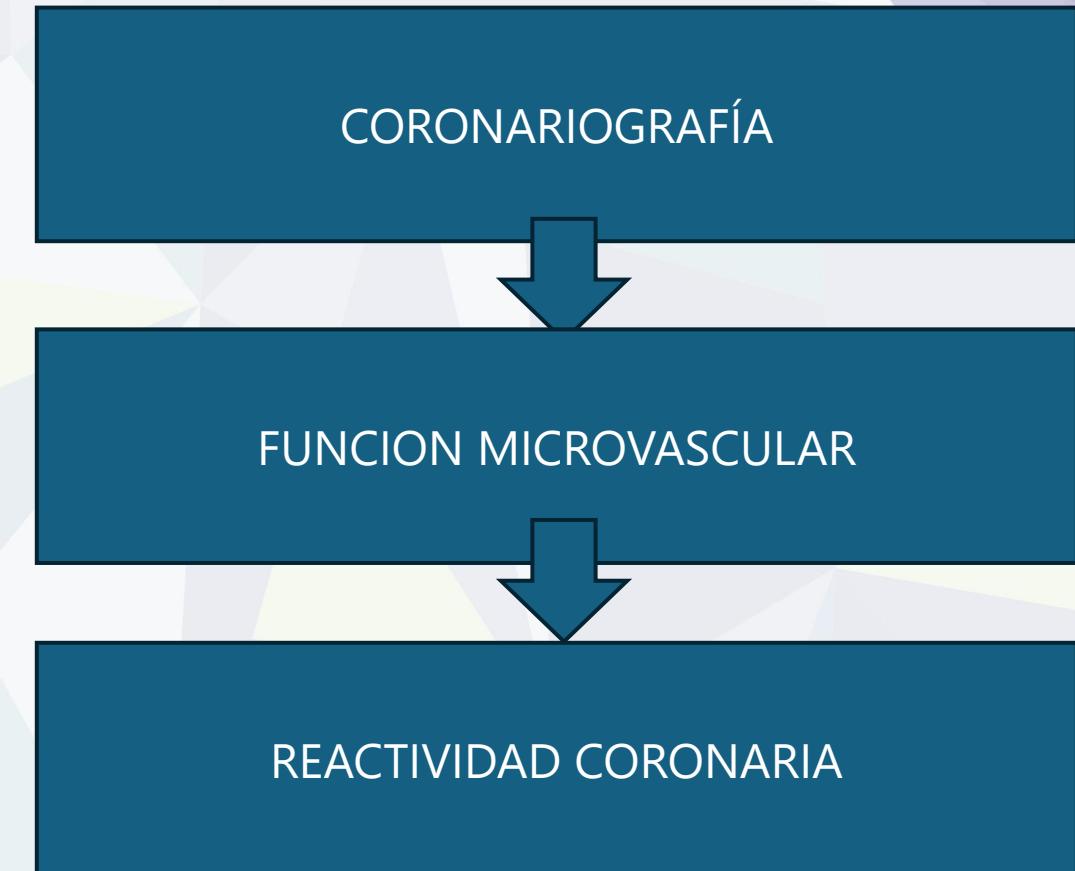


ANOCA / MINOCA: ALGORITMO-ÍNDICES

Enrique Gutiérrez Ibañes
Hospital General Universitario Gregorio
Marañón

Empecemos con ANOCA

- 50% de los pacientes que vienen a cateterismo por SCC
- Dos preguntas a contestar:
 - 1) Hay mecanismo de isquemia?
 - 2) Cuál(es)



RESERVA CORONARIA DE FLUJO (CFR)

- Cociente entre flujo máximo y flujo basal
- Hiperemia con vasodilatadores directos:
 - Adenosina iv / ic
 - Nitroprussiato
 - Papaverina
- Valor normal >2-2,5

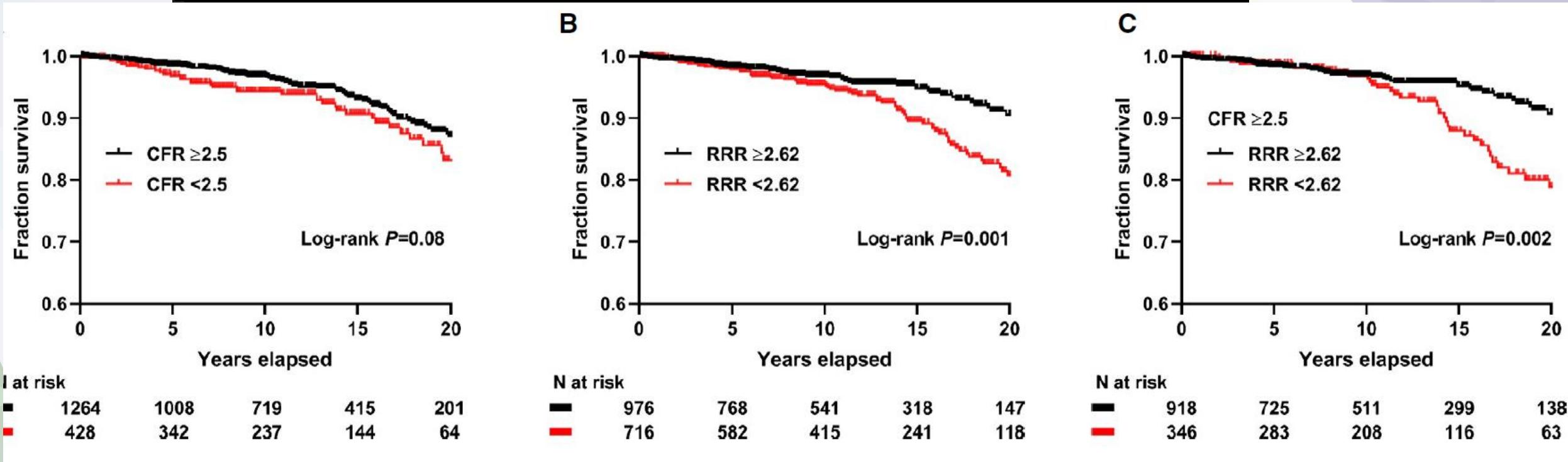


INDICES DE RESISTENCIA



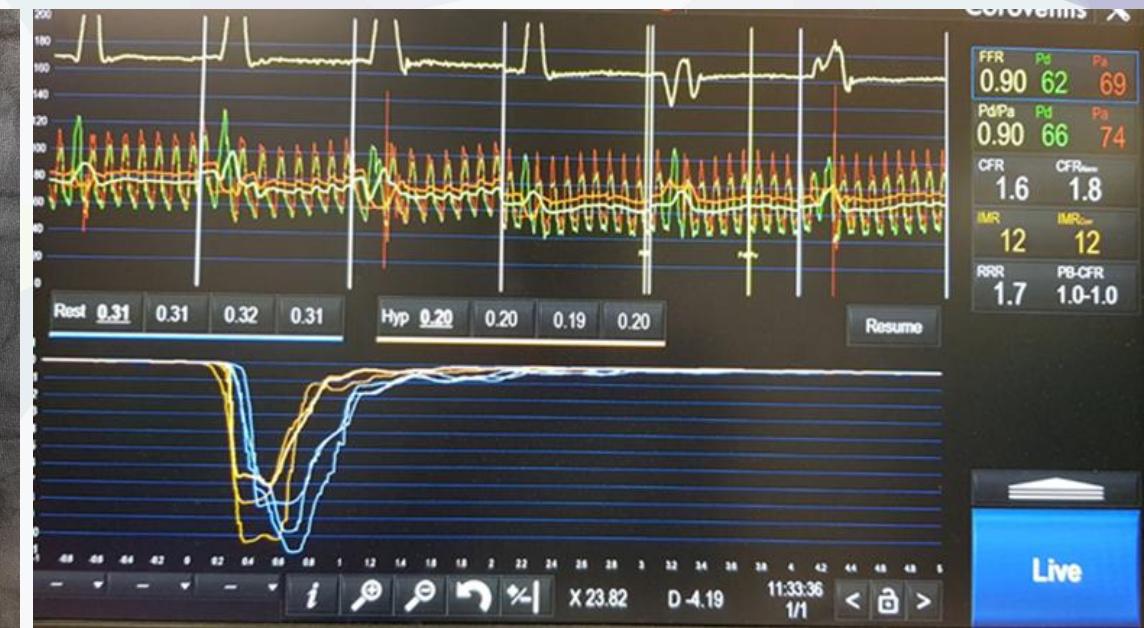
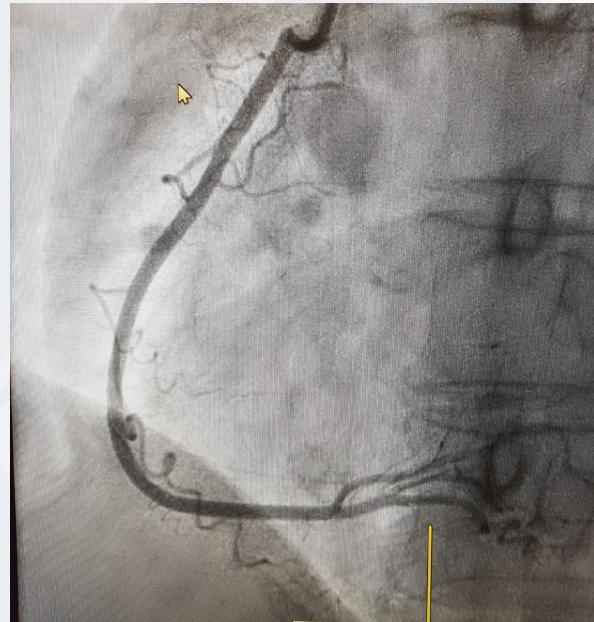
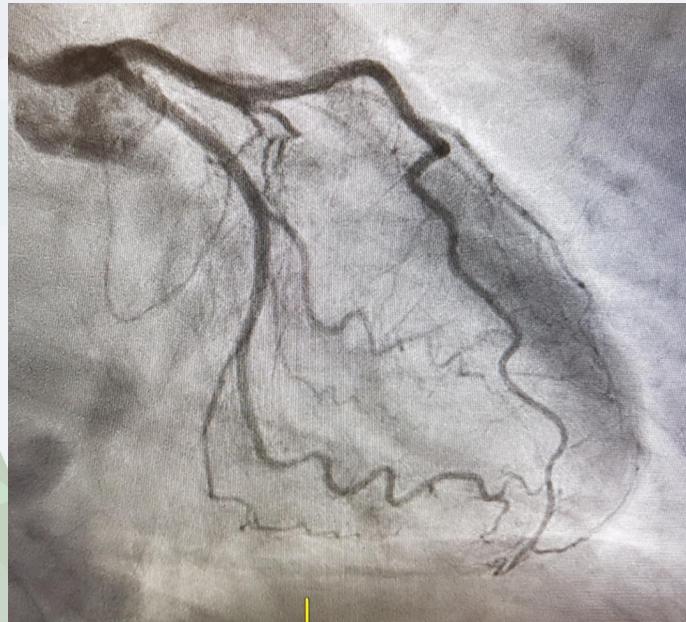
IMR: se obtiene de Pd Hyp x Tmn Hyp. Punto de corte 25.

RESISTIVE RESERVE RATIO



Live

Un caso de todos los días.



Mujer de 55 años con angina de esfuerzo típica, 4 meses de edad.
Prueba de esfuerzo positiva, tanto clínica como ECG. Eco normal.

¿Disfunción microvascular funcional?

