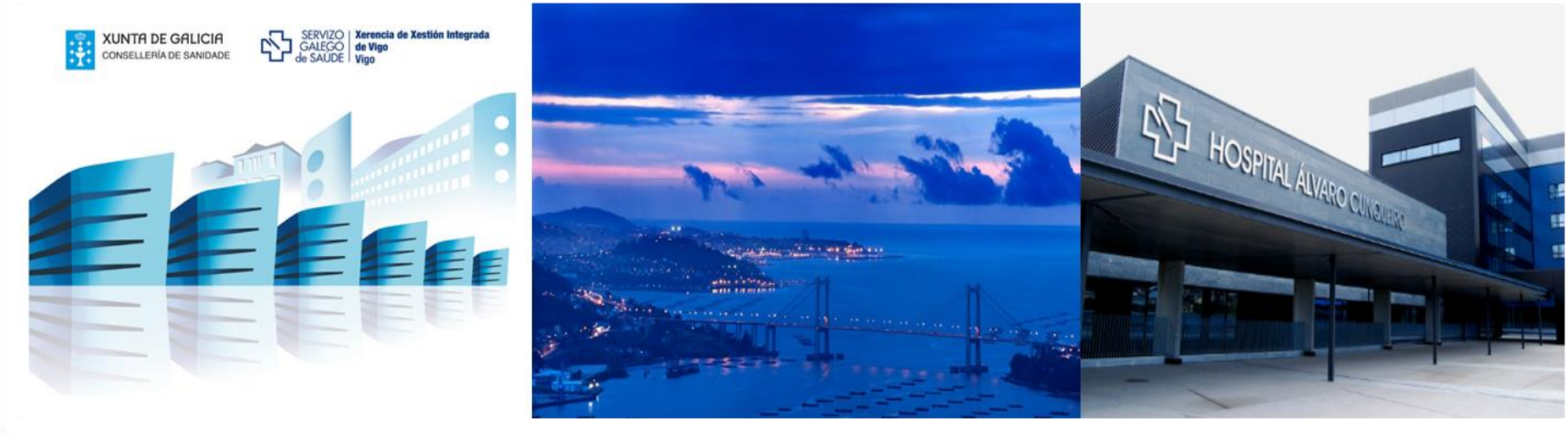


# A patient with Tako Tsubo and co-existent CAD

# Just treat medically

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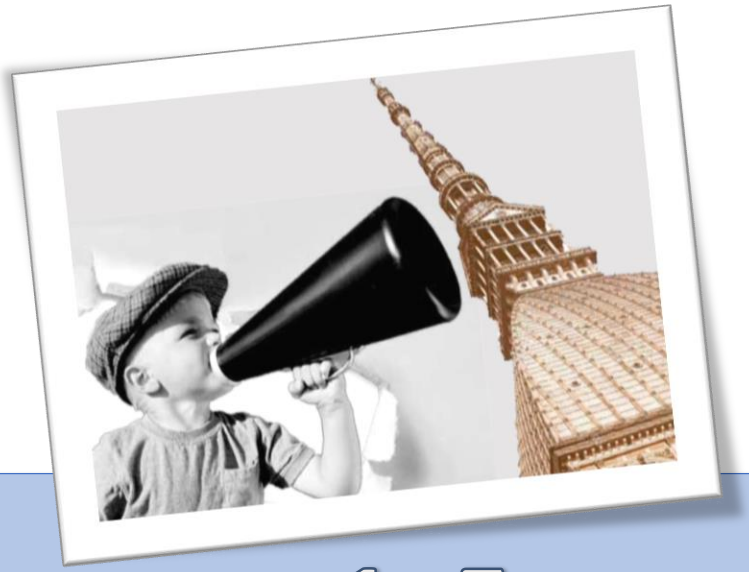
**31º Giornate Cardiologiche Torinese**

25 october 2019



# 1. Frequency of association

# INCIDENCE OF CAD IN PATIENTS WITH TAKO-TSUBO

## TAKO TSUBO and CORONARY STENOSIS: innocent bystanders

**Approximately 10% of TTS patients have CAD**

**Tako-tsubo Italian Network** → **9.6%**

Coron Artery Dis 2013;24:527-533

**INTERTAK** → **15.3%**

NEJM 2015; 373:929-938

**Japanese TTS Registry** → **10.3%**

Coron Artery Dis 2009,20:214-218

**RETAKO** → **16.5%**

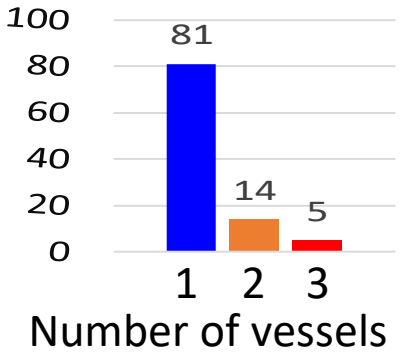
JACC Heart Fail 2018;6:928-936

# INCIDENCE OF CAD IN PATIENTS WITH TAKO-TSUBO

## TAKO TSUBO and CORONARY STENOSIS: innocent bystanders

**< 10% of patients with Tako Tsubo undergo PCI**
**CAD does not worsen the prognosis**

**Tako-tsubo Italian Network** → **9.6%**




**48% of stenosis were ≥ 75%**

**7% PCI**

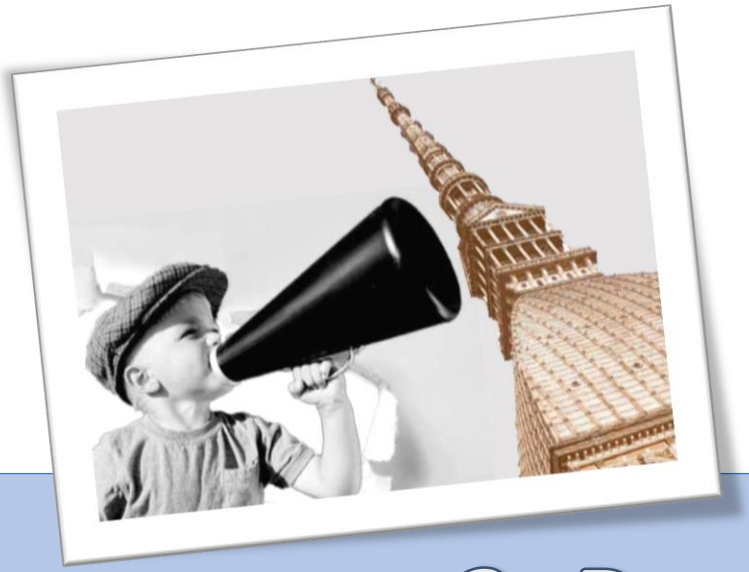
TTC patients with relevant CAD are more likely to present with risk factors for atherosclerotic diseases, but all the other clinical characteristics are similar to the remaining TTC patients

*Older, more family history of CAD, more diabetes*

The mid-term outcomes of patients with TTC are not significantly influenced by the presence of relevant coronary artery stenosis

