10° CONGRESSO NAZIONALE

Quello che le Linee Guida Non Dicono

Napoli
Hotel Excelsior
14-15 aprile 2023

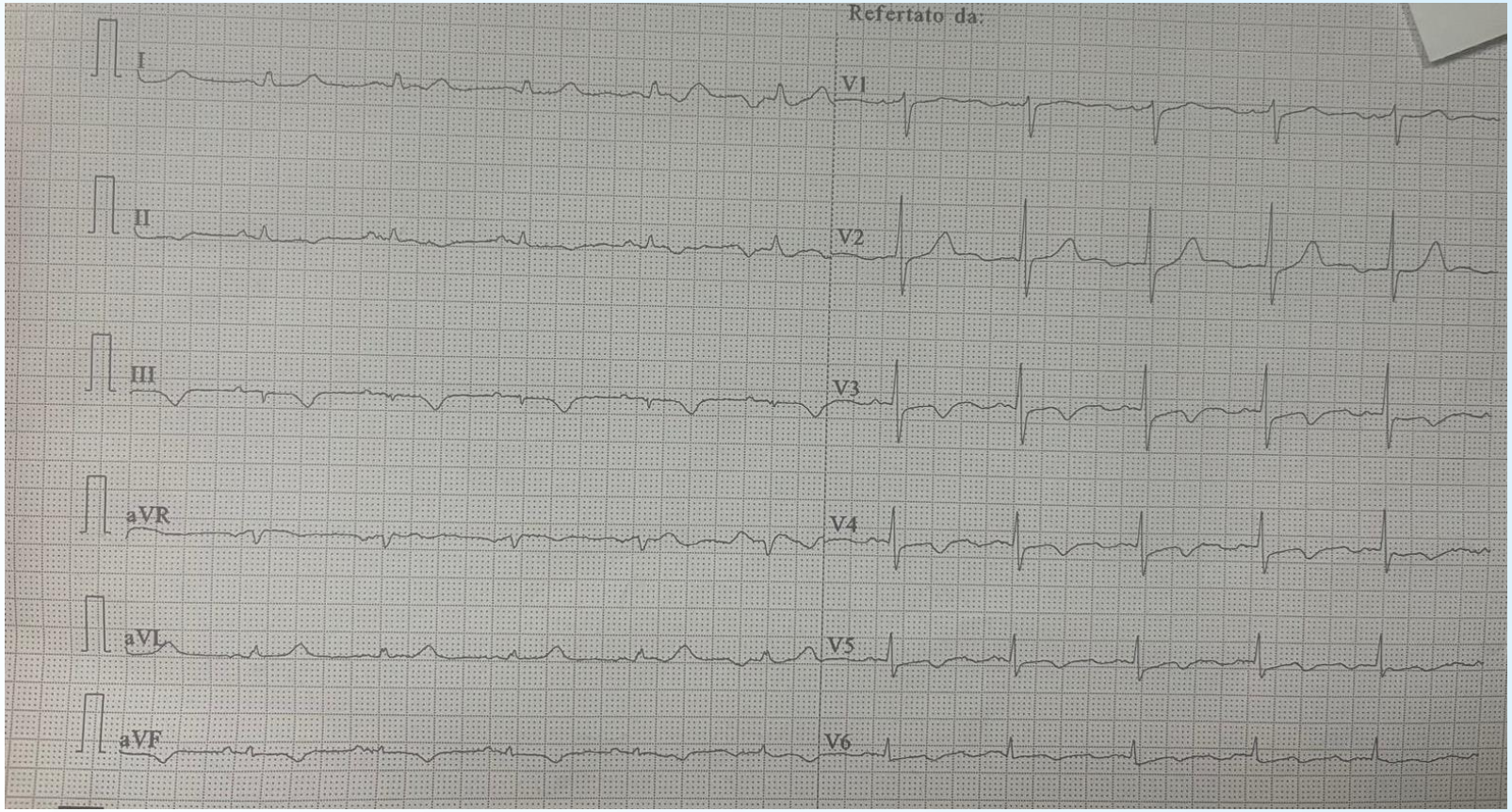
CARDIO-RADIOLOGIA: update 2023
Caso clinico MINOCA

Serena Dell'Aversana, MD
Ospedale "Santa Maria delle Grazie", Pozzuoli, ASL NAPOLI 2 NORD

Signora M. 45 anni

- Familiarità per CAD
- Abitudine tabagica

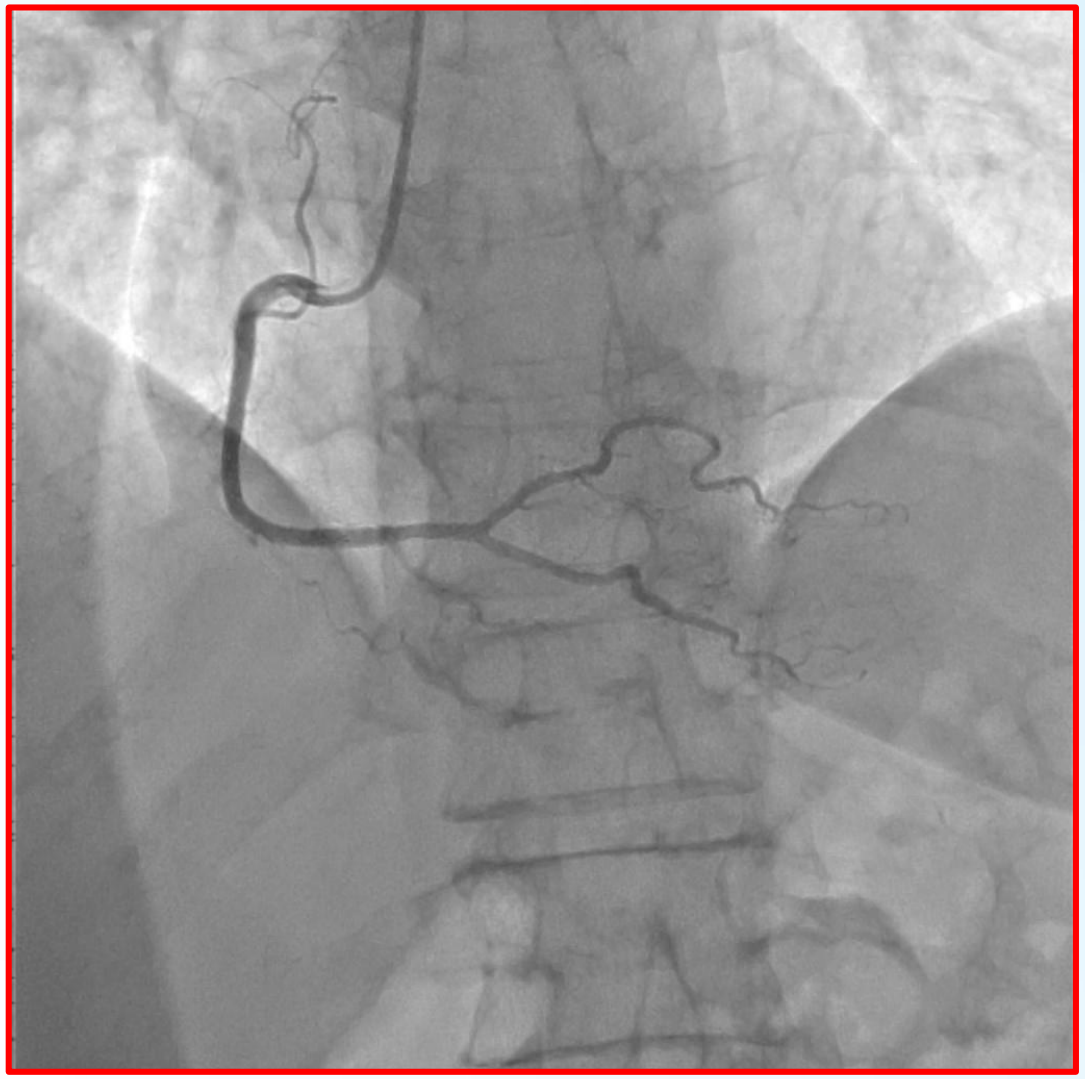
Improvvisa comparsa di dispnea e dolore anginoso precordiale persistente ed ingravescente

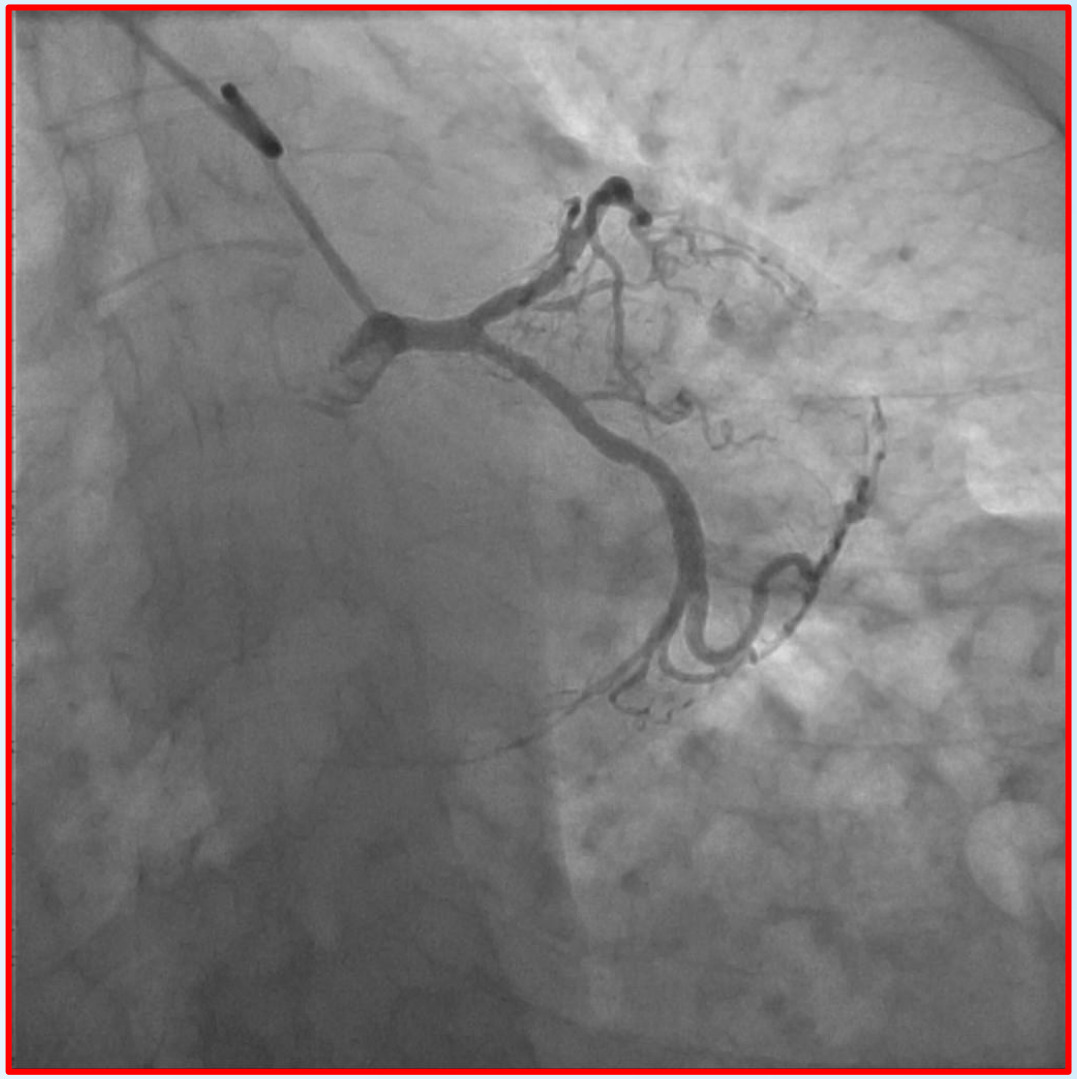


ECG: Ritmo sinusale fc media 70 bpm.
Onde T negative in infero-laterale

LAB: Troponina I 463 pg/ml (vn 0-16)
CK mB massa 26 ng/ml (vn 0-3,4)

Si allerta la sala emodinamica





Courtesy of Dott. Marco Boccalatte

Cardio RM

- Cine

1. Volumi, cinesi e frazione di eiezione destra*
2. Volumi, cinesi e frazione di eiezione sinistra*

- Caratterizzazione tissutale

1. Edema (diagnosi) *
2. Late gadolinium enhancement (eziologia, prognosi) *

- *MAPPING T1,T2, ECV*

WJC World Journal of Cardiology
Submit a Manuscript: https://www.f6publishing.com
World J Cardiol 2020 June 26; 12(6): 248-261
DOI: 10.4330/wjc.v12.i6.248
ISSN 1949-8462 (online)
MINIREVIEWS

Cardiovascular magnetic resonance in myocardial infarction with non-obstructive coronary arteries patients: A review

Marco Gatti, Andrea Carisio, Tommaso D'Angelo, Fatemeh Darvizeh, Serena Dell'Aversana, Davide Tore, Maurizio Centonze, Riccardo Faletti

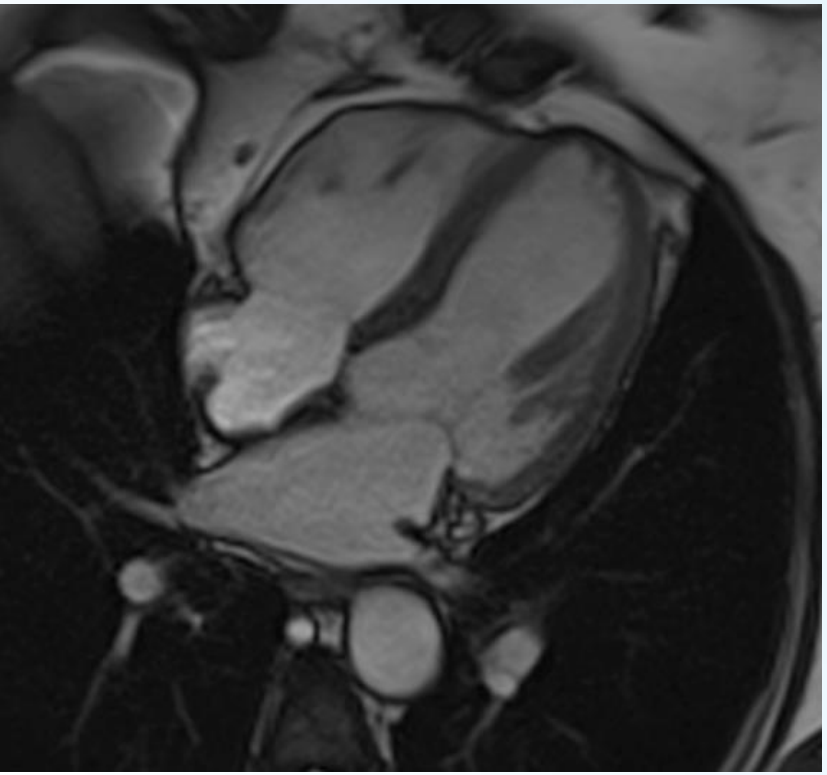
CMR STUDY PROTOCOL

In MINOCA patients the CMR study should be performed within 7 d from symptom onset in order to prevent false negative results or underestimation of the disease extent[8]. It should also be underlined that the examination should not be performed too early, but at least 24 h after disease onset, to avoid too early or overt signs of pathology. Furthermore, in case of negative CMR but with clinical evidence of myocardial involvement, it may be useful to repeat the test between 1 and 2 wk after the initial study to make the correct diagnosis[9].

