LA CARDIOMIOPATIA DA STRESS: È SEMPRE BENIGNA?

Francesco Bovenzi

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Ospedale San Luca, Lucca
Declaration of interest

I have noting to declare!
Takotsubo cardiomyopathy studies and respective timeline in the literature

Number of TTC studies


First description in Japan 1990
Pathophysiology 2005
Mayo Clinic diagnostic criteria 2007
Chronobiology 2008
Registries from USA, Europe, Asia 2010
Cardiac MRI 2011
NIS discharge database in USA Epidemiology 2012
Special Issue Heart Failure Clinics 0.02%
Bossone-Erbel 2012
Bossone-Lyon 2013

World Consensus

Bossone E et al. Dialogues in Cardiovascular Medicine, 2014
Takotsubo’s definition and discussion

- 90% an acute completely reversible HF syndrome (4-53 days)
- 90% women (90% post-menopausal)
- Typical: apical akinesia [ballooning] and hypercontractile base
- Atypical: midventricular akinesia and hypercontractile base
- No relevant CAD
- New ECG abnormalities
- Modest elevation in cardiac troponin
- Mimics symptoms of ACS
- Catecholamine theory:
  - Myocardium toxicity
  - Stunning
  - Decreased inotropic activity
  - Ballooning
- Triggers (66%)

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<tr>
<td><strong>Time of recovery, d</strong></td>
<td><strong>Average 15.7</strong></td>
<td>11.3</td>
<td>24</td>
<td>21</td>
<td>17.7</td>
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<tr>
<td>Pul. Edema, %</td>
<td>22</td>
<td>3</td>
<td>0</td>
<td>16</td>
<td>28</td>
<td>6</td>
<td>44</td>
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<td>IABP, %</td>
<td>8</td>
<td>0</td>
<td>18</td>
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<td>6</td>
<td>7</td>
<td>15</td>
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<tr>
<td>Coronary stenosis &gt;50%</td>
<td>0</td>
<td>0</td>
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<td>Spont. Multivessel spasm, %</td>
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<tr>
<td>Provocable multivessel spasm, n/n(%)</td>
<td>5/48(10)</td>
<td>6/14(43)</td>
<td>0/6(0)</td>
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<td>Transient intraventricular pressure gradient, %</td>
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<tr>
<td>In-hospital mortality, %</td>
<td>1</td>
<td>3(9)</td>
<td>0</td>
<td>0</td>
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<td>6</td>
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<td>8</td>
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<tr>
<td>Documented recurrence, n/n(%)</td>
<td>2/72(3)</td>
<td>2(6)</td>
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<td>2/22(9)</td>
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# Clinical manifestation

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<td>Coronarystenosis &gt;50%</td>
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This table is adapted and modified from *Circulation.* 2008;118:2754-2762.
Survival Curves for Stress Cardiomyopathy Patients Vs That Expected in the General Population

Kaplan-Meier survival curves for 136 patients with stress cardiomyopathy (solid red line) compared with that expected in an age- and sex-matched general population from Minnesota (broken blue line).

TTC Mortality rate is higher than the expected mortality in the general population.

\[ p = 0.016 \]
\[ 95\% \text{ CI} = 1.1, 2.7 \]

Sharkey SW et al. J Am Coll Cardiol 2010
Post-discharge prognosis of stress cardiomyopathy in women: a retrospective cohort study

Elena Salmoirago-Blotcher a,*, Sandhya Reddy b, Heather Swales c, Ilan Wittstein d, Ira Ockene b, Gerard Aurigemma b, Joseph Bouchard b, Robert J. Goldberg b

a Warren Alpert Medical School of Brown University, United States
b University of Massachusetts Medical School, United States
c Hartford Hospital, United States
d Johns Hopkins University School of Medicine, United States

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ABSTRACT

Background/objectives: There is limited information on the prognosis of stress cardiomyopathy (SCM) after hospital discharge. The aim of this retrospective cohort study was to determine the post-discharge prognosis of women with SCM compared to female controls with ST-segment elevation myocardial infarction (STEMI).

Methods: SCM cases were identified through chart reviews of women hospitalized at a single tertiary care medical center between 2002 and 2012. Controls were randomly selected (2:1 ratio) among women admitted with a validated diagnosis of STEMI during the same period. The primary outcome was a composite of cardiovascular readmissions and death from any cause. Risk of the composite outcome was estimated from multivariate Cox proportional hazard regression models.