*Unadjusted HR 0.60, 95% CI (0.13–2.72), p= 0.511*

Coron Artery Dis 2013;24:527-533



# 2. Practical management

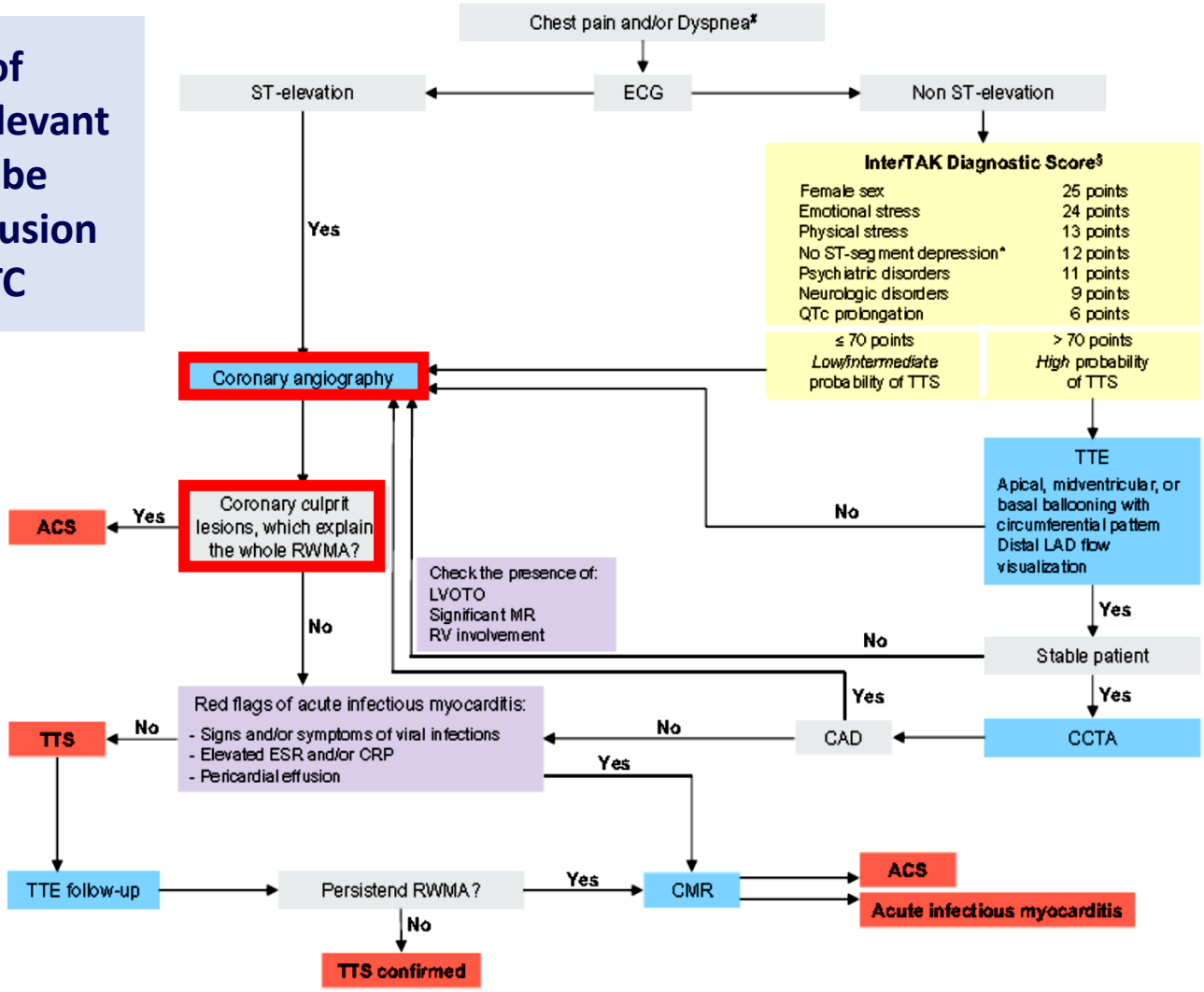
# DIAGNOSIS OF TAKO-TSUBO IN PRESENCE OF CAD

## FIRST STEP: TAKO-TSUBO vs ACUTE CORONARY SYNDROME

**The presence of angiographically relevant CAD should not be considered an exclusion criterion for TTC**

**The stenotic artery does not supply the dysfunctional myocardium**

**The extension of the dysfunctional myocardium is wider than the territory of distribution of a single stenotic coronary artery**

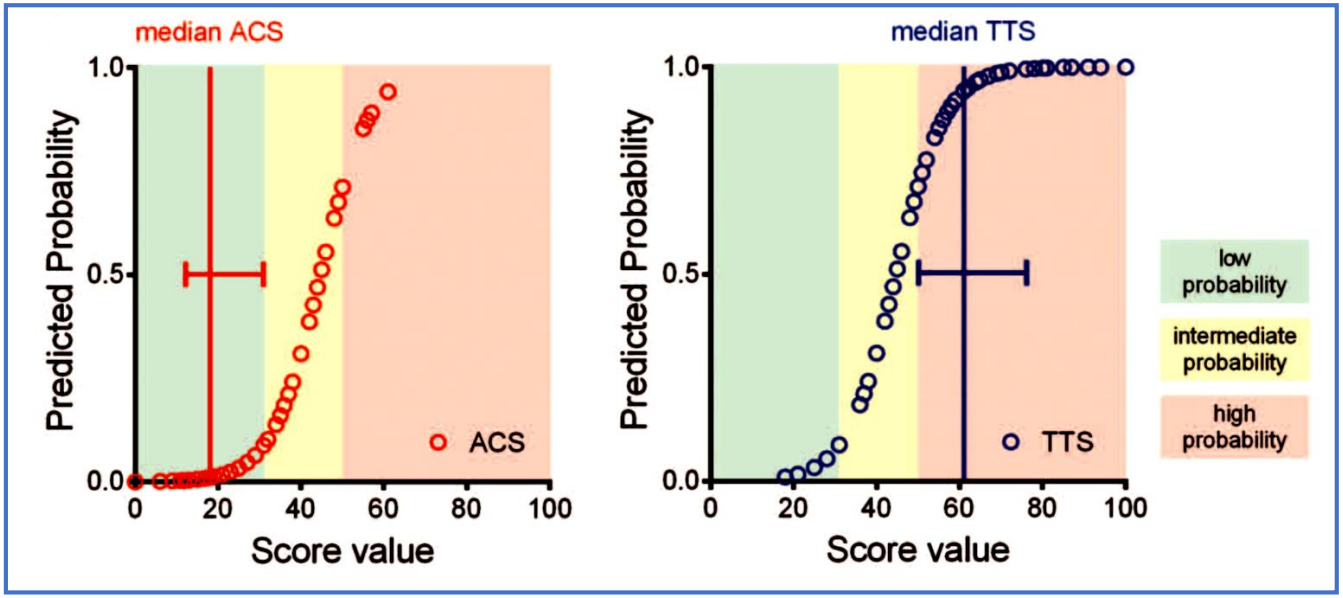


# DIAGNOSIS OF TAKO-TSUBO IN PRESENCE OF CAD

## FIRST STEP: TAKO-TSUBO vs ACUTE CORONARY SYNDROME

| Criteria | Points | Prediction of TTS | OR (95% CI) | P-value |
|---|---|---|---|---|
| Female sex | 25 | | 68 (29.0 - 163.7) | P<0.001 |
| Emotional trigger | 24 | | 65 (20.3 - 205.8) | P<0.001 |
| Physical trigger | 13 | | 8.7 (4.6 - 17.3) | P<0.001 |
| Absence of ST-segment depression* | 12 | | 7.2 (3.1 - 16.8) | P<0.001 |
| Psychiatric disorders | 11 | | 7.0 (3.1 - 15.5) | P<0.001 |
| Neurologic disorders | 9 | | 4.9 (2.2 - 11.3) | P<0.001 |
| QTc prolongation | 6 | | 2.8 (1.3 - 5.7) | P=0.006 |

