Editorial

The ACEF score in patients undergoing percutaneous coronary intervention: "Keep it simple and focus on what matters"

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A R T I C L E   I N F O

Keep it simple and focus on what matters. Don't let yourself be overwhelmed.

[*Confucius* [1]]

Percutaneous coronary intervention (PCI) is one of the most commonly performed procedures around the world and currently is associated with a very good outcome in most cases. Although the procedure is not burdened by excessive mortality, it may be affected by several perioperative complications, such as iatrogenic coronary artery dissections, no-reflow, or distal embolization of aterothrombotic material, which increase the incidence of short- and long-term adverse events and mortality. With this background, anticipating the risk of the procedure to fail during follow-up is crucial. On one hand, interventionalists need tools to select patients who require a closer monitoring both during or after the procedure and, on the other hand, patients should fully be aware of the risks associated with PCI before giving their consent [2].

In recent years, several risk scores have been developed to predict in-hospital and longer-term outcomes after PCI. Some indexes are based exclusively on clinical data, others rely only on angiographic features, and some others take into consideration both information [2].

A few years ago, the use of prognostic scores on a routine basis was strongly recommended by scientific societies. The 2014 guidelines for myocardial revascularization issued by the European Society of Cardiology (ESC) recommended to consider several indexes (i.e., Logistic Clinical SYNTAX score, SYNTAX score II, ASCERT-PCI score, EuroSCORE, ACEF, and NCDR) [3], but gave a class I degree of recommendation only to the SYNTAX score, likely reflecting the fact that it is the most studied risk model in interventional cardiology. The score was originally designed to categorize patients enrolled in the SYNTAX trial, comparing PCI with coronary artery bypass grafting in patients with multivessel coronary artery disease with or without involvement of the left main [4]. It consists solely of angiographic characteristics of lesions and can be calculated using a software developed by the SYNTAX trial investigators and available online. The SYNTAX II score was later developed in recognition of the principal limitation of the original SYNTAX, i.e., the lack of any clinical information. It includes age, gender, creatinine clearance, left main stenosis >50%, and presence of peripheral arterial disease or chronic obstructive pulmonary disease [5].

Despite its well-recognized value, calculation of the SYNTAX scores is time consuming and can only be performed after the patient has undergone coronary angiography. As a matter of fact, these risk scores are not taken into account in daily practice for immediate clinical decision making at the time of PCI. For this reason, a score that could estimate the risk of such complications based on the information available at arrival in the cath lab would be much more welcomed by the interventional cardiovascular community to choose the best treatment option in each individual patient. In this regard, a simple useful clinical score focusing on very few variables with a great prognostic impact would probably be much more used in daily practice.

In this issue of the Journal, Serruys et al. [6] published the results of their study aimed at assessing the ability of two risk scores, i.e. the ACEF (Age, Creatinine and Ejection Fraction) score and the modified (recently proposed) ACEF II score, to predict mortality after PCI in an 'all-comers' population. To this end, the authors calculated ACEF and ACEF II scores in the large study population ($n = 15,968$) of patients enrolled in the GLOBAL LEADERS study. Discrimination and calibration were assessed for outcomes at 30 days and 2 years after PCI. Also, patients were divided into quintiles according to the scores results and outcomes were compared between quintiles. Discrimination for 30-day mortality was acceptable for both scores. For 2-year mortality, the discrimination of ACEF score was acceptable while the discrimination of ACEF II score was moderate. Both scores identified patients at high risk of mortality but overestimated all-cause mortality at 30 days in all quintiles. On the basis of these results, the authors concluded that both ACEF and ACEF II scores are able to discriminate patients at high risk for short- and long-term mortality, but that the ACEF II model does not improve the predictive ability of the ACEF score.

The authors should be acknowledged for addressing a very important point, as they compared two clinical scores and showed that they both allow risk factor characterization of patients undergoing PCI. Noteworthy, the authors were able to assess the two scores in the very large population of the GLOBAL LEADERS trial [7], that was

an important prospective, randomized, multi-center, international, open-label trial designed to evaluate two strategies of antiplatelet therapy after PCI. Results confirm and extend in a very large 'all-comers' population the previous finding that the simple ACEF score can identify the subset of PCI patients with short- and long-term unfavorable outcome [8]. In addition, the authors demonstrate that the new modified ACEF II score does not yield any additive prognostic value in PCI patients.

The clinical implications of the study are of importance as they show that even a simple score might reliably help to understand the risk of patients undergoing PCI in everyday clinical practice without the need of sophisticated multi-parametric indexes. This novel information, however, does not imply that physicians should from now on stratify PCI patients on just three clinical elements. As the 2018 edition of the ESC guidelines for myocardial revascularization states [9], there is no single risk model that provides perfect risk assessment because scores have multiple shortcomings, such as the specific definitions used, the methodology applied, the absence of newer variables (i.e. frailty), the failure to reflect all relevant mortality and morbidity endpoints, and limited external validation. As a consequence, decision making should not be solely dependent on a risk score but should be more reliably based on multidisciplinary heart team discussion.

Paraphrasing an aphorism by Albert Einstein, interventional cardiologists should "*make every thing as simple as possible, but not simpler*" [10].

Conflict of interest

The authors report no relationships that could be construed as a conflict of interest

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