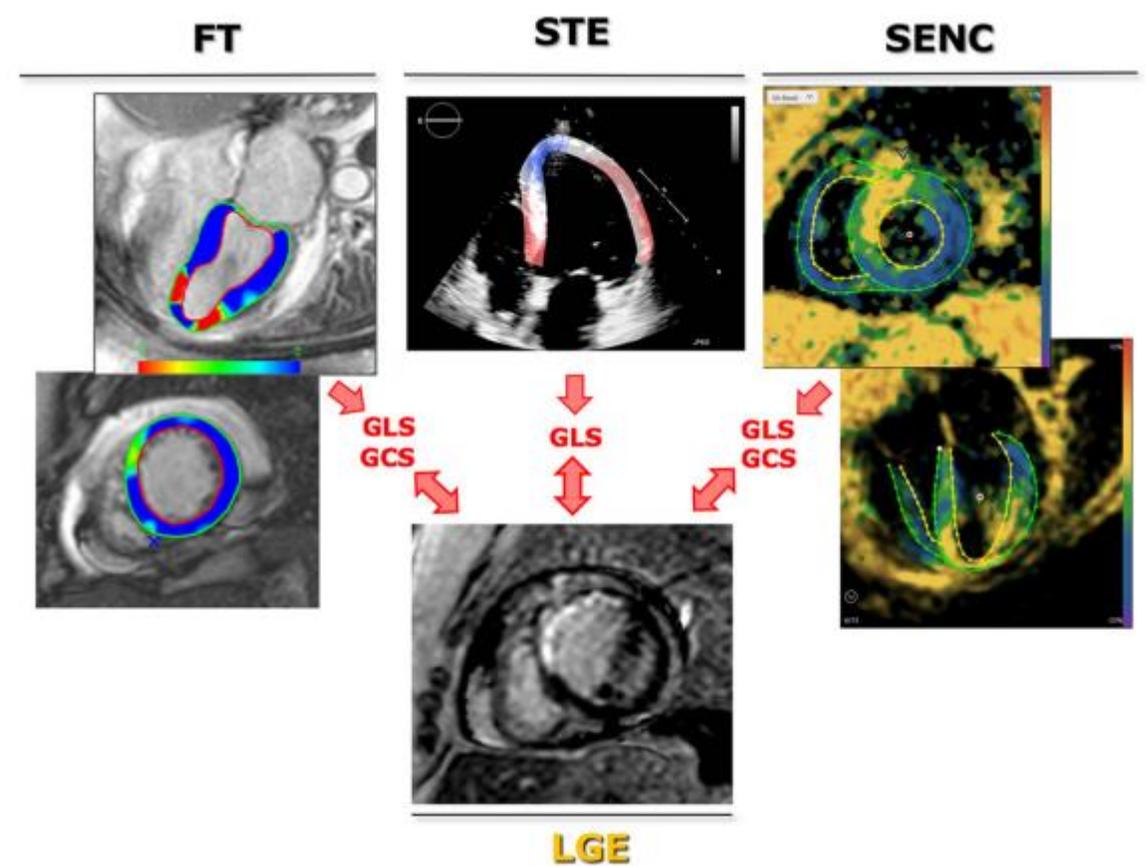
RESEARCH

Open Access



Echocardiography and cardiovascular magnetic resonance based evaluation of myocardial strain and relationship with late gadolinium enhancement

Jennifer Erley¹, Davide Genovese^{2,3}, Natalie Tapaskar², Nazia Alvi^{2,7}, Nina Rashedi², Stephanie A. Besser², Keigo Kawaji^{2,4}, Neha Goyal², Sebastian Kelle^{1,5,6}, Roberto M. Lang², Victor Mor-Avi² and Amit R. Patel^{2*}



SENC- and FT-derived GLS and GCS were associated with LGE, while STE-GLS was not. Irrespective of CMR technique, this association was stronger for GCS (AUC 0.77–0.78) than GLS (AUC 0.67–0.72) and STE-GLS (AUC = 0.58).

Conclusion: There is good inter-technique agreement in strain measurements, which were highly reproducible, irrespective of modality or analysis technique. GCS may better reflect the presence of underlying LGE than GLS.

2021 ESC/EACTS Guidelines for the management of valvular heart disease

Developed by the Task Force for the management of valvular heart disease of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

Authors/Task Force Members: Alec Vahanian * (ESC Chairperson) (France), Friedhelm Beyersdorf¹ (EACTS Chairperson) (Germany), Fabien Praz (ESC Task Force Coordinator) (Switzerland), Milan Milojevic¹ (EACTS Task Force Coordinator) (Serbia), Stephan Baldus (Germany), Johann Bauersachs (Germany), Davide Capodanno (Italy), Lenard Conradi¹ (Germany), Michele De Bonis¹ (Italy), Ruggero De Paulis¹ (Italy), Victoria Delgado (Netherlands), Nick Freemantle¹ (United Kingdom), Martine Gilard (France), Kristina H. Haugaa (Norway), Anders Jeppsson¹ (Sweden), Peter Jüni (Canada), Luc Pierard (Belgium), Bernard D. Prendergast (United Kingdom), J. Rafael Sádaba¹ (Spain), Christophe Tribouilloy (France), Wojtek Wojakowski (Poland), ESC/EACTS Scientific Document Group

Table 26. Evidence Gaps and Future Directions for Patients With VHD

Evidence Gaps	Future Directions
Identification of patients at risk and valve disease prevention (Stage A)	
Disease mechanisms	Basic science to identify specific targets for medical therapy
Rheumatic heart disease	Primary and secondary prevention
Calcific valve disease	Identification of patients at risk Risk factor intervention Prevention of disease initiation
Medical therapy for progressive valve disease (Stage B)	
Disease mechanisms	Basic science to identify specific targets to slow or reverse disease progression
Medical intervention	Targeted therapy using advanced imaging endpoints to study disease mechanisms
Ventricular and vascular interactions	Dynamic interplay between valve disease severity and changes in ventricular anatomy and function Modulation of ventricular and vascular dysfunction in patients with VHD
Optimal timing of intervention (Stage C)	
Improved measures of disease severity	Validation of newer measures of LV size (eg, volumes instead of dimension) and function (eg, strain) for timing of intervention decisions. Evaluation of nonimaging parameters (serum markers and other novel approaches)
Timing of intervention	Timing of intervention in asymptomatic patients with valve regurgitation Intervention for asymptomatic severe AS Intervention for moderate AS with LV dysfunction Identification of patients with secondary MR who benefit from intervention
Patient-centered research	Involvement of patients in identifying research questions, study design, and definition of outcomes
Inclusion of diverse patient groups	Adequate representation of diverse patient populations in RCTs for VHD
Decision aids	Development and validation of improved decision aids for shared decision-making with patients Implementation and validation of decision algorithms for physicians and Heart Valve Teams
Intervention options and long-term management (Stage D)	
Improved prosthetic valves	Durability of TAVI valves Nonthrombogenic durable surgical and transcatheter valves
Optimal antithrombotic therapy	Alternatives to VKA anticoagulation for mechanical valves Management of anticoagulation during pregnancy Optimal antithrombotic therapy after TAVI
Medical therapy after AVR	Medical therapy to address ventricular and vascular function

RESEARCH

Open Access



Multi-parametric assessment of left ventricular hypertrophy using late gadolinium enhancement, T1 mapping and strain-encoded cardiovascular magnetic resonance

Sorin Giusca¹, Henning Steen², Moritz Montenbruck², Amit R. Patel³, Burkert Pieske^{4,5}, Jennifer Erley^{4,5}, Sebastian Kelle^{4,5} and Grigorios Korosoglou^{1*}