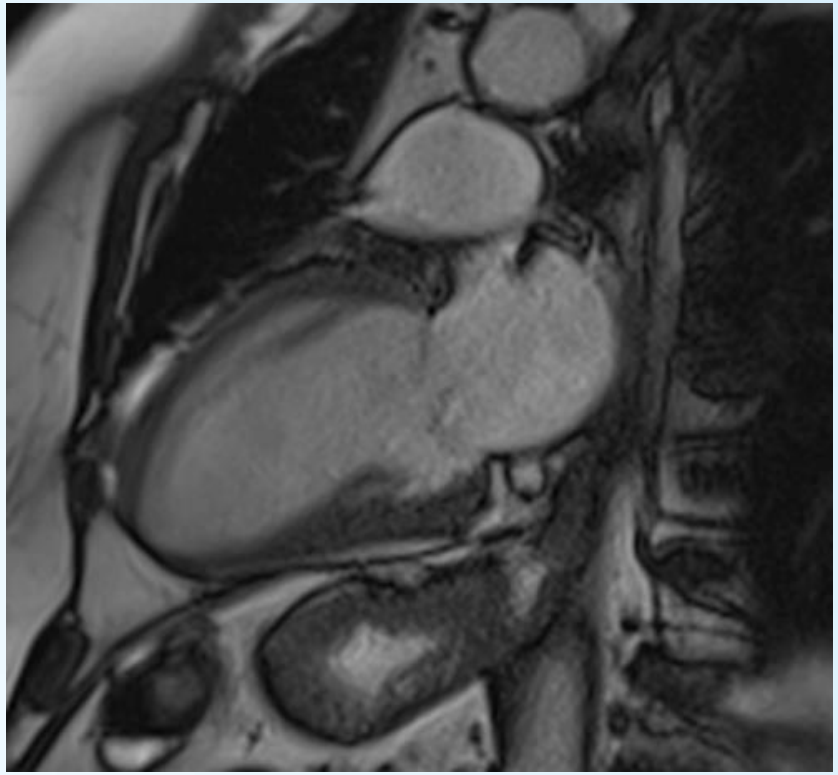
A CMR study protocol to evaluate MINOCA patients should include evaluation of cardiac structure and function with cine imaging, presence and pattern of myocardial edema with T2-weighted short-tau inversion recovery (T2w-STIR) image and presence and pattern of myocardial injury with late-gadolinium enhancement (LGE) imaging. Moreover, the use of new semiquantitative tissue characterization techniques, T1 and extracellular volume (ECV) and T2 mapping are recommended, due to their excellent sensitivity, specificity and diagnostic accuracy in detection of myocardial damage[10].

Cardio RM

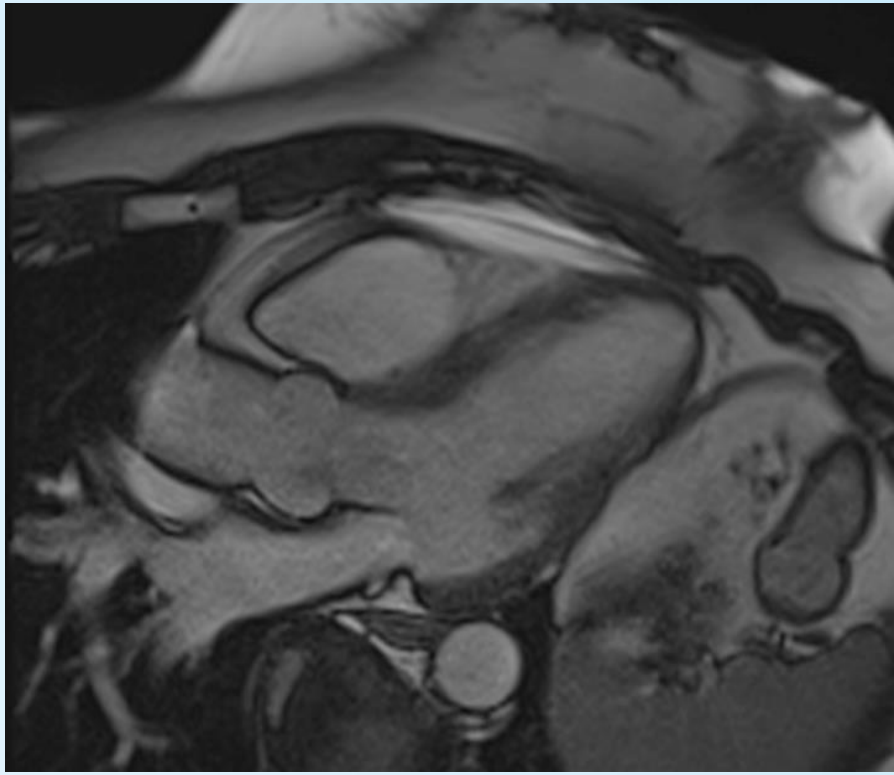
Esame eseguito a 72 ore dall'accesso in PS