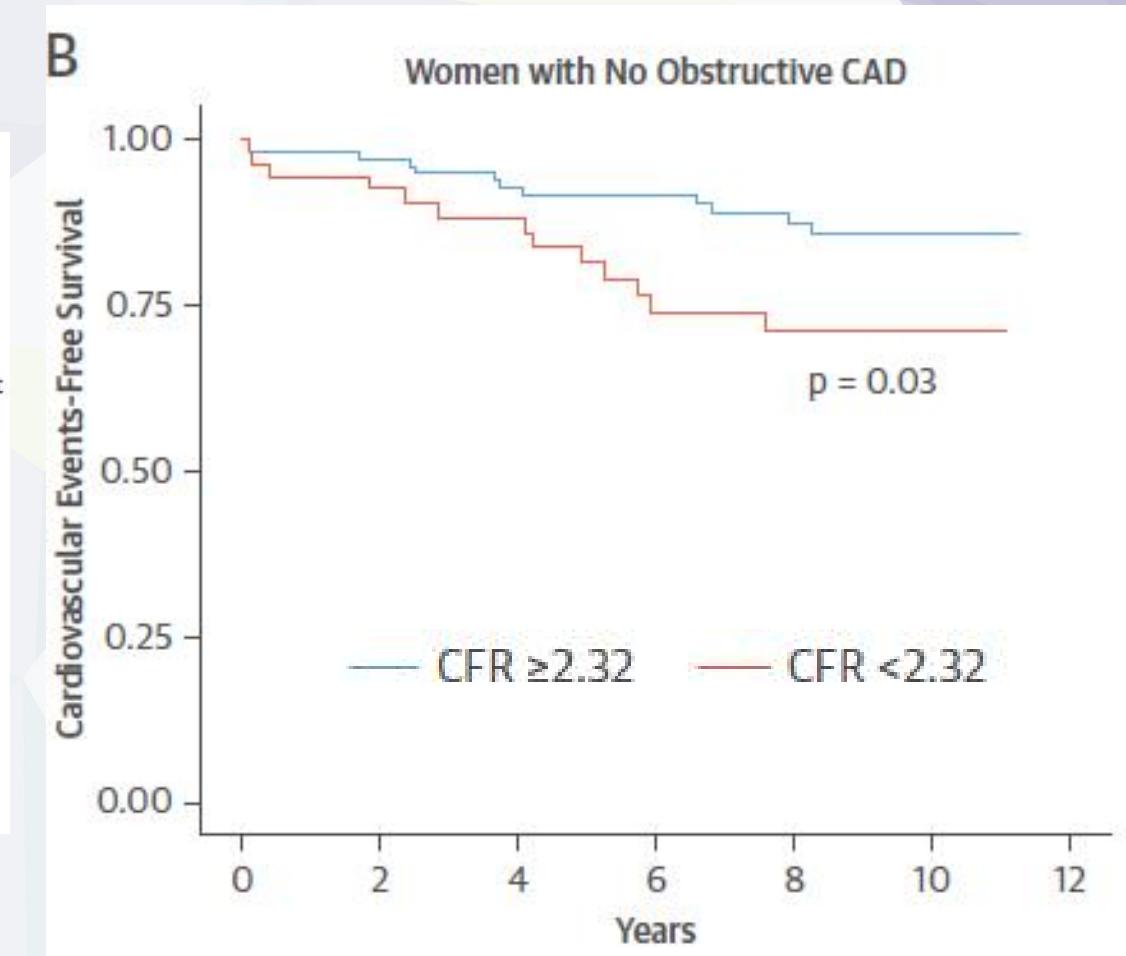
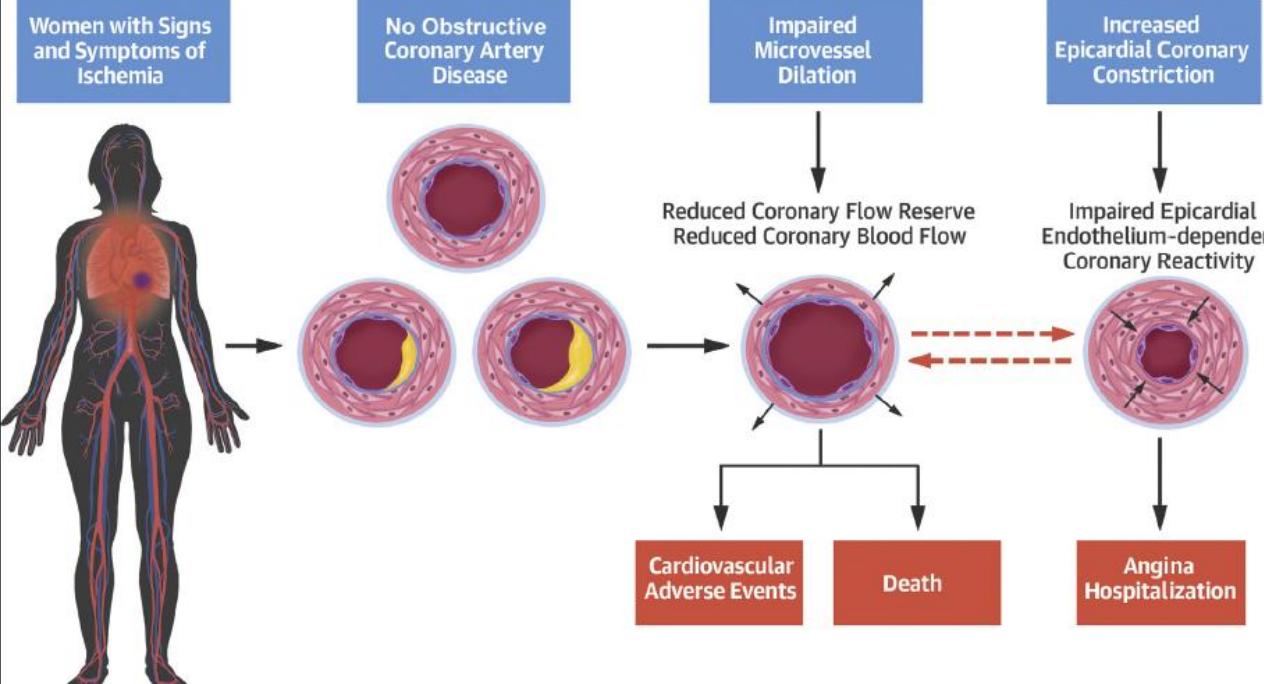


Mechanism	Systemic Vasculature			Myocardium		
	Nitric Oxide Synthase Activity	Acetylcholine Dilatation	Exercise Blood Pressure	NT-proBNP	Exercise Coronary Perfusion Efficiency	Inducible Ischemia
Reference Group (n = 40)	High vascular tone at rest Low vascular tone at stress	Normal	Normal	Normal	34 pgml⁻¹	65%
Functional CMD (n = 28)	Low vascular tone at rest Low vascular tone at stress	Increased	Normal	Normal	69 pgml⁻¹	46%
Structural CMD (n = 18)	High vascular tone at rest High vascular tone at stress	Increased	Reduced	High	132 pgml⁻¹	88%

Rahman H et al. JACC 2020;75:2538–2549.

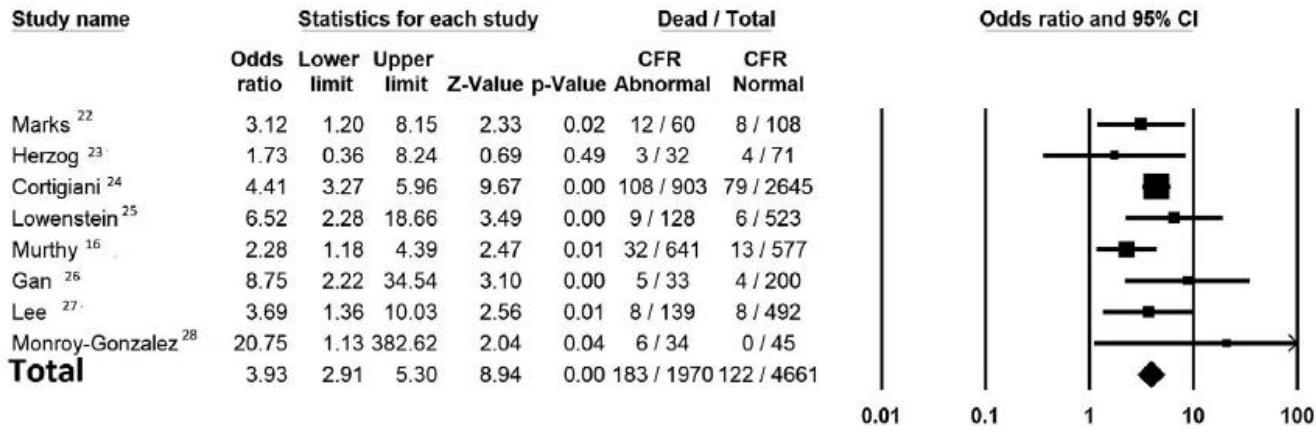
MADRID

Pronóstico a más de 10 años (WISE)