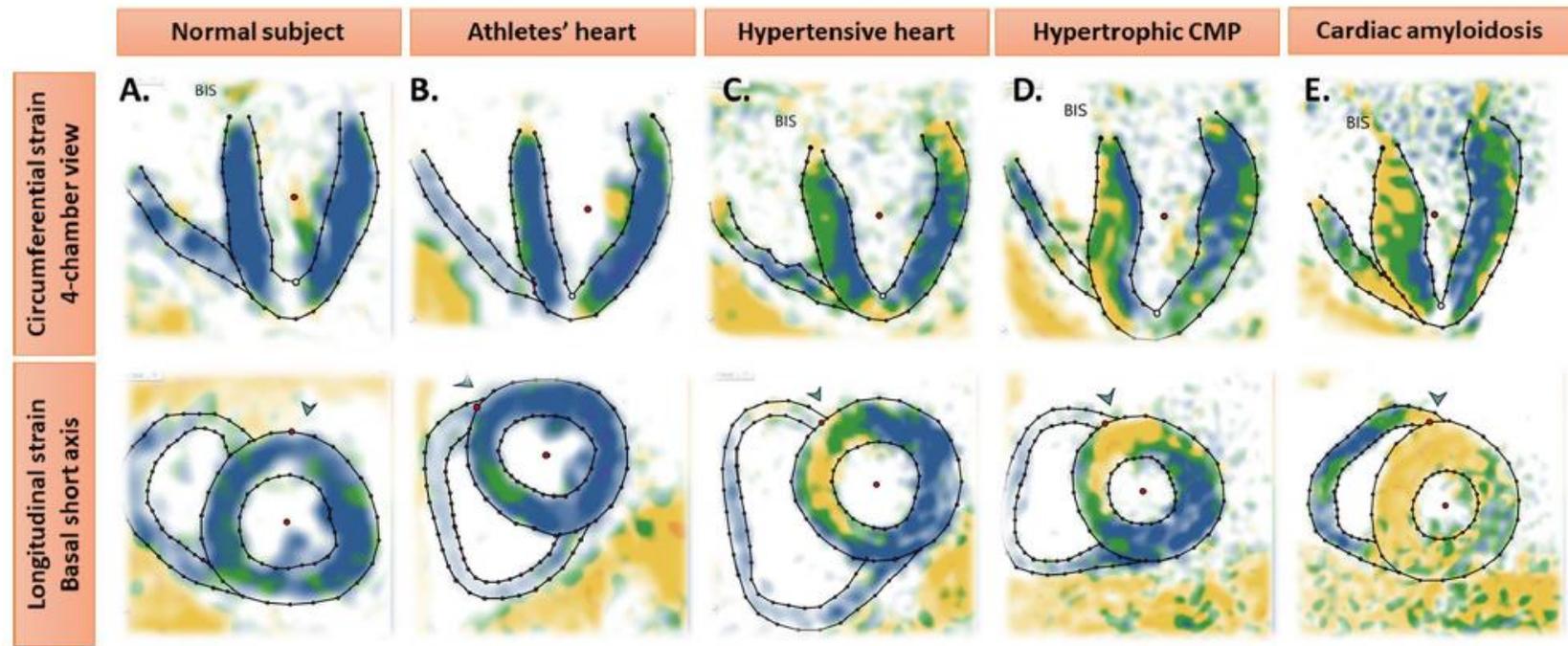
N=314 patients

Fast-SENC:

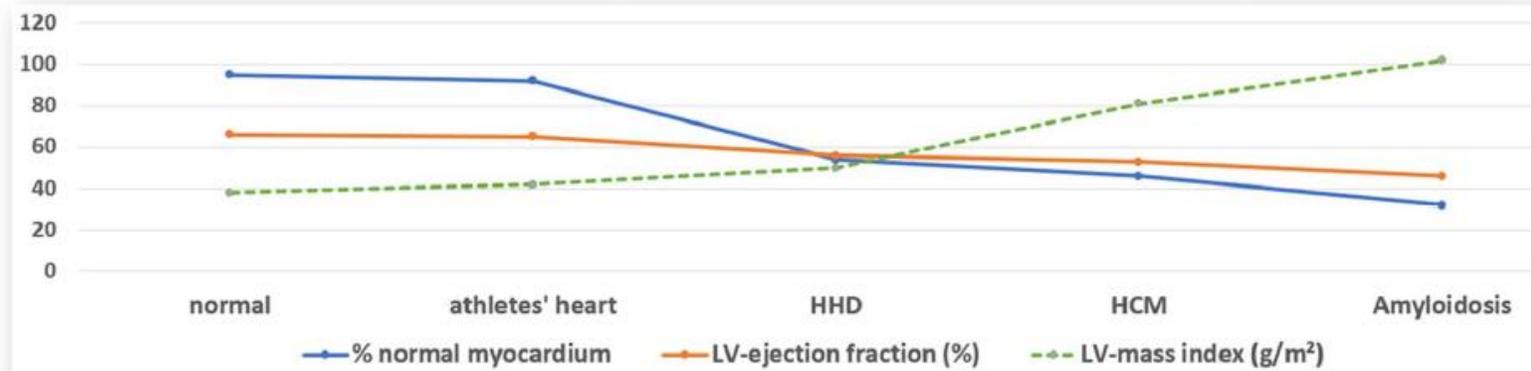
- athletes vs. HCM
- athletes vs. HHD

Combining strain and LGE:

- HHD vs. HCM
- HCM vs. cardiac amyloidosis.



	95%	92%	54%	46%	32%
%normal myocardium	95%	92%	54%	46%	32%
Mean GCS (%)	-22.3%	-22.5%	-17.3%	-16.1%	-16.9%
Mean GLS (%)	-22.8%	-22.1%	-16.9%	-16.2%	-8.4%
LV mass index (g/m ²)	38	42	50	81	102
LV-ejection fraction (%)	66%	65%	56%	53%	46%
T1 mapping (ms)	1030	1084	1016	1020	1195
LGE score	1.0	1.0	1.0	1.12	2.0