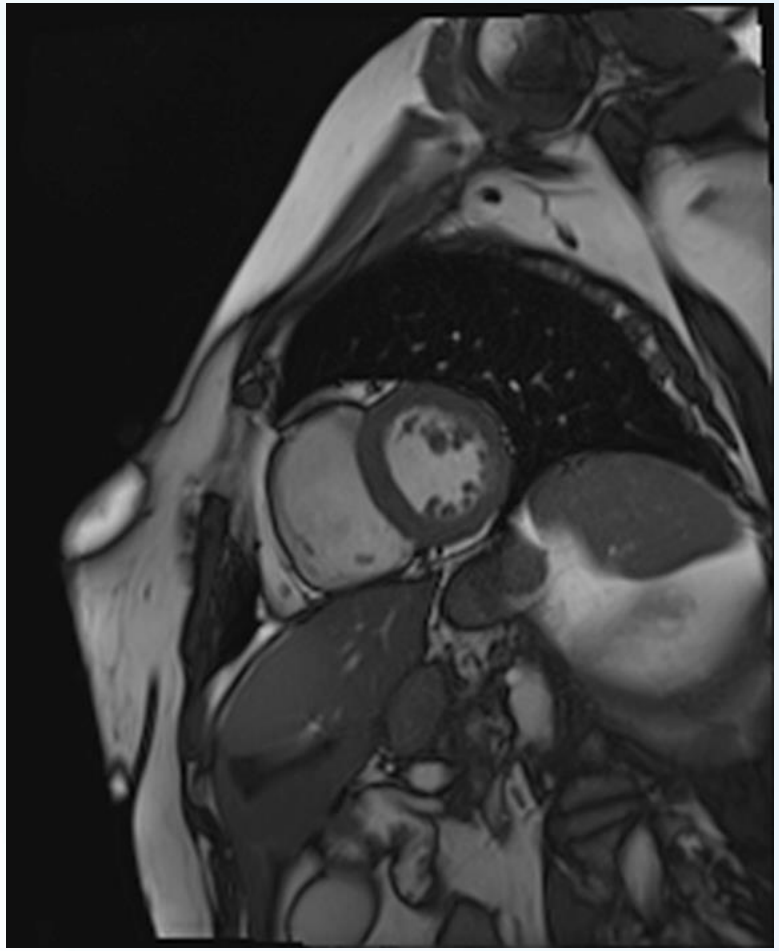
4ch cine SSFP



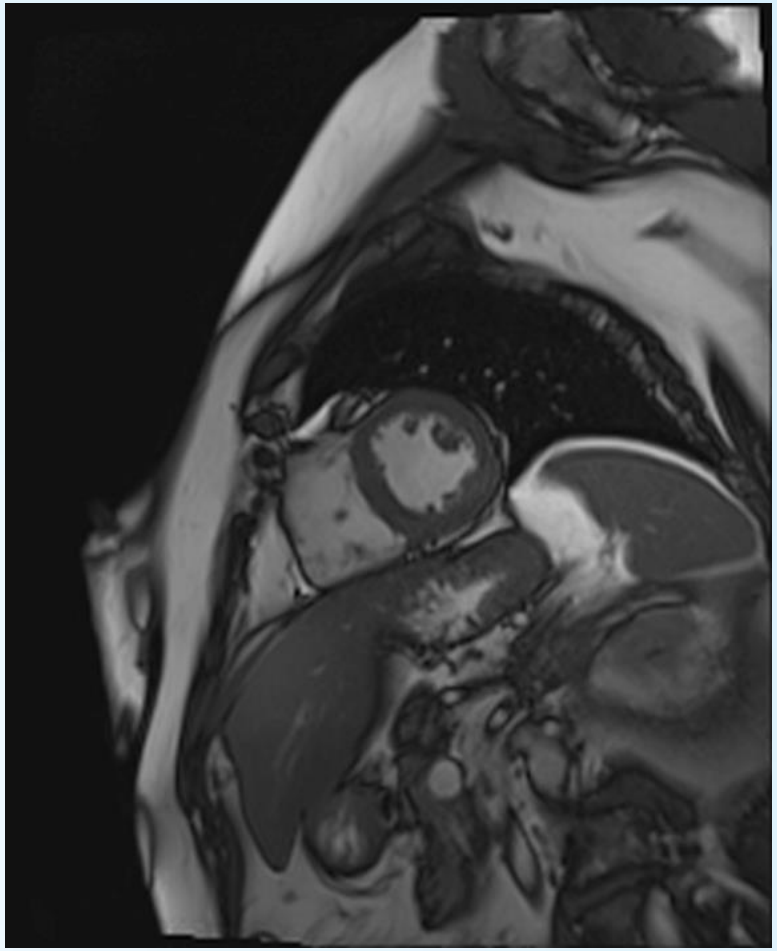
2ch cine SSFP



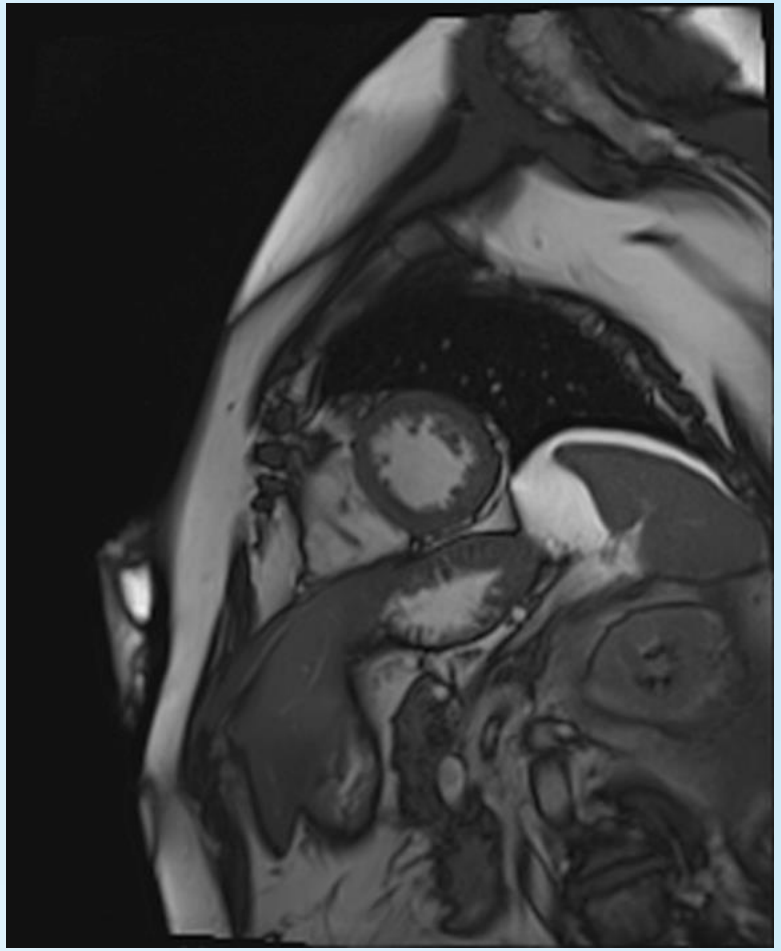
3ch cine SSFP



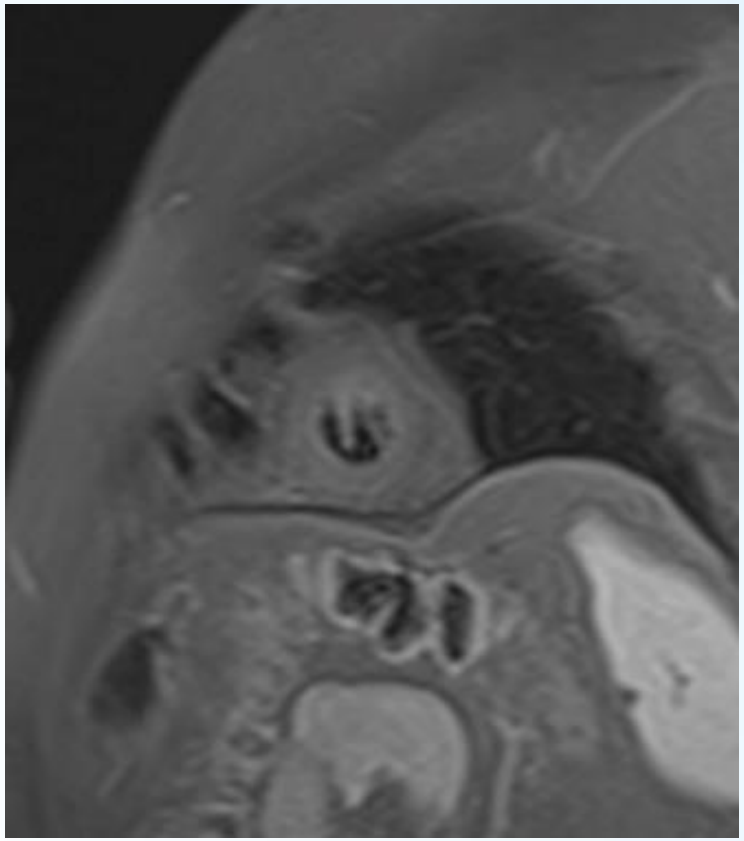
SA base cine SSFP

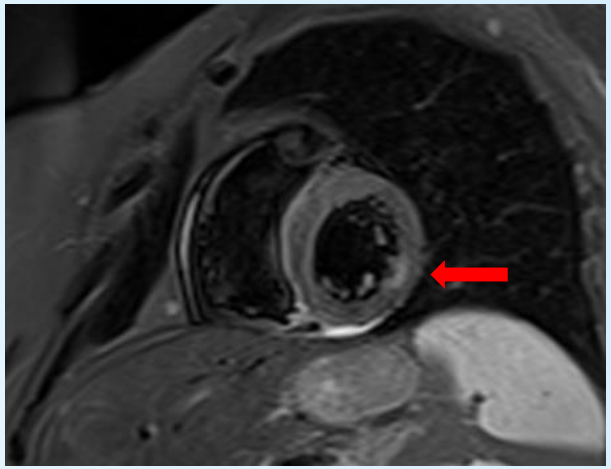


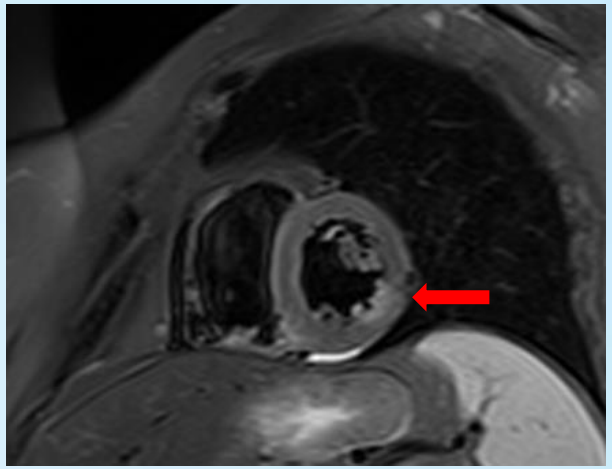
SA medio cine SSFP

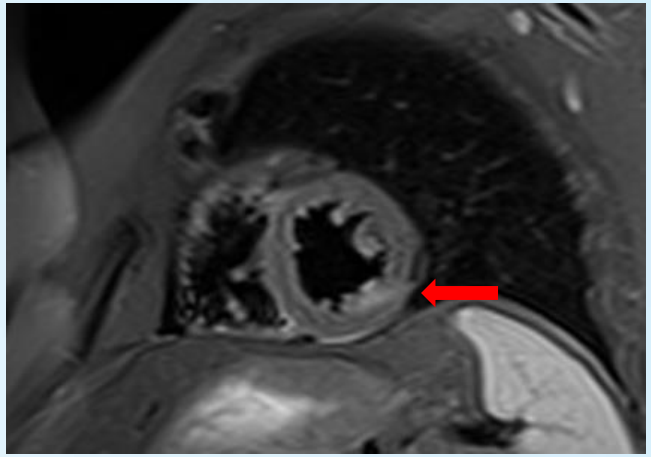


SA apice cine SSFP





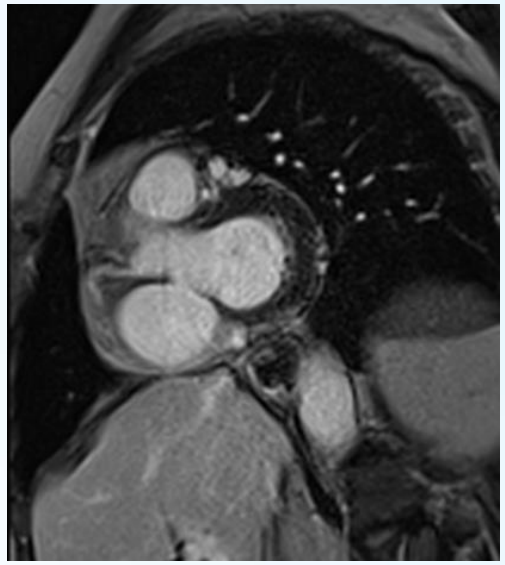
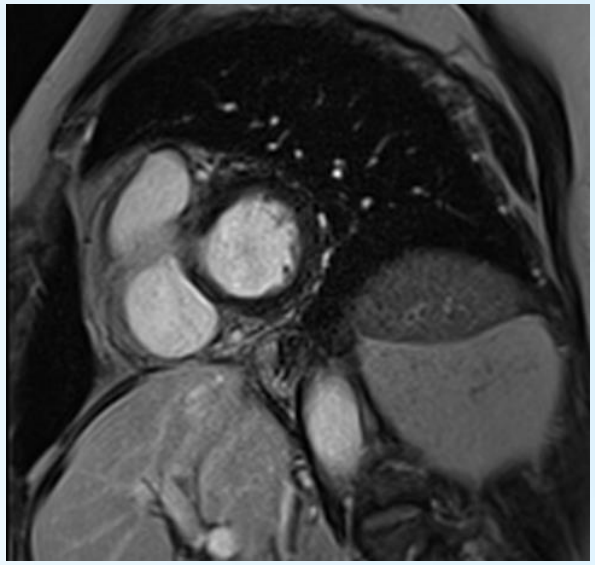
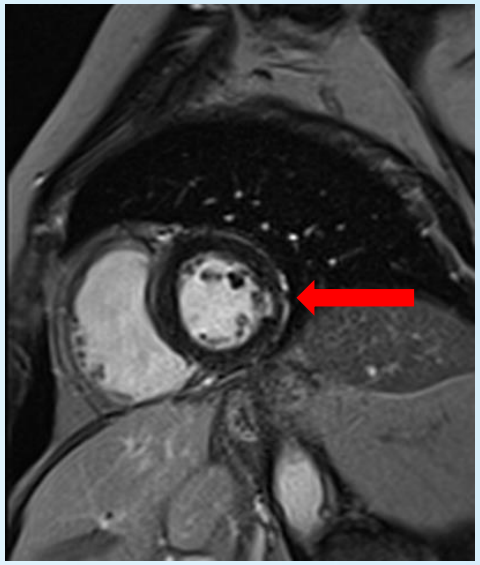


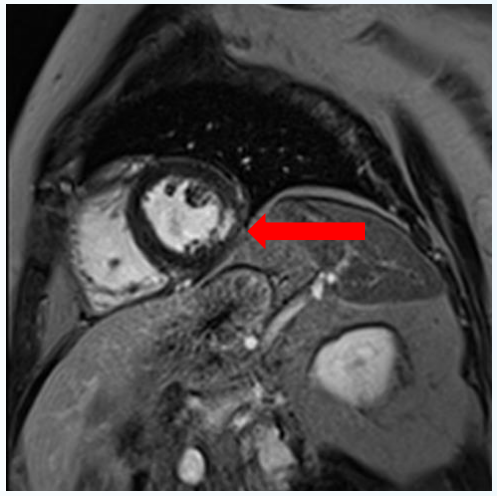
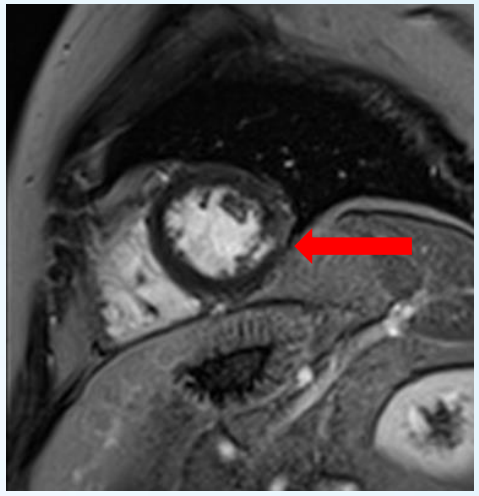
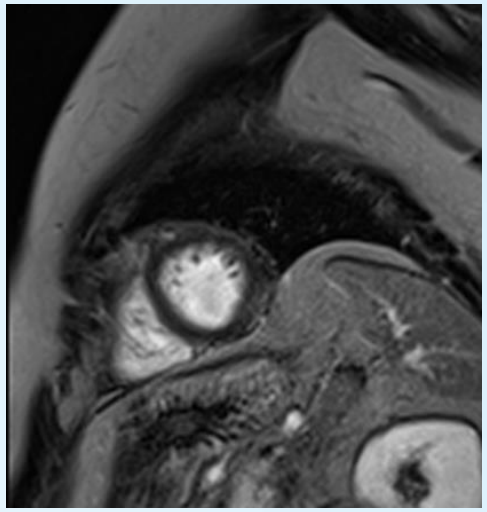
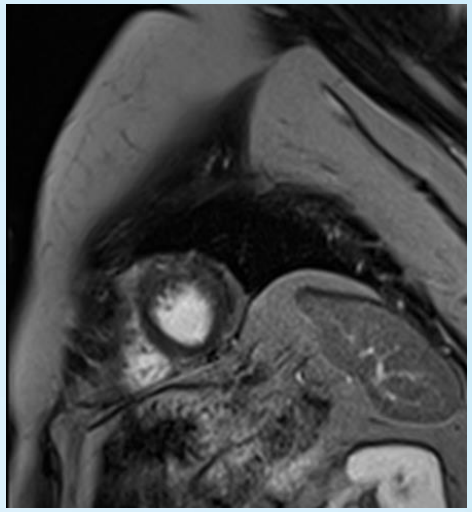


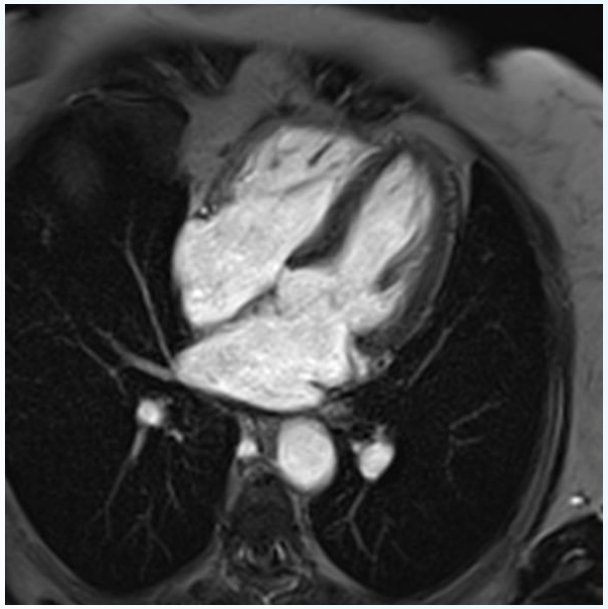
SA T2 STIR

→ Iperintensità di segnale sede infero-laterale basale e medioventricolare da riferire ad edema