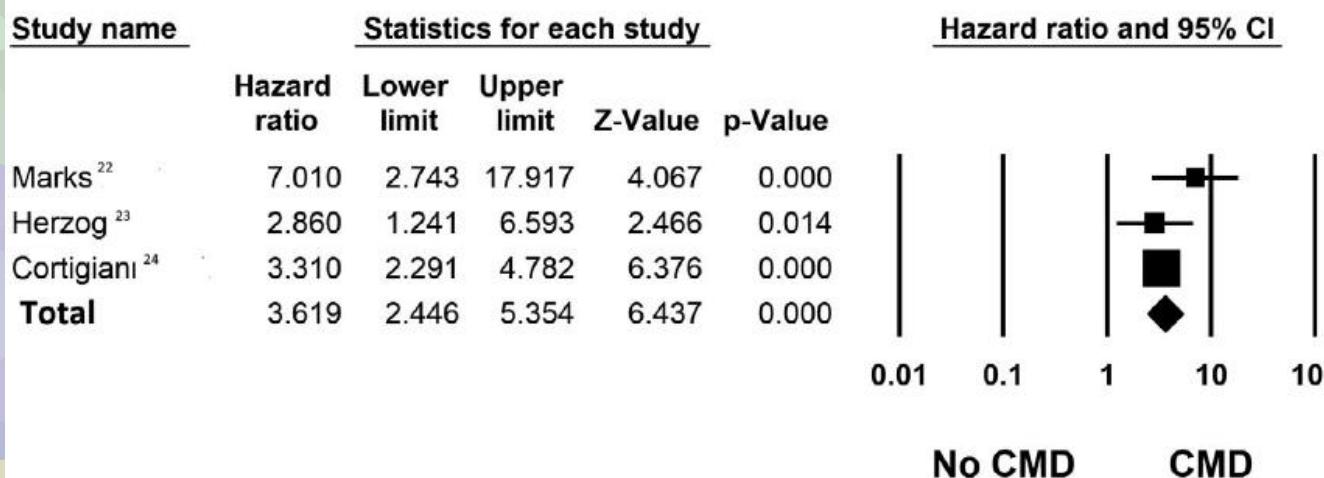


DISTINCIÓN MICROVASCULAR CORONARIA Y MORTALIDAD

Journal of the American Heart Association



B



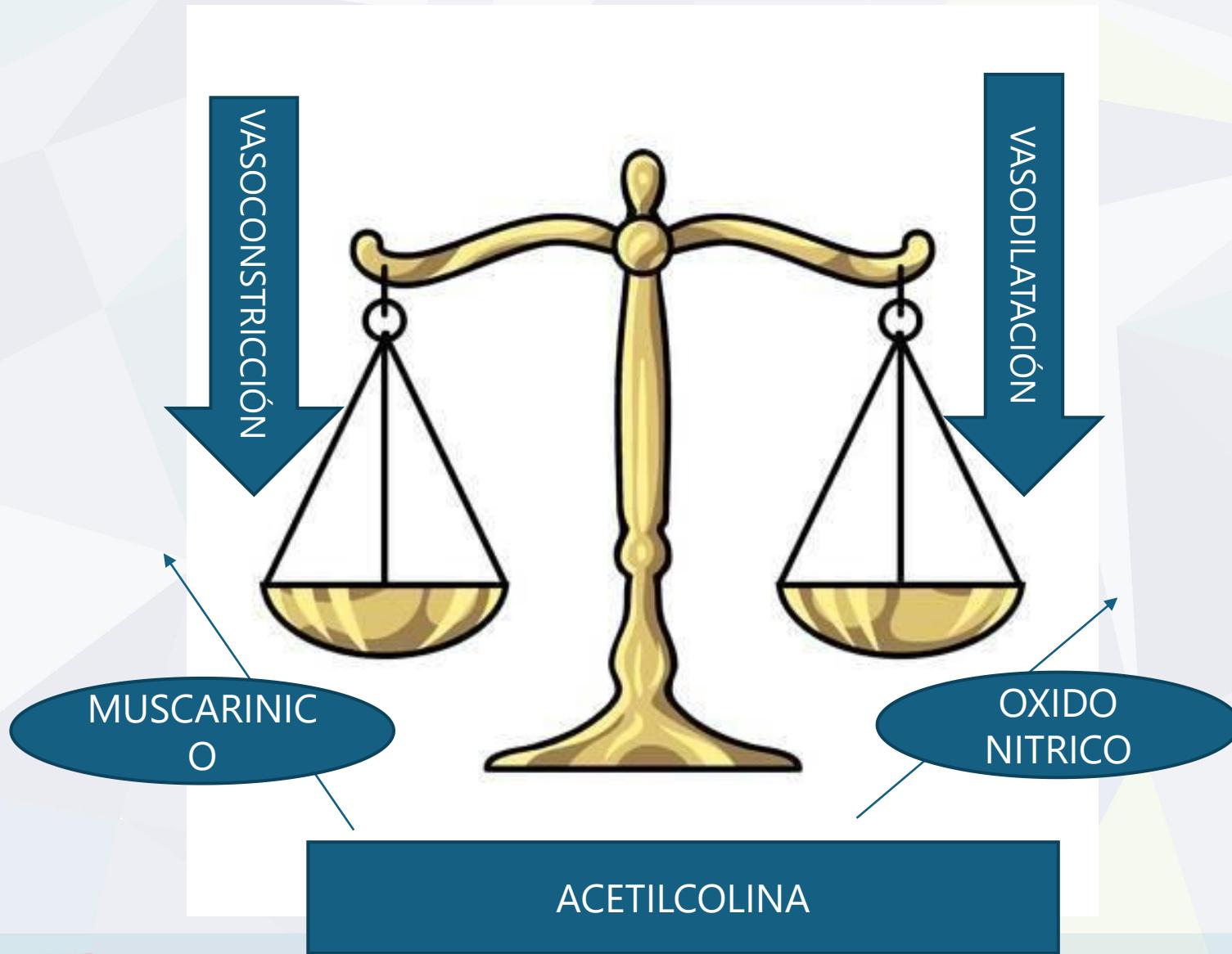
SYSTEMATIC REVIEW AND META-ANALYSIS

Association of Isolated Coronary Microvascular Dysfunction With Mortality and Major Adverse Cardiac Events: A Systematic Review and Meta-Analysis of Aggregate Data



Gdowski MA et al. JAHAA
2020

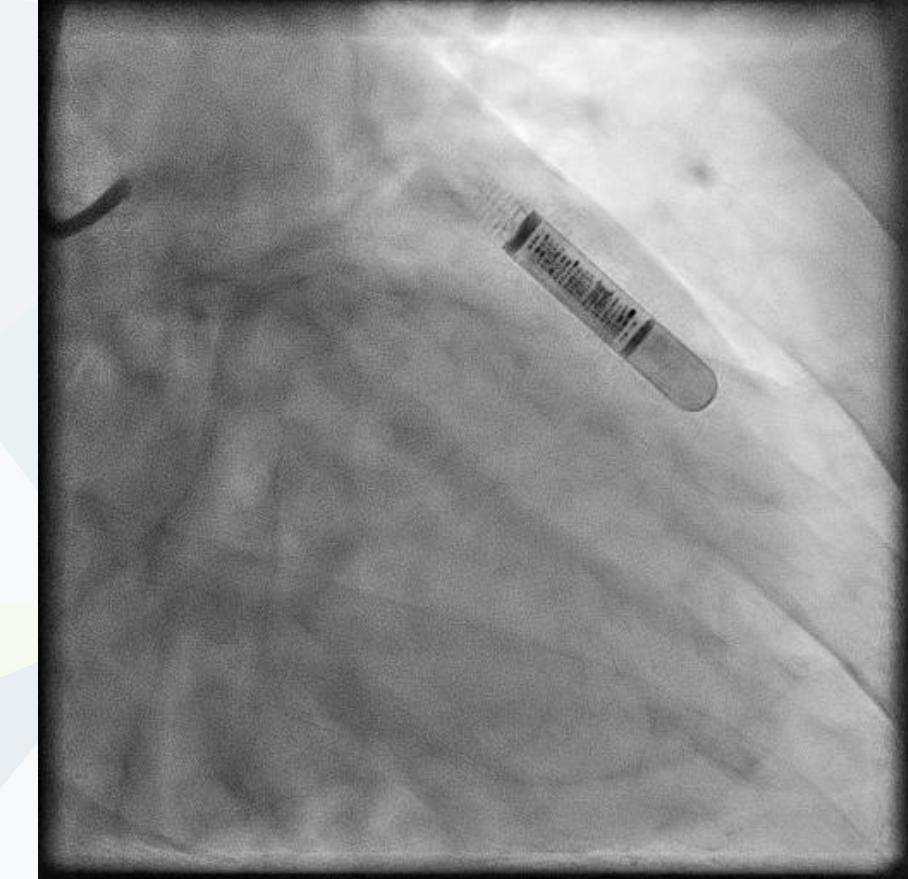
PRUEBA DE ACETILCOLINA. CONCEPTO



MADRID

PRUEBA DE ACETILCOLINA

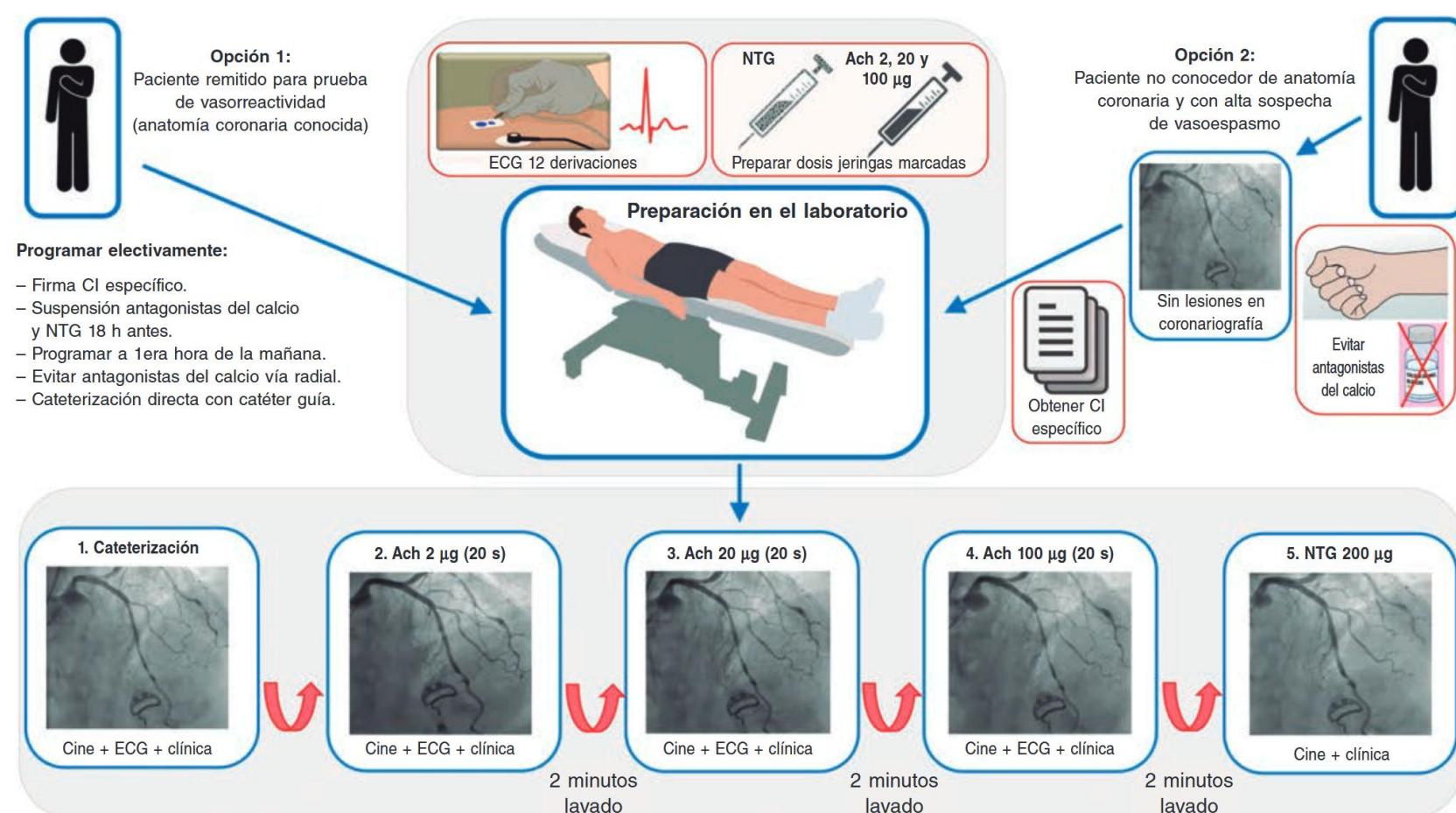
- Varón 55 años, exfumador
- Desde hace meses, dolores de esfuerzo, sobre todo al subir cuestas en bici
- Dos síncope con la bici
- Holter normal. Ergometría dudosa, con extrasistolia
- Cateterismo: lesión moderada en DA. Se solicita repetirlo



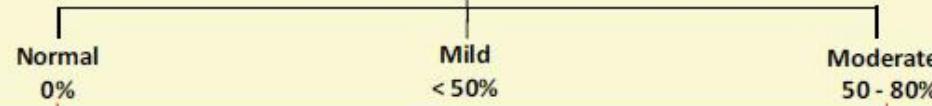
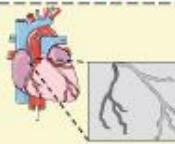
FFR de 0.83
CFR de 7.8
IMR de 6

Valoración de la función endotelial y provocación de vasoespasmo coronario mediante infusión intracoronaria de acetilcolina. Documento técnico de la ACI-SEC

Enrique Gutiérrez^{a,b}, Josep Gómez-Lara^{c,d,*}, Javier Escaned^e, Ignacio Cruz^f, Soledad Ojeda^{g,h}, Rafael Romaguera^{c,d} y Raúl Morenoⁱ



Step 1: Coronary angiography & LVEDP



Step 2: Diagnostic guidewire and Adenosine test

FFR + CFR + IMR*

FFR > 0.8
CFR ≥ 2.0
IMR < 25

FFR > 0.8
CFR < 2.0
IMR ≥ 25

No Coronary Microvascular Dysfunction Present

Coronary Microvascular Dysfunction Present

Step 3: Vasoreactivity (Acetylcholine test)