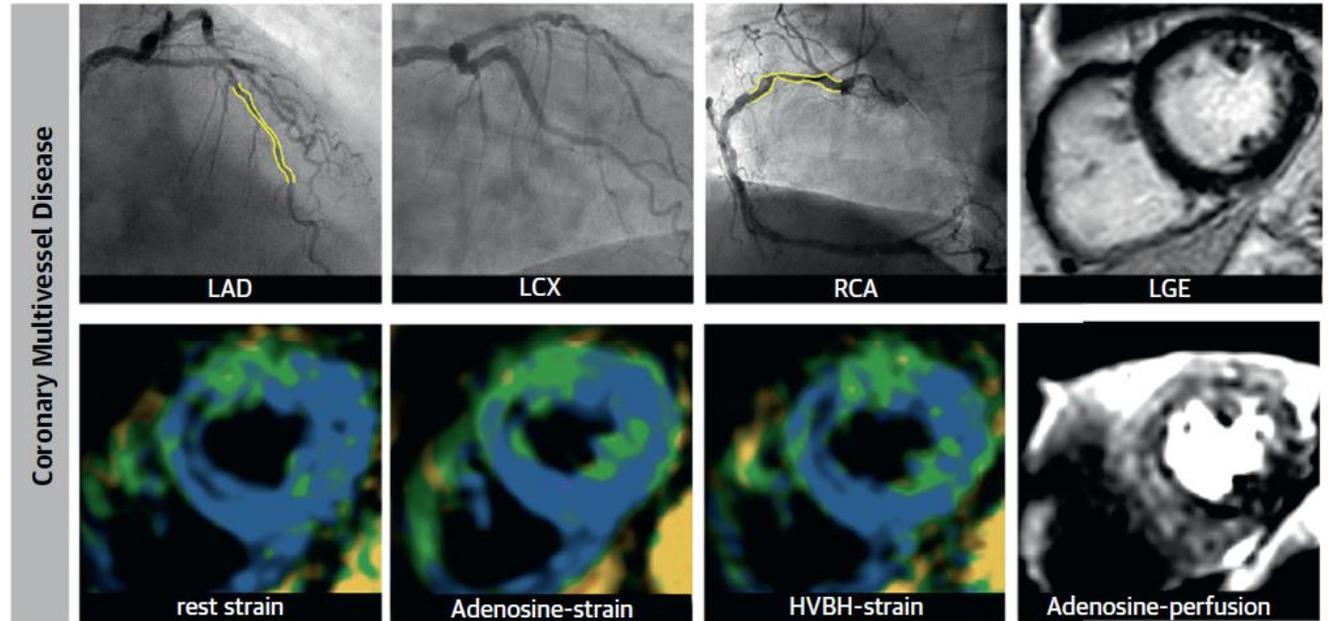
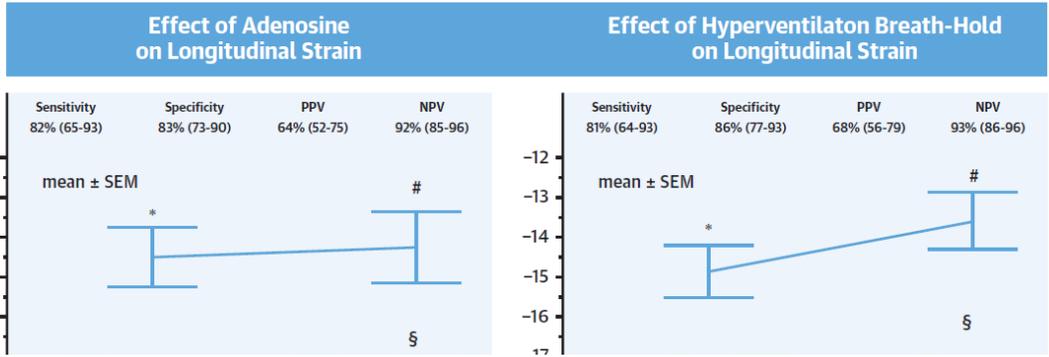
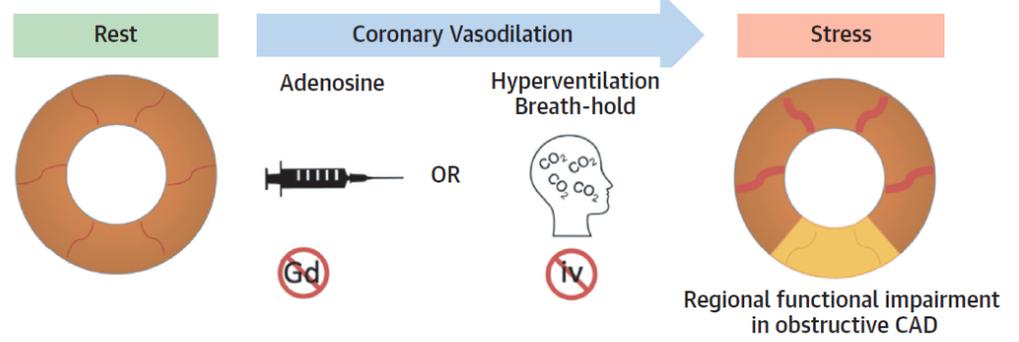
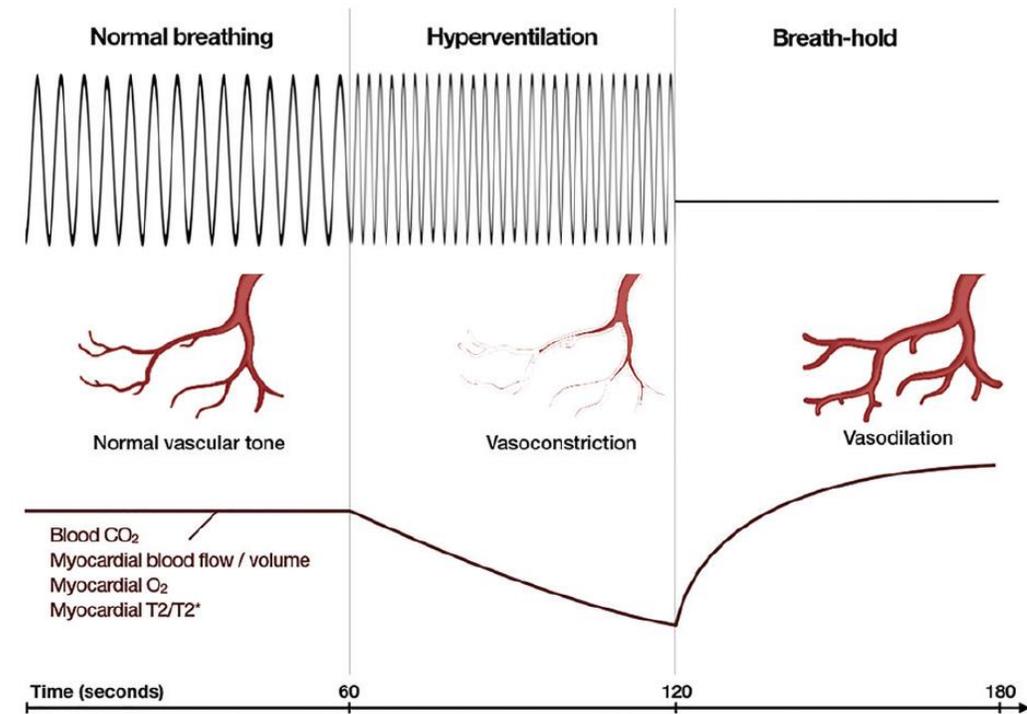


NEW RESEARCH PAPER

Hyperventilation/Breath-Hold Maneuver to Detect Myocardial Ischemia by Strain-Encoded CMR

Diagnostic Accuracy of a Needle-Free Stress Protocol

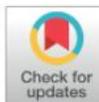
Marco M. Ochs, MD,^{a,b} Isabelle Kajzar,^{a,b} Janek Salatzki, MD,^{a,b} Andreas T. Ochs, MD,^{a,b} Johannes Riffel, MD,^{a,b} Nael Osman, PhD,^c Hugo A. Katus, MD,^{a,b} Matthias G. Friedrich, MD^{a,b,d}



CLINICAL PRACTICE GUIDELINE: FULL TEXT

2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR Guideline for the Evaluation and Diagnosis of Chest Pain

A Report of the American College of Cardiology/American Heart Association
 Joint Committee on Clinical Practice Guidelines



Selected summary of CMR recommendations in the 2021 AHA/ACC/ASE/CHEST/SAEM/SCCT/SCMR Guideline for the Evaluation and Diagnosis of Chest Pain



Society for
 Cardiovascular
 Magnetic
 Resonance

	CoR	LoE	Comments
Acute Chest Pain			
• No-known CAD	1	B-NR	CMR comparable to MPS, SE, PET
• Known CAD	2a	B-NR	CMR comparable to CCTA, MPS, SE, PET
• Known CAD and prior CABG	1	C-LD	CMR comparable to CCTA, MPS, SE, PET
• Suspected MINOCA or Myopericarditis	1	B-NR	Specific CMR recommendation
Stable Chest Pain			
• No-known CAD (Intermediate-high risk)	1	B-R	CCTA (1A); CMR comparable to MPS, SE, PET
• Obstructive CAD	1	B-NR	CMR comparable to MPS, SE, PET
• Prior CABG	2a	C-LD	CMR comparable to CCTA, MPS, SE, PET
• Non-obstructive CAD	2a	C-LD	CMR comparable to MPS, SE, PET
• INOCA (coronary microvascular dysfunction)	2a	B-NR	CMR comparable to PET, SE (2b C-EO)

CoR, class of recommendation (1, 2a, 2b, 3); LoE, level of evidence (A,B,C); R, randomised; NR, non-randomised; LD, limited data; EO, expert opinion; CCTA, cardiac CT angiography; MPS, myocardial perfusion scintigraphy; SE, stress echo, PET, Positron emission tomography; CMR, cardiovascular magnetic resonance. Courtesy JP Greenwood.

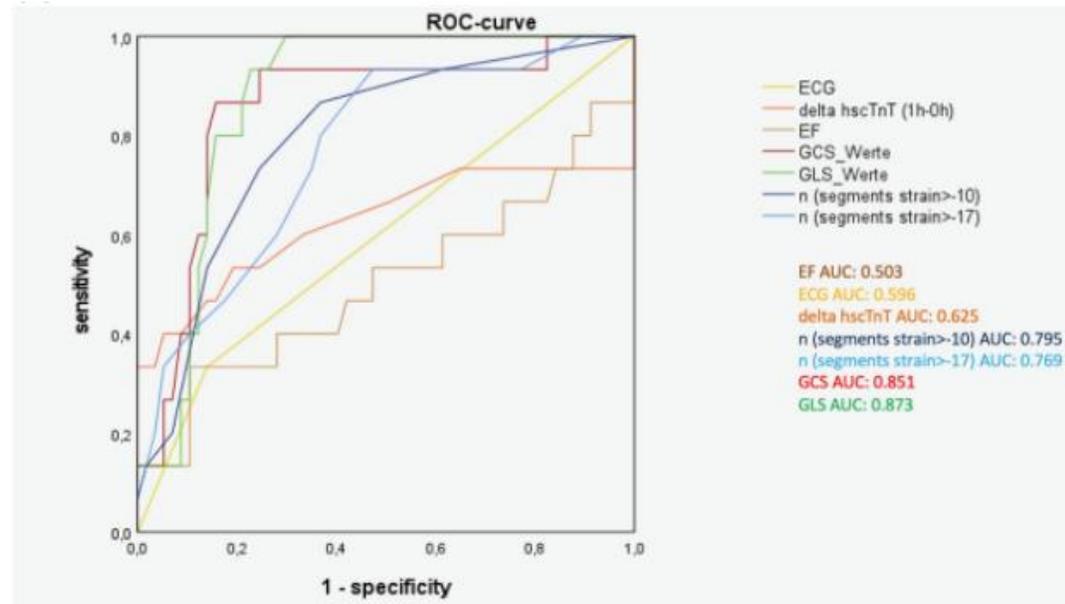
RESEARCH ARTICLE

Feasibility of fast cardiovascular magnetic resonance strain imaging in patients presenting with acute chest pain

