

From Multicenter Studies to National Registries: the Truth About Management of Myocardial Infarction

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Multicenter studies in cardiology have provided valuable knowledge on a wide range of diseases, and have led to improvements in treatment. Over the last 20 years these studies have helped establish so-called evidence-based medicine and national and international diagnostic and treatment guidelines, which are constantly renewed as knowledge advances. The constant progress in the diagnosis and management of myocardial infarction is one of the best examples of this process. The introduction of more sensitive and specific markers of myocardial damage has changed the nomenclature and classification of myocardial infarction, with a large subsequent increase in the percentage of infarction patients without prolonged ST segment who were previously classified as having unstable angina.^{1,2} The introduction of coronary reperfusion therapies has also led to a progressive decrease in mortality due to infarction, first because of systemic thrombolysis and later because of primary angioplasty. Therapies coadjutant to reperfusion, such as those used in the post-infarction stabilization phase, have also improved. These measures have led to a mean decrease in hospital mortality of 10% for male and female patients of all ages.

Almost all multicenter studies of myocardial infarction have been multinational trials with patients from different regions of the world and countries at varying degrees of development. However, multicenter studies conducted in a single country have also been performed. For example, the GISSI-1 study in Italy reported for the first time the effect of thrombolytic therapy with streptokinase on mortality from myocardial infarction.³ Moreover, this study helped to unify diag-

nostic criteria for myocardial infarction, which enabled stricter patient selection and ensured that investigators were kept up to date on research methods and also on the disease itself. The GISSI-1 study in Italy not only documented the effect of thrombolysis on mortality due to myocardial infarction, but also led to progress in cardiology in Italy.

Subsequent studies have consolidated this progress. The EMERAS study yielded negative results with regard to the use of thrombolytics in the late phase of infarction, but it did indirectly emphasize the importance of early treatment, and thus served to boost cardiology in Argentina and the participating centers in other countries.⁴ Clearly, this progress in cardiology occurs in medium-sized local or district hospitals and not in front-line hospitals with research capabilities. Multicenter studies in economically developed regions such as Scandinavia have also improved coordination and integration among the participating countries.⁵ Strong national and international networks have been established that allow continuous renewal in different research areas without changing the basic infrastructure. The globalization of concepts and the standardization of diagnostic criteria and management owe much to multicenter studies, which have thus demonstrated their geopolitical importance, particularly for myocardial infarction.

Given the value of multicenter studies, what use are national registries of patients with myocardial infarction? First, registries reflect the epidemiological reality of myocardial infarction in a given country with its particular demographic characteristics, distribution of coronary risk factors, predictors of mortality, etc. Registries also reveal the delays in time to arrival at the center, the time between diagnosis and decision making in candidates for reperfusion therapy, and the pharmacological management of patients in acute phase and at discharge in actual clinical practice. Variations in therapeutic approach between hospitals and regions can also become apparent. Finally, if registries cover prolonged periods, they reflect treatment trends, compliance with international guidelines and outcomes for immediate and late morbidity and morta-

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lity.

An example of the value of a good national registry is the PRIAMHO II study, which rapidly collates a large number of patients from randomly chosen hospitals of different sizes and with different therapeutic resources.⁶ Noteworthy features of this registry are the extensive coverage and thoroughness of the participating hospitals, and the use of external audits to verify the information. Furthermore, the follow-up at one year is 93%, much higher than other registries, which allows valuable conclusions to be drawn. The PRIAMHO II has a similar structure to PRIAMHO I, which makes comparisons of changes in diagnostic methods and treatments easier.⁷ We therefore find that the percentage of patients with prolonged ST segment who received reperfusion therapy increased from approximately 56% in the first registry to 71.6% (primary angioplasty was performed in 10.7% of these patients). This percentage compares favorably with those reported by the National Registry of Myocardial Infarction in the United States.⁸⁻¹¹ The PRIAMHO II study also reports the time between onset of symptoms and arrival in the emergency room, as well as the time between admission to the hospital and start of reperfusion therapy. The longer delay seems to be due to the time needed to reach the hospital, which depends in turn on cultural factors (perception of the disease) and geographic factors for each hospital. This delay is therefore the most difficult factor to change, and improvement requires long-term policies. The increase in the percentage of patients who undergo coronary angiography and echocardiography is also important. Both these techniques provide better stratification of prognosis and improve therapeutic decisions. In fact, left ventricular ejection fraction, one of the most important factors in long-term prognosis, was assessed in 60% of the patients.

With regard to complementary pharmacological therapy, significant progress was also reported in the prescription of beta-blockers (30%-56%) and angiotensin converting enzyme inhibitors (25%-45%). Early use of lipid-lowering agents increased (45%) and use of anticoagulants remained high. The PREVESE II study has shown that the appropriate use of this set of therapeutic measures contributes to lower immediate and late mortality.¹² A comparison of the PRIAMHO I and PRIAMHO II studies shows a decrease from 10.9% to 9.6% in mortality in the coronary unit, and a decrease from 14% to 11.4% in mortality after 28 days. If we assume that the percentage of hospital complications is similar in both periods, in accordance with the characteristics of the patients, then significant progress has been made in the treatment of patients because early mortality has decreased significantly.

One essential question is how much further mortality due to myocardial infarction can be decreased in an unselected sample of patients that includes an ever-higher proportion of older adults and also wo-

men. The authors themselves suggest that the time between onset of symptoms and reperfusion treatment should be reduced. Early thrombolysis has been shown to cause the biggest decrease in mortality.³ However, in Spain a trend towards primary angioplasty is likely. The German registry MITRA showed that mortality of patients treated with thrombolysis has remained unchanged over the last decade, whereas a steady decrease has been observed with primary angioplasty.¹³

The quality of the database of the PRIAMHO II registry should enable clarification of many further aspects of myocardial infarction. We do not know, for example, whether treatment was better for the groups with greater or lesser risk, or whether greater benefits were observed in subgroups of risk (women, patients with diabetes, older patients, etc.). We might also consider areas in which improvements are still possible. But what is clear is that the management of myocardial infarction in Spain has advanced.

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