1. No or <90% diameter reduction
2. No angina
3. No ischaemic ECG changes

1. ≥ 90% diameter reduction
2. + angina
3. + ischaemic ECG changes

1. No or <90% diameter reduction
2. No angina
3. No ischaemic ECG changes

1. No or <90% or ≥ 90% diameter reduction
2. + angina
3. + ischaemic ECG changes

Non cardiac pain

Epicardial Vasospastic Angina

Microvascular Angina

Microvascular And Epicardial Vasospastic Angina

INOCA ENDOTYPES

An EAPCI Expert Consensus Document on Ischaemia with Non-Obstructive Coronary Arteries in Collaboration with European Society of Cardiology Working Group on Coronary Pathophysiology & Microcirculation Endorsed by Coronary Vasomotor Disorders International Study Group

Management of INOCA

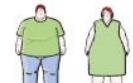
1. Lifestyle factors



Nutrition



Exercise



Weight management



Smoking cessation



Coping with stress

2. Risk factor management



Hypertension



Dyslipidaemia



Diabetes mellitus

3. Antianginal medication

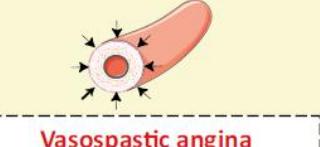


Microvascular angina

1. Betablocker
2. Calcium channel blocker
3. Nicorandil
4. Ranolazine
5. Ivabradine
6. Trimetazidine



Consider statins and ACEI/ARB



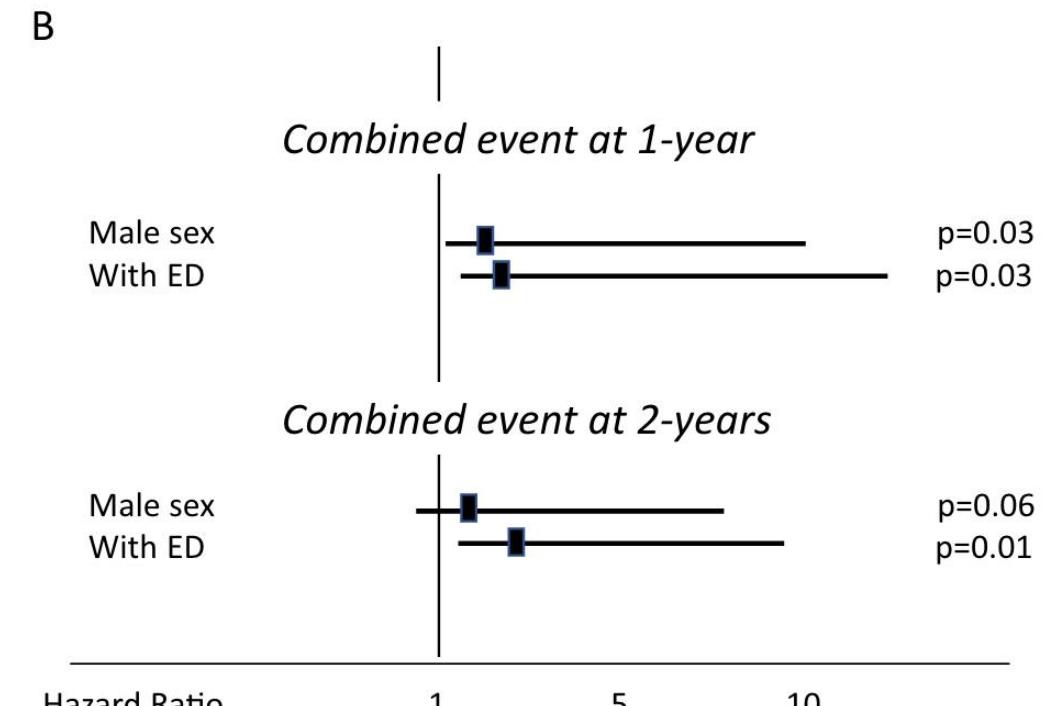
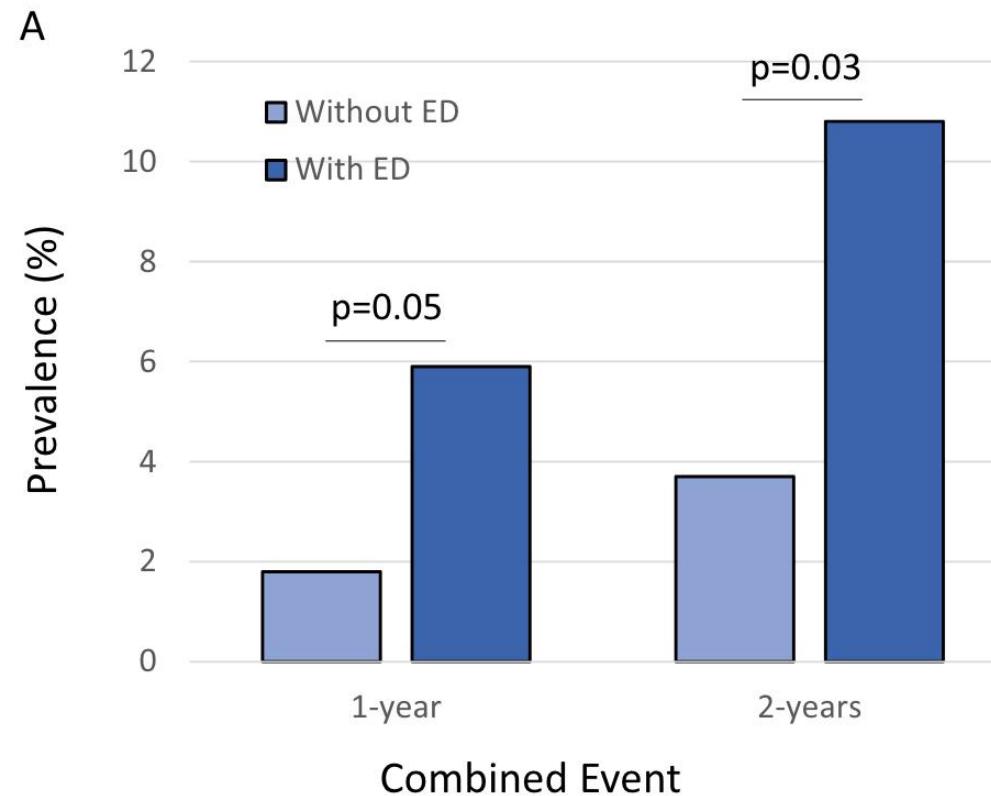
Vasospastic angina

1. Calcium channel blocker
2. Long-acting nitrate
3. Nicorandil

No te obsesiones con los endotipos



Disfunción endotelial sin criterios de espasmo





EL MINOCA ES UNA HISTORIA DIFERENTE

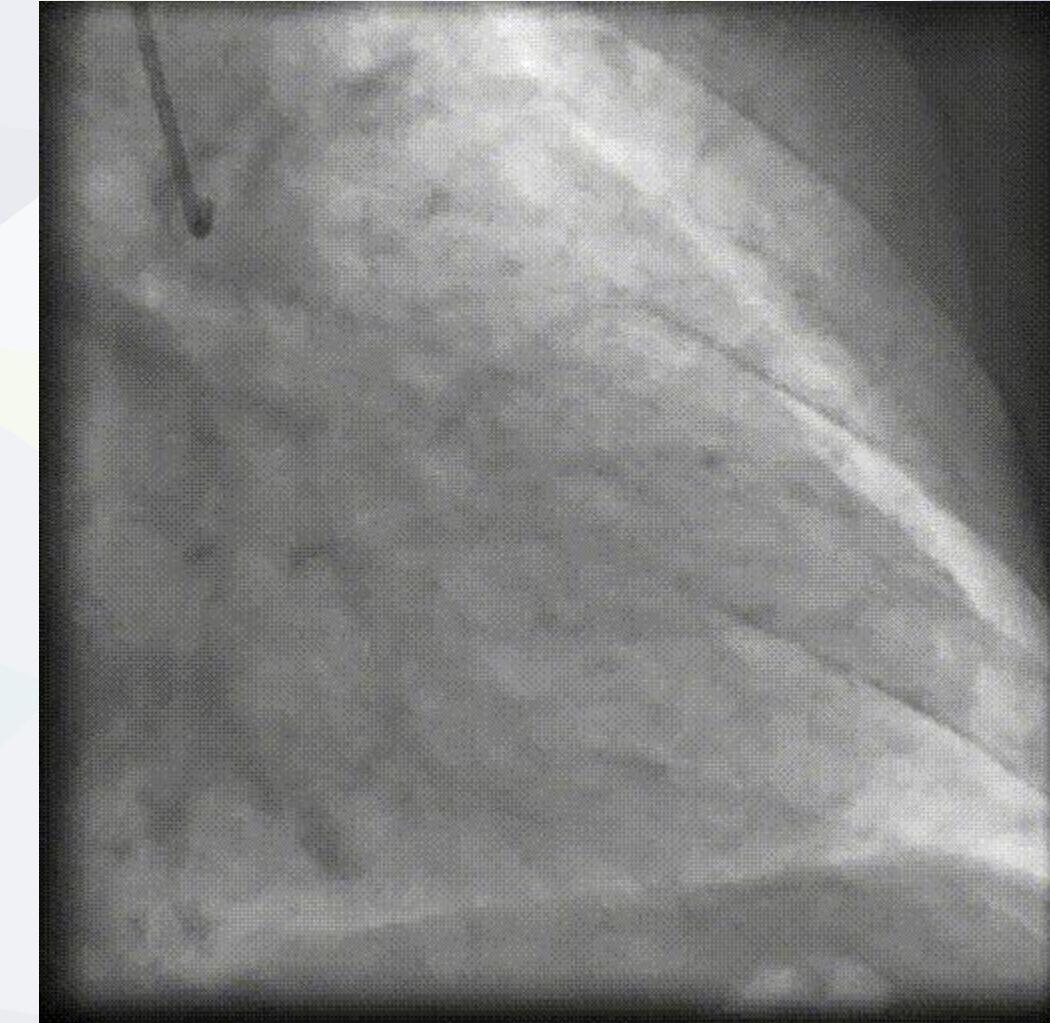
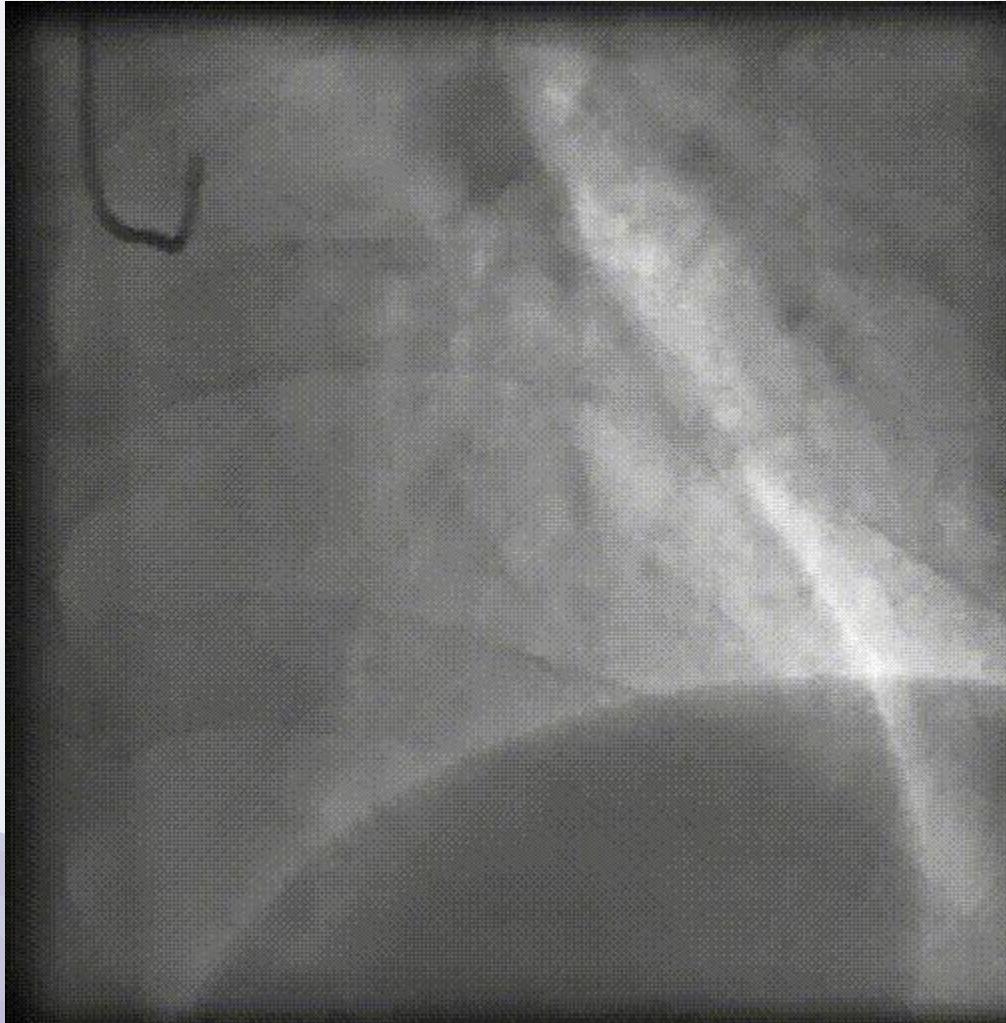
- Punto de partida: daño miocárdico (Tn) y coronarias "normales"
- 5 % de los pacientes que entran a la sala como infarto
- Muchas posibilidades diagnósticas. Tres fases:
 - Mirar las arterias epicárdicas
 - Mirar el miocardio
 - Mirar otras cosas