Results: Over an average follow-up of 24 months, incidence rates of the composite outcome were 1.40/1000 person-years among cases (n = 50) and 347/1000 person-years among controls (n = 100; P < 0.001). SCM women had a lower unadjusted risk of cardiovascular readmissions and death vs. STEMI women (HR: 0.47; 95% CI: 0.27, 0.82). This difference in risk was reduced after adjustment for demographic and clinical confounders (HR: 0.64; 95% CI: 0.30, 1.33). The lower risk of developing the composite outcome among SCM women was driven by a lower risk of death, while the risk of cardiovascular readmissions was similar between groups.

Conclusion: Risk of death and cardiovascular readmissions post-discharge was lower among women with SCM than among women with STEMI. Incidence rates of cardiovascular readmissions, however, were similar, indicating that SCM may not be a benign condition.
Takotsubo cardiomyopathy: is it a benign heart failure syndrome?

Birke Schneider, MD, FESC
Department of Cardiology - Sana Kliniken - Lübeck - GERMANY

... dovrà essere considerata come un’entità clinica con complicanze simili a quelle osservate nel contesto delle SCA

Schneider B, Dialogues in Cardiovascular Medicine, 2014
Clinical Features and Outcomes of Takotsubo (Stress) Cardiomyopathy


**Background:** The natural history, management, and outcome of takotsubo (stress) cardiomyopathy are incompletely understood.

**Methods:** The International Takotsubo Registry, a consortium of 26 centers in Europe and the United States (1.750 pts), was established to investigate clinical features, prognostic predictors, and outcome of TTC cardiomyopathy. Pts were compared with age and sex-matched pts who had an ACS.

**Conclusions:** Our study demonstrates that takotsubo (stress) cardiomyopathy represents an acute heart failure syndrome that is associated with a risk for adverse events (with substantial morbidity and mortality).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Takotsubo Cardiomyopathy</th>
<th>Acute Coronary Syndrome</th>
<th>P Value†</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Cohort (N=1750)</td>
<td>Matched Cohort (N=455)</td>
<td></td>
</tr>
<tr>
<td>Female sex — no. (%)</td>
<td>1571 (89.8)</td>
<td>411 (90.3)</td>
<td>1.00</td>
</tr>
<tr>
<td>Age — yr</td>
<td>66.4±13.1</td>
<td>67.7±12.5</td>
<td>0.19</td>
</tr>
<tr>
<td>Chest pain — no./total no. (%)</td>
<td>1229/1619 (75.9)</td>
<td>322/438 (73.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Dyspnea — no./total no. (%)</td>
<td>760/1620 (46.9)</td>
<td>208/439 (47.4)</td>
<td>0.011</td>
</tr>
<tr>
<td>Median troponin (IQR) — factor × ULN‡</td>
<td>7.70 (2.22–24.00)</td>
<td>7.68 (2.38–24.21)</td>
<td>0.62</td>
</tr>
<tr>
<td>Median creatine kinase (IQR) — factor × ULN</td>
<td>0.85 (0.52–1.48)</td>
<td>0.87 (0.55–1.42)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Median brain natriuretic peptide (IQR) — factor × ULN§</td>
<td>6.12 (2.12–15.70)</td>
<td>5.89 (1.68–13.92)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ST-segment change — no./total no. (%)</td>
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<tr>
<td>Elevation</td>
<td>690/1578 (43.7)</td>
<td>185/420 (44.0)</td>
<td>0.03</td>
</tr>
<tr>
<td>Depression</td>
<td>121/1578 (7.7)</td>
<td>35/420 (8.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Heart rate — beats/min</td>
<td>87.5±21.8</td>
<td>87.3±21.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Systolic blood pressure — mm Hg</td>
<td>110.6±28.8</td>
<td>131.6±31.4</td>
<td>0.96</td>
</tr>
<tr>
<td>Left ventricular ejection fraction — %‡</td>
<td>41.1±11.8</td>
<td>40.7±11.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Left ventricular end diastolic pressure — mm Hg</td>
<td>21.3±8.0</td>
<td>22.1±7.7</td>
<td>0.001</td>
</tr>
<tr>
<td>Coexisting medical condition — no./total no. (%)</td>
<td></td>
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</tr>
<tr>
<td>Coronary artery disease</td>
<td>245/1597 (15.3)</td>
<td>96/455 (21.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Neurologic or psychiatric disorder§</td>
<td>714/1525 (46.8)</td>
<td>252/452 (55.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Acute neurologic disorder</td>
<td>143/1528 (9.4)</td>
<td>41/452 (9.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Past or chronic neurologic disorder</td>
<td>293/1512 (19.4)</td>
<td>98/452 (21.7)</td>
<td>0.002</td>
</tr>
<tr>
<td>Acute psychiatric disorder</td>
<td>149/1525 (9.8)</td>
<td>57/452 (1.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Past or chronic psychiatric disorder</td>
<td>444/1512 (29.4)</td>
<td>165/451 (36.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Treatment — no./total no. (%)</td>
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<tr>
<td>Catecholamine</td>
<td>212/1735 (12.2)</td>
<td>53/455 (11.6)</td>
<td>0.75</td>
</tr>
<tr>
<td>Invasive or noninvasive ventilation</td>
<td>301/1735 (17.3)</td>
<td>63/455 (13.8)</td>
<td>0.02</td>
</tr>
<tr>
<td>Cardiopulmonary resuscitation</td>
<td>149/1735 (8.6)</td>
<td>40/455 (8.8)</td>
<td>0.16</td>
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<tr>
<td>In-hospital outcomes — no./total no. (%)</td>
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<td></td>
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<tr>
<td>Cardiogenic shock</td>
<td>170/1716 (9.9)</td>
<td>55/445 (12.4)</td>
<td>0.39</td>
</tr>
<tr>
<td>Death</td>
<td>72/1750 (4.1)</td>
<td>17/455 (3.7)</td>
<td>0.26</td>
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Kaplan–Meier Estimates of 10-Year Outcome Events