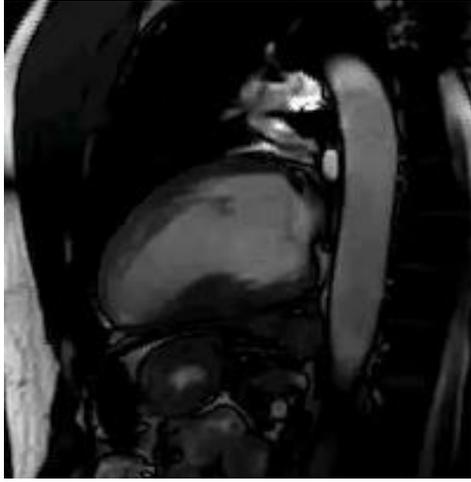
Johannes H. Riffel^{1*}, Deborah Siry¹, Janek Salatzki¹, Florian Andre^{1,2}, Marco Ochs¹, Lukas D. Weberling¹, Evangelos Giannitsis^{1,2}, Hugo A. Katus^{1,2}, Matthias G. Friedrich^{1,2,3}

1 Department of Cardiology, Angiology and Pneumology, University of Heidelberg, Heidelberg, Germany, 2 DZHK (German Centre for Cardiovascular Research), Partner Site Heidelberg, Berlin, Germany, 3 Departments of Medicine and Diagnostic Radiology, McGill University Health Centre, Montreal, Quebec, Canada

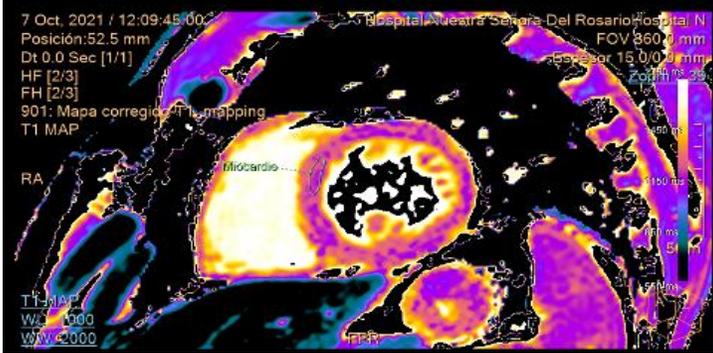
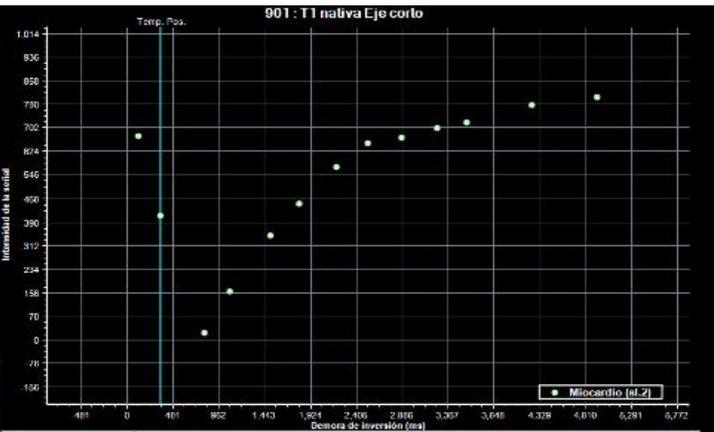
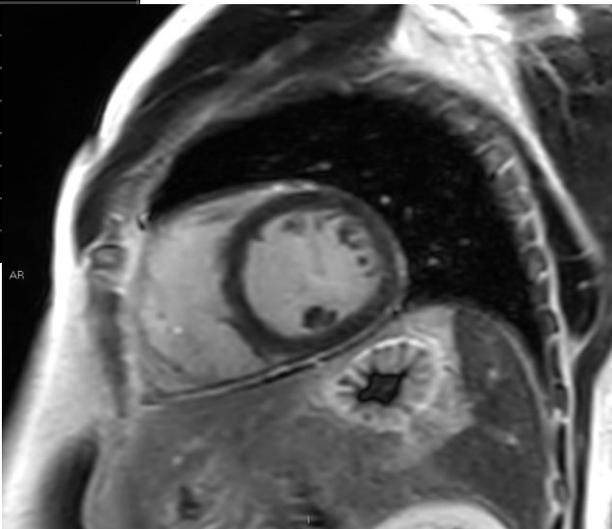
* johannes.riffel@med.uni-heidelberg.de



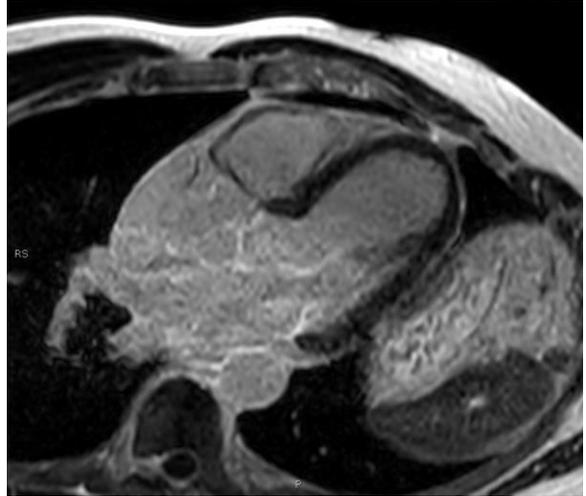
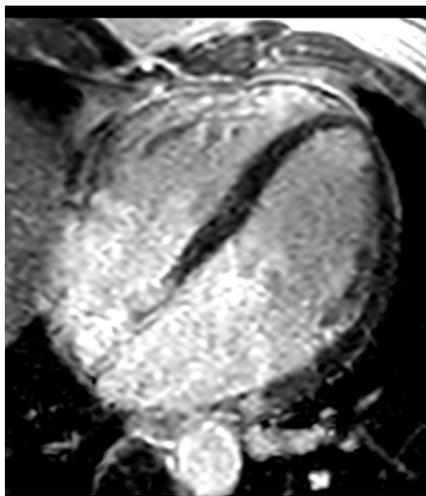
Caso 1: 50 años, FEVI discretamente disminuida, MCD?



	Ventrículo izquierdo: resur
	Volumen endoscópico
Fracción de expulsión	51 %
Volumen sistólico	103.4 ml
Rendimiento cardíaco	8.8 L/min
Índice sistólico	48.1 ml/m ²
Índice cardíaco	4.1 L/(min*m ²)
Volumen telediastólico	204.5 ml
Volumen telesistólico	101.1 ml
Volumen ED / ASC	95.1 ml/m ²
Volumen ES / ASC	47.0 ml/m ²



Asignación T1. Resultado local-901	
Miocardio sl 2	
T1 nativa	1206±24.8 ms
R1 nativa	0.8310 02 Hz
T1 mejorado	N/A ms
R1 mejorada	N/A Hz
z	
Area nativa de la ROI	
Area mejorada de la ROI	
Hematocrito	
Intensidad del campo	



Caso 1



Paciente:

ID:
 Sexo:
 Fecha de nacimiento:
 Edad: 50 años
 Altura: NA
 Peso: 90.0 kg (198.4 lbs)
 BSA: NA