LGE SA

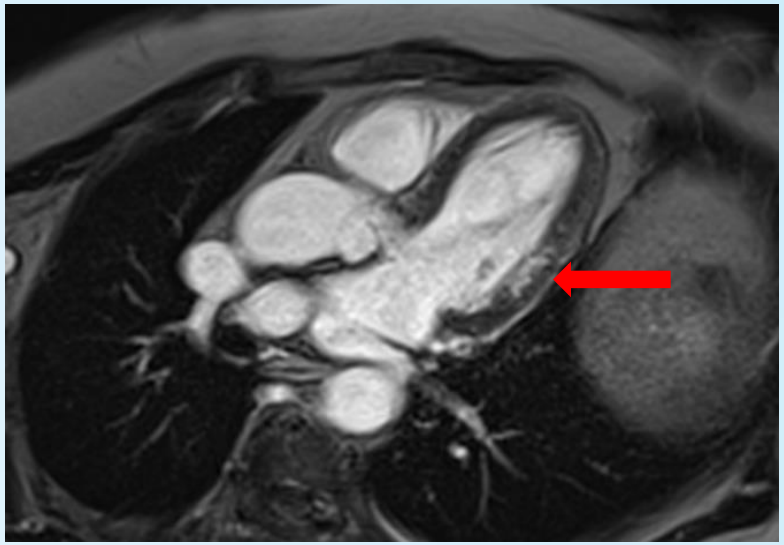




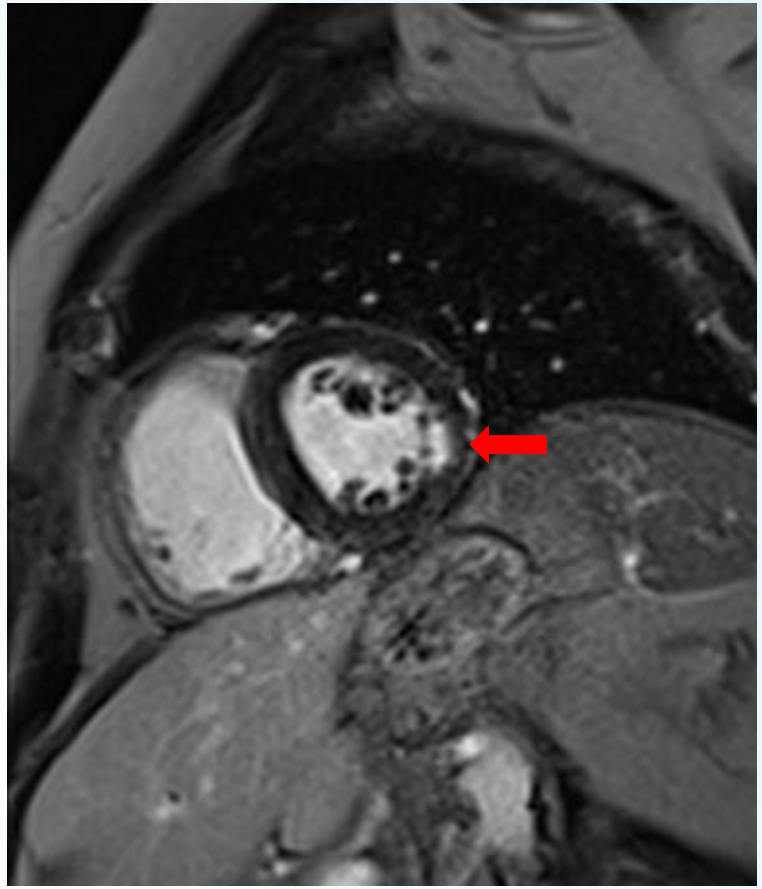


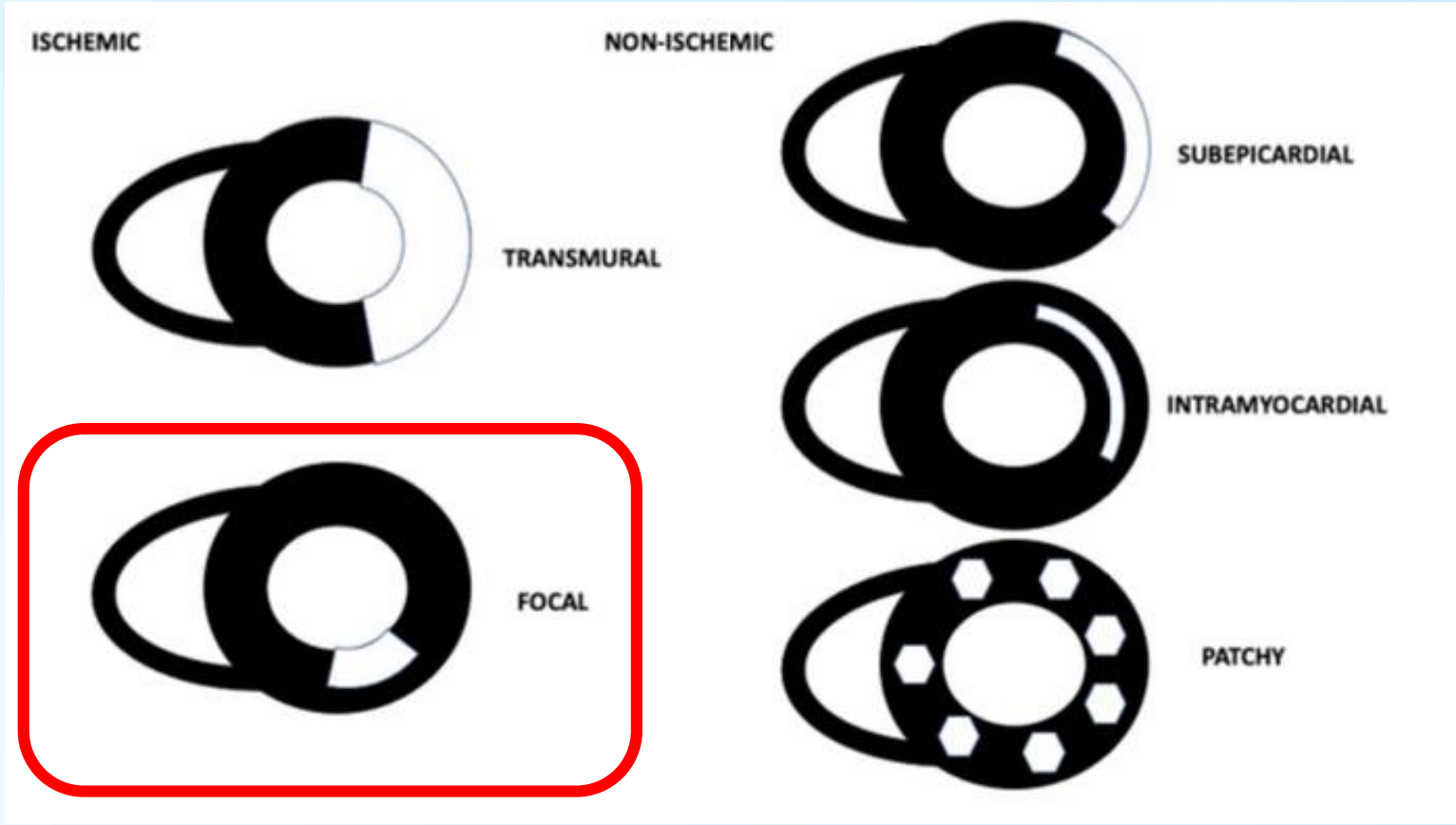
4ch LGE

2ch LGE



3ch LGE



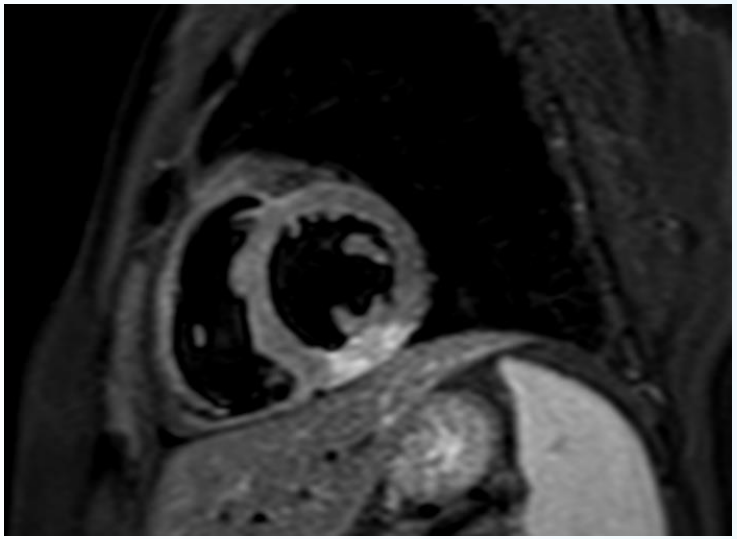


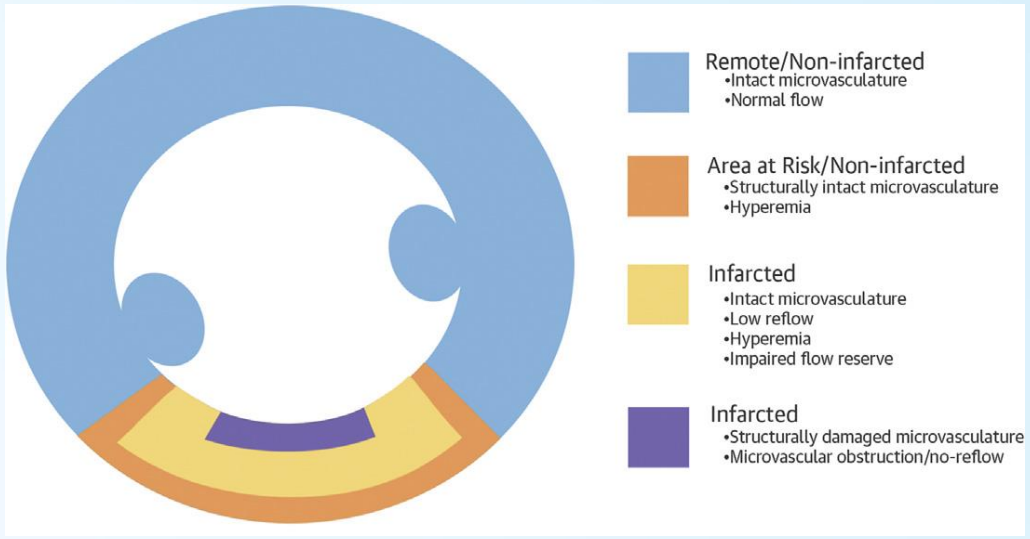
SA LGE

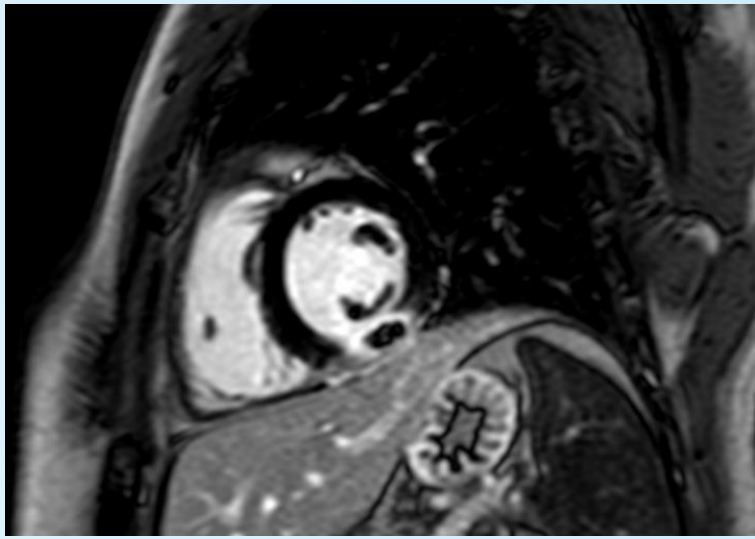
➡ Focale area di LGE con distribuzione subendocardica **(pattern ischemico)** con transmuralità inferiore al 50% a carico del segmento infero-laterale basale e medioventricolare

MINOCA – why CMR?

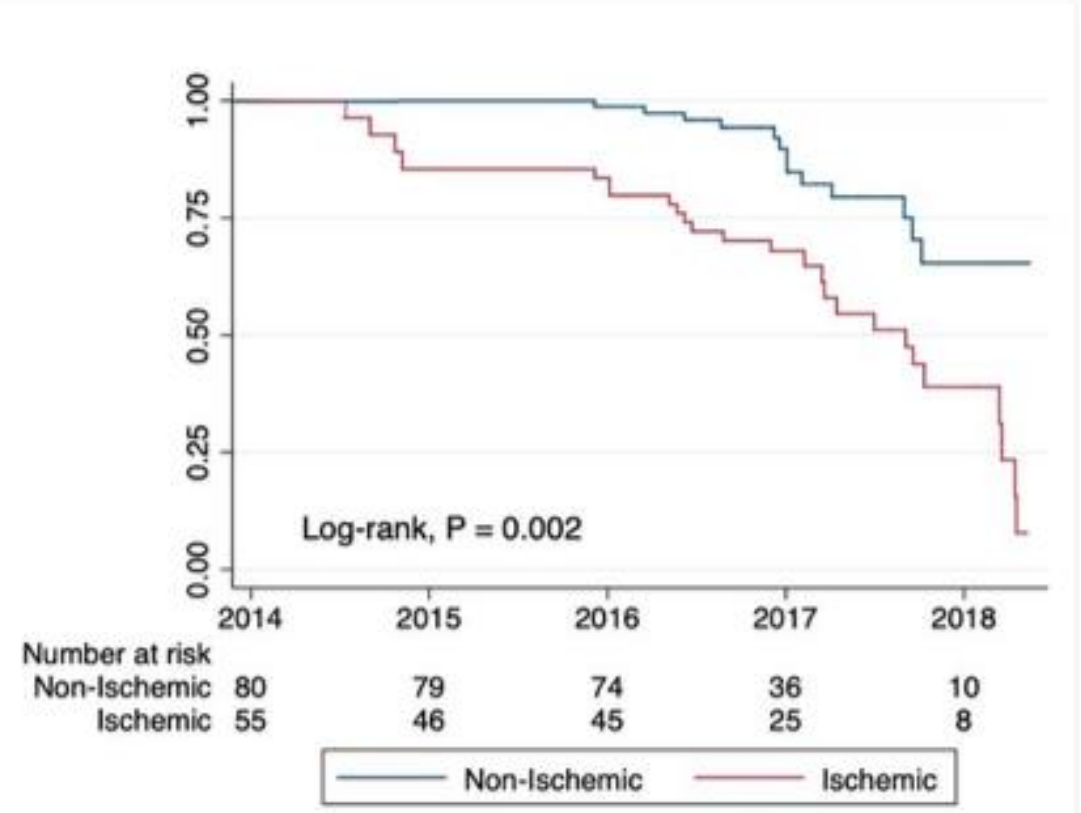
- After myocardial infarction, dynamic tissue changes occur (edema and cardiomyocyte necrosis inflammation, microvascular obstruction, hemorrhage, and finally replacement with fibrosis).



