Optimizing Treatment for Acute Myocardial Infarction, a Continuous Effort

Ramón Corbalán[1,2]

Pontificia Universidad Catolica - Cardiovascular Division,[1] *Santiago – Chile*
División Cardiovascular, Universidad Catolica de Chile,[2] *Santiago – Chile*

Short Editorial related to the article: Training Non-Cardiologists Could Improve the Treatment Results of ST Elevation Myocardial Infarction

Early reperfusion with primary percutaneous coronary intervention (PPCI) or thrombolysis (TL) has decreased the morbimortality from acute myocardial infarction (AMI) in Latin America and worldwide. National and international guidelines recommend reperfusion, using either method, according to its availability at the medical center, for patients admitted within 12 hours of AMI symptom onset.[1,2]

PPCI has been shown to be superior to TL, especially when performed at a specialized care center with the infrastructure, staff, and experience necessary to ensure good results and minimize complications.[3-5] However, because of the high costs associated with implementing and developing cardiovascular intervention programs, the availability of centers with the capacity to perform this intervention varies by country and even by region within a given country.

International evidence also indicates that pre-hospital TL followed by timely transfer to a higher-complexity hospital for an invasive study can match or even exceed the results obtained with PPCI.[6] Given the abovementioned findings, some authors recommend a routine invasive study of thrombolyzed patients within the first 24 hours after reperfusion.[7] TL has been shown to be particularly effective if a latest-generation thrombolytic is administered in a timely fashion, that is, within the first 2-4 hours after symptom onset.[8,9] Recent studies have shown the benefits of implementing a pharmacoinvasive strategy, that is TL with Tenecteplase at weight and age-adjusted doses, followed by transfer to a PCI center to perform rescue or elective PCI, depending on the signs of positive or negative reperfusion.[9,10] Nonspecialized doctors usually prefer a transfer to a PCI center, with a long delay, and the consequent underuse of thrombolytics.[11]

The implementation of these strategies has been successfully performed in Europe and USA and whenever possible, in Latin America, but there are persistent inequities in different regions. Large cities, such as Sao Paulo, represent a challenge, particularly at public hospitals, since improving MI care needs adequate public policies. First, the people should be educated about how to recognize symptoms and the need for prompt care at the emergency services. This should be followed by an early diagnosis made by the health team (doctors and nurses), support of tele-electrocardiography to accelerate the diagnosis and the implementation of the best available reperfusion therapy at each center. This implies using TL when the chances for transfer to a tertiary center will delay the time for optimal reperfusion.

In the study performed by Machado et al.[12] and published in this issue of *Arquivos Brasileiros de Cardiologia*, the authors report their experience with the training of doctors and nurses from emergency services in five public hospitals that exhibit high MI mortality rates at baseline, and compare results with data from hospitals with non-trained staff in the long-term follow up. The obtained results are quite impressive, since they achieve a significant reduction of mortality at the trained centers.[12] Certainly, this is an initiative that should be continued over time and extended to other hospitals. Rotation of health personnel in emergency services represent an additional challenge and, for that reason, the training should be continued over time.

This experience was supported by the Society of Cardiology from the State of Sao Paulo and the Health Secretariat of Sao Paulo. Additional support should be found to add other policies such as education, tele-electrocardiography, and the building of networks with tertiary centers.[13] Last, but not least, it would be convenient that treatment of acute MI could be supported by government authorities to facilitate consultation at the nearest available hospital. These policies have been successful in other countries, where they have achieved a significant reduction in MI mortality.[14]

Keywords

Myocardial Infarction; Early Reperfusion; Education and Training.

Mailing Address: Ramón Corbalán •
Pontificia Univ Catolica - Cardiovascular Division - Marcoleta 367, Piso 8, Appt 301, Santiago, 8330024 - Chile
E-mail: corbalan@med.puc.cl

DOI: https://doi.org/10.36660/abc.20210907

References

1. O'Gara P, Kushner F, Aschem D, Casey Jr D, Chung MK, Lemos JA, et al. 2013 ACC/AHA Guidelines for the Management of ST-Elevation Myocardial Infarction. A Report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. Circulation. 2013;127(4):e362-425.
2. Steg G, James SK, Atar D, Badano LP, Blomstrom-Lundqvist CB. ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation. The Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology (ESC). Eur Heart J., 2012;33(20):2569-619.
3. Keeley EC, Boura J, Grines CL Primary angioplasty versus intravenous thrombolytic therapy for acute myocardial infarction: a quantitative review of 23 randomized trials. Lancet 2003;361(9351):13-20.
4. Halvorsen S, Kuber K. The role of fibrinolysis in the era of primary percutaneous coronary intervention. Thromb Haemost. 2011;105(3):390-5.
5. Kristensen S, Lauit KG, Fajader J, Kaifoszova Z, Kala P, Di Mario C, et al. Reperfusion therapy for ST elevation acute myocardial infarction 2010/2011: current status in 37 ESC countries. Eur Heart J.2014;35(29):1957-70.
6. Bonnefoy E, Steg FG, Boutitie F, Dubien PY, Lapostolle F, Roncalli J, et al. Comparison of primary angioplasty and pre-hospital fibrinolysis in acute myocardial infarction (CAPTIM) trial: a 5-year follow-up. Eur Heart J. 2009;30(13);1598-606.
7. Armstrong PW., WEST Steering Committee. A comparison of pharmacologic therapy with/without timely coronary intervention vs. primary percutaneous intervention early after ST elevation myocardial infarction: the WEST (Which Early ST-elevation myocardial infarction Therapy) study. Eur Heart J.2006;27(13):1530-8.
8. Westerhout CM, Bonnefoy E, Welsh RC, Steg PG, Armstrong PW. The influence of time from symptom 1-year survival in ST-elevation myocardial infarction: a pooled analysis of an early fibrinolytic strategy versus primary percutaneous coronary intervention from CAPTIM and WEST. Am Heart J. 2021;161(2):283-9.
9. Armstrong PW, Gerschlick AH, Goldstein P, Danays T, Lambert Y, Sulimov V, et al. Fibrinolysis or Primary PCI in ST-Segment Elevation Myocardial Infarction. N Engl J Med. 2013; 368(15):1379-87.
10. Gershlick A,Westerhoat CM, Armstrong PW, Huber K, Halvorsen S, Steg PG, et al. Impact of pharmacoinvasive strategy when delays to primary PCI are prolonged. Hear.t 2015;101(9):692-8.
11. Oliveira GC, Ferreira JS, Oliveira JC. Lima TCR, Barreto ID. et al. Influence of geographical location on access to reperfusion therapies and mortality of patients with ST elevation MI in Sergipe: VICTIN Registry. Arq Bras Cardiol. 2021;117(1):120-9.
12. Machado Cesar LA, Mansur AP, Ramos RF, Magalhães C, Ferreira JFM, Oliveira NA, et al. Training Non-Cardiologists Could Improve the Treatment Results of ST Elevation Myocardial Infarction. Arq Bras Cardiol. 2021; 117(6):1073-1078.
13. Huber K, Goldstein P, Granger CB, Armstrong PW. The organization, function, and outcomes of ST-elevation myocardial infarction networks worldwide: current state, unmet needs and future directions. Eur Heart J.2014;35(23):1526-32.
14. Nazzal C, Campos TP, Corbalan HR, Lanas ZF, Bartolucci JJ, Sanhueza CP, et al. et al. Impacto del plan AUGE en el tratamiento de pacientes con infarto agudo al miocardio con supradesnivel del ST, en hospitales chilenos. Re Méd Chile. 2008; 136(10):1231-8.