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DISCUSSION FORUM

What to do with the equipoise?

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This commentary refers to 'Coronary computed tomography angiography for heart team decision-making in multivessel coronary artery disease', by C. Collet *et al.*, *Eur Heart J* 2018;39:3689–3698.

After the rise of coronary computed tomography angiography (cCT-A) in diagnosing coronary artery disease, the aim shifts towards treatment decision-making in revascularization of these patients. The recent SYNTAX-III 'Revolution' trial[1] evaluated the appropriateness of cCTA for this purpose as compared to invasive coronary angiography. We received the results of this elegantly designed trial with great interest. They found high agreement between heart team decisions on percutaneous coronary intervention (PCI) or coronary artery bypass graft (CABG) surgery in patients with complex coronary disease. However, some questions remain about the analysis of their results.

The authors chose the SYNTAX-II score-based recommendation as primary endpoint measurement, rather than the subsequent heart team's decision. Although a decision between PCI/CABG is still needed in case of equipoise in predicted mortality, we appreciate the value of the SYNTAX-II score. It eliminates bias by physicians or clinical factors unaccounted for in the SYNTAX-II score. This score, therefore, is indeed a more reliable tool for the comparison.

However, the authors merged the PCI-group and 'equipoise between PCI/CABG'-group. We could not find an explanation for this. One could argue that in case of similar predicted mortality, the less invasive option would be preferred, hence the combination with PCI. Nevertheless in both study arms a majority (106 patients) in the equipoise-group were selected for CABG. Consequently, it would be more sensible to combine the equipoise- and CABG-group. Furthermore, combining categories in a non-trivial 3 × 3 agreement table will increase or decrease the Cohen's kappa coefficient.[2] Therefore, if the SYNTAX-II recommendations are used, agreement using all three categories separately should be calculated. Since the categories can be viewed as ordinal data, a weighted kappa may be considered to assess inter-rater agreement.[3]

Secondly, addition of cCTA derived fractional flow reserve (CT-FFR) reduced the overestimation of the anatomical SYNTAX-score, changing the decision based on cCT-A alone in 7% of patients. Unfortunately, the authors did not quantify whether this change improved the agreement.

Finally, although trivial, we could not reproduce the significant *P*-values for 'current smoking' and 'diabetes mellitus' in *Table 4*.

We believe that implementation of CT-FFR can improve the decision-making process. It is important that the boundaries of these possibilities continue to be explored, and we endorse the authors' effort in this regard. In order to fully appreciate the SYNTAX-III trial, we hope to receive more insight in the outcomes of this clinically important and indeed revolutionary trial.

Conflict of interest: none declared.

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