MIRAR BIEN CORONARIAS
SI PLACAS: HACER IMAGEN

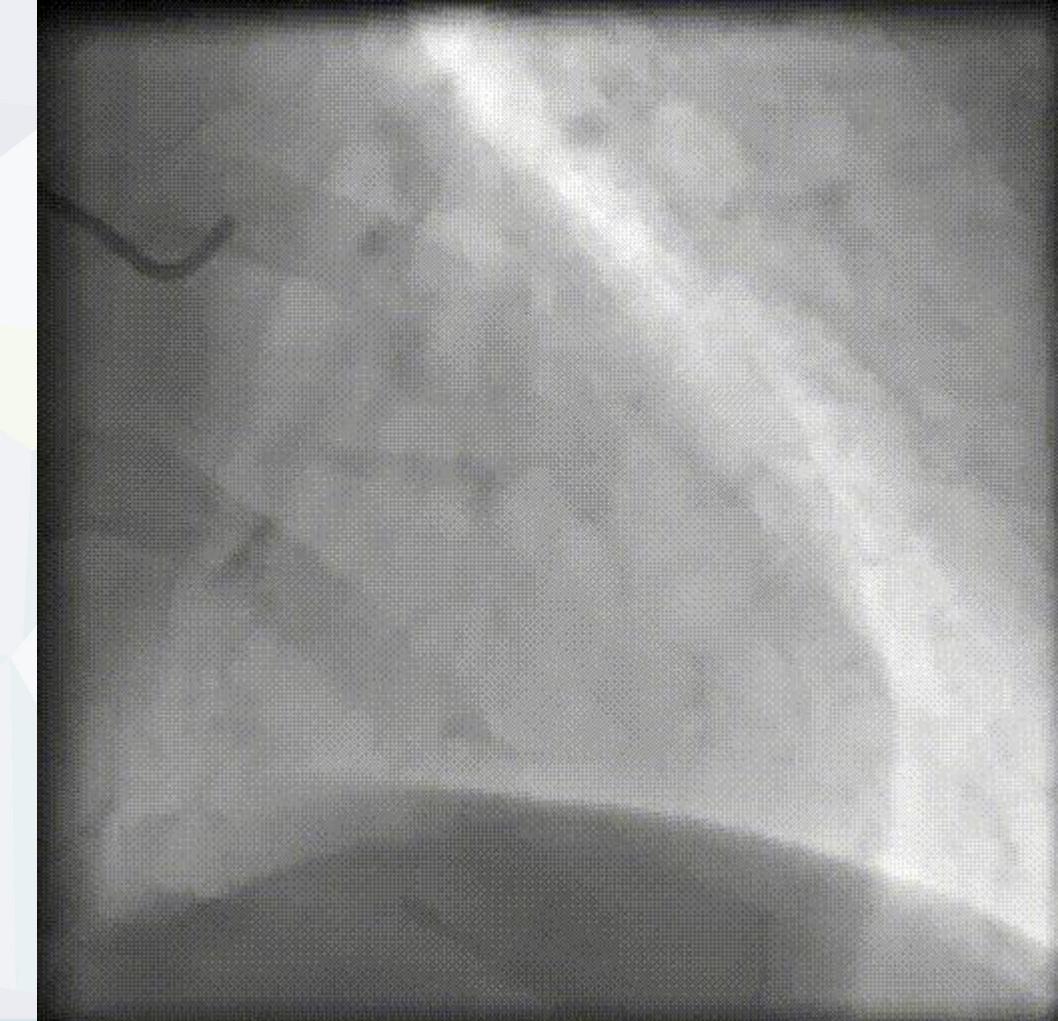
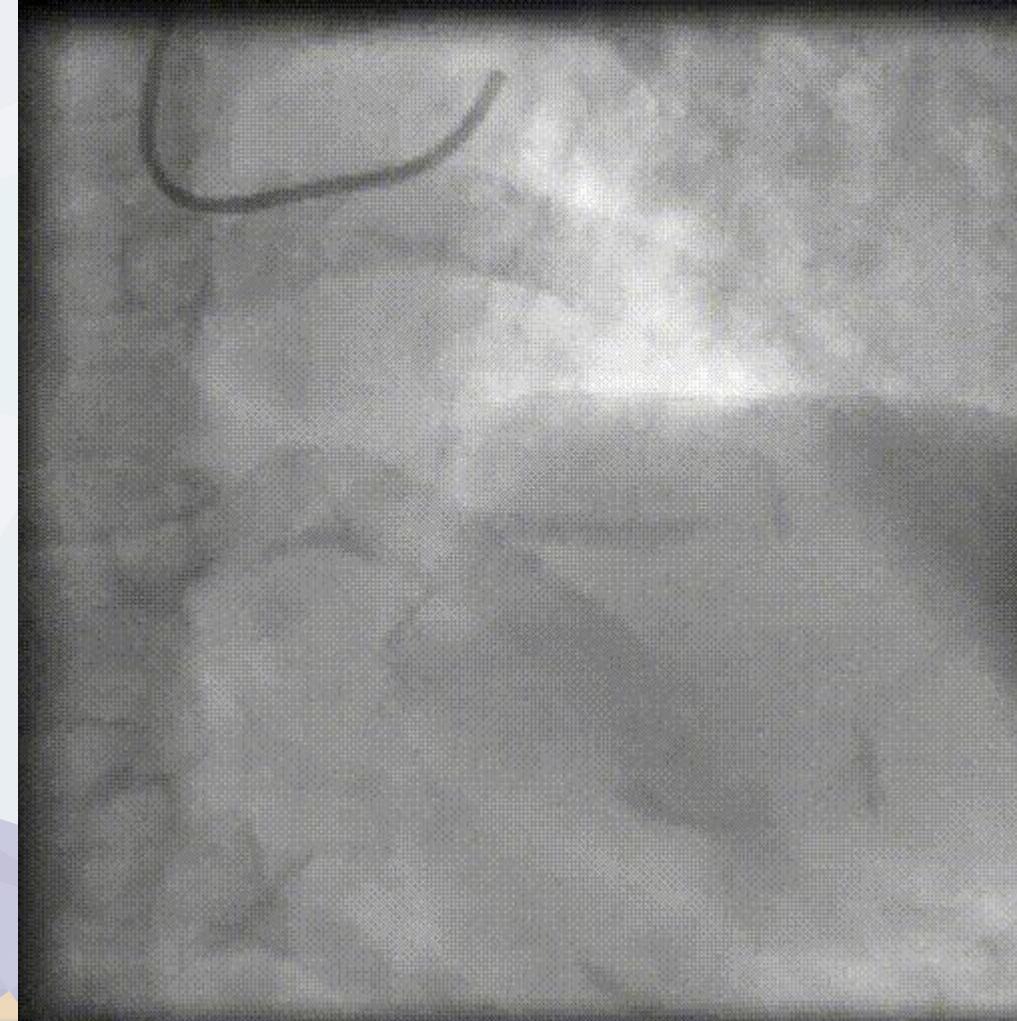
MIRAR MIOCARDIO

SIN DIAGN: REACTIVIDAD CORONARIA
FUNCIÓN MICRO?

