Tailoring antithrombotic treatment in patients with acute myocardial infarction and cancer: virtue lies in balance

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This editorial refers to ‘Bleeding risk prediction after acute myocardial infarction-integrating cancer data: the updated PRECISE-DAPT cancer score’, by M. Dafaalla et al., https://doi.org/10.1093/eurheartj/ehae463.

**Balance between the thrombotic and bleeding risk in patients with cancer and myocardial infarction to decide type and duration of antithrombotic treatment.**
For more than two decades, dual platelet antiplatelet therapy (DAPT) has been one of the mainstays in the treatment of patients who have suffered an acute myocardial infarction (AMI) or undergoing percutaneous coronary intervention (PCI).

The ability of this therapy to reduce the risk of thrombotic events contrasts with the increased risk of bleeding that it entails. In recent years, this increased bleeding risk has been put in the spotlight, establishing criteria to define patients at high bleeding risk (HBR), who account for up to 50% of patients undergoing PCI. On the other hand, up to 30% of procedures are considered complex PCI and imply a higher thrombotic risk. To complicate the decisions further, up to 45% of patients have simultaneously a high thrombotic and haemorrhagic risk. Patients with cancer represent one of these subgroups, owing primarily to the local and systemic impact of the malignancy and secondary effects of antineoplastic treatments (Graphical Abstract).

International guidelines recommend individualization of DAPT, balancing the thrombotic and bleeding risk. They have endorsed standardized risk prediction tools to guide the duration of DAPT such as the PRECISE-DAPT score, that includes five clinical and laboratory features and has been demonstrated to predict bleeding events in large external validation cohorts.

One limitation is that these tools only include those variables that were available (or considered important) during their validation. Therefore, it seems necessary to update them, adding those factors that could improve their performance due to their relevance and prevalence. One of these potential conditions with significant prognostic impact is cancer, in which the accuracy of the original PRECISE-DAPT may be suboptimal. Up to 10% of all PCI procedures are performed in patients with cancer. Moreover, cancer has proved to be a strong predictor of severe bleeding in AMI patients and it is considered a major criterion for HBR by the Academic Research Consortium and the European Society of Cardiology. Taking this into account, it is striking that cancer has not been included in the majority of the bleeding risk scores for treatment individualization, probably because cancer patients are often excluded from the clinical trials from where the scores are derived.

In this issue of the European Heart Journal, Dafaalla et al. propose a modification of the PRECISE-DAPT score incorporating cancer as a predictor for bleeding. Its validation, and comparison with the original score, was based in a nationally linked cohort of 216 709 ST-segment elevation myocardial infarction (STEMI) patients of which 4569 had cancer. The modified PRECISE-DAPT score, that included active cancer as a binary variable, showed modestly higher accuracy compared with the original score [C-statistics 0.64 vs. 0.60; hazard ratio (HR) 1.03, 95% confidence interval (CI) 1.03–1.04] even in patients without cancer [C-statistics 0.63, HR 1.03, 95% CI 1.03–1.04]. More interestingly, according to the original score, only 65.5% of cancer patients were classified as HBR and 21.6% were considered to have a low or very low bleeding risk. When using the modified score, 94% of cancer patients were classified as HBR, 6% were classified as moderate bleeding risk, and no cancer patient was classified as low or very low bleeding risk. Considering these data, 29% of cancer patients who would receive conventional DAPT (assessing bleeding risk with the original PRECISE-DAPT) should be considered HBR patients if the modified score was used and potentially shorten DAPT duration, reducing the risk of bleeding events. Despite the obvious strengths of this study, with rigorous data based on a very large cohort of patients with infarction and cancer, it has some limitations. The databases on which this modified PRECISE-DAPT score is based did not include some relevant variables for deciding the most appropriate antithrombotic treatment: indication for anticoagulation, use of direct oral anticoagulants, duration of antiplatelet drug use after discharge, cancer type, oncological treatment, or cancer stage. This fact makes it difficult to use this, or any other tool, in isolation to guide decisions in all patients. Regarding cancer-related variables, the authors observed that consideration of cancer type did not improve the performance of the modified score. However, there were few patients with haematological malignancies or gastrointestinal cancer (both strongly associated with bleeding), which might be the reason for this lack of improvement. Furthermore, the stages of the disease can have a significant impact on haemorrhagic risk considering that ~10% of patients with advanced stages suffer at least one episode of bleeding. In addition, cancer therapies should also be considered, as some systemic treatments such as chemotherapy and targeted therapy increase the bleeding risk.

In recent years, there is a trend towards shortening the duration of DAPT as much as possible in all the patients who suffer an AMI or undergo a PCI. This is in line with the 2022 ESC Guidelines on cardio-oncology, which recommend that the duration of DAPT in the acute coronary syndrome (ACS) setting should be as short as possible, with 1–3 months being proposed as the optimal duration. The results of the modified PRECISE-DAPT score validation add more evidence to support the premise that short or ultra-short DAPT should be the default therapy in almost all cancer patients and can also help to personalize DAPT in AMI patients without cancer.

Further studies are required to generate more accurate tools for risk assessment of bleeding events in cancer patients. In this sense, and considering that some scores are probably not used in daily practice as much as recommended, it will be necessary to maintain a balance between the improved accuracy of the new scores and their applicability (adding only those variables that significantly improve their performance). For this aim, artificial intelligence might be useful. Our challenge in the coming years will be to take advantage of all these tools and new technologies, while maintaining clinical judgement and common sense as a basic pillar in decision-making, especially in complex patients such as oncological patients with myocardial infarction.

Declarations
Disclosure of Interest

All authors declare no disclosure of interest for this contribution.

References