100 0.1 1 10 100

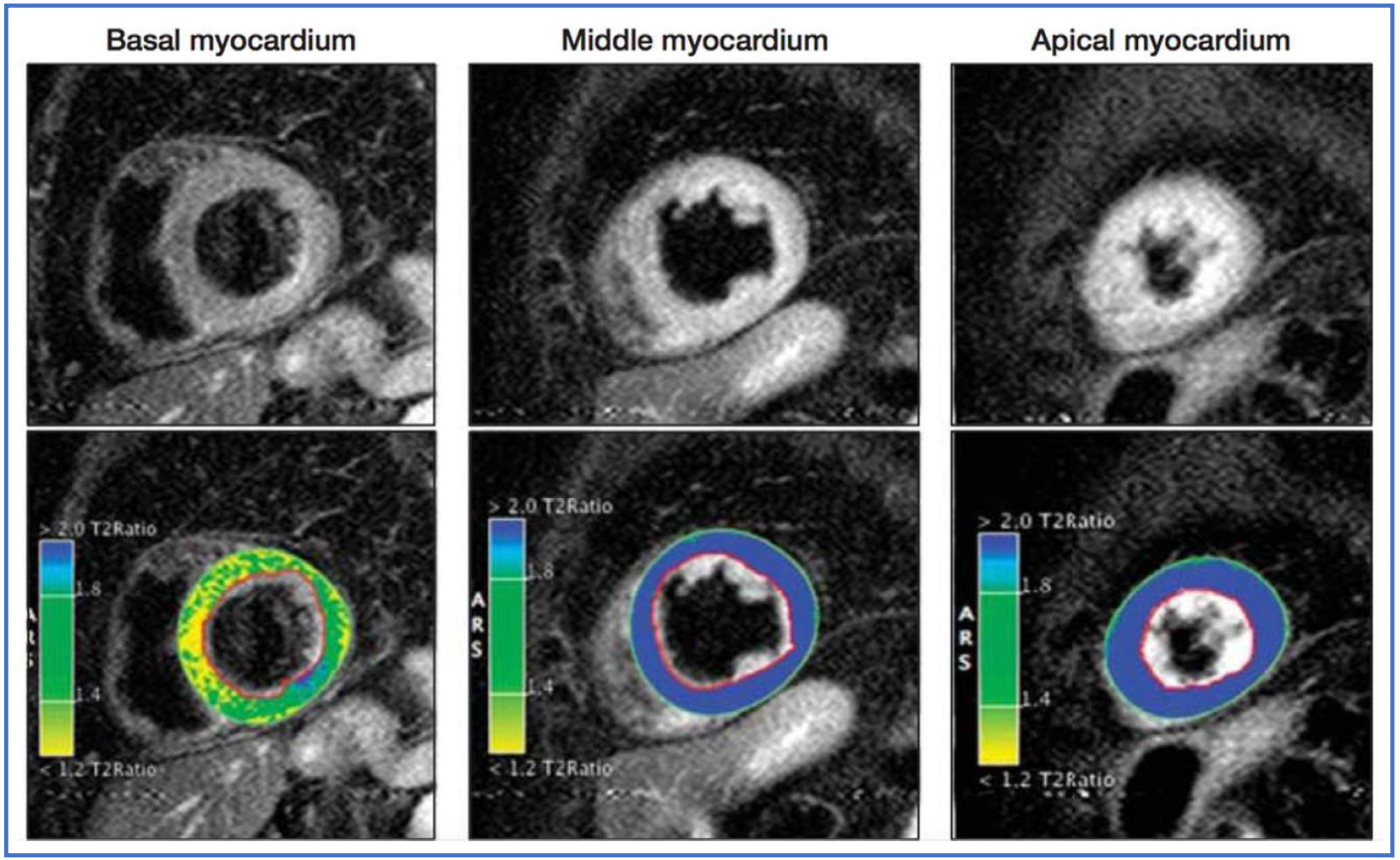



Eur J Heart Fail. 2017;19:1036-1042

# DIAGNOSIS OF TAKO-TSUBO IN PRESENCE OF CAD

## FIRST STEP: TAKO-TSUBO vs ACUTE CORONARY SYNDROME

Cardiovascular magnetic resonance identification of myocardial edema in TTS

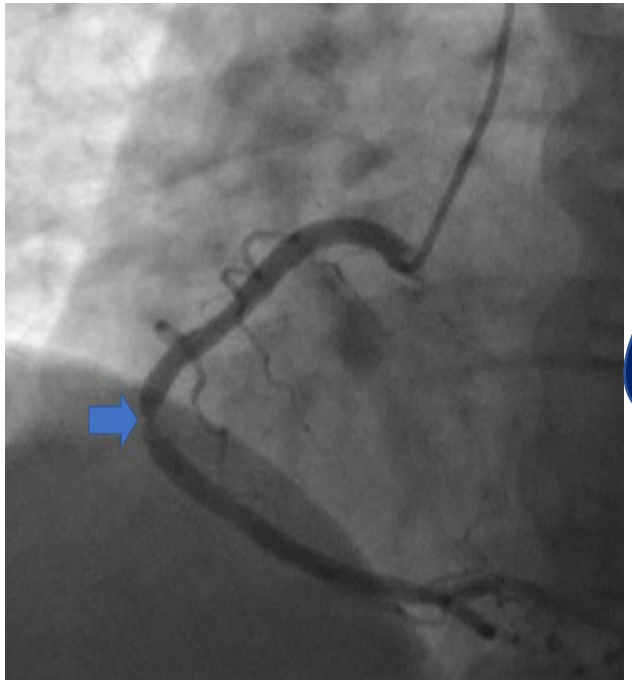


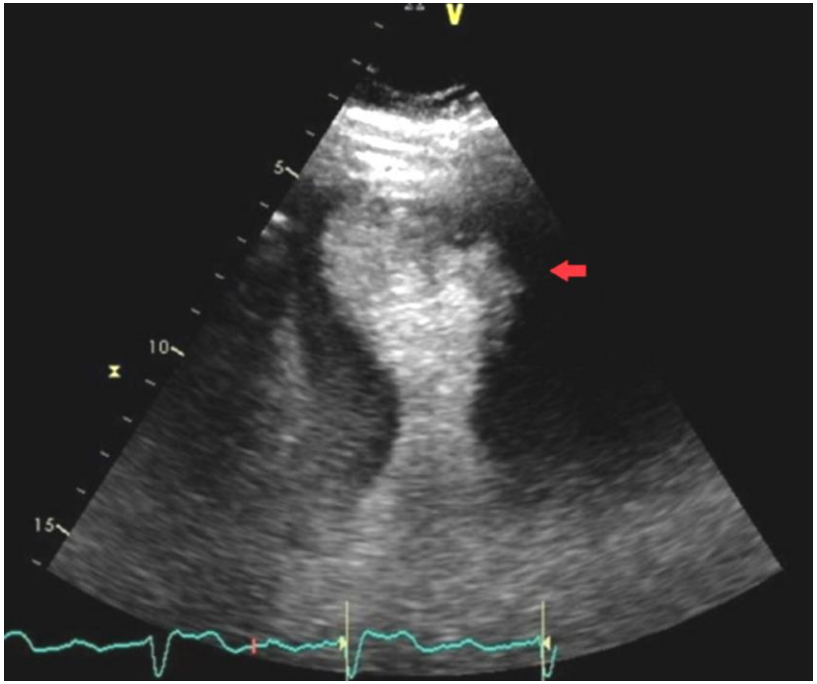

Circulation. 2017;135:2426–2441

# DIAGNOSIS OF TAKO-TSUBO IN PRESENCE OF CAD

## SECOND STEP: MYOCARDIAL INFARCTION AS A TRIGGER FOR TAKO-TSUBO

**TTS and AMI may occur simultaneously**
**Somatic stress associated with AMI may cause TTS**

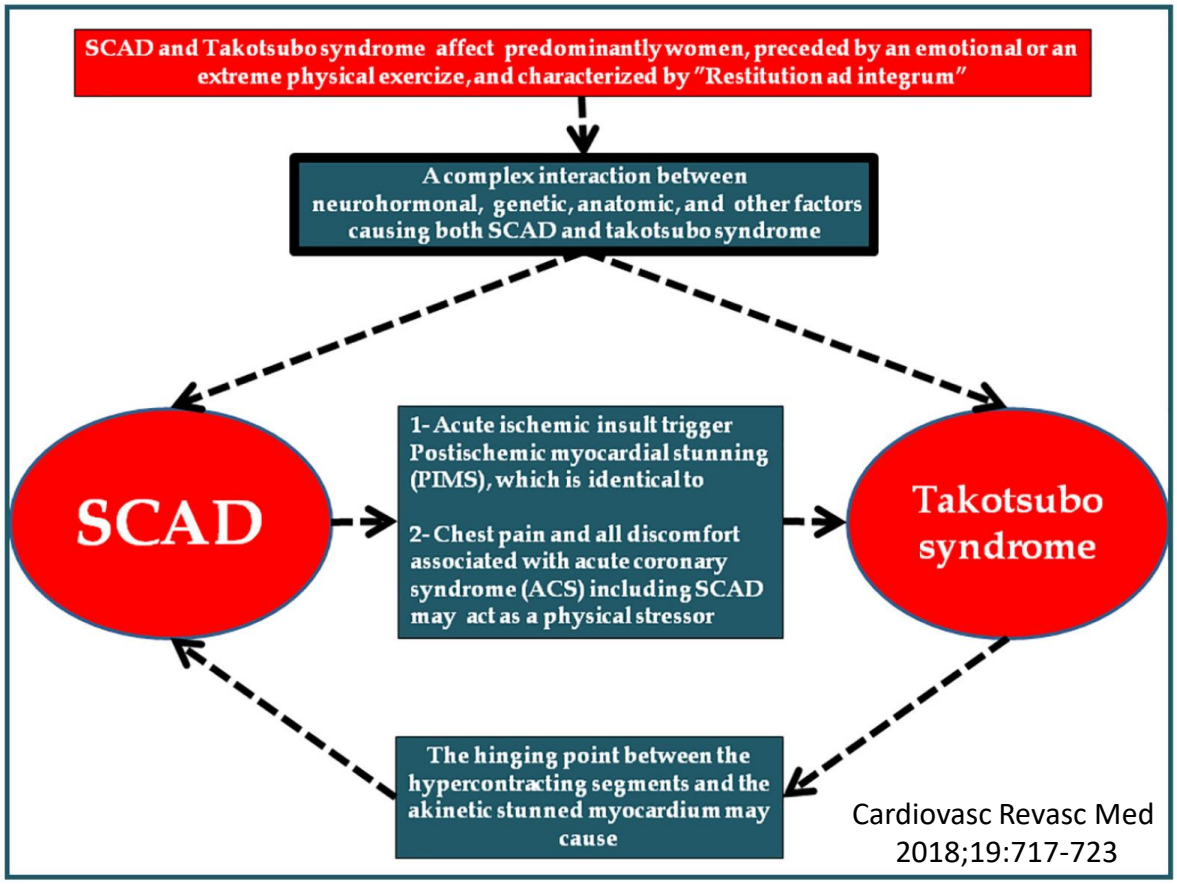




# DIAGNOSIS OF TAKO-TSUBO IN PRESENCE OF CAD

## SECOND STEP: MYOCARDIAL INFARCTION AS A TRIGGER FOR TAKO-TSUBO

**ACS including spontaneous coronary artery dissection (SCAD) may induce prolonged post-ischemic myocardial stunning (PIMS)**