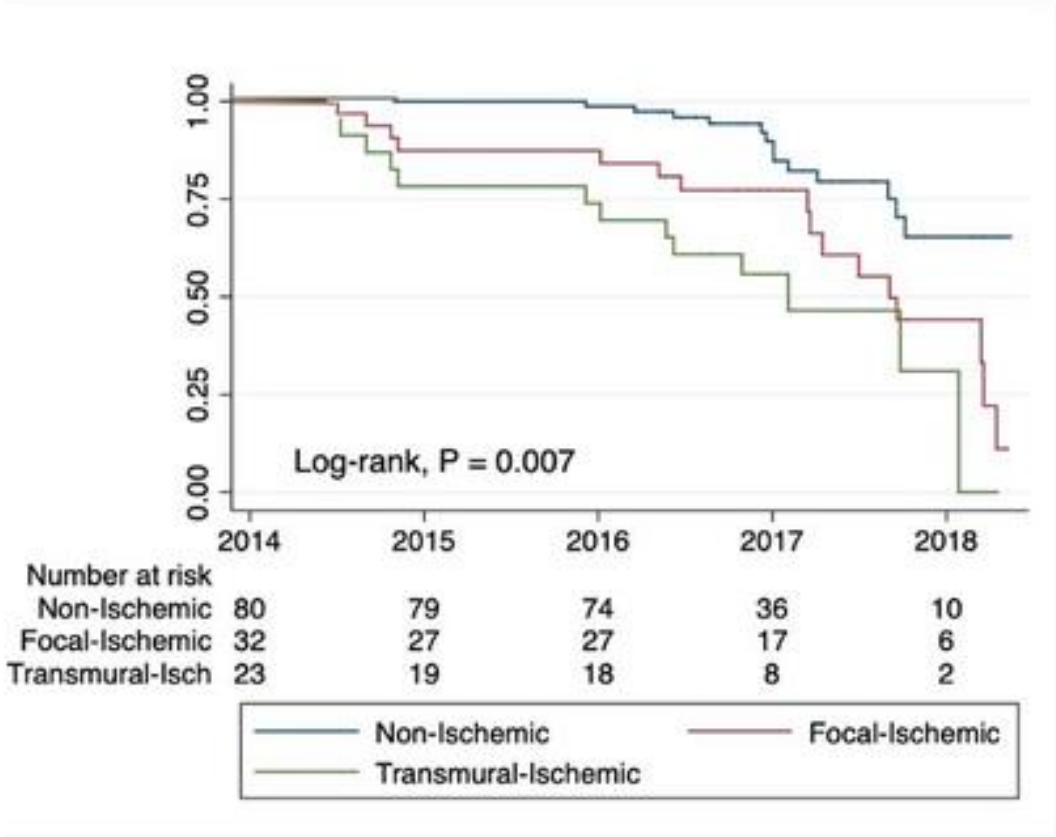




Bekkers SC et al. Microvascular obstruction: underlying pathophysiology and clinical diagnosis. J Am Coll Cardiol 2010;55:1649–60.



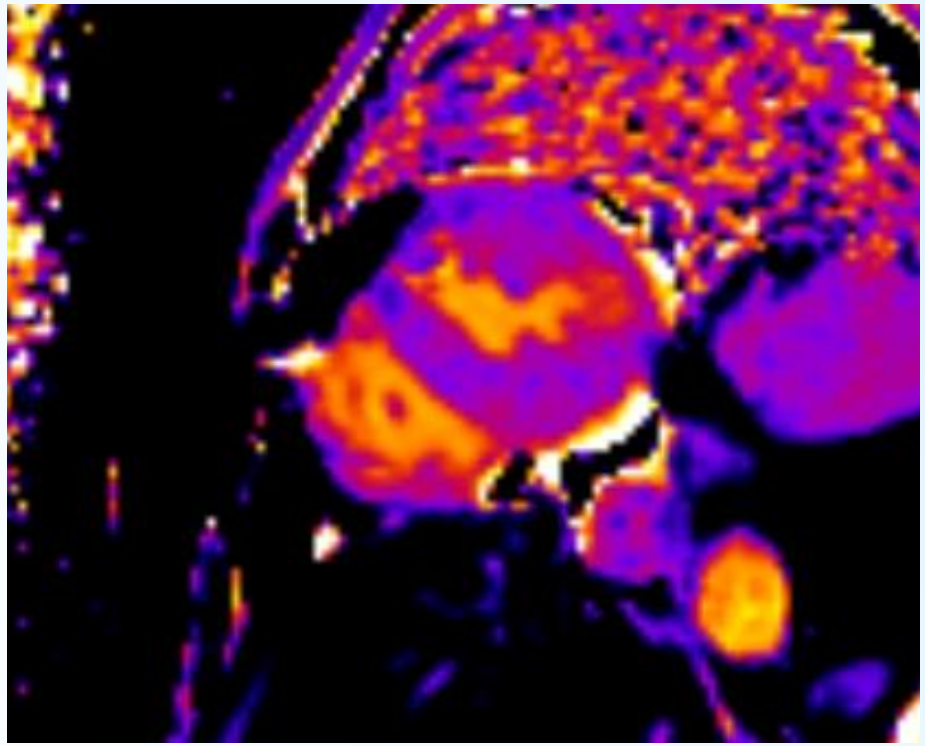
(a)



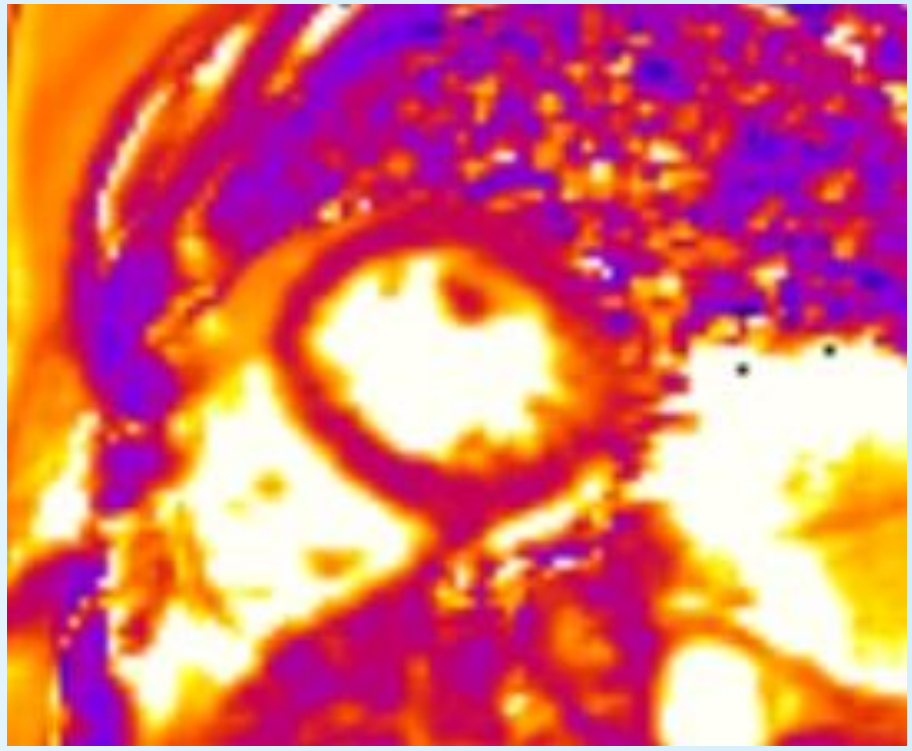
(b)

Bucciarelli V. et al JCM 2023

Cardio RM - Mapping



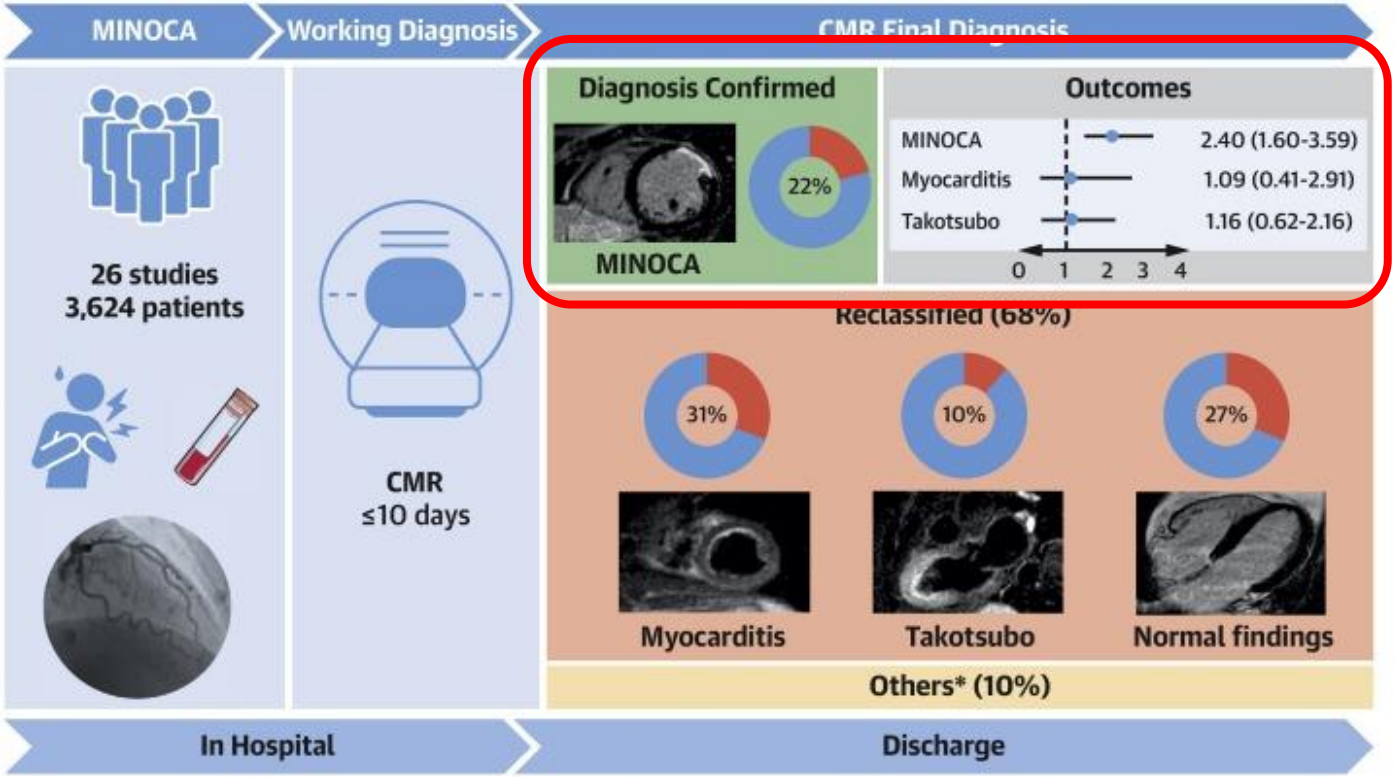
T1 mapping nativo (1263 ms circa)



T2 mapping (68 ms circa)

MINOCA

CENTRAL ILLUSTRATION: Summary of the Main Findings, Proving the Diagnostic and Prognostic Value of Cardiac Magnetic Resonance in the Management of Patients With Myocardial Infarction With Nonobstructive Coronary Arteries



Mileva N, et al. J Am Coll Cardiol Img. 2023;16(3):376-389.

TAKE HOME MESSAGE Diagnostic algorithm for MINOCA

Recommendations	Class[a]	Level[b]
In all patients with an initial working diagnosis of MINOCA, it is recommended to follow a diagnostic algorithm to differentiate true MINOCA from alternative diagnoses.	I	C
It is recommended to perform CMR in all MINOCA patients without an obvious underlying cause.[370]	I	B
It is recommended to manage patients with an initial diagnosis of MINOCA and a final established underlying cause according to the disease-specific guidelines.	I	C
Patients with a final diagnosis of MINOCA of unknown cause may be treated according to secondary prevention guidelines for atherosclerotic disease.	IIb	C

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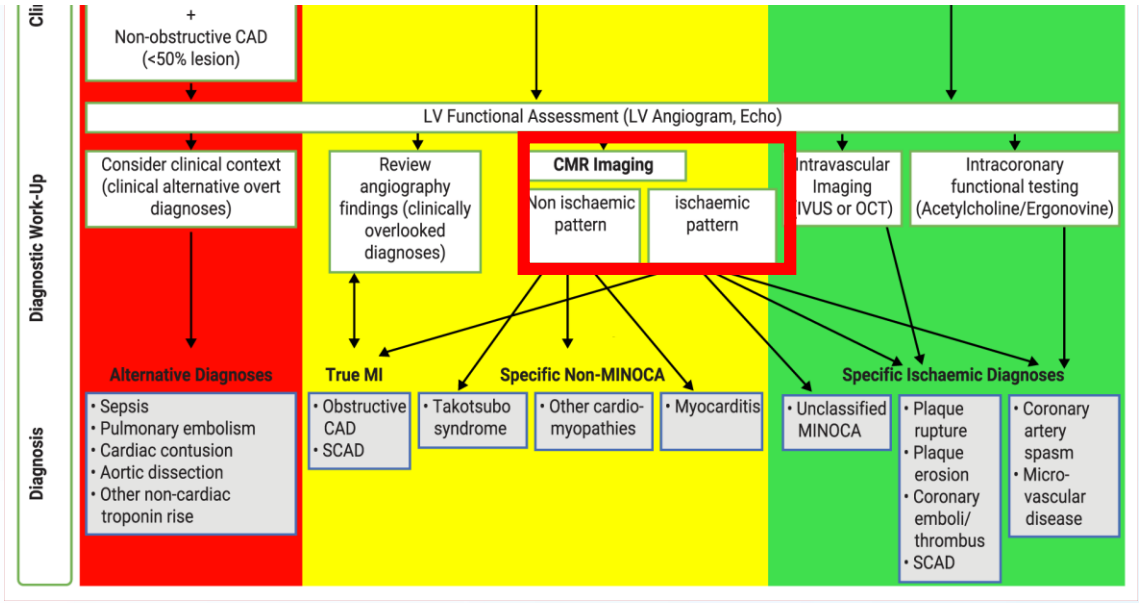