Accession #: 793321175

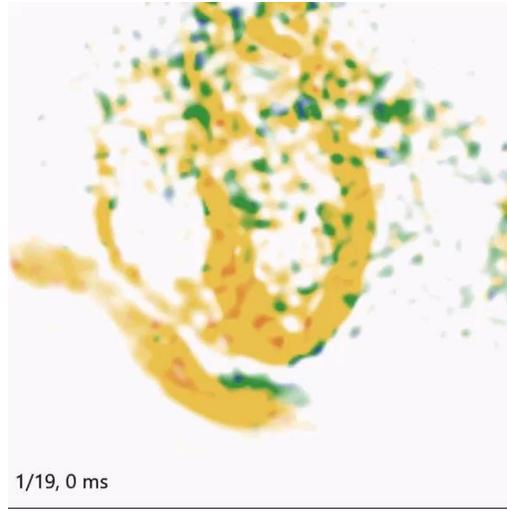
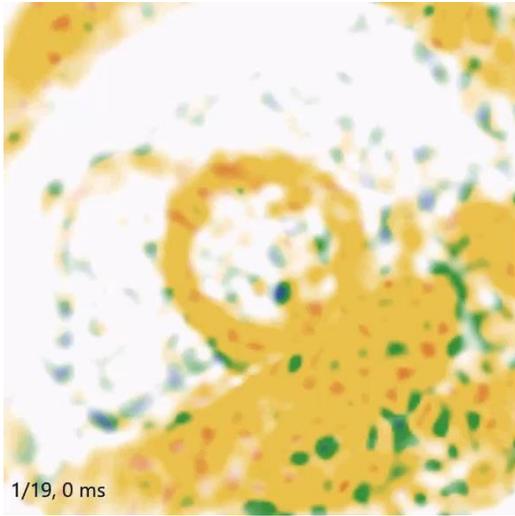
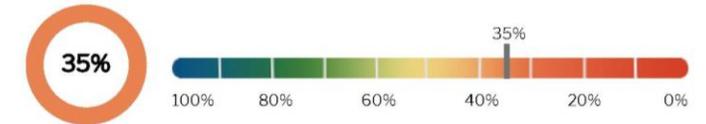
Fecha de escaneo: 10/07/2021
 Médico solicitante: ZAMORANO
 Técnico radiólogo:
 Tipo de examen: CARDIO 3T
 Indicación:
 Calidad del estudio:

Segmentos disfuncionales VI

(37/37 segmentos analizados)

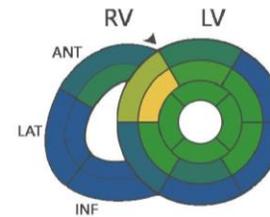
Cant. de segmentos >-10% 4
 Cant. de segmentos >-17% 24

MyoHealth™ (% Segmentos Normales ≤ -17%)



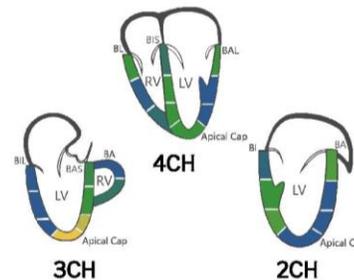
Mediciones regionales de MyoStrain®

MyoStrain Longitudinal

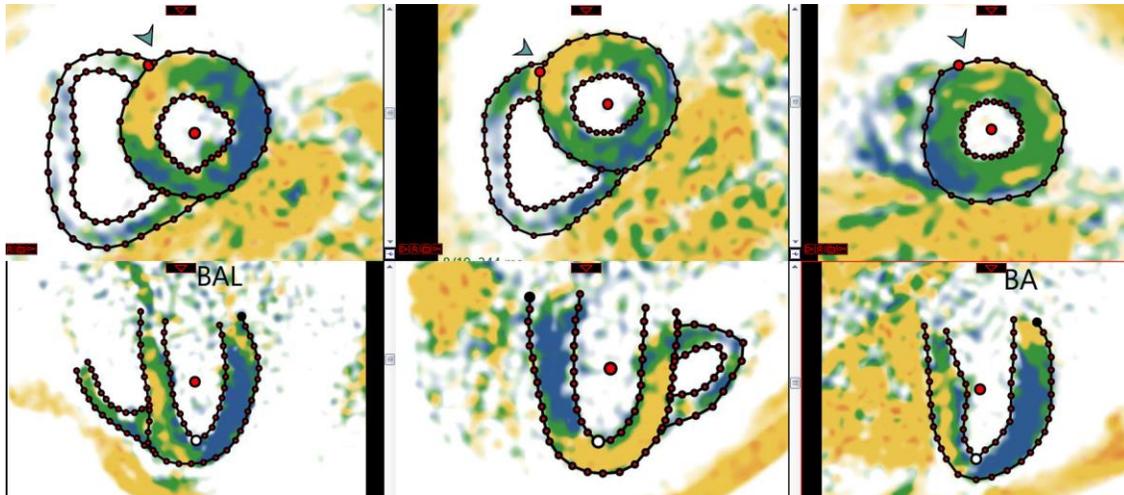


	Basal	Medio	Apical			
LV	Anterior	-16%	Anterior	-10.4%	Anterior	-10.9%
	Anteroseptal	-9.1%	Anteroseptal	-6.6%	Septal	-13.9%
	Inferoseptal	-17.6%	Inferoseptal	-13.7%	Inferior	-14.5%
	Inferior	-19.4%	Inferior	-16.3%	Lateral	-12.1%
	Inferolateral	-21.4%	Inferolateral	-12.1%		
	Anterolateral	-20%	Anterolateral	-14.5%		
RV	Anterior	-17.2%	Anterior	-15.8%		
	Lateral	-21.8%	Lateral	-22.6%		
	Inferior	-18.7%	Inferior	-19%		

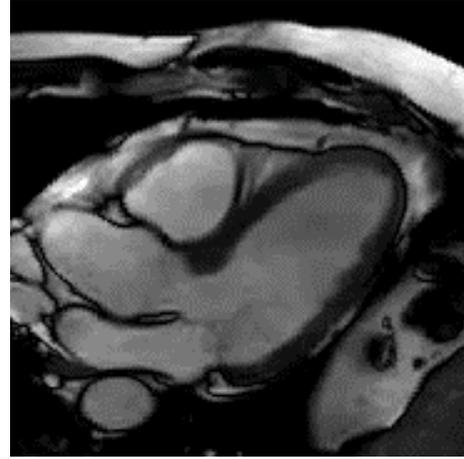
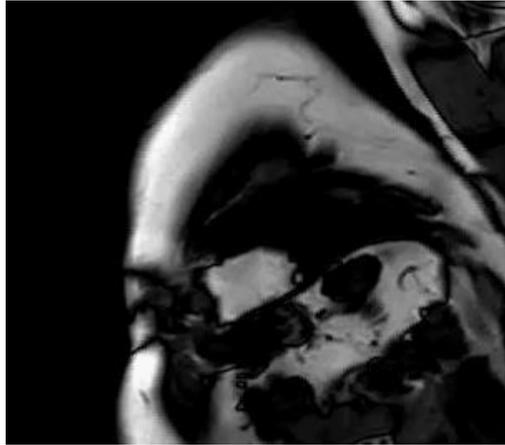
MyoStrain Circunferencial



	3CH	4CH	2CH			
LV	Basal Inferolateral	-18.7%	Basal Inferoseptum	-16.3%	Basal Inferior	-17.6%
	Mid Inferolateral	-24.4%	Mid Inferoseptum	-11.2%	Mid Inferior	-12.1%
	Apical Lateral	-21.9%	Apical Septum	-11.2%	Apical Inferior	-10.2%
	Apical Cap	-4.1%	Apical Cap	-13.8%	Apical Cap	-22.5%
	Apical Anterior	-8.2%	Apical Lateral	-25.5%	Apical Anterior	-24.4%
	Mid Anteroseptum	-12.2%	Mid Anterolateral	-25.1%	Mid Anterior	-22.6%
	Basal Anteroseptum	-15.4%	Basal Anterolateral	-13.5%	Basal Anterior	-10.2%
	RV	Basal Anterior	-19.1%	Basal Lateral	-13.4%	
Mid Anterior		-16.3%	Mid Lateral	-18.3%		
			Apical Lateral	-17%		



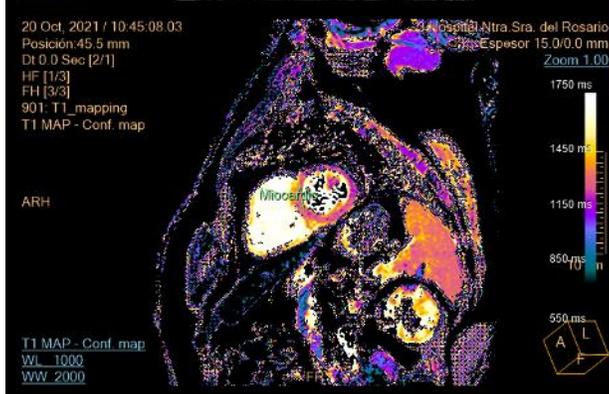
Caso 2: 54 años, hipertrofia septal: MCH?