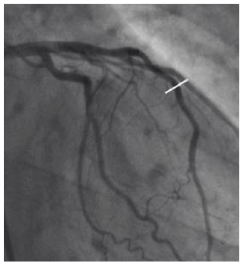



Cardiovasc Revasc Med 2018;19:717-723

# DIAGNOSIS OF TAKO-TSUBO IN PRESENCE OF CAD

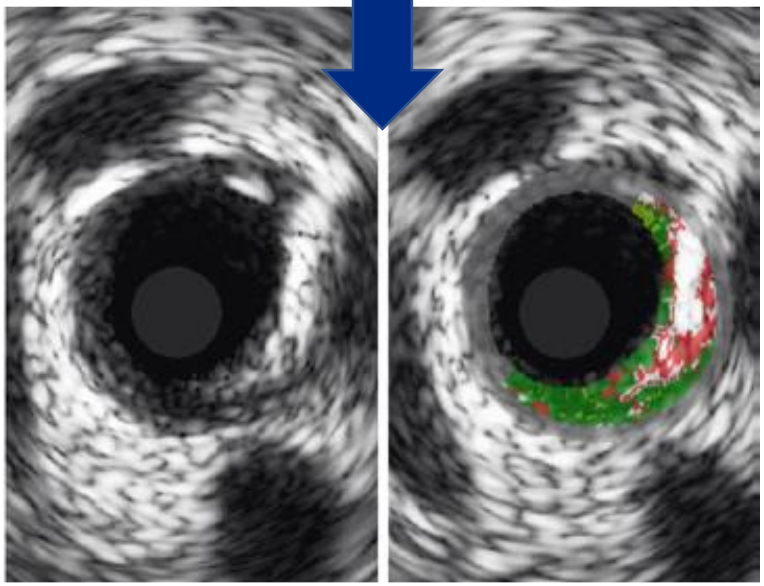
## THIRD STEP: CHARACTERIZATION OF CORONARY PLAQUE

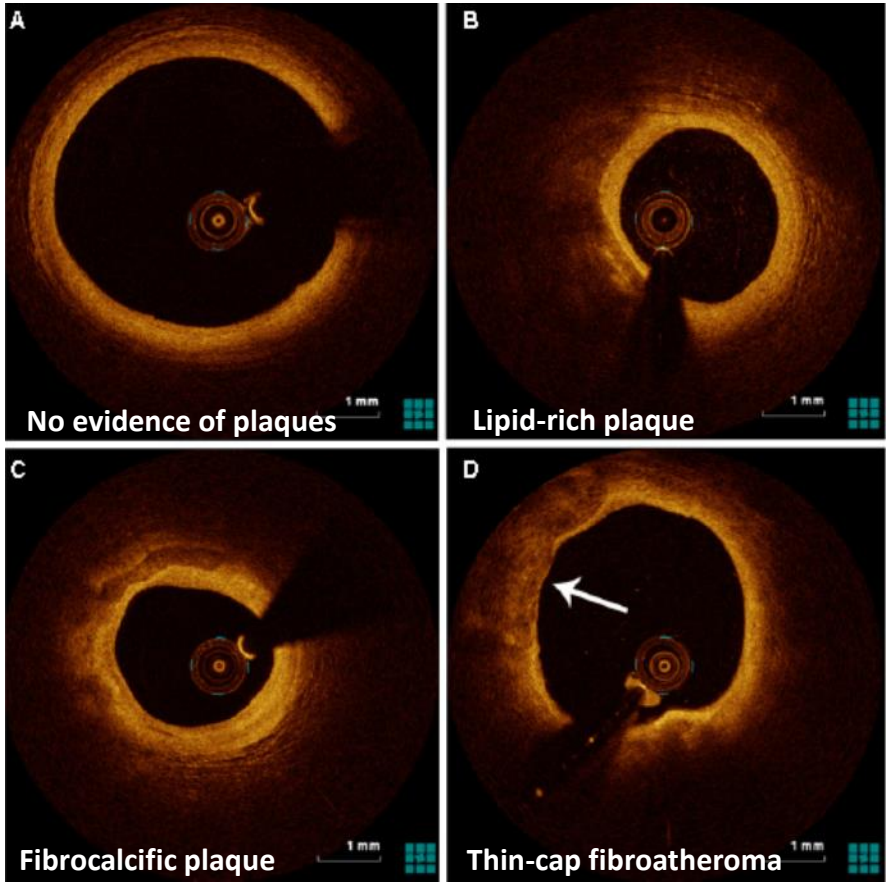
**Identification of ruptured plaques or thin-cap fibrous atheroma**