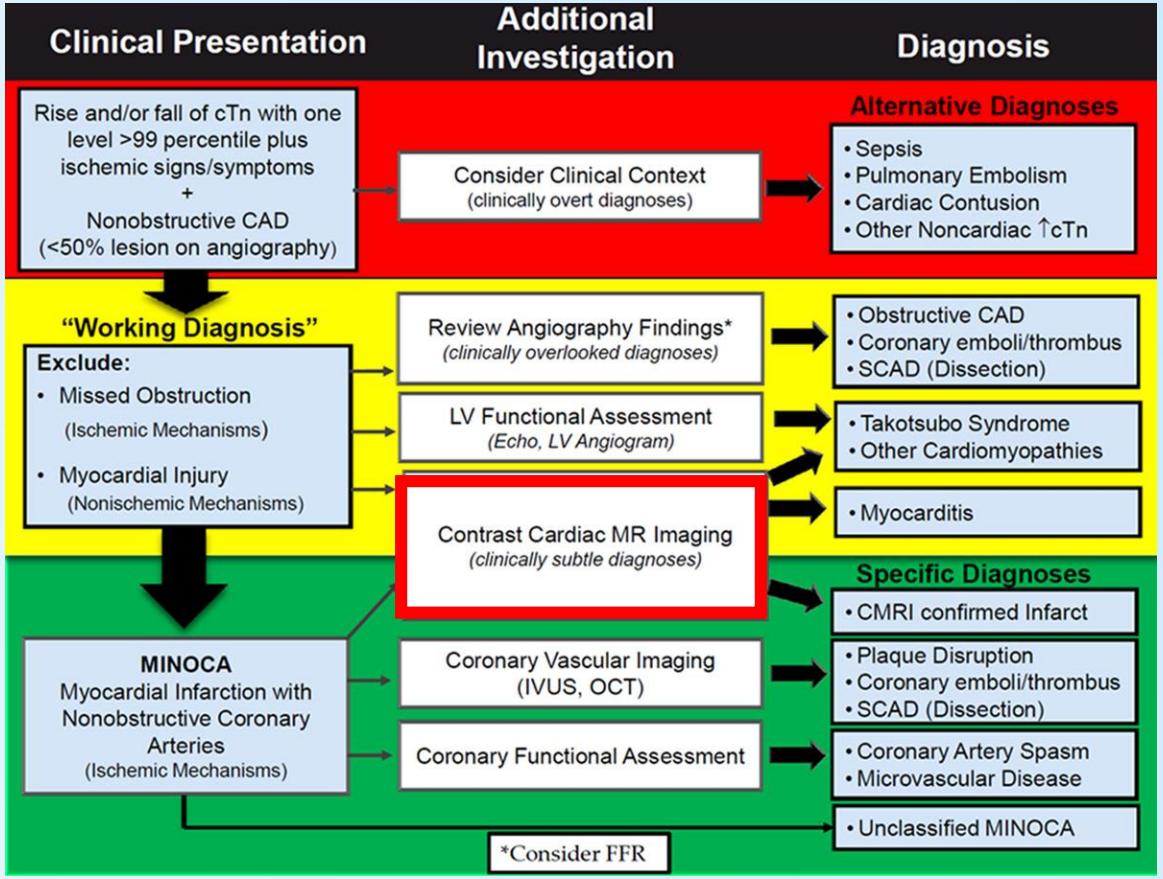

Eur Heart J, ehaa575, https://doi.org/10.1093/eurheartj/ehaa575

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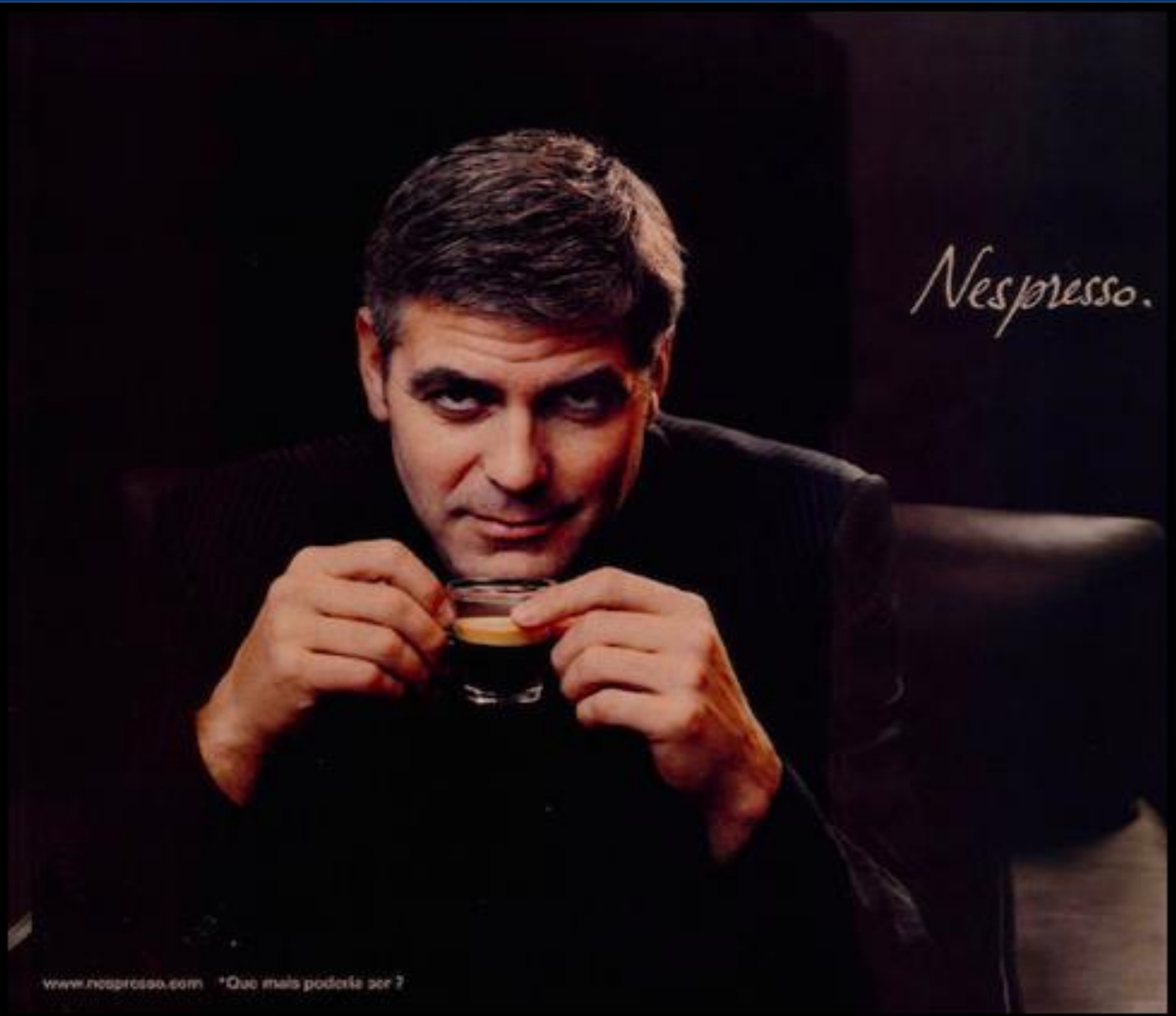
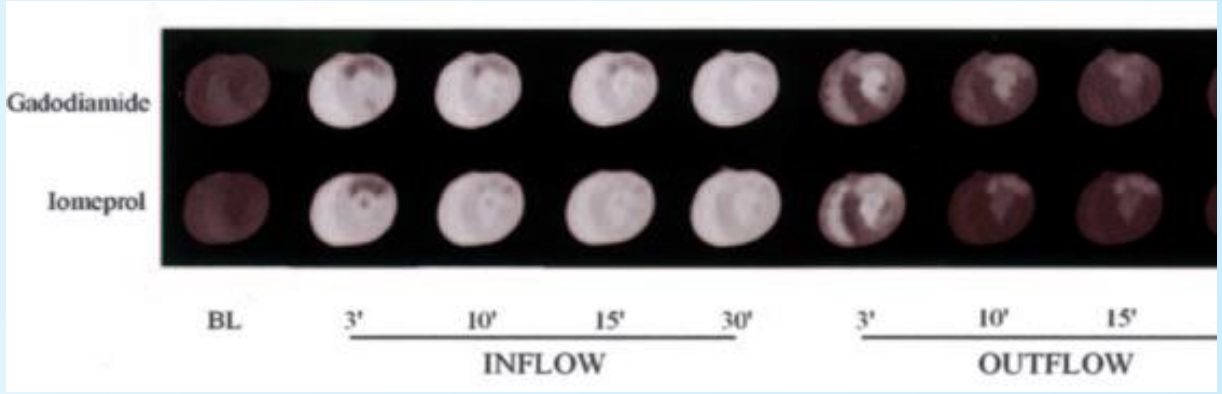
ESC European Society of Cardiology

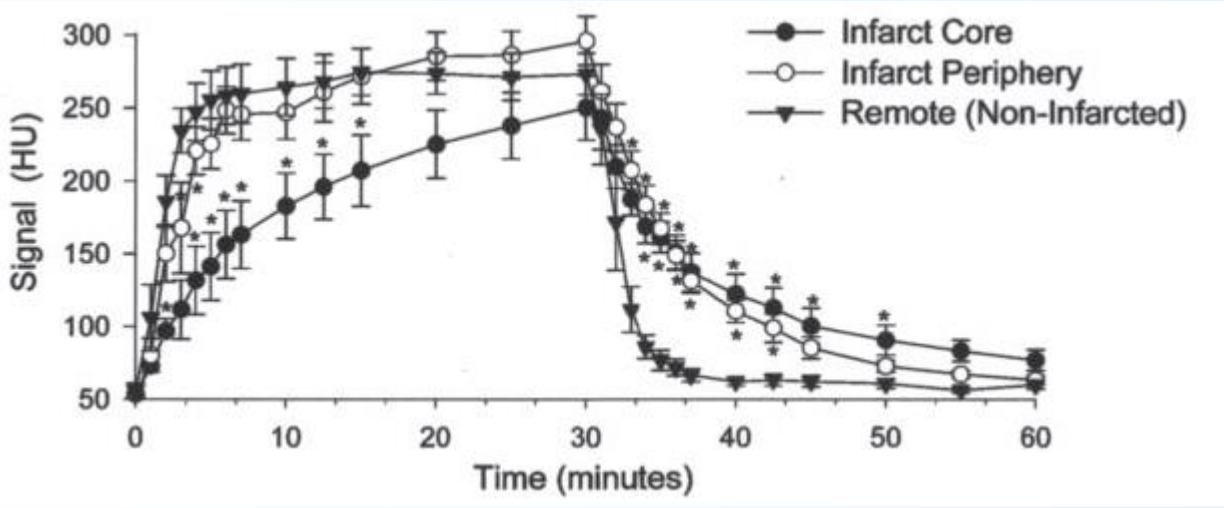
Circulation. 2019 Apr 30;139(18):e891-e908. doi: 10.1161/CIR.0000000000000670.


Nespresso.
www.nespresso.com *Que mais poderia ser ?

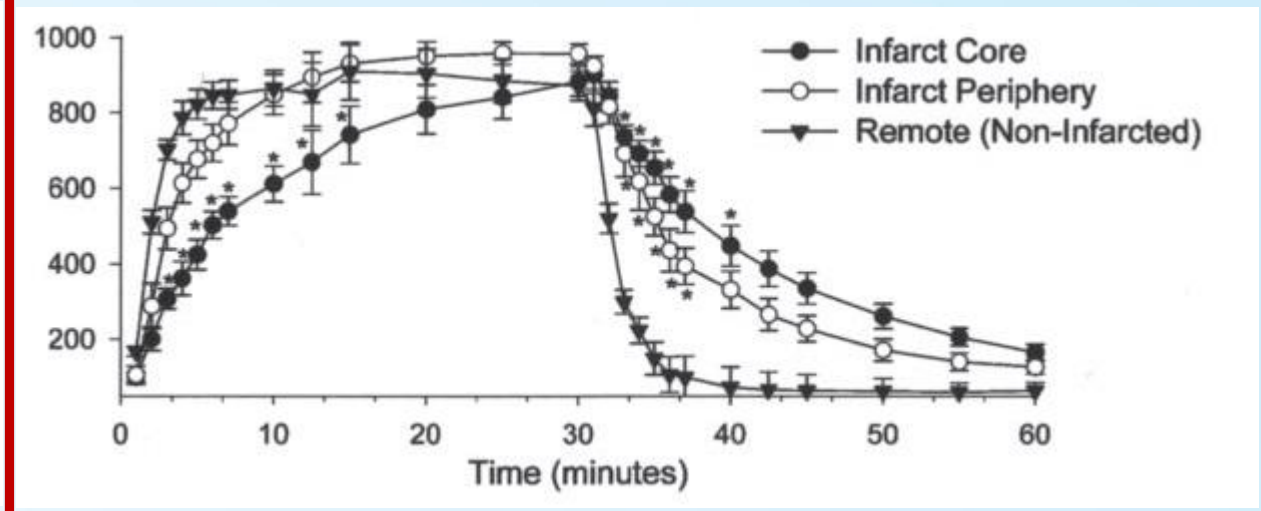
Iodine-Based Contrast Media kinetic



GADODIAMIDE

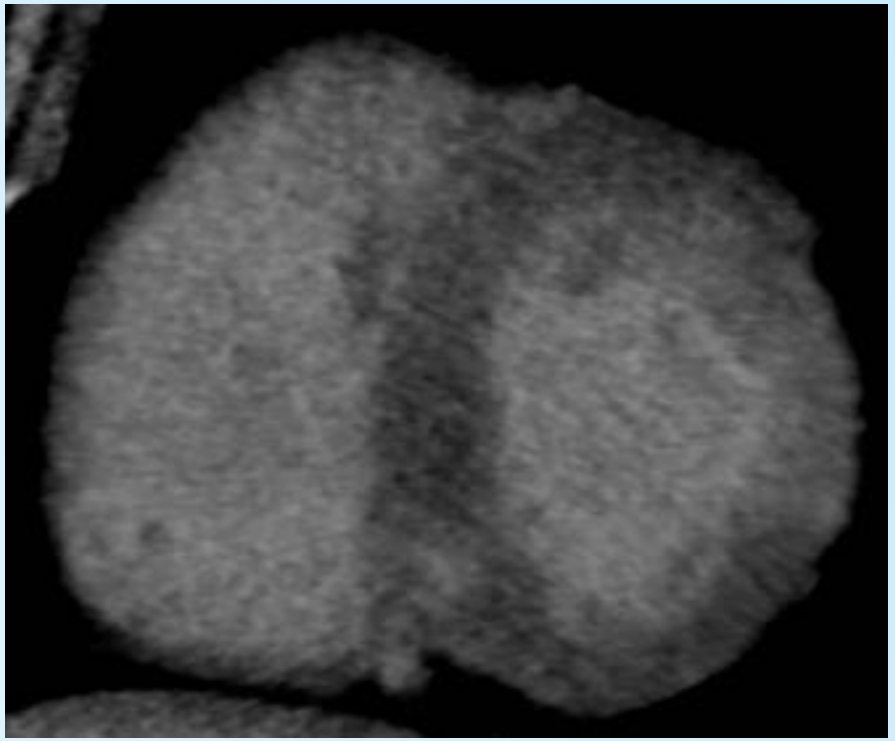


IOMEPROL



Gerber et al. Circulation. 2006;113:823-833.

