Letter to the editor concerning "comparative prognostic value of postprocedural creatine kinase myocardial band and high-sensitivity troponin T in patients with non-ST-segment elevation myocardial infarction undergoing percutaneous coronary intervention"

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Dear Editor,

We read with interest the article entitled: *Comparative prognostic value of postprocedural creatine kinase myocardial band and high-sensitivity troponin T in patients with non-ST-segment elevation myocardial infarction undergoing percutaneous coronary intervention."*

The authors aimed at assessing the prognostic value of two different biomarkers: creatine kinase myocardial band (CK-MB) and cardiac high-sensitivity troponin T (hs-TnT) after percutaneous coronary intervention (PCI) in patients admitted for non-ST-segment elevation myocardial infarction (NSTEMI).

This study, including 2,077 patients, deals with a hot topic in interventional cardiology concerning risk stratification using biomarkers in patients undergoing PCI.

The authors concluded that both CK-MB and hs-Tn T peaks were independent predictors of 3-years mortality in patients with NSTEMI undergoing PCI with a moderate strength of association and without significant difference between the biomarkers in head-to-head comparisons.

This kind of study is highly relevant since very little is known specifically on many aspects of hs-troponins biomarkers. More often, the data obtained with standard troponins or CK have been considered equally reliable than that obtained with hs-troponins but this is still to be confirmed. Nevertheless, hs-troponins are mentioned as good biomarker for prognostic value after interventional cardiology and in clinical research, in relation to the ability to reflect infarct size and the correlation with no-reflow

These findings concerning prognostic value of troponin were consistent with the literature [1]. The authors also stated that the threshold of biomarker elevation was different between both biomarkers, much more elevated for hs-TnT (>70 ULN cut-off) than for CK-MB (>3 times the ULN cut-off) as expected from a high-sensitive biomarker.

However, as discussed by the authors, hs-TnT may be oversensitive in detecting periprocedural myocardial damage and a post-procedural hs-cTn elevation must be carefully interpreted [2]. There is still little knowledge on the ideal timing for assessing myocardial damage: early, the day after or even few days after. High-sensitivity biomarkers are sometimes misleading in clinical practice, and to our opinion, the clinicians have to be aware of advantages but also of pitfalls associated with these biomarkers. Consistently, we demonstrated a biphasic pattern of hs-TnT elevation in reperfused patients with acute myocardial infarction. Indeed, the biphasic pattern of hs-TnT elevation with an early (at a median of 11.8 hr from admission) high amplitude peak and a late peak of lower amplitude occurring 3–4 days thereafter has been described in a recent article [3]. These findings were consistent with the previously published study of Solecki et al. with an early peak at 12 hr for hs-TnT and a second peak at 82 hr [4]. This aspect is tricky in clinical practice and has not been addressed in this study.

Moreover, patients included in this study were admitted for NSTEMI and biomarker elevation due to PCI procedure remains unclear. Thus, these findings cannot be applied for patients undergoing planned PCI.

Last but not least, CK seems to be a great value venerable biomarker providing similar information to that of a more recent and fashioned one.

In conclusion, this study highlighted the prognostic value of both CK-MB and hs-TnT in patients admitted for NSTEMI undergoing PCI. These biomarkers may be complementary and should be assessed routinely for risk stratification. Their respective interest, the ideal timing, relationship with biomarkers including inflammatory or fibrosis biomarkers, as well as specific pathophysiological meaning remain to be investigated.

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Letter about the article entitled "Comparative prognostic value of postprocedural creatine kinase myocardial band and high-sensitivity troponin T in patients with non-ST-segment elevation myocardial infarction undergoing percutaneous coronary intervention": advantages and pitfalls of high-sensitive troponins.

REFERENCES

[1] Novack V, Pencina M, Cohen DJ, Kleiman NS, Yen CH, Saucedo JF, Berger PB, Cutlip DE. Troponin criteria for myocardial infarction after percutaneous coronary intervention. Arch Intern Med 2012;172: 502–508.

[2] Lim CC, van Gaal WJ, Testa L, Cuculi F, Arnold JR, Karamitsos T, Francis JM, Petersen SE, Digby JE, Westaby S, Antoniades C, Kharbanda RK, Burrell LM, Neubauer S, Banning AP. With the "universal definition," measurement of creatine kinase-myocardial band rather than troponin allows more accurate diagnosis of periprocedural necrosis and infarction after coronary intervention. J Am Coll Cardiol 2011;57:653–661.

[3] Laugaudin G, Kuster N, Petiton A, Leclercq F, Gervasoni R, Macia JC, Cung TT, Dupuy AM, Solecki K, Lattuca B, Cade S, Cransac F, Cristol JP, Roubille F. Kinetics of high-sensitivity cardiac troponin t and i differ in patients with st-segment elevation myocardial infarction treated by primary coronary intervention. Eur Heart J Acute Cardiovasc Care 2016;5:354–363.

[4] Solecki K, Dupuy AM, Kuster N, et al. Kinetics of high-sensitivity cardiac troponin T or troponin I compared to creatine kinase in patients with revascularized acute myocardial infarction. Clin Chem Lab Med 2015;53:707–714.