Timing of early invasive strategy in patients with non-ST-elevation acute coronary syndrome

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The optimal time for revascularization in patients presenting with non-ST-elevation acute coronary syndrome (NSTE-ACS) has not been determined. The updated European Society of Cardiology guidelines published in 2020 recommend with Class I, level of evidence A an early invasive strategy (IS) within 24 h in patients with a diagnosis of non-ST-elevation myocardial infarction (NSTEMI), dynamic or presumably new contiguous ST/T-segment changes suggesting ongoing ischaemia, transient ST-segment elevation, and Global Registry of Acute Coronary Syndrome (GRACE) risk score ≥140. The recently published American College of Cardiology/American Heart Association coronary revascularization guidelines refer to stabilized patients with a high GRACE score of ≥140, and give a Class IIA recommendation, level of evidence (B–R) for early IS.

The systematic review of randomized controlled trials (RCTs) of early IS for revascularization for this population that was recently published by Kite et al. in the European Heart Journal attempted to address the value of early vs. delayed revascularization. The investigators pooled data from 10 209 subjects who participated in 17 RCTs spanning nearly two decades. By pooling relative risks using a random-effects model, the authors reported that among all-comers with NSTE-ACS, an early IS did not reduce all-cause mortality, myocardial infarction, admissions for heart failure, repeat revascularization, major bleeding, or stroke, and suggested that there is no justification for early IS for the NSTEMI patient population. However, the analysis carries major deficiencies that may bias the results and does not support the conclusion.

First, the study estimated the relative risk by pooling the total events observed over the entire follow-up period. This is erroneous, as relative risk is time-dependent and has to be defined at a given time point. Corresponding relative risks should be calculated based on methods that take into account censoring. Second, there was heterogeneity with the actual time defined for early IS among the pooled studies. Third, the treatment for NSTEMI patients with devices and pharmacology was changed across the longitudinal span of the studies. Finally, there was heterogeneity in the risk profile of the patients across the contributing studies. We believe that early IS cannot be generalized to all NSTE-ACS patients unless their risk profile is taken into consideration. Because of the deficiencies and limitations of the study, the question of the optimal time for revascularization of patients presenting with NSTE-ACS remains unknown. We believe that a dedicated randomized clinical trial comparing an early IS <24 h and perhaps as early as is being adopted for the treatment of STEMI vs. standard of care is warranted. Until such study results are available, we suggest conducting an updated patient-level meta-analysis to identify the profile of patients who may benefit from early IS in the setting of NSTE-ACS.

Conflict of interest: R.W. reports serving on the advisory boards of Abbott Vascular, Boston Scientific, Medtronic, Philips IGT, and Pi-Cardia Ltd; being a consultant for Abbott Vascular, Biotronik, Boston Scientific, Cordis, Medtronic, Philips IGT, Pi-Cardia Ltd, Swiss Interventional Systems/SIS Medical AG, Transmural Systems Inc, and Venous MedTech; receiving grant support from AstraZeneca, Biotronik, Boston Scientific, Chiesi, Medtronic, and Philips IGT; serving on the Speakers Bureau for AstraZeneca; and being an investor in MedAlliance and Transmural Systems Inc. The other authors have no conflict of interest to disclose.

Data availability
No new data were generated or analysed in support of this research.

References