LIE CT protocol



Late Iodine Enhancement (LIE) scan:
7 minutes after CM administration
Low kV

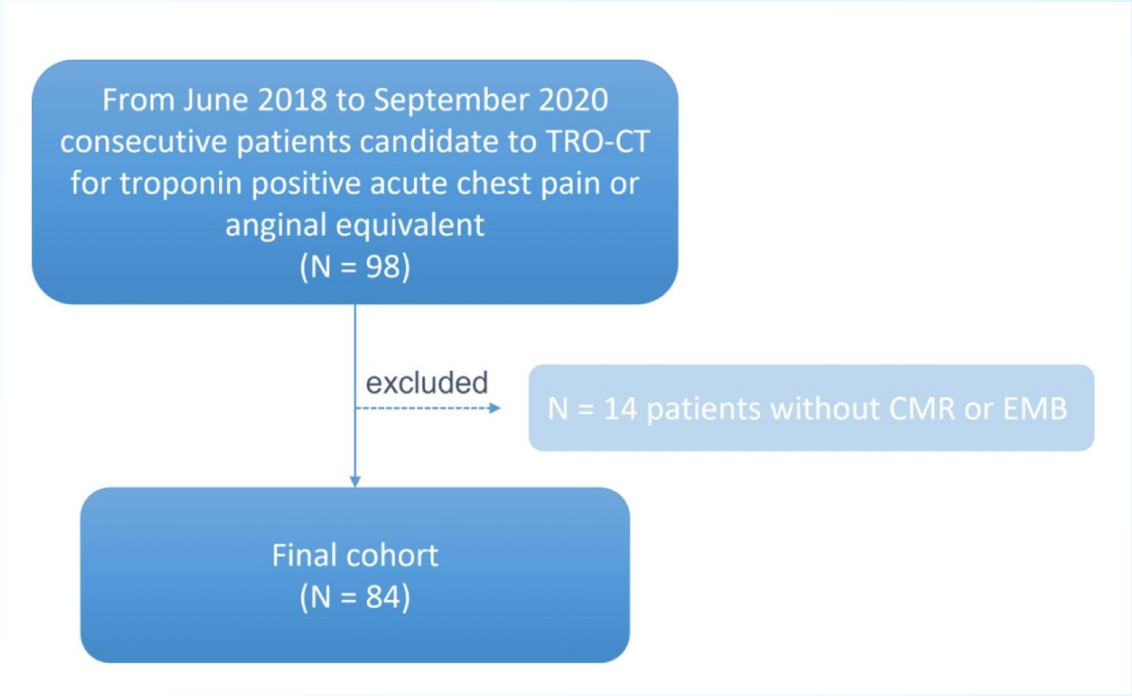
Contrast medium: **0.6 g/kg**
of iodinated contrast medium (i.e. 50ml + 60 ml in a 60 kg patients)

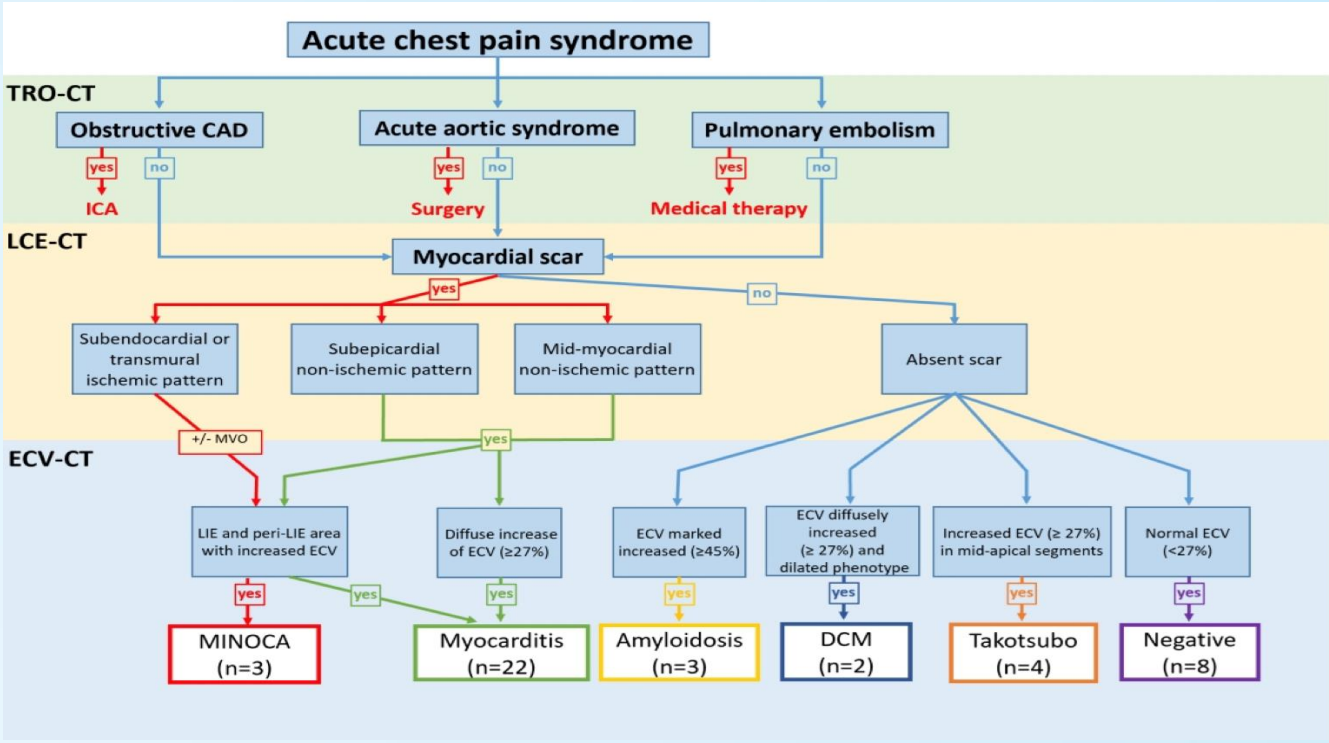
Post-processing: LIE dataset reconstructed in short axis

Radiology
ORIGINAL RESEARCH

Myocardial Late Contrast Enhancement CT in Troponin-Positive Acute Chest Pain Syndrome

Anna Palmisano, MD, PhD • Davide Vignale, MD • Marijana Tadic, MD • Francesco Moroni, MD • Domenico De Stefano, MD • Marco Gatti, MD • Edda Boccia, PhD • Riccardo Faletti, MD • Michele Oppizzi, MD • Giovanni Peretto, MD • Massimo Slavich, MD • Simone Sala, MD • Matteo Montorfano, MD • Eustachio Agricola, MD • Alberto Margonato, MD • Francesco De Cobelli, MD • Francesco Gentile, MD • Mattia Robella, MD • Giancarlo Cortese, MD • Antonio Esposito, MD





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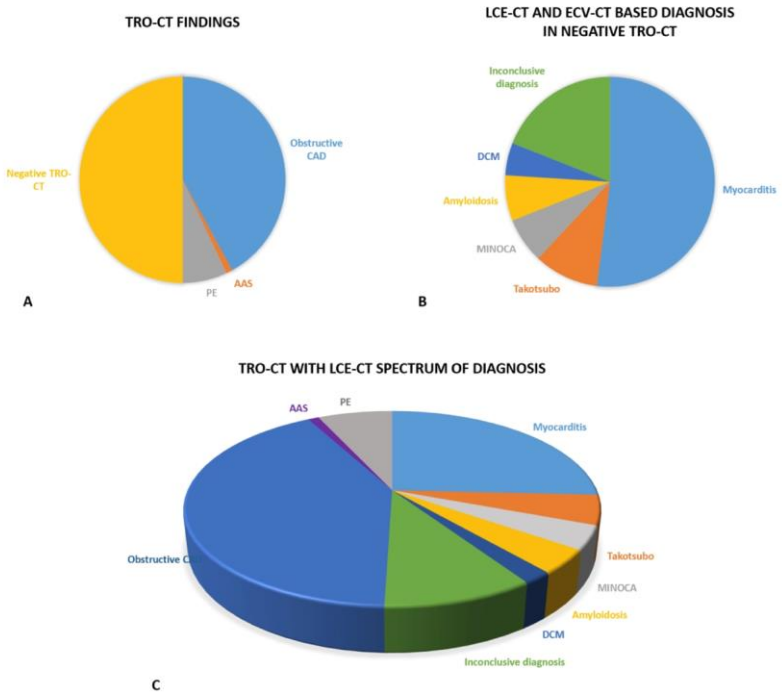
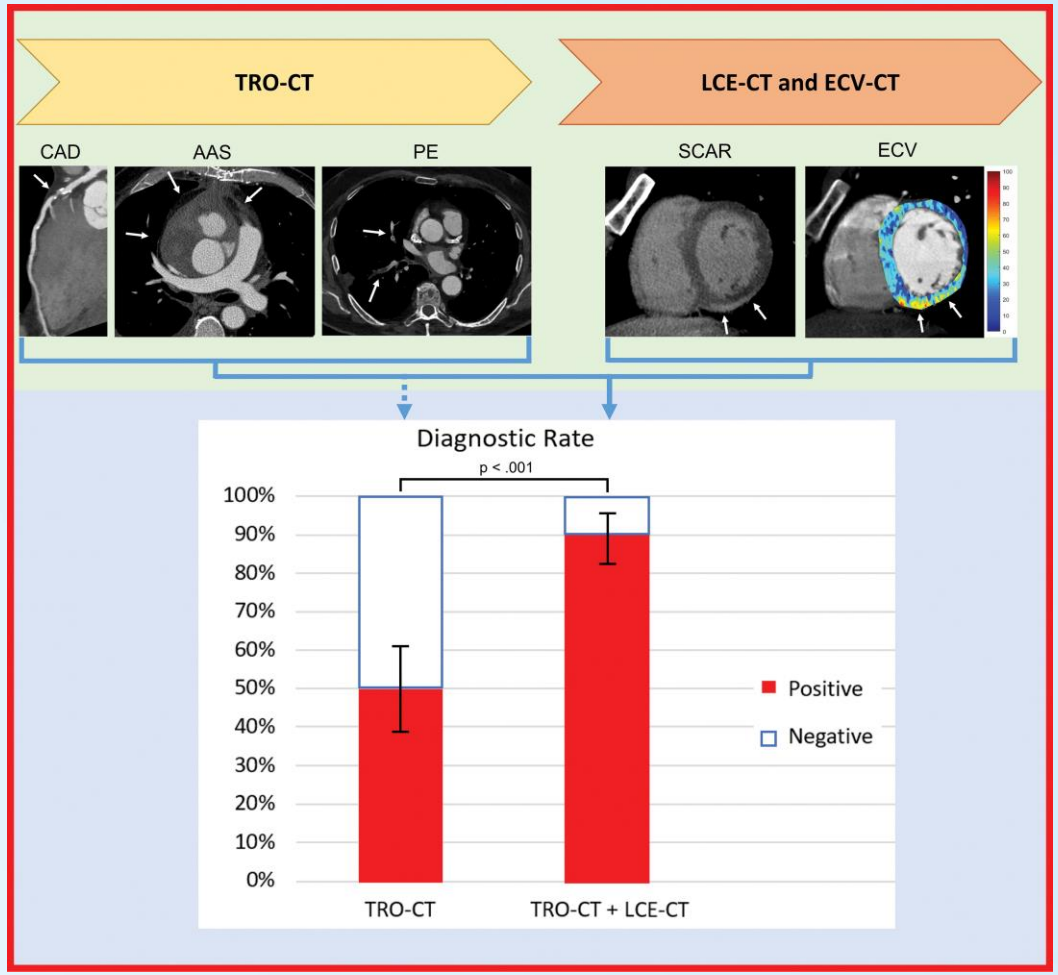




CASE 1

- Donna, 26 aa. Pregressa infezione da SARS-CoV-2 paucisintomatica
- Accede in DEA per febbre di ndd, persistente, con associato dolore toracico discontinuo. Emodinamicamente stabile.
- ECG: tachicardia sinusale con alterazioni della ripolarizzazione in sede laterale con T negative in omosede.
- TnI 409 ng/dl