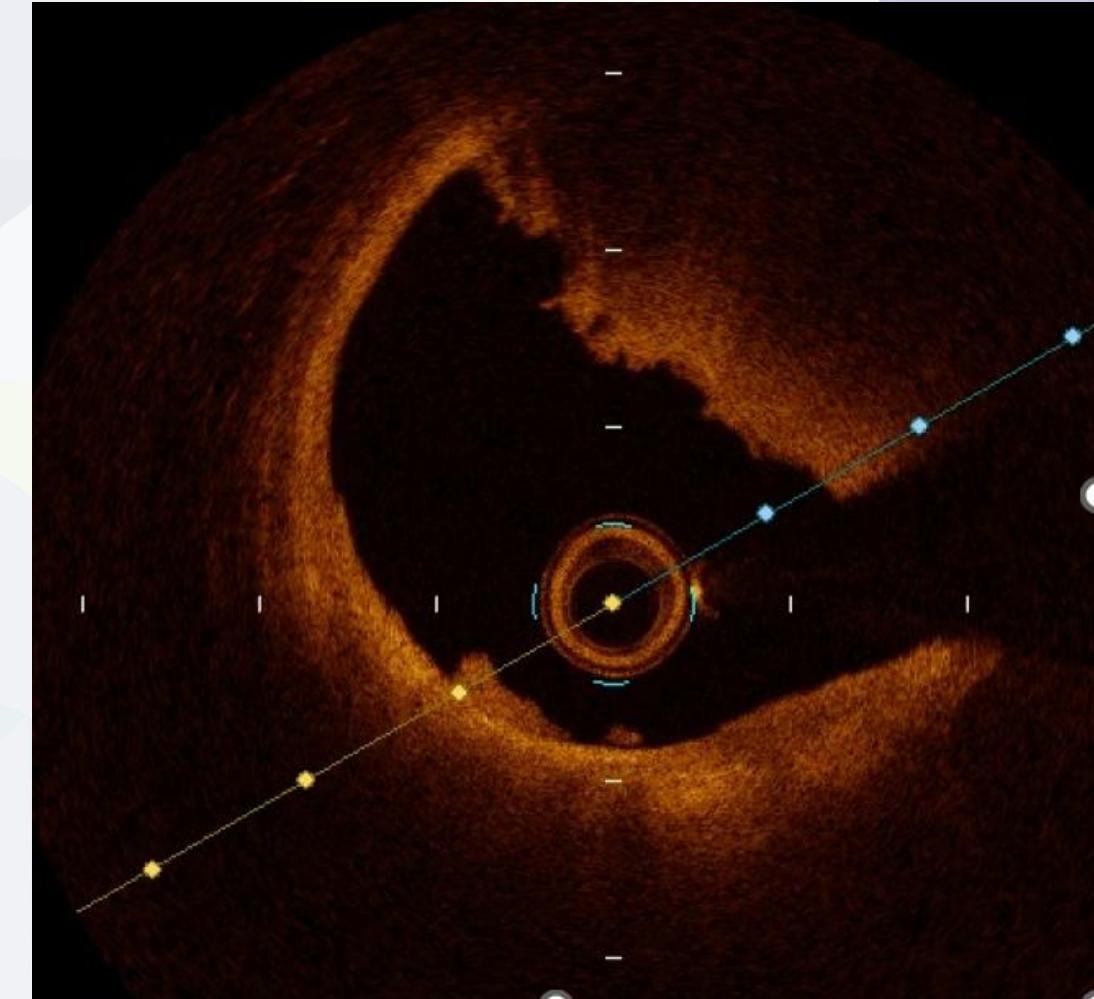
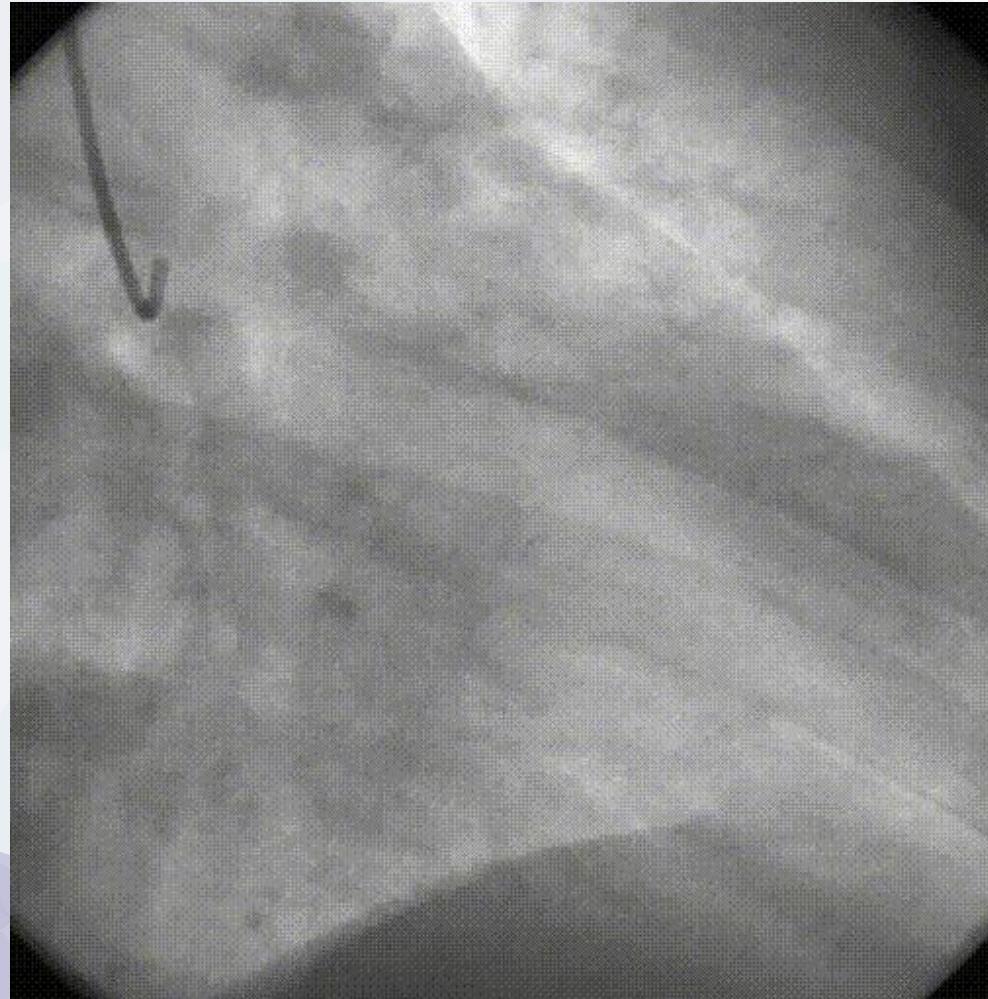
Causas epicárdicas. Mirar!



Causas epicárdicas. Mirar!

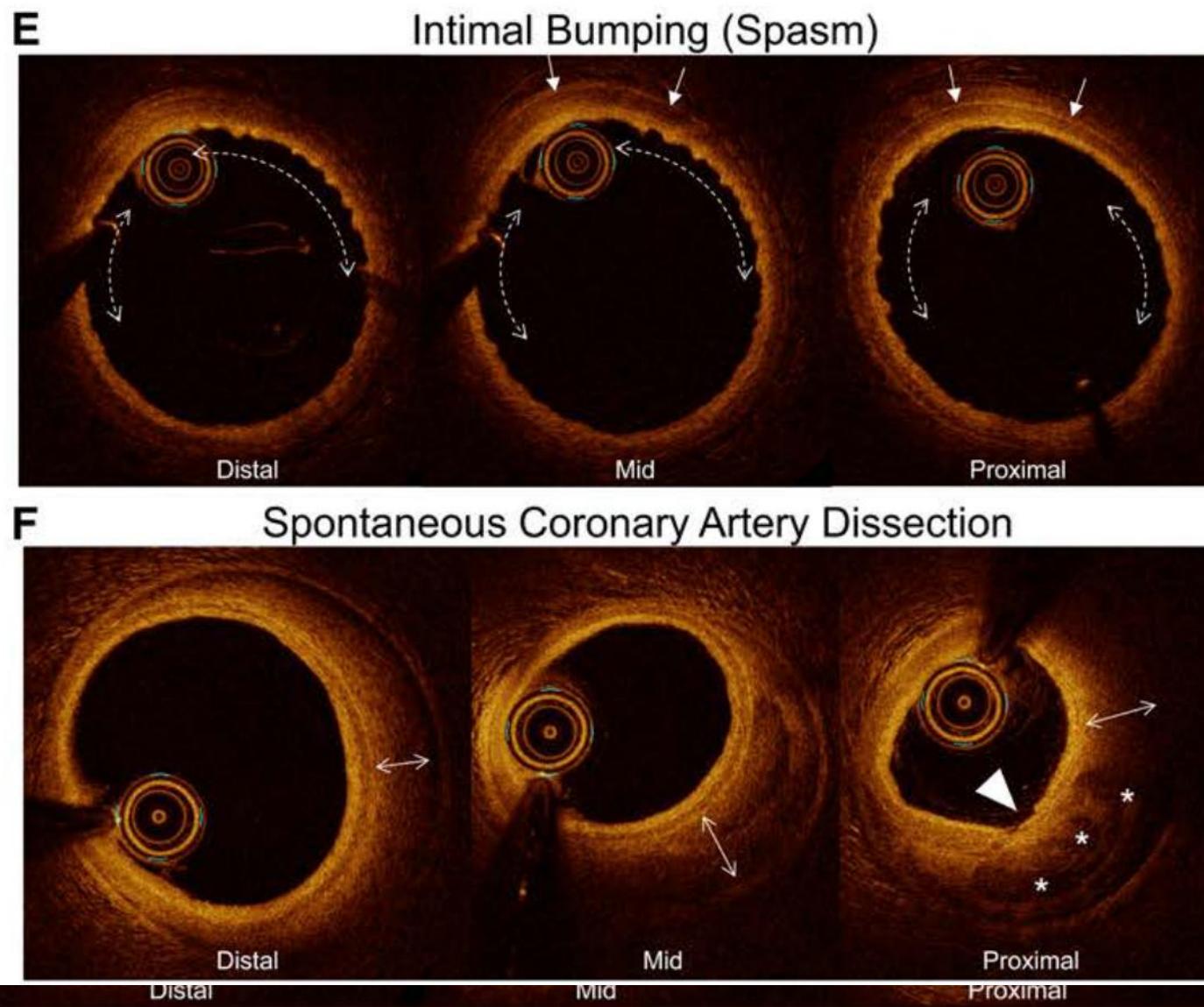


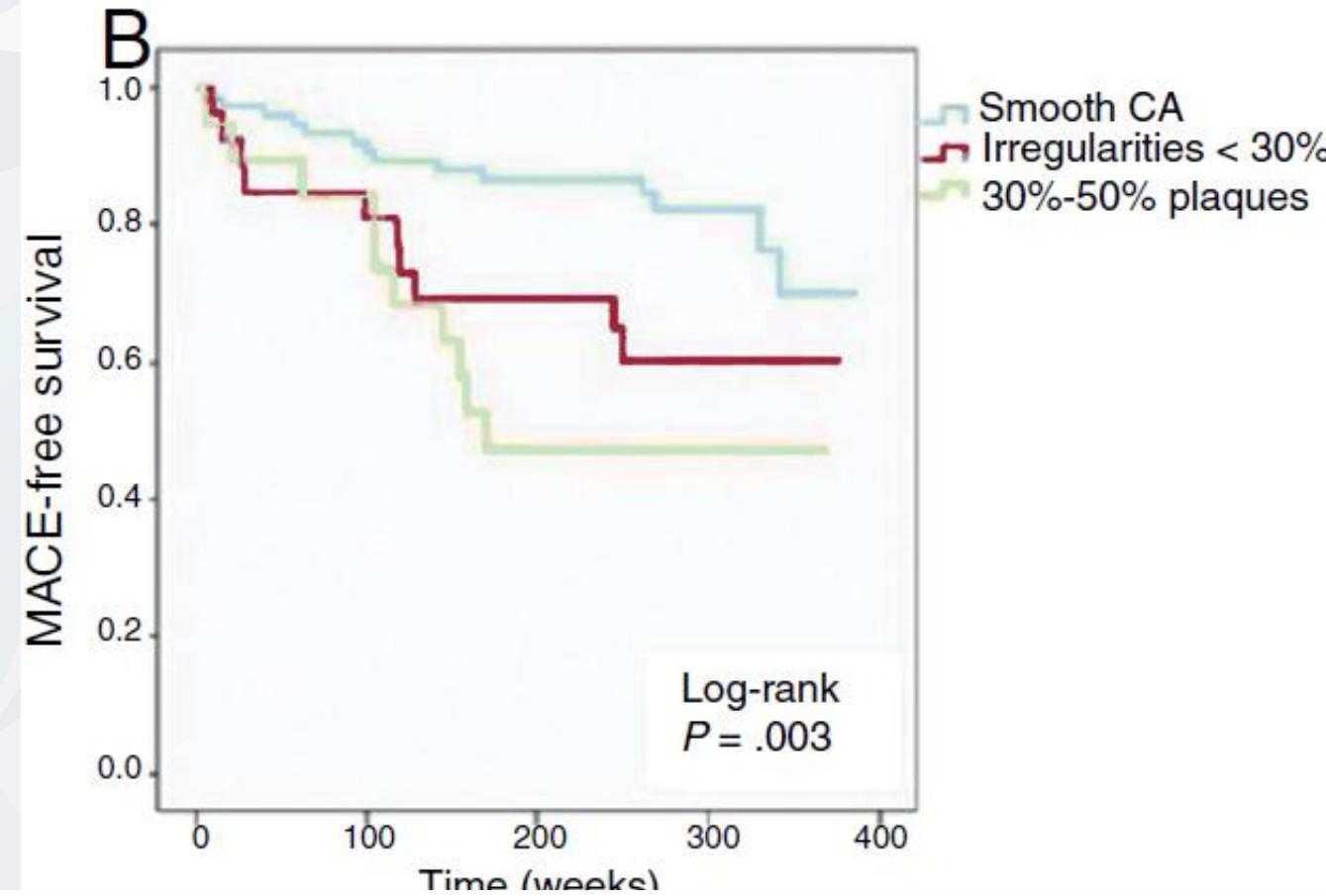
Mirar por fuera, mirar por dentro.



