Winning the battle against ST-segment-elevation myocardial infarction: continued progress, but still a long way to go

Nicolas Danchin*

Department of Coronary Artery Disease and Intensive Cardiac Care, Hôpital Européen Georges Pompidou, Assistance Publique des Hôpitaux de Paris, 20 rue Leblanc, 75015 Paris, France, and Université Paris Descartes, Paris, France

Online publish-ahead-of-print 29 September 2010

This editorial refers to ‘Reperfusion strategy in Europe: temporal trends in performance measures for reperfusion therapy in ST-elevation myocardial infarction’, by F. Schiele et al., on page 2614

With the Euro Heart Survey Acute Coronary Syndromes III (EHS ACS III) results presented in this issue of the Journal, Schiele et al.1 are the bearers of good news. In their detailed analysis of the data gathered from 6481 patients admitted within 12 h of the onset of an ST-segment-elevation myocardial infarction (STEMI), the proportion of patients receiving reperfusion therapy increased from 77% in 2006 to 81% in 2008, while time delays from admission to reperfusion decreased [from 60 to 45 min for primary percutaneous coronary intervention (PCI), and from 20 to 15 min for intravenous fibrinolysis]. Concomitantly, in-hospital mortality decreased from 8.1% to 6.6%, a remarkable 19% relative decrease in just 2 years. These findings are important, as they show that improvement in the management of patients admitted for STEMI is still possible and they should be an incentive for continued efforts for all institutions and networks taking care of STEMI patients. The main strength of the study is that it was carried out in 138 highly motivated institutions across 21 European Society of Cardiology (ESC) member countries, which included patients according to a similar methodology for a period of 2 years, thereby making temporal comparisons possible with only limited risk of bias. In addition, the investigators used the Cardiology Audit and Registration Data Standards (CARDS) to collect the data according to common definitions,2 thereby ascertaining that the items recorded had exactly the same meaning in the different participating centres. The results presented can therefore be considered most reliable.

But satisfying as they may be, these results should certainly not let us think that we have now won the battle against the complications of STEMI. Indeed, the first message of caution should come from the study itself: 12% of STEMI patients admitted at the participating institutions presented beyond 12 h after the onset of symptoms, and this population, not likely to benefit from reperfusion strategies, was excluded from the current analysis. Efforts to have STEMI patients calling more quickly remain necessary, and this is no easy task, as it involves public awareness campaigns. Secondly, the patients transferred from another hospital to the participating centres were also not included, and it is likely that time to reperfusion and outcomes would have been quite different in these patients. Finally, the most important limitation of the study is probably its lack of representativeness, with the participation of many academic and rather large volume centres, the majority of which (74% of the patients) had a catheterization laboratory on site. The figures observed in the EHS ACS III registry are actually quite different from those noted in the Euro Heart Survey Acute Coronary Syndromes Snapshot 2009, a survey conducted over 1 week in December 2009 (i.e. >1 year after the end of the EHS ACS III registry). Although still far from optimal, the representativeness of the EHS ACS Snapshot 2009, with 485 participating institutions in 47 ESC member countries, was a definite improvement, compared with the previous EHS ACS surveys: the first EHS ACS survey included 62 centres in 25 countries, the second 190 centres in 39 countries, and the third 138 centres in 21 countries.1,3,4 The figures from the EHS ACS Snapshot 2009 are unfortunately less encouraging than those from EHS ACS III.5 Reperfusion therapy was used in only 70% of the STEMI patients, and median times to reperfusion were considerably longer: median time from qualifying ECG to primary PCI was 115 min (compared with a 45 min median door to artery time, at the end of the EHS ACS III registry), and median time from qualifying ECG to fibrinolysis was 50 min (compared with a 15 min median door to fibrinolysis time, at the end of EHS ACS III). In-hospital mortality was also higher (8.5%), with large inequalities between regions (from 3.0% in Northern European countries to 10.0% in Central and Eastern European countries).
countries). Therefore, there is still a considerable margin for progress in the management of STEMI patients in Europe.

The analysis of the EHS ACS III registry also provides food for thought in other directions. The first point, acknowledged by the authors, is that, although reperfusion therapy is key in the management of STEMI patients, it is not the only determinant of outcome. In this regard, the results of the three nationwide French surveys carried out 5 years apart, from 1995 to 2005, appear striking. Overall, 30 day mortality decreased by 50% during this time period (from 13.7% in 1995 to 6.9% in 2005), but the relative decrease in mortality was similar in patients treated with primary PCI (–46%), those receiving intravenous fibrinolysis (–45%), or those not receiving any reperfusion therapy (–43%) (Figure 1). These findings indicate the importance of the overall management of STEMI patients, beyond the use of reperfusion therapy.

The second point raised by the results presented by Schiele et al. is the role of benchmarking (or monitoring of performance measures), a practice that is currently much in fashion. Although the satisfactory results observed in EHS ACS III were documented in centres that, obviously, monitored their practice, particularly in terms of time to reperfusion therapy, they do not constitute a demonstration of the clinical benefits of monitoring per se. Indeed, counter-examples exist: the centres participating in the Global Registry of Acute Coronary Events (GRACE) also monitored their daily practice, but no significant reduction in times to reperfusion from 2003 to 2007 was found, and geographical location, two parameters not taken into account in the EHS ACS III analysis, were the strongest predictors of delay in the initiation of reperfusion treatment. Conversely, improved management can be observed without specific performance measurement monitoring, as was documented for the use of reperfusion therapy or recommended medications in the French registries. Moreover, benchmarking should certainly not be considered the alpha and omega of appropriate therapeutic management; in fact, one may even question the benefit of audit measures, when they are linked to financial incentives for the physicians or the institutions. A recent study assessed the appropriateness of medical exceptions to quality measures, in particular in patients with coronary artery disease. In the sample population studied, prescription rates ranged from 84% for angiotensin converting enzyme inhibitors or angiotensin receptor blockers, to 90% for anti-platelet agents or beta-blockers; the medical exceptions for not prescribing the recommended medications were judged appropriate in 94% of the cases, debatable in 3%, and inappropriate in only 3%. One may therefore be a bit sceptical when reading the recent report of the Myocardial Ischaemia National Audit Project (MINAP) prepared in June 2009, which found prescription rates on discharge from hospital of 98% for aspirin, 94% for clopidogrel, 97% for statins, 93% for beta-blockers, and 92% for angiotensin converting enzyme inhibitors, with many institutions reporting prescription rates of 99–100% for some of these medications. In other words, monitoring practice patterns is certainly helpful in improving patient management; linking the results of such monitoring to financial incentives, or making public the results of the institutions may, however, lead to unforeseen perverse effects, when competition upon figures may take precedence over the necessary clinical judgement.

Finally, the EHS ACS III describes the management and outcomes of patients admitted to hospital for STEMI. It does not address the outcomes of patients with acute myocardial infarction who do not reach the hospital: in this regard, sudden cardiac death is an especially challenging complication of acute myocardial ischaemia, and its incidence remains high (most estimates suggest an incidence of 50/100 000), although the same decline in the incidence of sudden death, particularly sudden death attributed to ventricular fibrillation of ischaemic origin, and STEMI appears to exist. Our efforts should therefore not only bear on the
treatment of patients hospitalized for STEMI, but also on the prevention and management of out-of-hospital sudden cardiac death.

In summary, the data from EHS ACS III are undoubtedly encouraging. They should not let us think, however, that the battle against STEMI is over.

References