

# Tako-tsubo syndrome or Type II Myocardial infarction? When a classification is a simplistic approach for a complex reality

Dott. ANGELO GUGLIELMI (1), Dott.ssa ELEONORA ROSSI (1), Dott.ssa RITA CAMPOROTONDO (2), Dott.ssa ROSSANA TOTARO (2), Dott.ssa ALESSANDRA REPETTO (2), Prof. GIORGIO IOTTI (1), Prof. FRANCESCO MOJOLI (1), Dott. GUIDO TAVAZZI (1)

(1) Università di Pavia, Dipartimento di Scienze Clinico-Chirurgiche, Diagnostiche e paediatriche; Anestesia e Rianimazione, Fondazione Policlinico San Matteo IRCCS Pavia, Italia.

(2) Divisione di Cardiologia, Fondazione Policlinico San Matteo IRCCS Pavia, Italia.

Argomento: Caso clinico

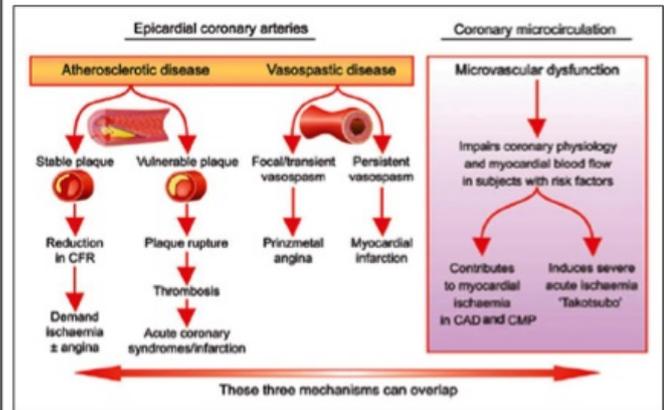
A 73-year-old woman, with history of COPD and hypertension, presented to ER with severe respiratory distress (pH 7.14 paCO<sub>2</sub> 85 mmHg paO<sub>2</sub> 81 mmHg HCO<sub>3</sub><sup>-</sup> 28 mmol/L), hypotension, fast atrial fibrillation (181 bpm) and ST-segment depression in antero-septal leads. Noninvasive ventilation, B<sub>2</sub>agonist, norepinephrine (0,2 mcg/kg/min) and amiodarone ev were started. However, the patient rapidly deteriorated requiring mechanical ventilation, which entailed to better respiratory and hemodynamic profile. Transthoracic echocardiography (TTE) showed akynesia of the mid-distal septum anterior walls and apex (hsTNI>2000 ng/L). Coronary angiography showed a stenosis (60%) of left anterior descending coronary, that was treated with angioplasty and drug eluting stent. The patient was discharged after two weeks; the echocardiographic patten normalized and ECG showed T wave inversion in antero-septal leads.

The 4<sup>th</sup> Universal definition of Myocardial infarction (MI) recognized 5 different kind of MI basing on underline etiopathology. Type 2 MI (T2MI) identifies as casual factor: vascular dysfunction/vasospasm and oxygen supply/demand imbalance (with/without stable atherosclerosis). Tako-tsubo cardiomyopathy (TTC) is a transient myocardial wall motion abnormalities (WMA), which may be triggered by emotional or physical stress, and usually resolves completely. Coronary disease is present up to 15% of cases. Hypotension, tachyarrhythmia, hypoxemia, respiratory distress are potential causative factors of both syndromes. Recent long term registries have shown that the outcome of patients with MI and TTS is similar (JACC 2018;72:874-82). As the presence of coronary artery disease, the difference between T2MI and TTS would have not changed the treatment dramatically, for the exception of the warning on the use of inotropes if the patients had slipped in cardiogenic shock. Although, the definition of MI makes a firm distinction between the two entities, some patients exhibit overlap of clinical conditions/presentations making the clinical daily life more complex than syndromes classification.

Figure 1 summarized T2MI and TTS etio-pathological common features

## Criteria for Takotsubo Syndrome

- Rise and fall of cTn values above the 99th percentile URL
- Emotional/physical triggers and symptoms may be present
- New ST segment changes, including QTc prolongation
- Imaging of left ventricular wall motion abnormalities, RV ventricular involvement may be present. The WMA usually extent beyond the single epicardial territory
- CAD may be present

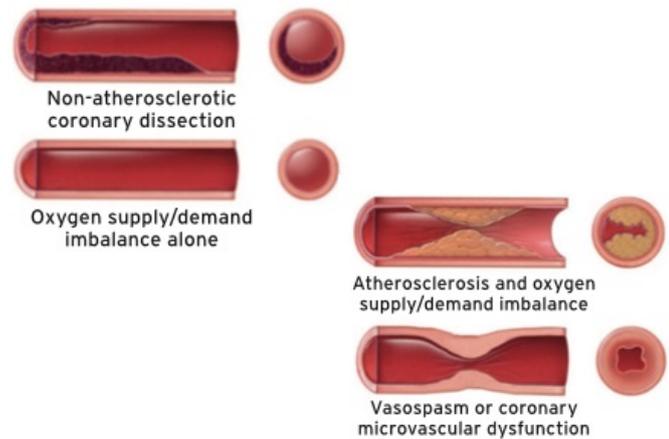


European Heart Journal (2018) 39, 2032–2046

## Criteria for type 2 MI

Detection of a rise and/or fall of cTn values with at least one value above the 99th percentile URL, and evidence of an imbalance between myocardial oxygen supply and demand unrelated to acute coronary athero-thrombosis, requiring at least one of the following:

- Symptoms of acute myocardial ischaemia;
- New ischaemic ECG changes;
- Development of pathological Q waves;
- Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality in a pattern consistent with an ischaemic aetiology.



European Heart Journal (2019) 40, 237–269