Mujer de 55 años, fumadora. Dolor torácico, bloqueo de rama derecha, elevación tropo.

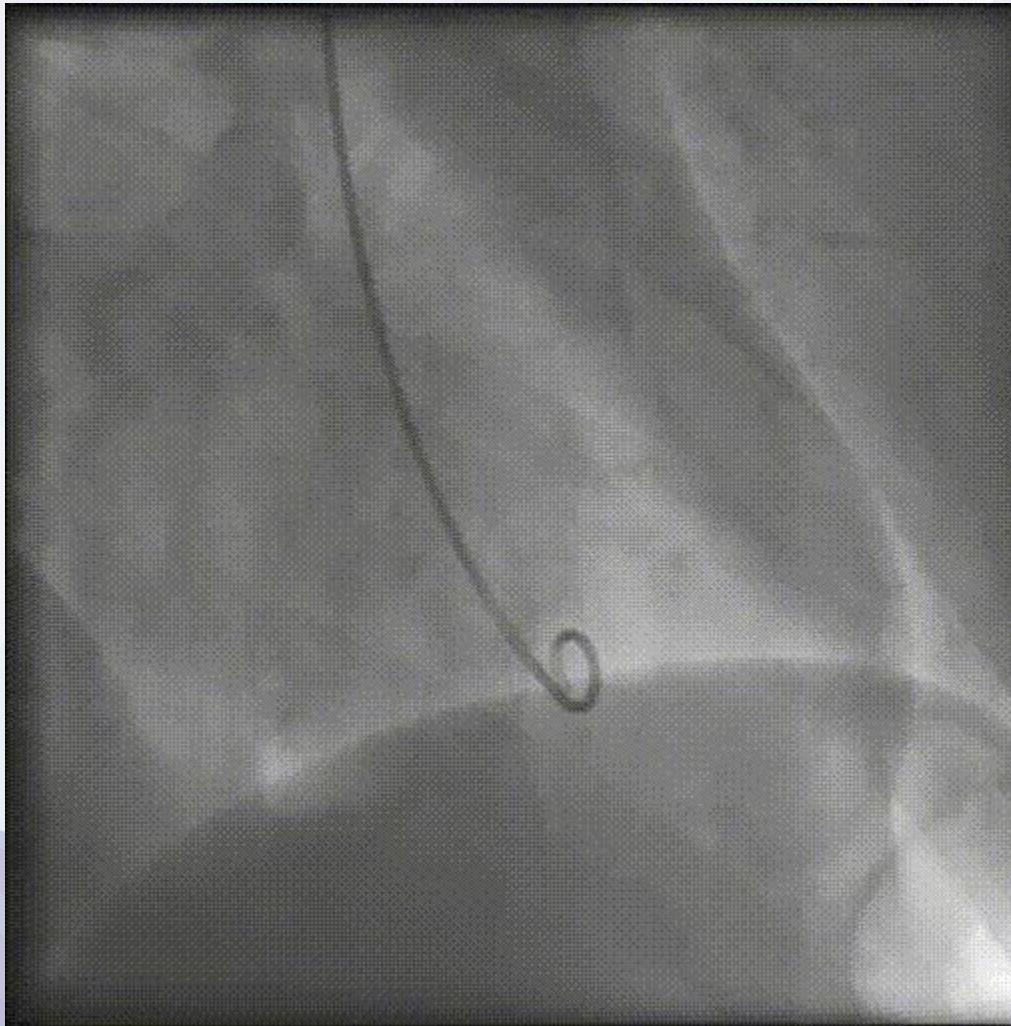
Lesiones epicárdicas





	MACE (n = 34)	HR
Smooth CA (n = 75)	18.7	reference
Mild irregularities < 30% (n = 27)	37.0	2.45
Plaques 30%-50% (n = 19)	52.6	3.64

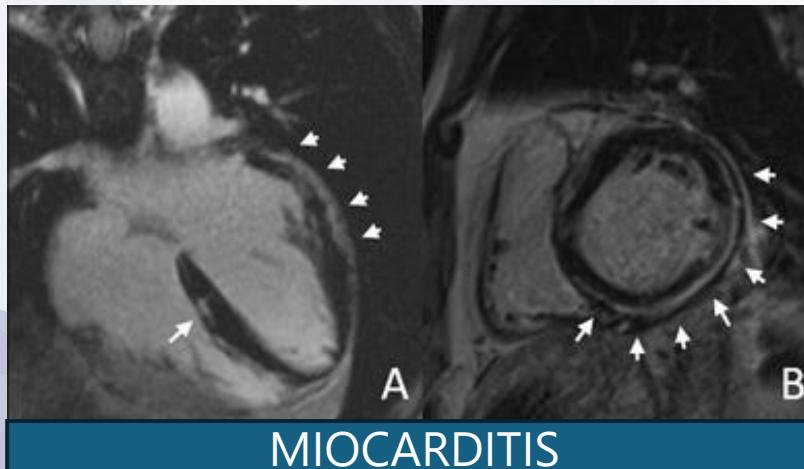
FASE 2: MIRAR EL MIOCARDIO



MADRID MIRAR EL MIOCARDIO



TAKOTSUBO



MIOCARDITIS



INFARTO TIPO 1

“MINOCARDITIS” y sus predictores

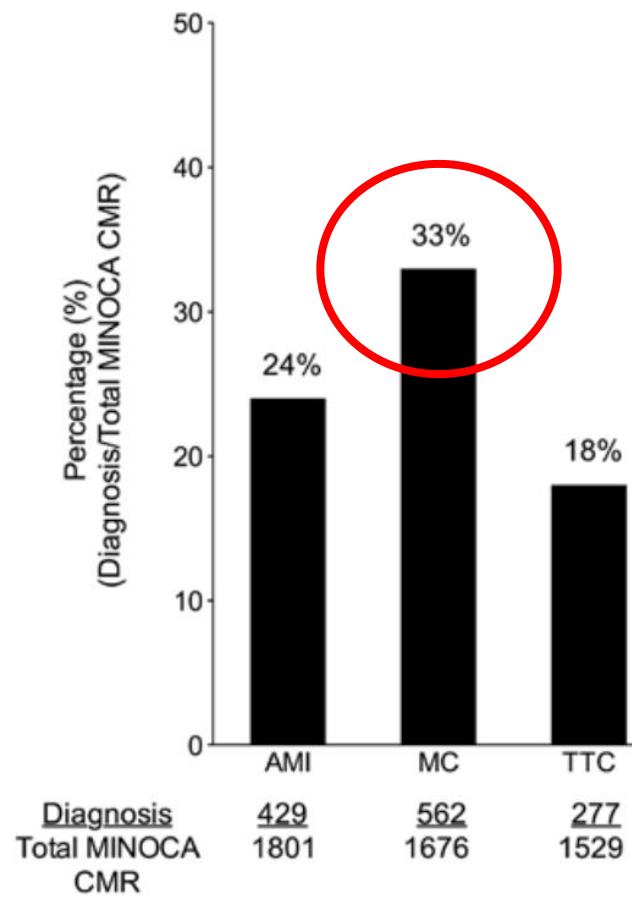
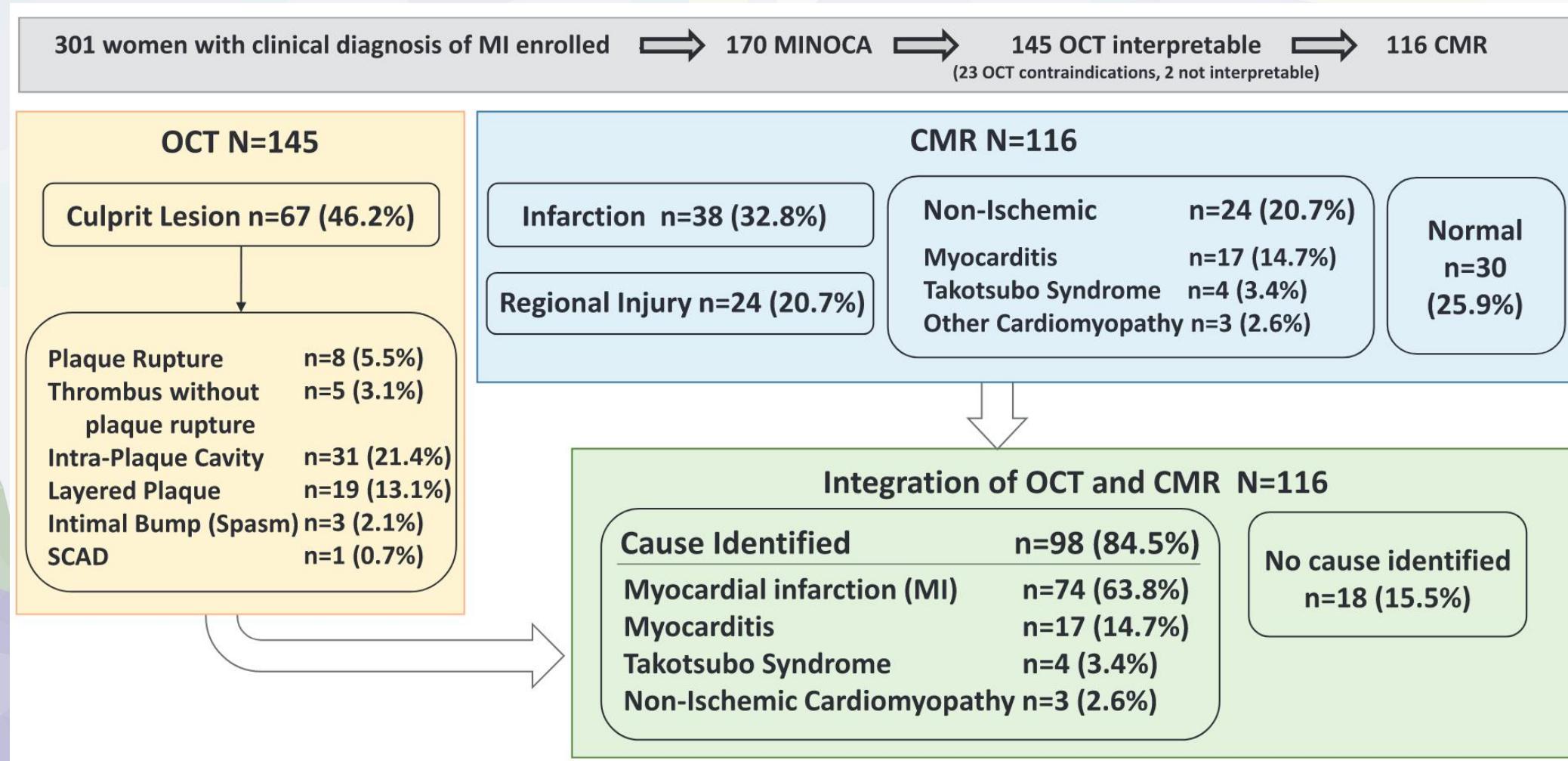


TABLE 1 Characteristics Independently Associated With CMR-Confirmed Myocarditis in Patients With a Provisional Diagnosis of MINOCA in a Meta-Analysis of Individual Patient Data

	OR (95% CI)	p Value
Angiographically normal coronaries	2.30 (1.12-4.71)	0.023
Female	0.32 (0.16-0.63)	<0.001
Older age (per yr)	0.96 (0.95-0.97)	<0.001