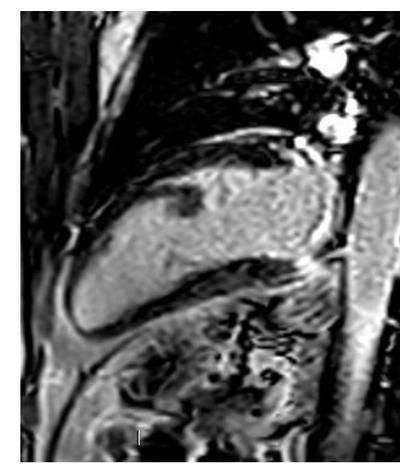
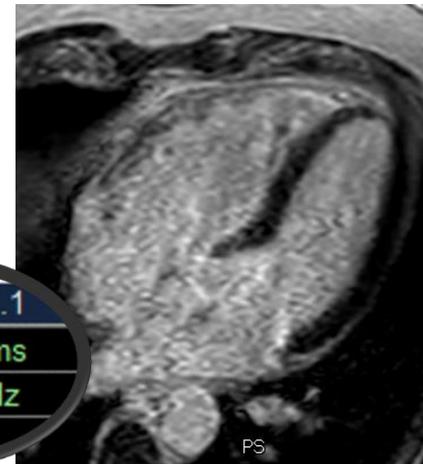
	Ventrículo izquierdo
	Volumen endoscópico
Fracción de expulsión	56 %
Volumen sistólico	112.9 ml
Rendimiento cardiaco	7.9 L/min
Índice sistólico	49.9 ml/m ²
Índice cardiaco	3.5 L/(min*m ²)
Volumen telediastólico	200.2 ml
Volumen telesistólico	87.3 ml
Volumen E	88.5 ml/m ²
Volumen E	38.6 ml/m ²



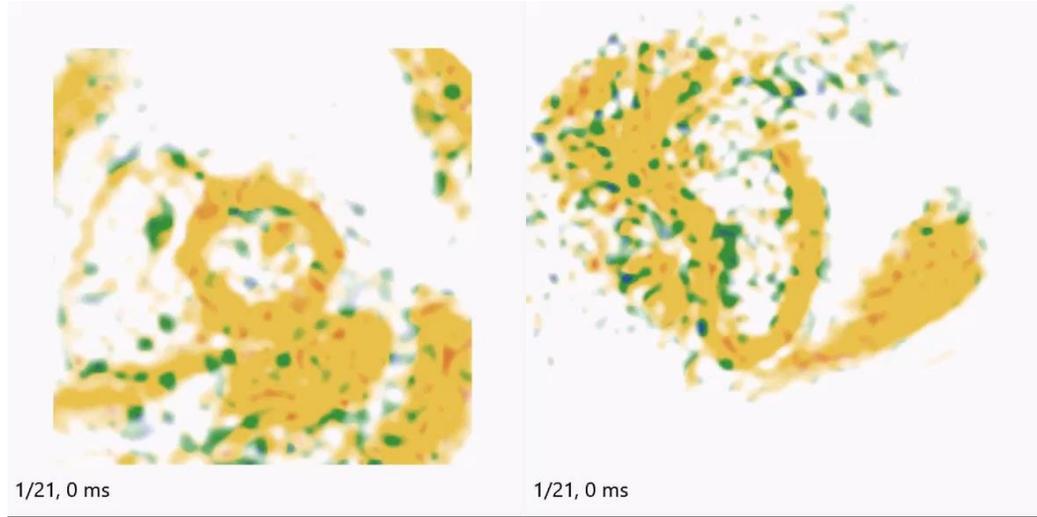
Asignación T1: Resultado local-901	
	Miocardio sl.1
T1 nativa	1261±32.1 ms
R1 nativa	0.79±0.02 Hz
T1 mejorada	N/A ms
R1 mejorada	N/A Hz
e	N/A %
Área nativa de la ROI	50.6 mm ²
Área mejorada de la ROI	N/A Hz
Hemastocito	N/A %
Intensidad del campo	3 T



Miocardio sl.1
 1261±32.1 ms
 0.79±0.02 Hz
 N/A ms



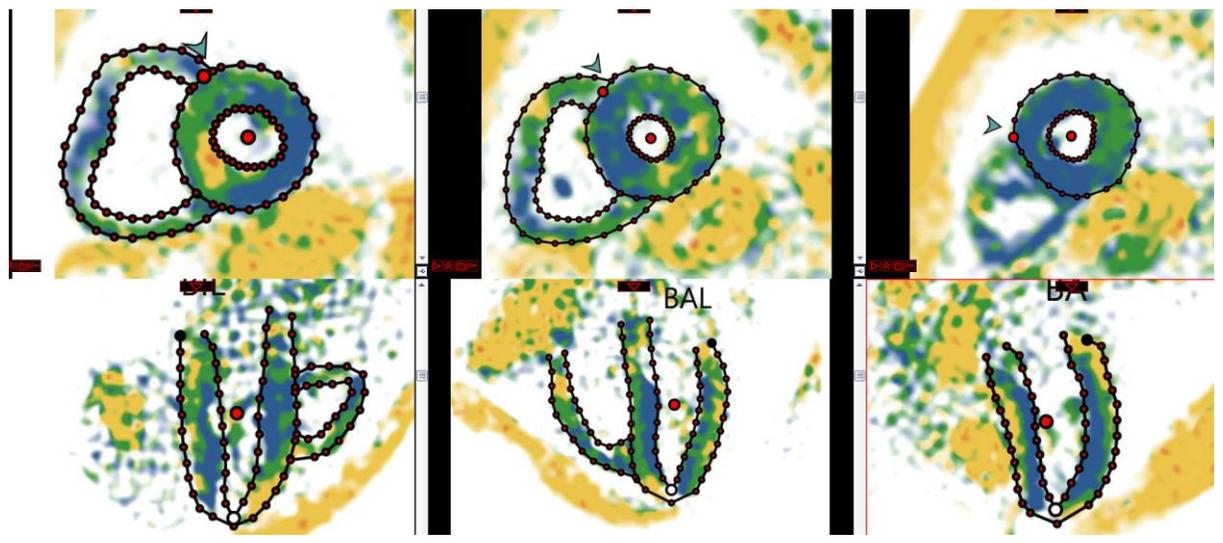
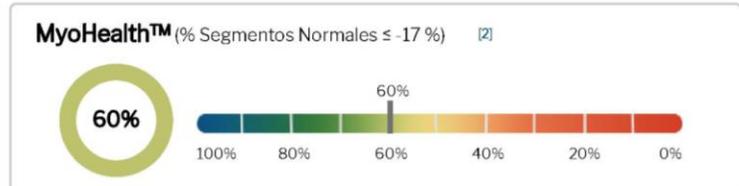
Caso 2



Paciente:	Accession #: 797237011
ID:	Fecha de escaneo: 10/26/2021
Sexo:	Médico solicitante: SIN DEFINIR
Fecha de nacimiento:	Técnico radiólogo:
Edad: 54 años	Tipo de examen: CARDIO
Altura: NA	Indicación:
Peso: 98.0 kg (216.0 lbs)	Calidad del estudio:
BSA: NA	

Segmentos disfuncionales VI (37/37 segmentos analizados)

