Commentary: Dual antiplatelet therapy after coronary artery bypass graft surgery: Fewer stones remain unturned

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Early graft occlusion after coronary artery bypass graft surgery (CABG) may be a result of increased platelet activation and so the role of dual antiplatelet therapy (DAPT), rather than aspirin alone, is increasingly being investigated. Currently, DAPT after CABG is predominantly recommended for patients who are already receiving DAPT for coronary stents^{1,2} or patients with acute coronary syndrome.^{1,2} Currently, clopidogrel is the favored second antiplatelet drug with aspirin.^{1,2}

Leaving no stone unturned implies that in solving complex problems all unanswered questions need to be explored. In the case of DAPT after CABG, there are many unturned stones. In addition to establishing whether or not there are clinical benefits, reduced graft occlusion rates, and quantifying risks of bleeding from DAPT, other questions include timing and duration of DAPT, establishing which particular patient groups will benefit, and which DAPT regimen is most effective.

Xu and colleagues³ compare the antiplatelet effects of aspirin and ticagrelor (AT) with aspirin and clopidogrel (AC) after CABG. They aimed to answer 2 important questions: Are the already-defined pharmacokinetic effects of ticagrelor and clopidogrel⁴ retained after CABG and what are the differences in efficacy and speed of onset of platelet inhibition in AT versus AC?

The single-center study randomized 140 patients—who were otherwise well matched for preoperative demographic characteristics—undergoing CABG into 2 subgroups, AT and AC.³ The study was well designed, is clearly explained, and is thoughtfully discussed. Aspirin was started within 24 hours of surgery and the second antiplatelet drug was administered within 48 hours of surgery. The effect of these 2 DAPT regimens were tested by analyzing the onset of platelet inhibition (IPA) and platelet reactivity index at 0 hours, 2 hours, 8 hours, 24 hours, 3 days, and 30 days. The results demonstrated that the onset of action was faster

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Central Message

Dual antiplatelet therapy after coronary artery bypass surgery with ticagrelor has a faster onset of action and a higher peak platelet inhibition than clopidogrel, with similar early medication safety.

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and peak IPA was higher with AT than AC. There was no mortality, revascularization, or life-threatening bleeding, and no differences in minor bleeding between the 2 groups. The authors conclude that ticagrelor has a faster onset of action and higher peak IPA than clopidogrel after CABG, with similar early medication safety.

The authors acknowledge important limitations to their study. The groups, although balanced with each other, included both on-pump (17% in the AT group and 20% in the AC group) and off-pump patients (83% in the AT group and 80% in the AC group). Clinical outcomes, although excellent, were limited to 30 days; therefore, longer-term effects and comparisons are uncertain. Finally, the authors have 30-day computed tomography graft patency data that appear potentially interesting and are presented in online-only material, but these are not discussed because this was not a primary study end point.

Which stones did this study turn? The first is that the effects of ticagrelor and clopidogrel are retained in patients after CABG and the second is an apparent advantage to ticagrelor in terms of both speed of onset and extent of IPA. A possible third is that early clinical outcomes and bleeding rates are similar between AT and AC DAPT after CABG; however, patient numbers are relatively small because the study was designed for observing

pharmacokinetic and not clinical differences. There are several, arguably more important, questions that remain unanswered. Studies are required to compare DAPT with ticagrelor versus clopidogrel powered for longer-term clinical effects, graft occlusion rates, and bleeding complications. Other work should explore whether all or only specific patient groups benefit from DAPT after CABG and what the timing and length of treatment should be. Nevertheless, Xu and colleagues³ have turned 2 more stones in our understanding of DAPT use after CABG and, in so doing, improved our knowledge of how best to minimize early graft occlusion.

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