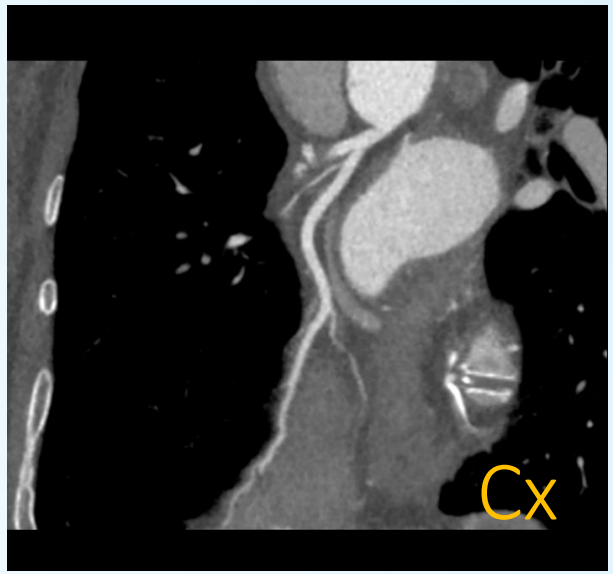
→ CT

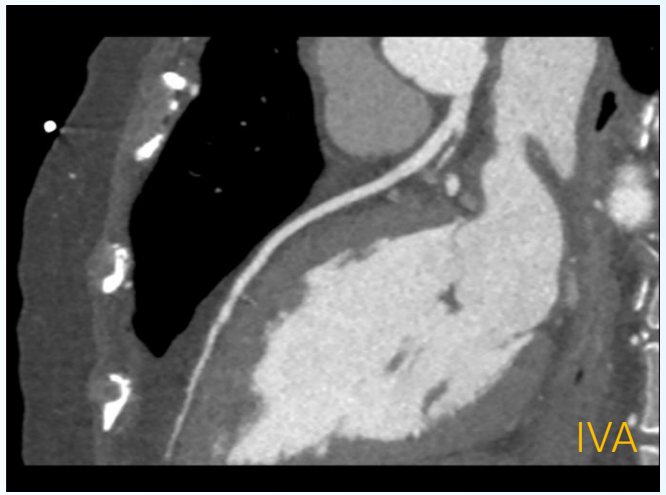
CASE 2

- Donna, 40 aa.
- ortopnea, tachicardia → PS
- ECG: tachicardia sinusale con disturbi della ripolarizzazione atipici.
- Ematochimici: TnT 378 ng/dL

→ CT

CASE 1

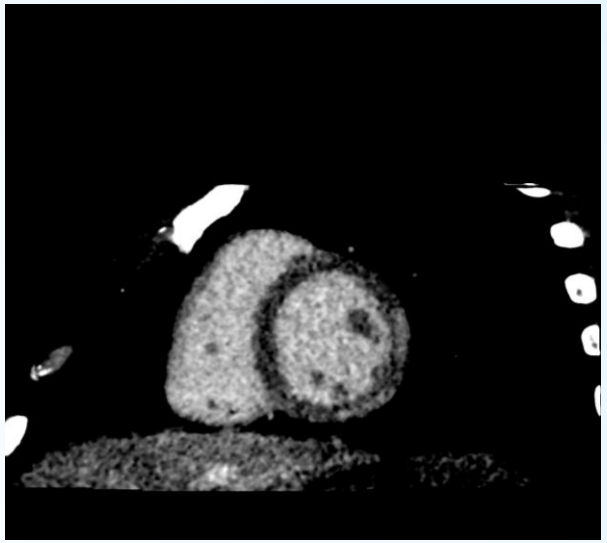


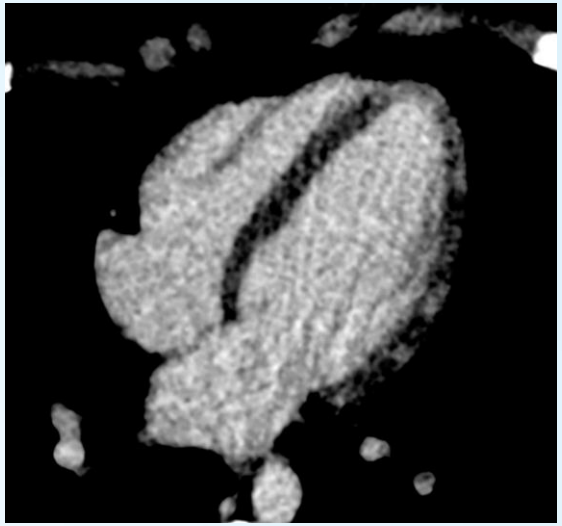


CASE 2

CASE 1

LIE





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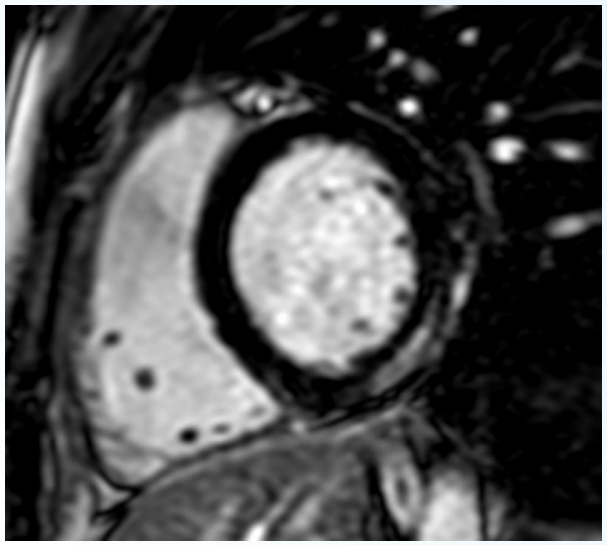
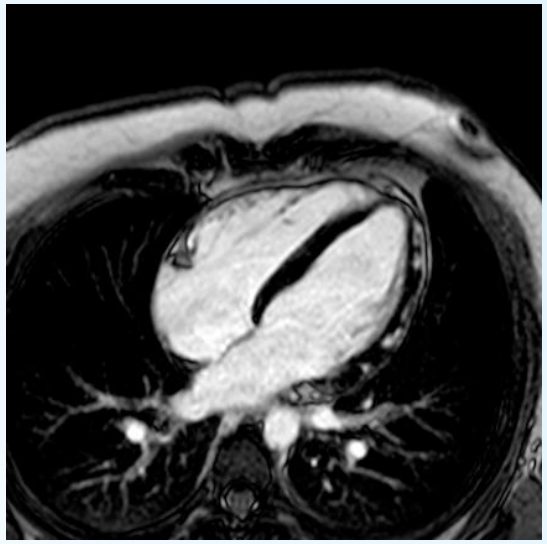
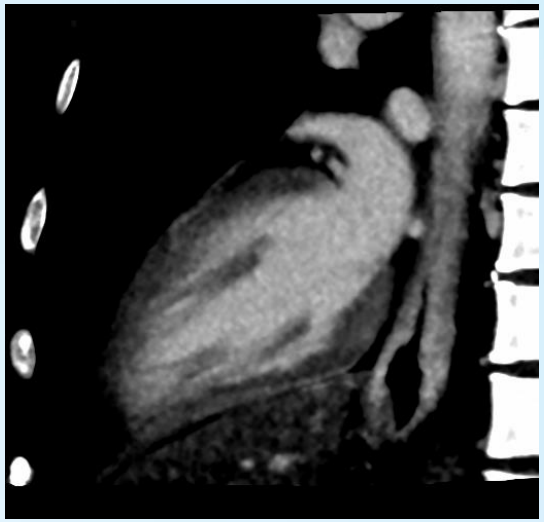
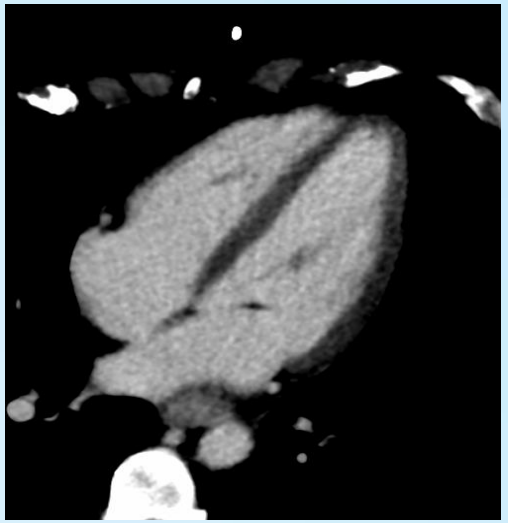
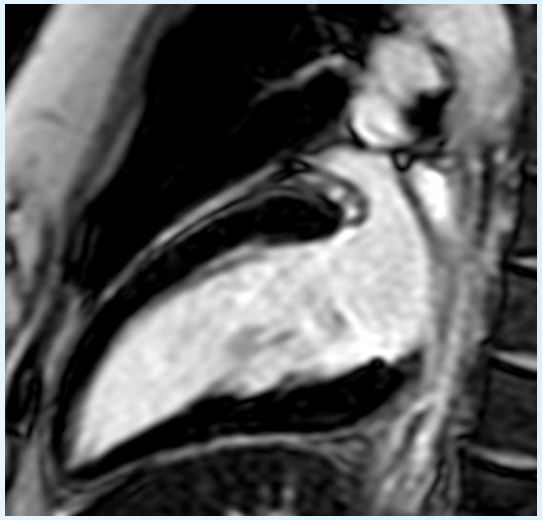


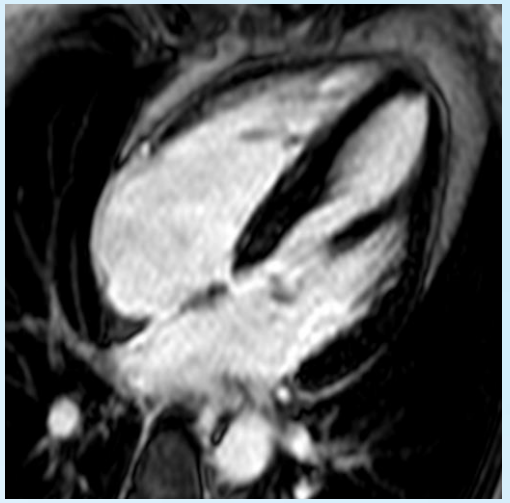


CASE 2







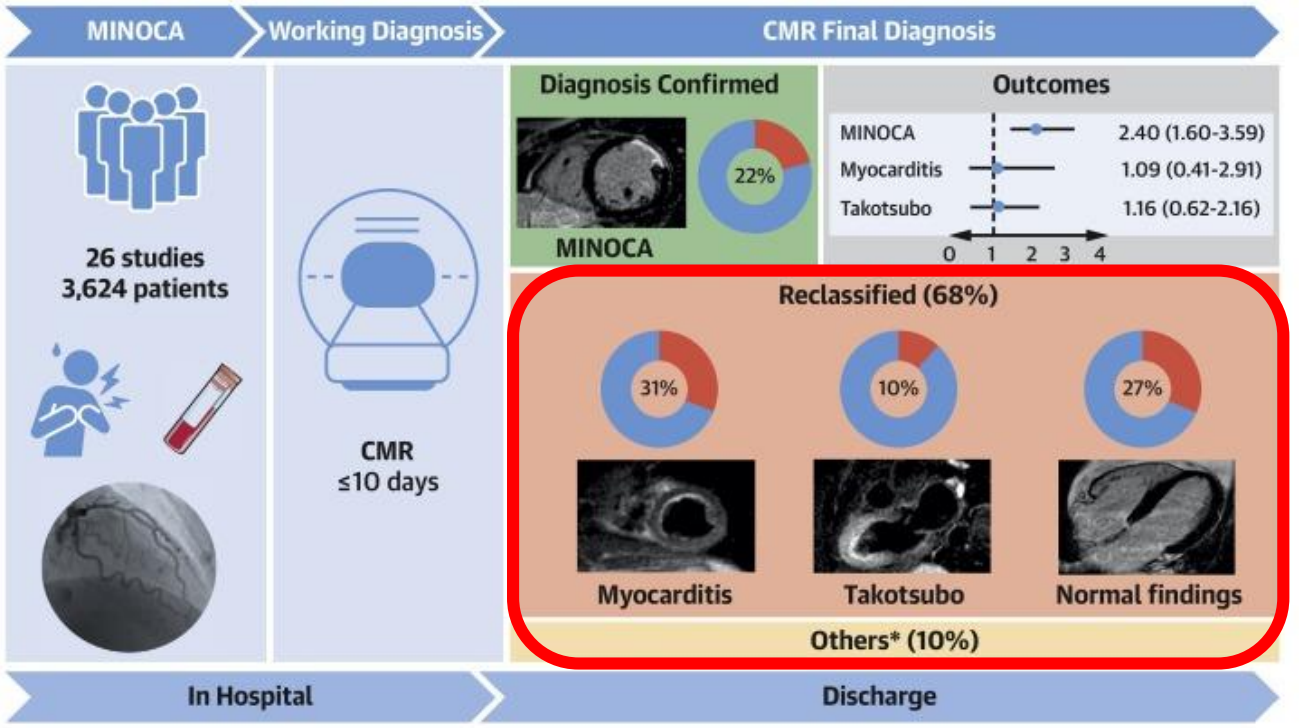


CASE 1

CASE 2

MYOCARDITIS

CENTRAL ILLUSTRATION: Summary of the Main Findings, Proving the Diagnostic and Prognostic Value of Cardiac Magnetic Resonance in the Management of Patients With Myocardial Infarction With Nonobstructive Coronary Arteries



Mileva N, et al. J Am Coll Cardiol Img. 2023;16(3):376-389.

NORMAL FINDINGS

Grazie per l'attenzione

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