Cant. de segmentos >-10%	1
Cant. de segmentos >-17%	15



Mediciones regionales de MyoStrain®

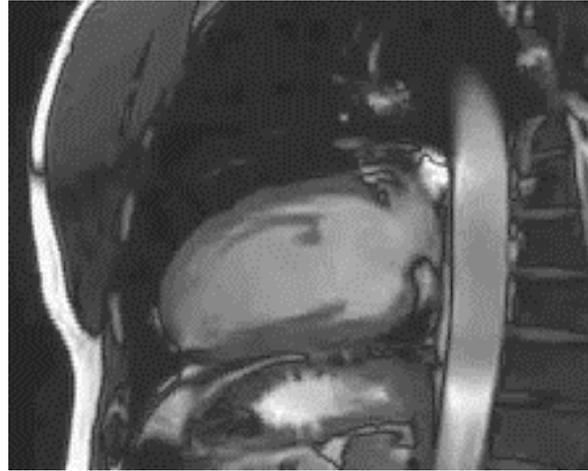
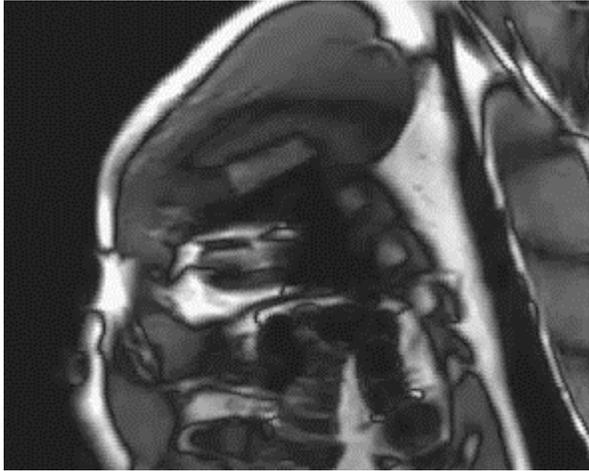
MyoStrain Longitudinal

	Basal	Medio	Apical
LV	Anterior -18.8 % Anteroseptal -14.6 % Inferoseptal -9.6 % Inferior -18.5 % Inferolateral -21 % Anterolateral -21.8 %	Anterior -16.2 % Anteroseptal -17.7 % Inferoseptal -18.6 % Inferior -13.8 % Inferolateral -14.3 % Anterolateral -15.8 %	Anterior -20.9 % Septal -19.9 % Inferior -17.1 % Lateral -17.8 %
RV	Anterior -17.4 % Lateral -22.1 % Inferior -18.8 %	Anterior -16.2 % Lateral -21.2 % Inferior -17.8 %	

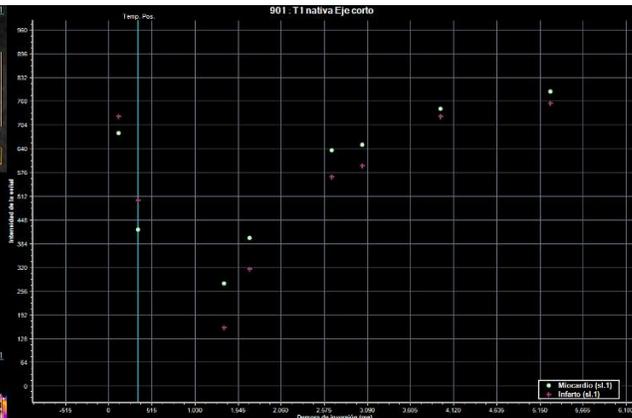
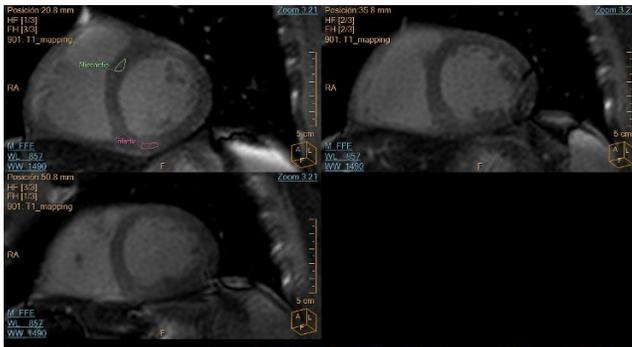
MyoStrain Circunferencial

	3CH	4CH	2CH
LV	Basal Inferolateral -16.3 % Mid Inferolateral -23 % Apical Lateral -21.4 % Apical Cap -10.4 % Apical Anterior -12.6 % Mid Anteroseptum -19.7 % Basal Anteroseptum -19.8 %	Basal Inferoseptum -16.4 % Mid Inferoseptum -20.2 % Apical Septum -17.4 % Apical Cap -10.2 % Apical Lateral -19.1 % Mid Anterolateral -20.2 % Basal Anterolateral -15.2 %	Basal Inferior -20.4 % Mid Inferior -16.7 % Apical Inferior -21.2 % Apical Cap -14.4 % Apical Anterior -19.6 % Mid Anterior -21.8 % Basal Anterior -15.6 %
RV	Basal Anterior -21.7 % Mid Anterior -15.1 %	Basal Lateral -13.8 % Mid Lateral -17.6 % Apical Lateral -18.3 %	

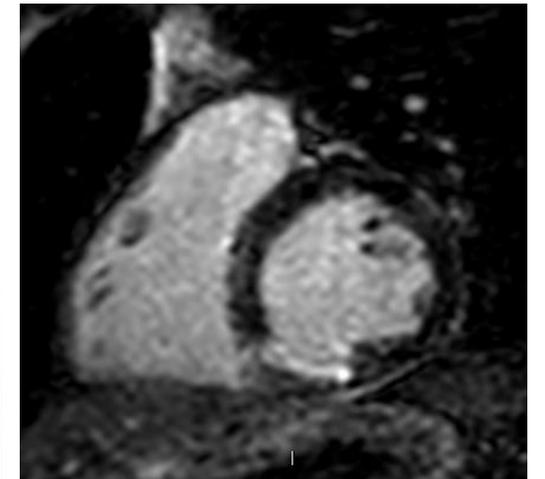
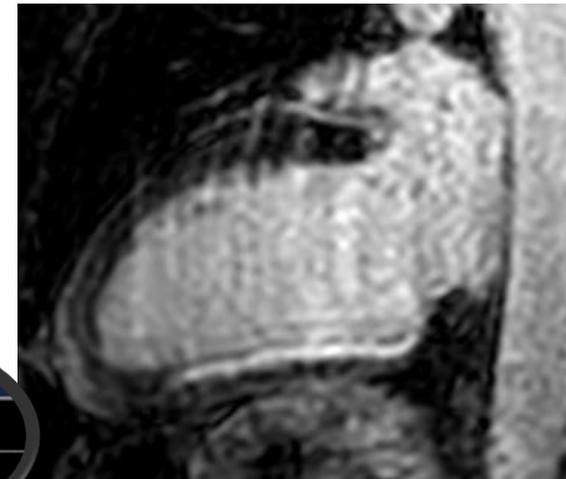
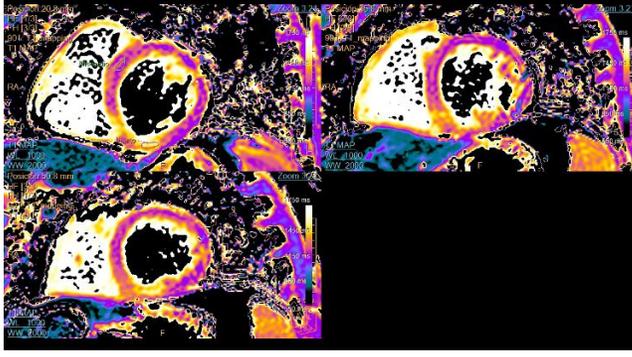
Caso 3: 50 años, control post-IAM



