Prognostic value of high sensitivity troponin T second peak occurrence after ST elevation myocardial infarction

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Introduction: The role of high sensitivity troponin T (hs-TnT) in risk stratification of patients (pts) with acute coronary syndrome (ACS) is well established and is widely practiced in many hospitals. hs-TnT improves on the early diagnosis but its prognostic significance, especially in the non-immediate phase, has not been yet defined.

Purpose: To determine if an asymptomatic or non-provoked second peak of serum hs-TnT level during the plateau phase of troponin release after ST elevation myocardial infarction (STEMI) has prognostic value.

Methods: Single-center study that included the pts with STEMI who underwent primary percutaneous coronary intervention (PCI) for myocardial reperfusion during 2017. Serum hs-TnT level was measured daily. The presence of a second peak of this cardiac biomarker was defined by an increase of > 10% of its serum level of during the decay phase (at least 2 consecutive decreasing values), = 48 hours after STEMI onset (plateau phase), in the absence of ischemic symptoms or trigger factors such as a new PCI procedure. Based on its occurrence, 2 groups were compared. In-hospital outcomes included death and complications following STEMI. After-discharge outcome was a composite of all-cause mortality and unplanned hospitalization due to heart failure (HF) or ACS.

Results: A total of 104 pts were included: 75 (72.1%) male, mean age of 62.8 ± 14.4 years. Inferior STEMI was the most prevalent[43 pts (41.3%), 9 of which with right ventricular involvement]). The majority of pts were revascularized in the first 6 hours after symptoms onset [62 pts (59.6%)]. All but one was submitted to coronary stenting. A second hs-TnT peak was observed in 16 pts (15.4%), 8 (50%) at 96 hours and 4 (25%) at 72 hours after STEMI onset. The measured mean values of hs-TnT were 5526.3 ± 3319.6 ng/L at the first peak and 3225.8 ± 1825.9 ng/L at the second peak (normal range < 13 ng/L). During hospital stay, 25 pts (24.0%) develop HF [16 with Killip-Kimball class = 3], 22 (21.2%) presented arrhythmic complications (5 aborted cardiac sudden death) and only 1 (0.93%) progressed with mechanical complication (free wall rupture). In-hospital mortality rate was 3.8%. After-discharge composite outcome was observed in 6 pts (4 deaths, 2 unplanned hospitalization due to HF and 1 due to ACS). With exception of hospital length of stay which was significantly higher in pts with a second peak of hs-TnT occurrence (median of 7 days vs 5.5 days, p < 0.01), there was no statistically difference between groups in terms of baseline characteristics, coronarography findings and in-hospital and after-discharge outcomes.

Conclusions: A non-symptomatic non-triggered second peak of hs-TnT in pts with STEMI who underwent PCI was not associated with short, medium or long-term adverse outcomes. These data may provide the physicians confidence to manage this pts, avoiding hospital stay extension and consequently higher health-related costs.