Long-term follow-up revealed a rate of death:
- any cause (5.6% pts-year)
- a rate of MACCE (9.9% pts-year)

No. of Patients 1750 786 570 431 300 191 126 71 38 17 9

Una sindrome “romantica” ma nello stesso tempo anche potenzialmente “mortale”

Piombino. L'anziana donna si è sentita male vedendo il marito senza vita, poi è deceduta all'ospedale

Muore di dolore subito dopo il marito

Piombino: i due coniugi avevano ottant'anni, la tragedia davanti al figlio

Il Tirreno, 25 febbraio 2010

Di felicità si può morire: è la sindrome Takotsubo

Non solo i grandi dolori ma anche le gioie intense possono portare alla morte. Con un picco di emozione il ventricolo cardiaco sinistro si deforma. A rischio le donne in menopausa

La Stampa, 3 marzo 2016
Happy heart syndrome: role of positive emotional stress in takotsubo syndrome

Jelena R. Ghadri¹, Annahita Sarcon², Johanna Diekmann¹, Dana Roxana Bataiosu¹, Victoria L. Cammann¹, Stjepan Jurisic¹, Lars Christian Napp³, Milosz Jaguszewski¹, Frank Scherff¹, Peter Brugger⁴, Lutz Jäncke⁵, Burkhardt Seifert⁶, Jeroen J. Bax⁷, Frank Ruschitzka¹, Thomas F. Lüscher¹, and Christian Templin¹

InterTAKRegistry: Methods and Results

- Of 1750 TTS pts, we identified a total of 485 with a definite emotional trigger (27.7% pts)

- Of these, 4.1% (n. 20) presented with pleasant preceding events and 95.9% (n. 465) with unequivocal negative emotional events associated with TTS.

- Clinical presentation of pts with ‘happy heart syndrome’ was similar to those with the ‘broken heart syndrome’ including symptoms such as chest pain [89.5% (17/19) vs. 90.2% (412/457), P = 1.0]. Similarly, electrocardiographic parameters, laboratory findings, and 1-year outcome did not differ.

TTS pts with preceding pleasant events were compared to those with negative emotional triggers from the International Takotsubo Registry.

![Graph showing differences in Takotsubo type]

P = 0.21

- Broken heart
- Happy heart

Patients (%)
Epidemiologia della sindrome di tako-tsubo nel mondo reale: dati del Registro Toscano della Miocardiopatia da stress tipo Tako-tsubo

Benedetta Bellandi¹, Claudia Salvadori², Guido Parodi¹, Alberto Genovesi Ebert³, Nunzia Petix⁴, Stefano Del Pace¹, Andrea Boni⁵, Francesco Pestelli⁶, Massimo Fineschi⁷, Antonio Giomi⁸, Alberto Cresti⁹, Gabriele Giuliani¹⁰, Francesco Venditti¹, Lorenzo Querceto¹⁰, Gian Franco Gensini¹, Leonardo Bolognese², Francesco Bovenzi⁵

