



## EDITORIAL COMMENT

# The dilemma of beta-blocker use after acute coronary syndrome: To support the dogma or to embrace the paradigm shift?



## O dilema do uso de bloqueadores beta após uma síndrome coronária aguda: manter o dogma ou abraçar a mudança de paradigma?

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### The old evidence

Since the last quarter of the 20th century, beta-blockers have been considered a cornerstone therapy after acute coronary syndrome (ACS), alongside reperfusion therapy, antiplatelet agents, statins and angiotensin-converting enzyme inhibitors/angiotensin receptor blockers.

Together, these therapies have led to striking improvements in the outcome of these syndromes, in terms of both mortality and morbidity.

More recent advances in organizational models of response to ACS and in reperfusion therapy, with wider availability of percutaneous coronary intervention (PCI) replacing pharmacological reperfusion therapy, have led to further significant reductions in mortality and morbidity, particularly in terms of heart failure and mechanical complications following myocardial infarction (MI).

With every new advance in this field, researchers should question old dogmas and reassess previous strategies, pro-

cedures and drug indications. Current guidelines should be seen as such, as current, and should be periodically revised. This is regularly done by the major cardiological societies, at the national and continental (and even international) level.

In the latest updates of the American and European guidelines on MI, beta-blocker use is still a class I or IIa indication for patients after both ST-elevation MI<sup>1,2</sup> and non-ST-elevation ACS.<sup>3,4</sup>

### The new evidence

However, several authors have questioned this indication, especially in patients without left ventricular dysfunction, in most cases on the basis of registries<sup>5–8</sup> and/or meta-analyses of real-world population-based studies.<sup>9–11</sup> These authors all suggest that a paradigm shift is needed and that the guidelines' indication for beta-blocker use after MI should be challenged.

In this issue of the *Journal*, another piece of evidence is published that keeps this discussion wide open. In their interesting article, Timóteo et al.<sup>12</sup> present a single-center study that again supports the use of beta-blockers after ACS, as this strategy showed a significant reduction in all-

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cause mortality, irrespective of residual left ventricular function.

The potential limitations of the study being based on a single center were overcome by a robust statistical analysis with the use of propensity-score matching, a large number of patients, and an impressive 99.8% of successful one-year follow-up.

One of the limitations acknowledged by the authors is the lack of information regarding the type and dose of the beta-blockers used, but the same limitation also applies to similar studies and meta-analyses.

## The dilemma

So we are faced with a significant dilemma. Should we support the dogmatic approach and continue to prescribe beta-blockers for our post-ACS patients, based on indications in the current guidelines and on studies like that of Timóteo et al.<sup>12–15</sup> Or should we follow Thomas Kuhn's view that science is based on paradigm shifts and challenge these indications, as advocated by the above more recent meta-analyses?<sup>9–11</sup>

I, for one, as a man of science, would like to have as much robust data as possible, which means that I would like to see contemporary randomized clinical trials (RCTs) that study the results of prescribing beta-blockers after ACS alongside the more recent strategies of care (including modern reperfusion therapies) recommended for these syndromes.

The question, of course, is whether the pharmaceutical industry would support RCTs that question the continued use of old and cheap drugs. This is a clear case for investigator-driven studies, supported by their institutions and/or medical societies, such as the recent article by Watanabe et al.<sup>16</sup> which published the results of the CAPITAL-RCT study, showing no benefit from the use of carvedilol in patients with ST-elevation MI treated with primary PCI. Similar studies are needed in order to clarify this important clinical question.

To the quote attributed to W. Edwards Deming, "In God we trust; all others must bring data," I would add: "... robust data".

## Conflicts of interest

Daniel Ferreira has received honoraria (advisory board member and/or invited speaker) from Astellas, Astra-Zeneca, Bayer, BMS/Pfizer, Boehringer-Ingelheim, Novartis, and Sanofi-Aventis.

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