OCT

IVUS

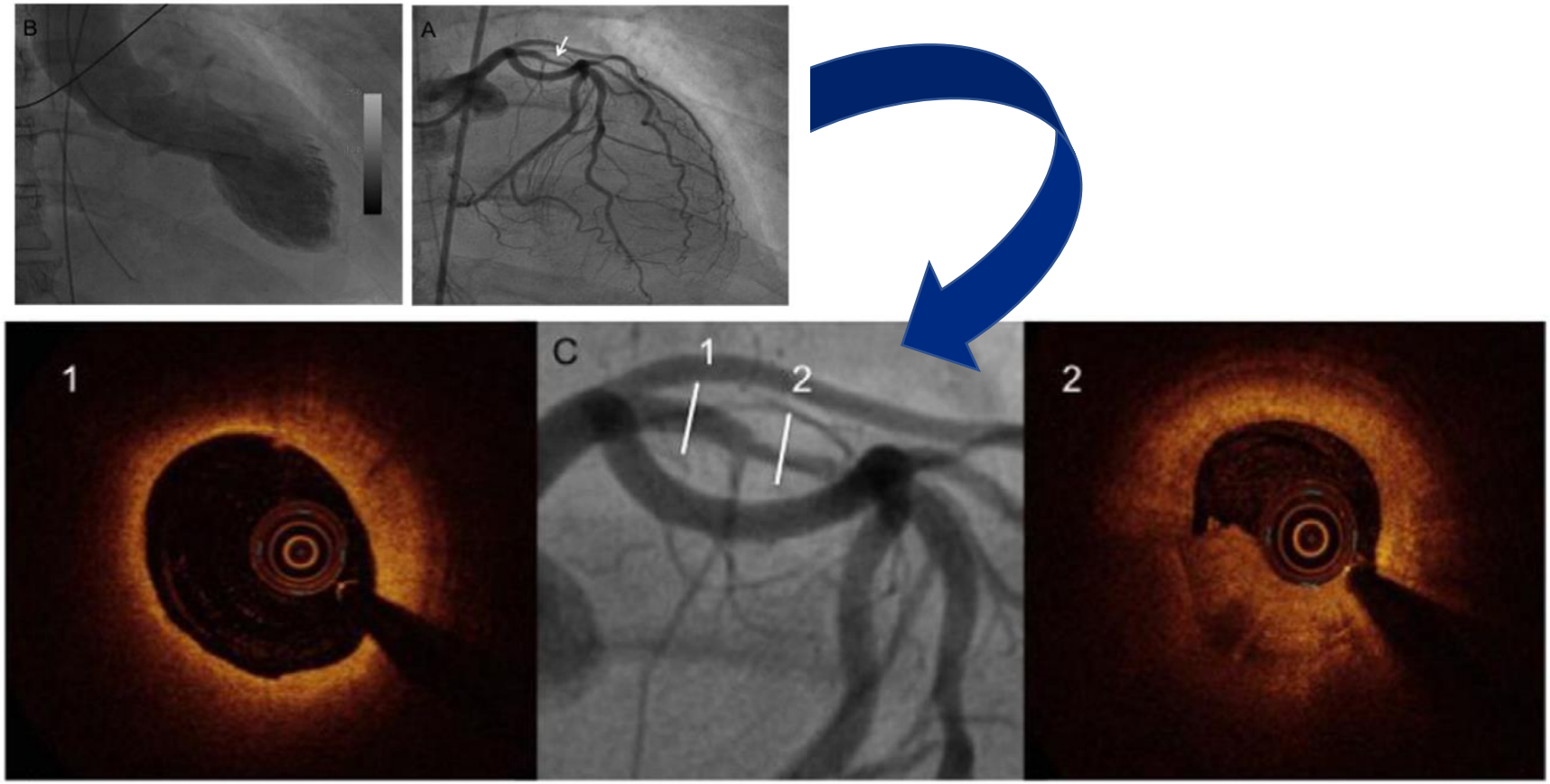


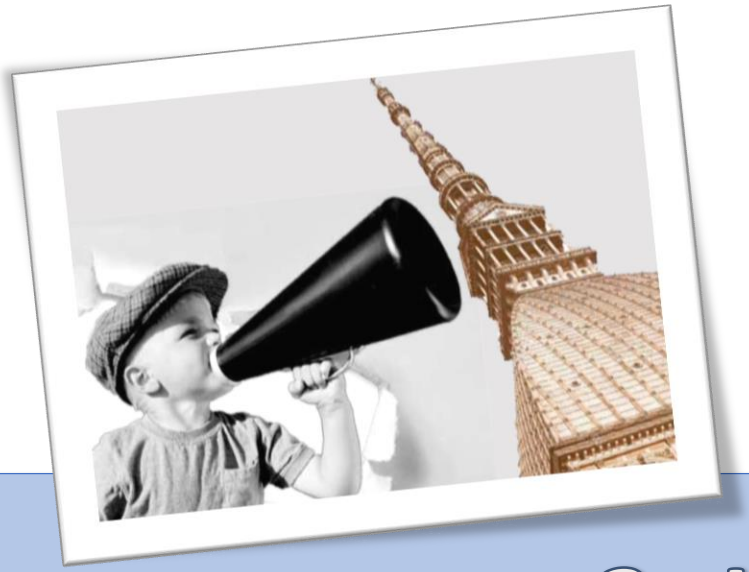


# DIAGNOSIS OF TAKO-TSUBO IN PRESENCE OF CAD

## THIRD STEP: CHARACTERIZATION OF CORONARY PLAQUE

**Tako Tsubo: a form of aborted myocardial infarction**





# 3. Just treat medically

# MEDICAL THERAPY vs REVASCULARIZATION

## MEDICAL THERAPY

**Aspirin, B-blocker/CCB, statin for CAD**

**ACEI/ARB for TS**

### Acute Heart Failure Treatment

**Mild TTS w/o signs of HF***

**Cardiology unit with telemetry monitoring for at least 48 hrs**

Consider:
- ACE inhibitor or ARB
- Beta-blocker

***Avoid:**
Inotropes as:
- Adrenaline
- Noradrenaline
- Dobutamine
- Milrinone
- Isoproterenol

**Heart Failure/Pulmonary Edema***

**Intermediate Care Unit (preferentially)**

Consider:
- ACE inhibitor or ARB
- Beta-blocker
- Diuretics (if no LVOTO)
- Nitroglycerin (if no LVOTO)

**Hypotension/Cardiogenic Shock***
**Intensive Care Unit (preferentially)**

**LVOTO**

Consider:
- IV fluid (if no HF)
- Short acting Beta-blocker
- LVAD (Impella)

**Avoid:**
- Diuretics
- Nitroglycerin
- IABP

**Primary pump failure**

Consider:
- Levosimendan
- LVAD (Impella)
- VA-ECMO

### Treatment after Discharge

**Three months or until RWMA recovery**

Consider:
- ACE inhibitor or ARB

**Treatment of other underlying disorders**, e.g.

**Coronary artery disease:**
- Aspirin
- Statin

**Depression/Anxiety:**
- Combined psycho-cardial rehabilitation

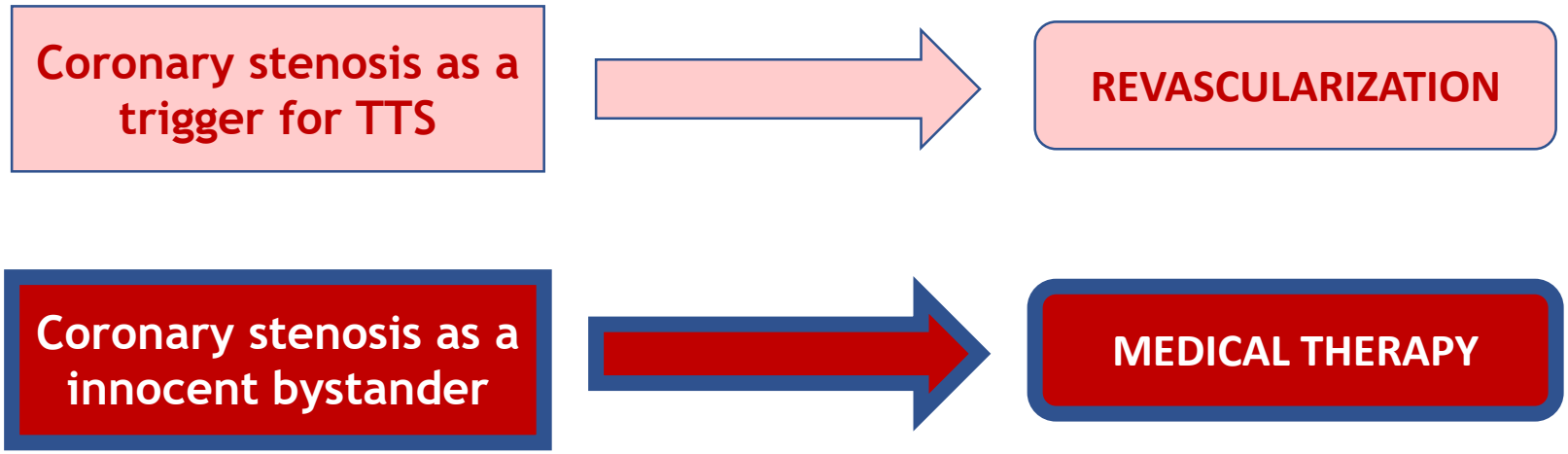
**Recurrence Prevention**

Consider:
- Hormone replacement
- ACE inhbitor or ARB

# MEDICAL THERAPY vs REVASCULARIZATION

## MEDICAL THERAPY

**Tako Tsubo patients with concomitant CAD**



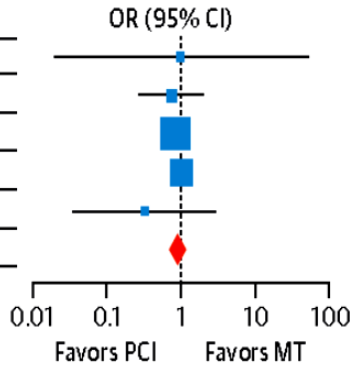
# MEDICAL THERAPY vs REVASCULARIZATION

## MEDICAL THERAPY IS BETTER

**In stable CAD patients with optimal medical therapy, PCI did not reduce the incidence of death or MI as compared with medical therapy alone**

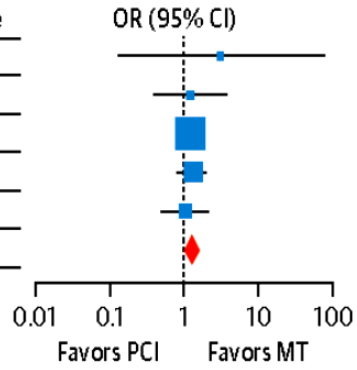
**A DEATH**

| Source | OR (95% CI) | *P* Value |
|---|---|---|
| Hambrecht | 1.02 (0.02-52.43) | .99 |
| MASS II | 0.76 (0.27-2.16) | .60 |
| COURAGE | 0.84 (0.61-1.18) | .32 |
| BARI 2D | 1.06 (0.71-1.58) | .78 |
| FAME 2 | 0.33 (0.03-3.16) | .33 |
| Overall | 0.90 (0.71-1.16) | .42 |