<table>
<thead>
<tr>
<th>Sintomo d'esordio</th>
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<tr>
<td>Dolore toracico</td>
<td>90  (86%)</td>
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<tr>
<td>Dispnea</td>
<td>8  (8%)</td>
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<tr>
<td>Sincopè</td>
<td>10  (10%)</td>
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<tr>
<td>Altro</td>
<td>12  (11%)</td>
</tr>
<tr>
<td>Evento stressante</td>
<td></td>
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<tr>
<td>Fisico</td>
<td>13  (12%)</td>
</tr>
<tr>
<td>Psicologico</td>
<td>65   (63%)</td>
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<tr>
<td>Alterazioni del tratto ST-T</td>
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<tr>
<td>Sopraslivellamento</td>
<td>62  (59%)</td>
</tr>
<tr>
<td>Sottoslivellamento</td>
<td>13  (12%)</td>
</tr>
<tr>
<td>Inversione onda T</td>
<td>58  (56%)</td>
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<tr>
<td>Luanahezza del OT corretto (ms)</td>
<td>440 ± 75</td>
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FE all’ingresso (%): 40 ± 9
FE alla dimissione (%): 51 ± 9

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<tr>
<th>Classe Killip all’ingresso</th>
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<tbody>
<tr>
<td>I</td>
<td>84  (80%)</td>
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<tr>
<td>II</td>
<td>9    (9%)</td>
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<tr>
<td>III</td>
<td>2    (2%)</td>
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<tr>
<td>IV</td>
<td>4    (4%)</td>
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</tbody>
</table>

... un rischio di complicanze legate all’insufficienza cardiaca nella fase acuta che non è completamente tascurabile.
A variety of serious complications may occur during the **acute clinical course** in up to **52%** of the patients.

---

**Arrhythmias**
- Ventricular tachycardia/fibrillation
- Atrial fibrillation
- Atrioventricular block
- Resuscitation

**Heart Failure**
- Pulmonary edema
- Pleural effusion

**Cardiogenic shock**
- Mitral regurgitation

**Intraventricular pressure gradient**
- Left ventricular thrombus formation
- Stroke
- Peripheral embolism

**Right ventricular involvement**
- Pericardial tamponade

**Myocardial rupture**
- Free wall rupture
- Perforation of the interventricular septum

**Death**

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Schneider B,
*Dialogues in Cardiovascular Medicine, 2014*
Rischio aritmico nella cardiomiopatia
tako-tsubo: è davvero così innocua
la malattia del cuore infranto?

Francesco Rotondi, Fiore Candelmo, Ferdinando Alfano
U.O. di Cardiologia-UTIC, Dipartimento Medico Chirurgico del Cuore e dei Vasi,
Azienda Ospedaliera di Rilievo Nazionale ed Alta Specialità “San Giuseppe Moscati”, Avellino

RIASSUNTO
È noto che la cardiomiopatia tako-tsubo presenta a medio e lungo termine una buona prognosi. Ciononostante, è sempre più spesso segnalato il rischio aritmico legato a questa condizione clinica. Alla luce della letteratura corrente, sono qui riportati i criteri per una stratificazione prognostica accanto ad alcuni suggerimenti pratici per la gestione di questi pazienti “vulnerabili”.

1. La questione relativa all’incidenza di aritmie cardiache è stata ignorata nei primi studi e il termine “arrhythmias” veniva raramente preso in considerazione.
2. I dati risultavano sottostimati e le aritmie ventricolari letali non riconosciute come prima manifestazione clinica.

GIAC 2012;15
Arrhythmia occurrence with takotsubo cardiomyopathy: a literature review

Faisal F. Syed¹, Samuel J. Asirvatham²,³*, and Johnson Francis⁴

¹Department of Internal Medicine, Mayo Clinic College of Medicine, Rochester, MN, USA; ²Department of Medicine, Division of Cardiovascular Diseases, Mayo Clinic College of Medicine, 200 First Street SW, Rochester, MN 55905, USA; ³Department of Pediatrics and Adolescent Medicine, Mayo Clinic College of Medicine, Rochester, MN, USA; and ⁴Malabar Institute of Medical Sciences, Calicut, Kerala, India

Received 28 August 2010; accepted after revision 3 November 2010; online publish-ahead-of-print 3 December 2010

Aims
Takotsubo cardiomyopathy (TC) or the apical ballooning syndrome is a reversible cardiomyopathy mimicking acute myocardial infarction (AMI). Although malignant arrhythmia is considered less likely to occur in TC than with AMI, sporadic reports of malignant arrhythmia with TC, however, have been reported. We reviewed the medical literature on TC and arrhythmias and describe in the summary the reported findings and discuss possible specific scenarios where arrhythmia may be more likely in patients with TC.