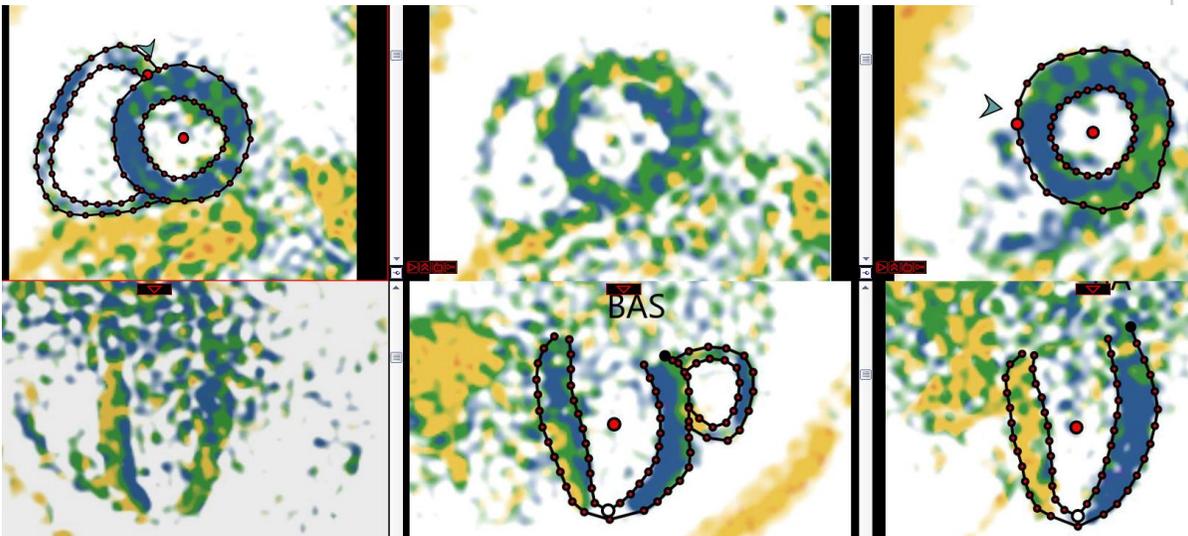
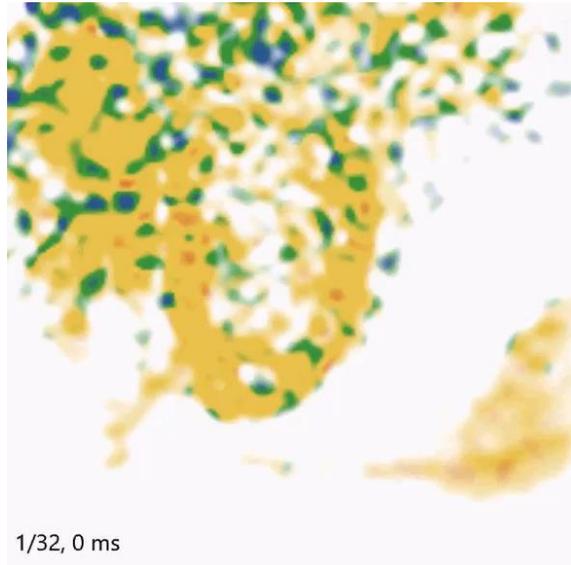
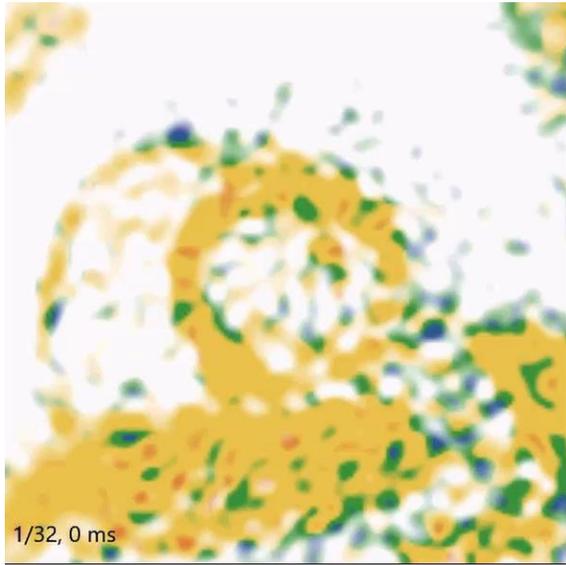
	Ventrículo izquierdo
	Volumen endoscópico
Fracción de expulsión	56 %
Volumen sistólico	115.2 ml
Rendimiento cardiaco	5.3 L/min
Índice sistólico	63.0 ml/m ²
Índice cardiaco	2.9 L/(min*m ²)
Volumen telediastólico	206.8 ml
Volumen telesistólico	91.6 ml
Volumen ED / ASC	113.1 ml/m ²
Volumen ES / ASC	50.1 ml/m ²



Asignación T1: Resultado local-901		
	Miocardio sl.1	Infarcto sl.1
T1 nativa	1253±52.6 ms	1511±52.3 ms
R1 nativa	0.80±0.03 Hz	0.66±0.02 Hz
T1 mejorada	N/A ms	N/A ms
R1 mejorada	N/A Hz	N/A Hz
Área nativa		
Área mejorada		
Intensidad		



Caso 3



Paciente:

ID:
Sexo:
Fecha de nacimiento:
Edad: 50 años
Altura: NA
Peso: 70.0 kg (154.3 lbs)
BSA: NA

Accession #: 784689011

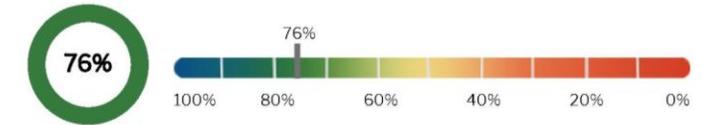
Fecha de escaneo: 09/29/2021
Médico solicitante: ZAMORANO
Técnico radiólogo:
Tipo de examen: CARDIO
Indicación:
Calidad del estudio:

Segmentos disfuncionales VI

(37/37 segmentos analizados)

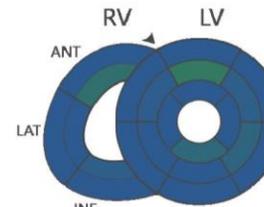
Cant. de segmentos >-10%: 1
Cant. de segmentos >-17%: 9

MyoHealth™ (% Segmentos Normales ≤ -17%)



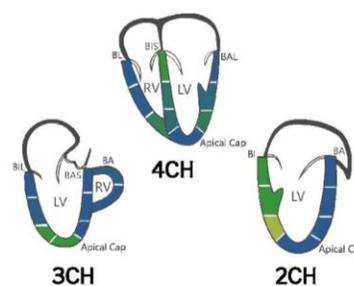
Mediciones regionales de MyoStrain®

MyoStrain Longitudinal



	Basal	Medio	Apical
LV	Anterior: -20.6 % Anteroseptal: -21.2 % Inferoseptal: -22.7 % Inferior: -22.2 % Inferolateral: -22.1 % Anterolateral: -21.1 %	Anterior: -16 % Anteroseptal: -18.6 % Inferoseptal: -21.6 % Inferior: -19.7 % Inferolateral: -17.8 % Anterolateral: -18.4 %	Anterior: -19 % Septal: -20.8 % Inferior: -17.5 % Lateral: -19.6 %
RV	Anterior: -21.4 % Lateral: -23.7 % Inferior: -21.2 %	Anterior: -16.8 % Lateral: -19.6 % Inferior: -18.3 %	

MyoStrain Circunferencial



	3CH	4CH	2CH
LV	Basal Inferolateral: -21 % Mid Inferolateral: -18.1 % Apical Lateral: -14.2 % Apical Cap: -12.9 % Apical Anterior: -22.5 % Mid Anteroseptum: -21.8 % Basal Anteroseptum: -22.1 %	Basal Inferoseptum: -14.3 % Mid Inferoseptum: -16.4 % Apical Septum: -17.1 % Apical Cap: -19.1 % Apical Lateral: -15.9 % Mid Anterolateral: -17.4 % Basal Anterolateral: -22.4 %	Basal Inferior: -11.6 % Mid Inferior: -13.8 % Apical Inferior: -8.8 % Apical Cap: -23.4 % Apical Anterior: -26.4 % Mid Anterior: -25.5 % Basal Anterior: -19.4 %
RV	Basal Anterior: -18.3 % Mid Anterior: -19 %	Basal Lateral: -19.4 % Mid Lateral: -19.6 % Apical Lateral: -15.9 %	

Conclusiones

- ❑ El strain mide la deformación miocárdica y es un interesante parámetro para detectar precozmente disfunción subclínica, siendo un factor pronóstico independiente.
- ❑ Mediante RM la secuencia fast-SENC y el software Myostrain han demostrado ser robustos para medir el strain, con tiempos de adquisición de 10-15 minutos.
- ❑ Abre la posibilidad de una estratificación más precisa, y por tanto un tratamiento cardiovascular personalizado impactando en el pronóstico.
- ❑ Puede tener un potencial importante en la detección de la isquemia miocárdica de forma no invasiva (sin gadolinio ni agentes farmacológicos de stress).
- ❑ Algunos autores especulan que podría ser el nuevo estándar en la cuantificación de la función ventricular. ¿Vamos a dejar de usar la FEVI en pocos años? ¿más precoz que T1-mapping?
- ❑ Se requiere todavía más evidencia científica y la inclusión detallada de protocolos de strain con RM en guías clínicas.



¡MUCHAS
GRACIAS!

@eliseovano