**B MYOCARDIAL INFARCTION**

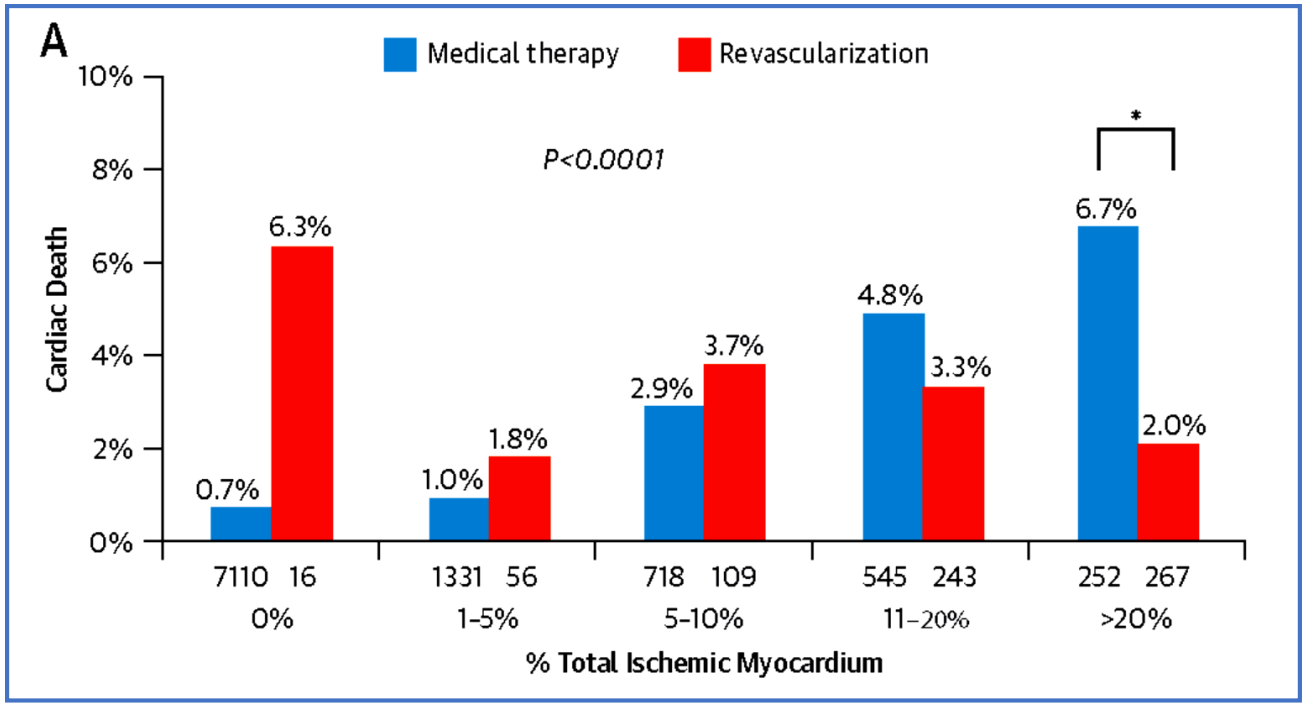
| Source | OR (95% CI) | *P* Value |
|---|---|---|
| Hambrecht | 3.12 (0.12-78.45) | .49 |
| MASS II | 1.24 (0.40-3.88) | .71 |
| COURAGE | 1.24 (0.94-1.65) | .13 |
| BARI 2D | 1.29 (0.82-2.04) | .27 |
| FAME 2 | 1.06 (0.51-2.22) | .88 |
| Overall | 1.24 (0.99-1.55) | .06 |



# MEDICAL THERAPY vs REVASCULARIZATION

## PROGNOSIS ACCORDING TO ISCHEMIA

**In patients with stable CAD, revascularization was only associated with better prognosis if area of ischemia was > 10%**