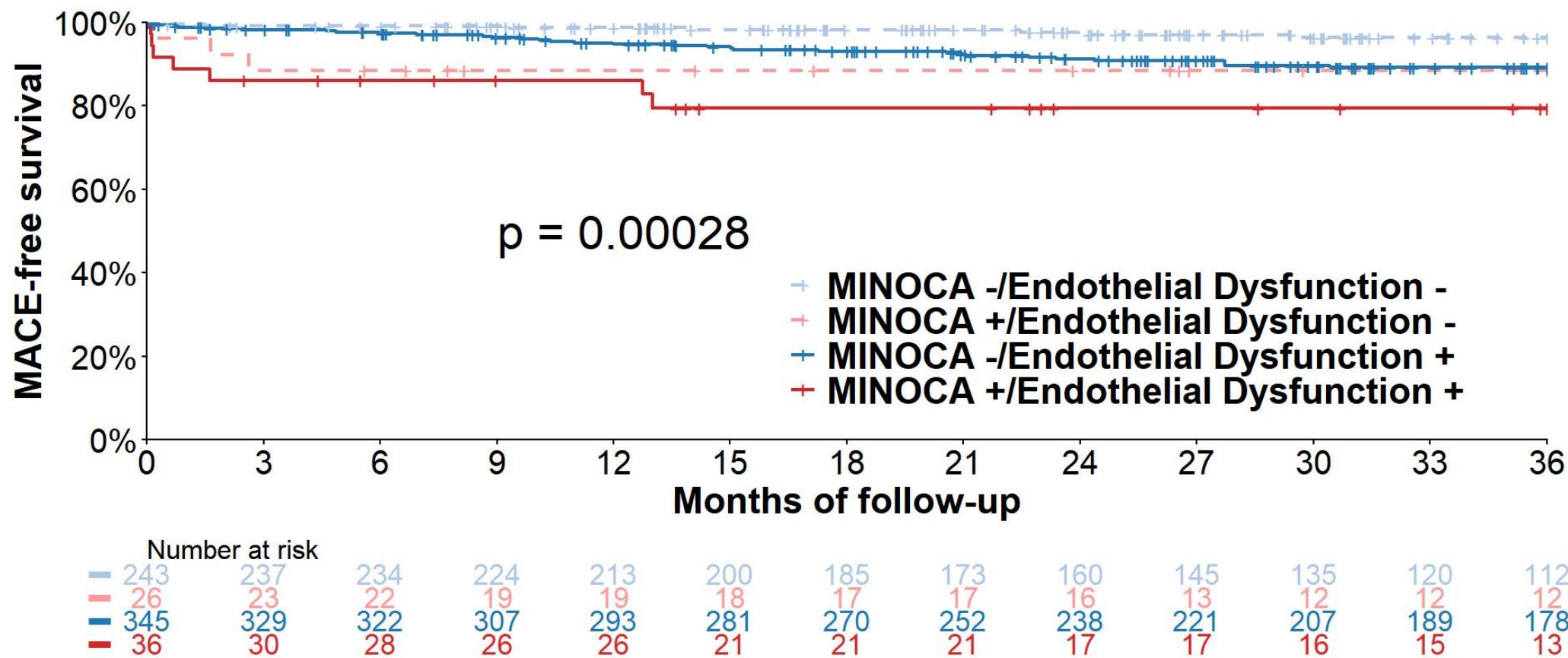
Hausvater. JACC: Cardiovascular Imaging. 2020;13:1906–1913. 2.
Pasupathy. Circulation. 2015;131:861–870.

La mayoría de los MINOCA son lesiones epicárdicas complicadas o miocarditis

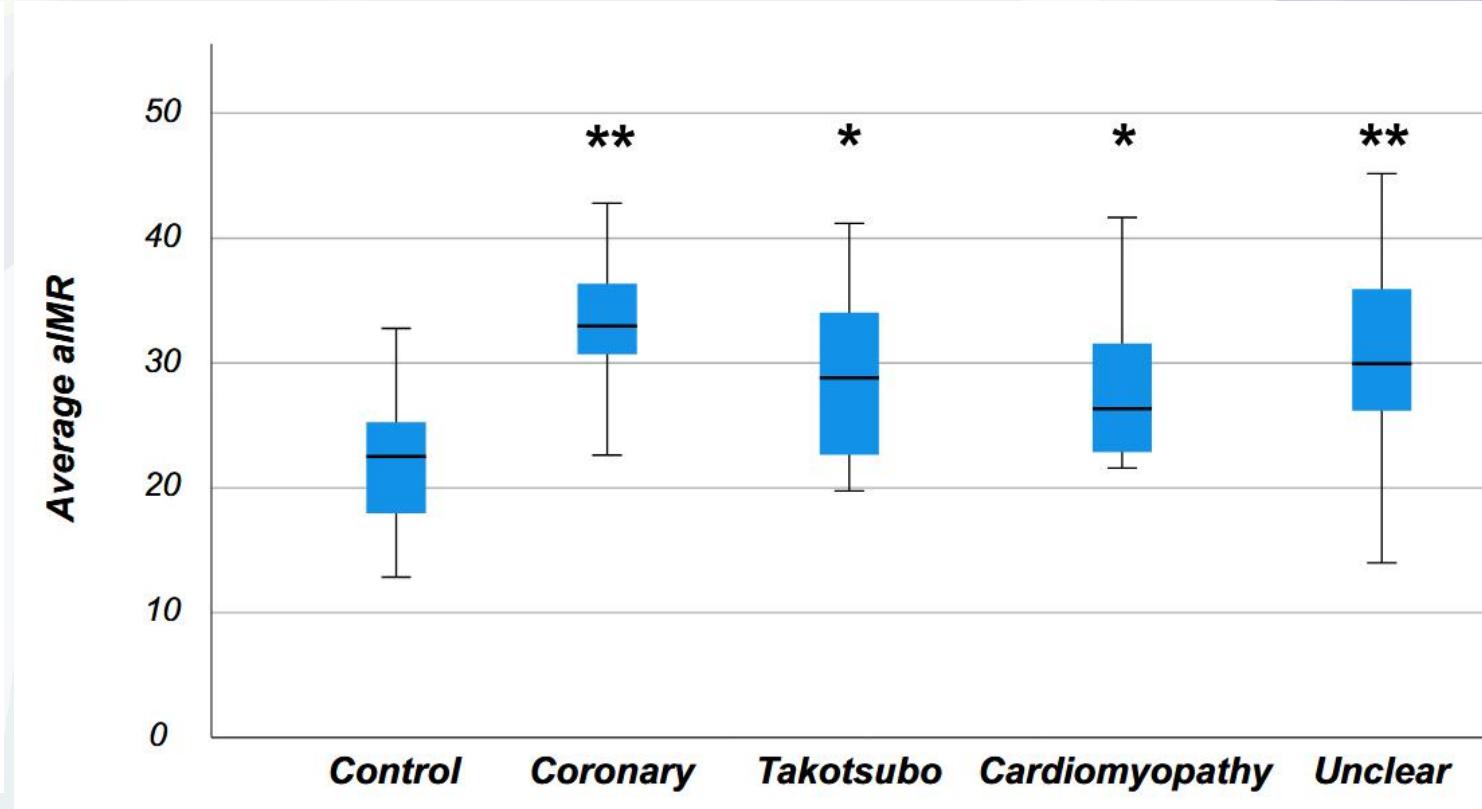


ACETILCOLINA EN EL MINOCA?

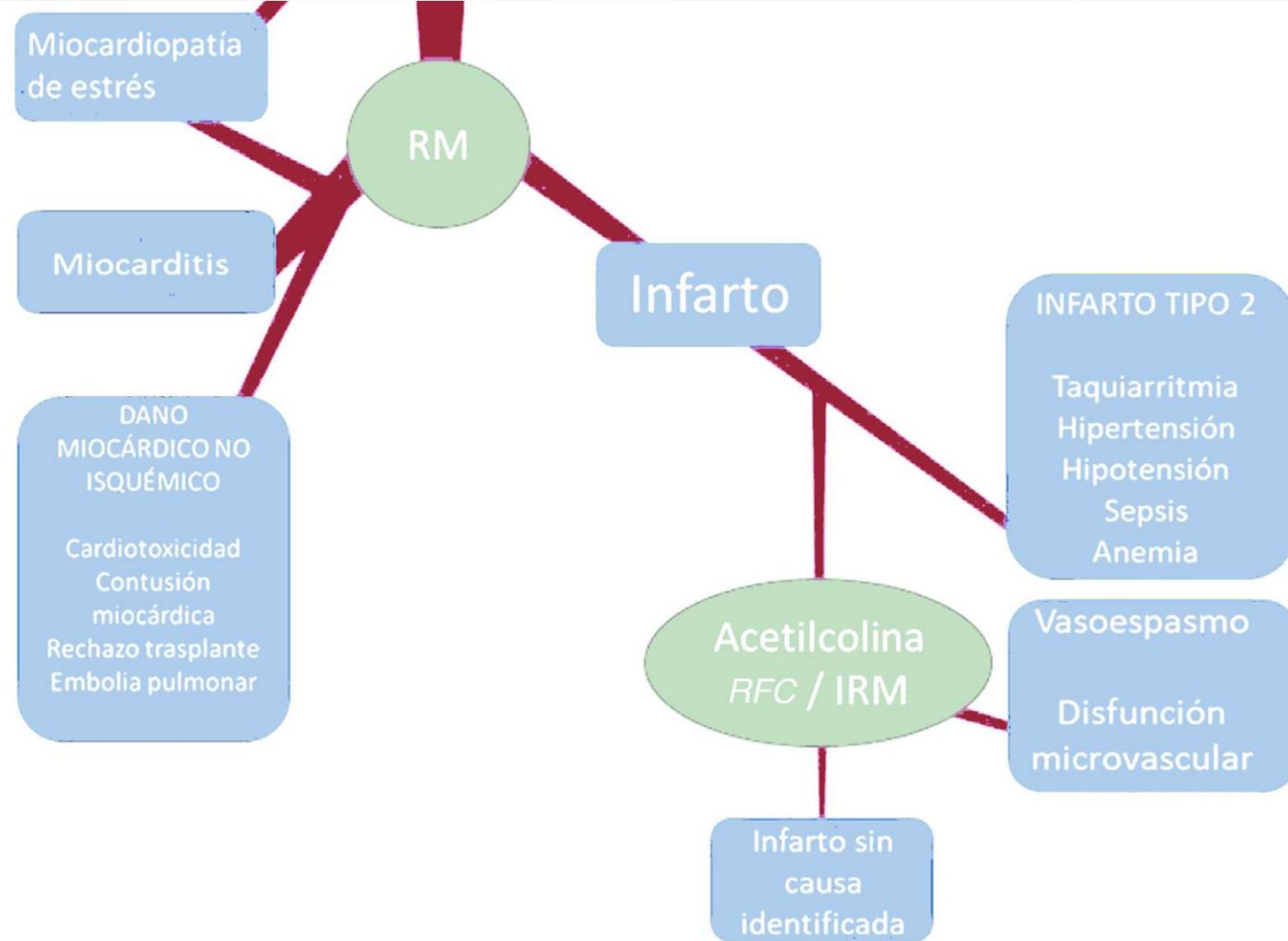
Figure 5. Kaplan-Meier curve for MACE according to diagnosis of MINOCA and Endothelial Dysfunction



¿Función microvascular en el MINOCA?



Qué hago yo, entonces?



CONCLUSIONES

5, 6 y 7 NOVIEMBRE
HOTEL RIU PLAZA DE ESPAÑA