Methods and results
Articles were identified on PubMed using the MeSH terms 'Takotsubo Cardiomyopathy' or 'Apical Ballooning Syndrome'. Seventy-four unique case series with five or more TC patients were identified, with a cumulative total of 1876 cases. Twelve series (242 cases) were excluded because Mayo criteria were not met. Twenty-five series (816 cases, 43.5%) reported on arrhythmia and were included in the analysis.

Prevalenza
FV 2.2%, TVS 1.2%, TVNS 1%, Asistolia 0.5%, BAV 2.9%, Disfunzione sinusale 1.3%, FA 4.7% e MCI 1.1%
European Review for Medical and Pharmacological Sciences

Takotsubo cardiomyopathy and arrhythmic risk: the dark side of the moon

F. ROTONDI, F. MANGANElli

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Abstract. — BACKGROUND: “Takotsubo” cardiomyopathy (TTC) is a clinical disorder usually triggered by intense emotional and/or physical stress, characterized by reversible severe localized left ventricular wall dyskinesia, transient changes of ST segment, without significant coronary artery stenoses, that can mimic acute myocardial infarction. STATE OF THE ART: Although TTC is well known to have a good mid- and long-term prognosis, arrhythmic risk is increasingly recognized and we could provide, in view of the available literature, a mean for a prognostic stratification and some practical suggestions for management of these “vulnerable” patients.

Conclusions
TTC, generally considered a benign syndrome, should be reconsidered as a clinical condition at high risk for lethal arrhythmias
Caso Clinico

Blocco di branca sinistra di nuova insorgenza come prima manifestazione elettrocardiografica della cardiomiopatia takotsubo

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Takotsubo cardiomyopathy is a recently described syndrome characterized by reversible left ventricular dysfunction, chest pain, ST-segment elevation, and minor elevation in serum levels of cardiac enzymes, in the absence of significant coronary artery disease. ST-segment elevation is the most common electrocardiographic finding on the admission ECG of patients, followed by evolutionary T-wave inversions. We report a case of takotsubo cardiomyopathy characterized by the unusual feature of a new onset transient left bundle branch block as first electrocardiographic manifestation. New left bundle branch block increases heterogeneity in the broad spectrum of electrocardiographic findings of takotsubo syndrome, contributing to ambiguity in the early recognition and affecting potential management strategies.

(G Ital Cardiol 2010; 11 (5): 442-445)
Evoluzione delle anomalie dell’ECG a 12 derivazioni
durante l’ospedalizzazione

A: Blocco di branca sinistra di nuova insorgenza al ricovero
B: Precoce normalizzazione dell’ECG nel Cath-Lab
C: Inversione onda T con prolungamento QTc in 2° giornata
D: Inversione dell’onda T con normalizzazione del QTc alla dimissione

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Takotsubo cardiomyopathy: a novel “proarrhythmic” disease

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Introduction

Transient left ventricular apical dyskinesia accompanied by ischemic-like electrocardiographic abnormalities in the absence of obstructive epicardial coronary artery disease is characteristic of Takotsubo cardiomyopathy (TC) (1). Clinical manifestations and morbidity are related to the degree of left ventricular dysfunction with symptom resolution paralleling the course of improvement in systolic function of the left ventricle (LV). Treatment, if required, consists of supportive therapy while the dysfunctional LV recovers (2). Whether TC may represent a possible anatomical substrate for severe arrhythmia or conduction disturbance remains unknown. We present two cases of TC associated with life-threatening arrhythmias and speculate that such arrhythmias may identify a subpopulation of TC patients at

Case 2

last intensity ≥7.8 seconds (Fig. 1B). The patient was stabilized and urgently transferred to our centre for further management. Subsequent investigations identified mild hypokalemia of 3.3 mmol/L secondary to intravenous bicarbonate. Potassium levels normalized within 18 h following discontinuation of forced alkaline diuresis. By 48 hours T wave abnormalities and prolongation of the QTc interval have resolved (Fig. 1A). Cardiac catheterization revealed marked akinesis of the mid and apical left ventricle with hyperkinesis of the basal segments (Figs. 2A, 2B) with normal epicardial coronary vessels (Fig. 2C). Echocardiography confirmed dilation and akinesis of the mid and apical LV with preservation of basal function. Follow-up echocardiography at one month was normal.