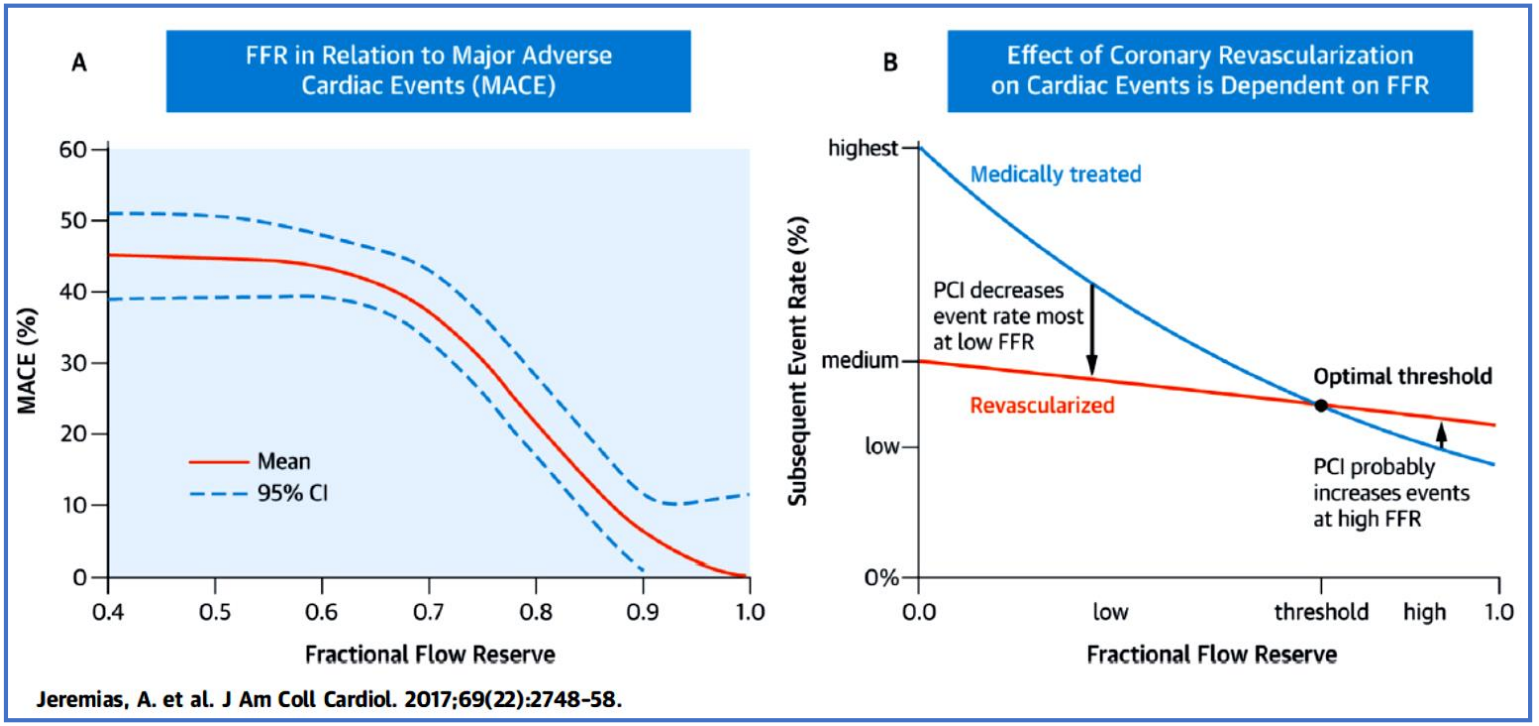



J Am Coll Cardiol 2016;67:81–99

# MEDICAL THERAPY vs REVASCULARIZATION

## PROGNOSIS ACCORDING TO FFR/IFR

**Revascularization was associated with a lower rate of MACE when the FFR was <0.8**

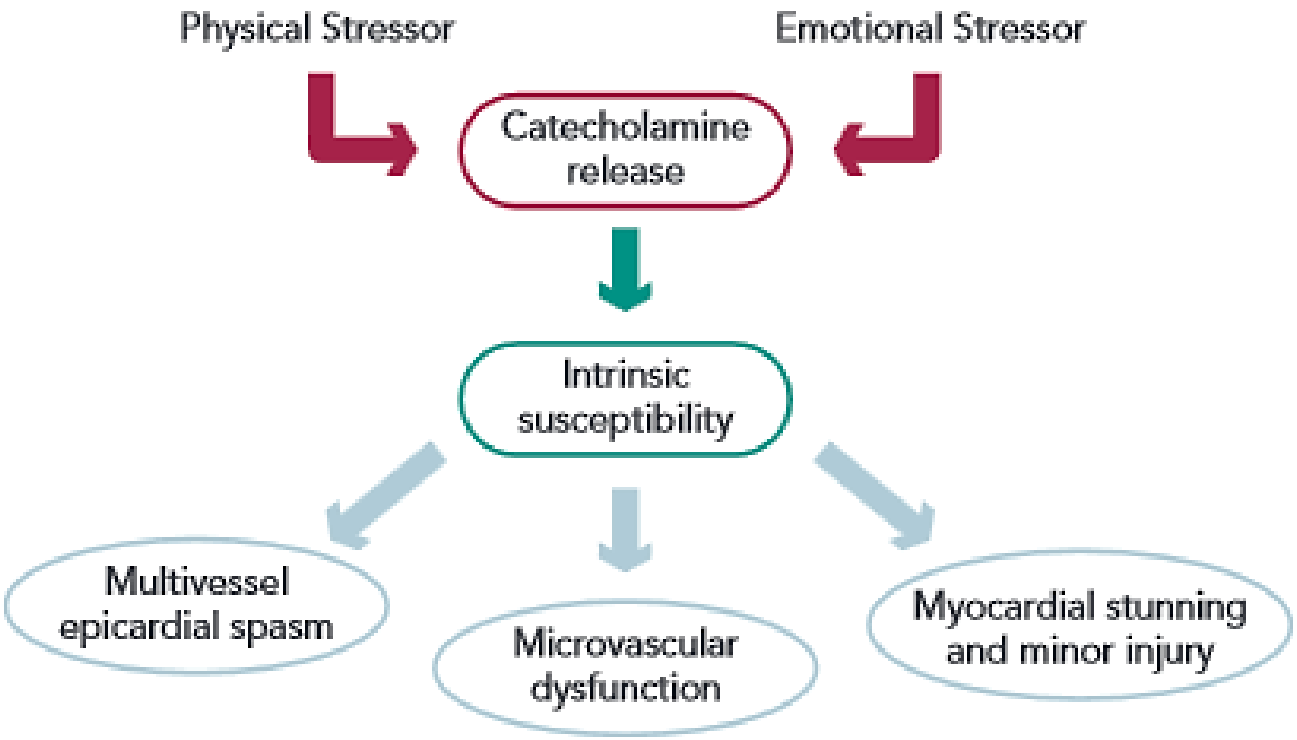



Jeremias, A. et al. J Am Coll Cardiol. 2017;69(22):2748-58.

# MEDICAL THERAPY vs REVASCULARIZATION

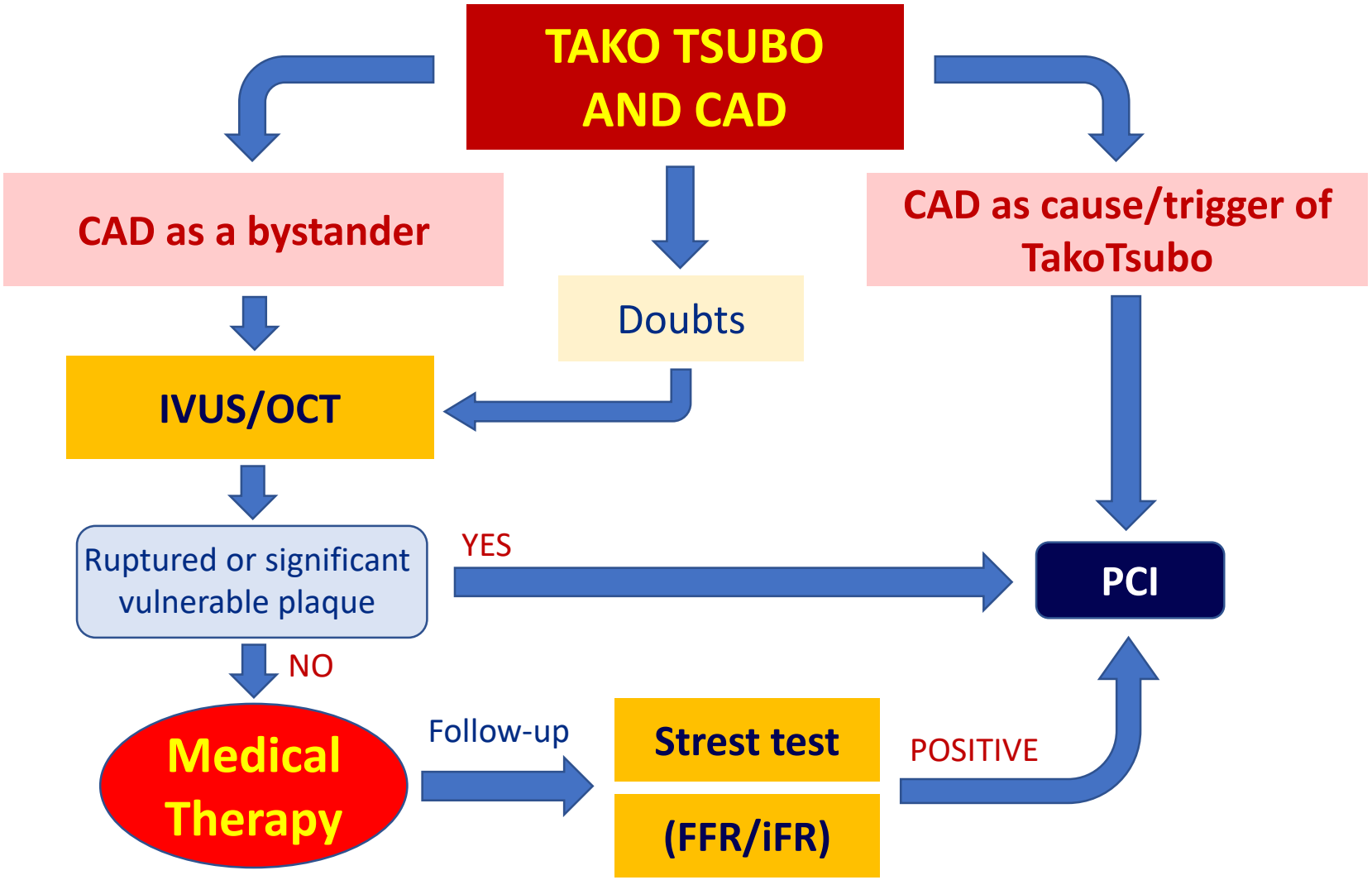
## ASSESSMENT OF CORONARY STENOSIS

**When we should assess the repercussion of coronary artery stenosis?**



# MEDICAL THERAPY vs REVASCULARIZATION

## ALGORITHM FOR PATIENTS WITH TAKO-TSUBO AND CAD



# 4. Conclusions

# CONCLUSIONS

## TAKO-TSUBO AND CORONARY ARTERY DISEASE: Just treat medically

**10-15% of patients with Tako Tsubo have CAD**
**Prognosis was similar for CAD vs non-CAD**

**In patients with Tako Tsubo and CAD, it is recommended to assess coronary artery stenosis with IVUS or OCT**

**If acute myocardial infarction is not the cause or trigger of Tako Tsubo, coronary artery stenosis should be medically treated**

**After acute phase, myocardial ischemia or coronary flow (FFR/iFR) should be evaluated to decide whether or not to revascularize**

# Grazie mille

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