Letter to the Editor
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Absolute Change in High Sensitivity Cardiac Troponin I for Three Hours is Useful for Diagnosing Acute Myocardial Infarction in the Emergency Department: How to Get to Best Benefit From HS-Troponins in Clinical Practice?

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Dear Editor,

The latest generation of troponin assays, the high-sensitivity (hs)-cardiac troponins (hs-cTn), provide a powerful tool for the diagnosis and management of patients with suspected acute myocardial infarction (AMI). However, these assays are a double-edged sword, as although they are very sensitive, their results can sometimes be misleading. For instance, hs-cTn do not follow the classical decrease exhibited by other traditional biomarkers such as creatine kinase or non-hs-cTn markers [1]. Thus, physicians should be aware of these characteristics to avoid misinterpretation. In addition, for clinical research purposes, although the management and interpretation of hs-cTn are sometimes tricky, they can also provide unexpected assessments such as an approximation of microvascular occlusion [2,3]. In other words, hs-cTn constitutes a powerful tool that should be used extensively but cautiously.

In a paper by Kim, *et al.* [4] entitled "*Absolute change in high sensitivity cardiac troponin I for 3 hours is useful for diagnosing AMI in the emergency department (ED)*", the authors proposed a smart use of hs-cTn value; briefly, they emphasize that using the absolute change of the cardiac hs-cTnI value to diagnose AMI in the ED is better than using the relative change, expressed as % of baseline. Although this finding is not completely novel [5, 6], it warrants further exploration.

First, some limitations need to be updated, especially the lack of applicability for other biomarkers including other subtypes of hs-cTn. In addition, the results should be considered with caution, as they were obtained from a single center, with a relatively small population.

The current guidelines recommend the use of relative rather than absolute changes in hs-cTn value to define a recognized pattern of change (changes from 20–60%) [7]. Importantly, absolute changes of hs-cTn values are not recommended because they are assay dependent; the cut-offs are specifically defined

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for each assay, based on the 0–1 hour kinetics, and the use of this strategy should be restricted to a very short list of manufacturers. Thus, this study provides important data, not only by emphasizing the importance of the absolute change in hs-cTnI values, but also by suggesting a standard delay of three hours between assays.

These results could be of interest, especially during very early admission to the ED or for specific subpopulations but need to be further explored. For instance, could this absolute elevation be more relevant in elderly patients or patients with chronic kidney disease, known to have high baseline troponins, clearly associated with long-term mortality [8]?

Importantly, the negative predictive value (NPV) appears to be good in various studies but decreases significantly when very short delays are considered [9].

Interestingly, some authors have established similar NPVs for hs-cTn I or T using various assays [6], while others have suggested less perfect NPVs (96.5%) using an hs-cTnT assay or more importantly when the delay is very short (<1 hour) [10]. Indeed, from a clinical standpoint, a near 100% NPV is mandatory in order to safely rule out suspected patients.

In conclusion, clinicians should be aware of this specific issue in order to improve patient management, especially in difficult, real-life clinical setting cases.

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FH, AMD, JPC, and FR conceived, drafted, edited, and approved final manuscript and take full responsibility for its content.

CONFLICTS OF INTEREST

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