Prognostic impact of QT intervals in takotsubo cardiomyopathy: still a long way to trap the octopus

- L'allungamento dell'intervallo QT è molto frequente, spesso associato con altre cause (farmaci, ipopotassiemia, ipomagnesiemia, ipocalcemia)
- La prevenzione e il trattamento delle aritmie minacciose non prescinde dall'eliminazione delle possibili cause di allungamento del QT
- Il sovraccarico di calcio intracellulare potrebbe essere il responsabile della disfunzione e dell'allungamento dell'intervallo QT, così come l'aumento della concentrazione delle catecolamine con l'ipertono adrenergico
- Mancano studi randomizzati per guidare le scelte

Sudden cardiac death in Tako-Tsubo syndrome: a possible mechanism

Eleni Goulouti, Alain Delabays

Summary

The left ventricular “apical ballooning” syndrome, also known as “Tako-Tsubo syndrome”, has been the subject of numerous studies and reports in the literature, to the point that the term “stress-induced cardiomyopathy” has been coined. It is characterized by transient left ventricular apical ballooning associated with electrocardiographic changes and minimal myocardial enzymatic release, mimicking acute myocardial infarction in patients without significant coronary disease at angiography. We report the case of a 70-year-old woman suffering from Tako-Tsubo cardiomyopathy, who presented with long-QT and cardiac arrest secondary to “torsade de pointes”

Key words: Tako-Tsubo syndrome; stress cardiomyopathy; apical ballooning; torsade de pointes; sudden cardiac death; long QT

Goulouti E, et al. Cardiovascular Medicine 2011
Takotsubo cardiomyopathy and the long-QT syndrome: an insult to repolarization reserve

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Despite these consistent findings, ventricular arrhythmias in patients with TCM are relatively uncommon. In a review of seven case series containing a total of 180 cases, Bybee et al.¹ reported a 1–1.5% incidence of ventricular arrhythmias. In a

This editorial refers to ‘A fatal combination in an old lady: Takotsubo cardiomyopathy, long QT syndrome, and cardiac hypertrophy’ by H. Wedekind et al., on page 820

Un cut-off del QTc > 500 ms esprime una sensibilità dell’82% e ad una specificità dell’85% per lo sviluppo di TdP.

Looning and hypokinesia with the preservation of basal contraction. Electrocardiogram changes include ST-segment elevation, the evolution of marked anterior T-wave inversion, and prolongation of the QT interval. These features all appear to resolve with time.¹

Torsades de pointes and QTc prolongation as a predictor of risk
Uno studio che valuta l'impatto prognostico in Ospedale e dopo un follow up di 7 anni dell'allungamento del QTc al momento della presentazione.

Metodi: 56 pts consecutivi con TTC (Mayo criteria) analizzati per 60 variabili.

Risultati: 1. Il QTc è risultato, dopo l'intubazione, il fattore più fortemente predittivo di outcome avversi (15 decessi - di cui 5 in H e 4 a 90g.

2. Tutti i decessi avevano un intervallo del QTc tra 400 e 550 msec).

Conclusioni: Il QTc allungato riflette l'impatto sulla ripolarizzazione miocardica e l'ipertono adrenergico evidenziando il suo significato prognostico negativo.
Nella medicina di genere, purtroppo, domina ancora l’arte della probabilità, così quando una donna «racconta» del suo cuore è come se niente fosse mai accaduto, o per molti considerato “benigno”.
Nella **medicina di genere**, purtroppo, domina ancora l’**arte della probabilità**, così quando una donna «racconta» del suo cuore è come se niente fosse mai accaduto, o per molti considerato “benigno”.

Anche per la TTC alcuni **dogmi di benignità**, hanno di fatto condizionato l'esperienza e il pensiero del medico negli ultimi anni verso una **medicina genere-specifica**.
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Demolendo i tanti luoghi comuni, oggi sappiamo che in più del 50% delle TTC il decorso clinico presenta una serie di complicanze per le quali è opportuno identificare precocemente i casi a più alto rischio, e tra questi: $QTc > 500$ msec, IM, LVOTO, una persistente disfunzione VS.