

# Abstract 10528: All-In-One: Echocardiography and Biomarkers for Tako-Tsubo Syndrome Diagnosis

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Originally published 5 Nov 2018 | Circulation. 2018;138:A10528

## Abstract

**Introduction:** Tako-tsubo syndrome (TS) mimics myocardial infarction (MI) in clinical presentation, ECG modifications and biomarkers elevation. Echocardiography can suggest a clinical suspicion of TS diagnosis according to typical patterns of wall motion abnormalities and left ventricular shape. Furthermore, in TS the extension of wall motion abnormalities can appear disproportionate compared to biomarkers elevation.

**Hypothesis:** In this study we sought to determine whether association of biomarkers and echocardiographic parameters may help the differential diagnosis in this clinical setting.

**Methods:** We retrospectively studied 548 consecutive patients admitted to the Coronary Care Unit of our institution for acute coronary syndrome (ACS). 516 patients (70% M, age 64 IQR 52-76) received diagnosis of MI, whereas 32 patients were diagnosed as TS (100% F, age 77 IQR 65-81). Firstly, we compared admission values of Troponin I (TnI), CPK, NT-proBNP (BNP), Ejection Fraction (EF) and Wall Motion Score Index (WMSI) between patients with TS and patients with MI. Then we compared ratios between biomarkers and echocardiographic variables. Receiver operating characteristic (ROC) curves were used to verify the reliability of these ratios as diagnostic tools.

**Results:** In our population, TS patients showed BNP and WMSI admission values significantly higher and EF and TnI values significantly lower than MI patients, while no significant difference was found between CPK values. Comparing admission ratios between biomarkers and echocardiographic parameters, TnI/EF ratio (median 0.018 IQR 0.01-0.03 vs 0.003 IQR 0.0009-0.02), TnI/WMSI ratio (0.41 IQR 0.24-1.09 vs 0.12 IQR 0.03-0.86), BNP/EF ratio (130.7 IQR 40.9-305.9 vs 32.1 IQR 9.1-102.5) and BNP/WMSI ratio (3654 IQR 1542.4-6967.5 vs 1167.5 IQR 383.2-2901.1) were all significantly higher in TS patients ( $p < 0.001$  for every ratio), while no significant differences were found regarding CPK/EF and CPK/WMSI ratios. ROC curves obtained with each ratio showed quite-good to good performance in distinguish TS from MI, with the exception of CPK based ratios: TnI/EF ratio (AUC 0.676, CI 0.600-0.751,  $p < 0.001$ ), TnI/WMSI ratio (AUC 0.638 CI 0.564-0.712,  $p < 0.001$ ), BNP/EF ratio (AUC 0.745, CI 0.664-0.827,  $p < 0.001$ ) and BNP/WMSI ratio (AUC 0.734, CI 0.644-0.824,  $p < 0.001$ ).

**Conclusions:** In our population. AUCs obtained from ratios between biomarkers and echocardiographic parameters