

New study confirms benefits of treating heart attack patients with a cheap drug

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One dose of the drug metoprolol, if given to heart attack patients early—during ambulance transit to hospital—can significantly improve the contractile strength of the heart muscle. And this improvement is maintained for at least six months after the intervention, according to the results of the follow-up study of patients included in the METOCARD-CNIC clinical trial, published in the latest edition of the Journal of the American College of Cardiology, one of the leading journals in the cardiovascular area.

The initial results of this trial were published a few months ago (*Circulation*. 2013;128:1495-1503), and showed that patients who received this [treatment](#) during emergency transit to hospital had much smaller amounts of dead heart muscle than those randomly assigned to receive no treatment. The new study shows that the proportion of patients with a severely deteriorated heart contractile function is much less (60%) in the group that received metoprolol. Early treatment with metoprolol treatment also significantly reduced the rate of hospital readmission for [chronic heart failure](#), and massively reduced the need to implant a cardioverter-defibrillator.

Borja Ibáñez—joint lead investigator on the study with Valentín Fuster—explains that "the possibility to reduce so dramatically the number of cases of chronic [heart failure](#) (with all the associated treatments and hospital readmissions) with such a cheap procedure (the metoprolol treatment costs less than two euros per patient) could generate enormous savings for health services across Europe."

An initial estimate indicates that if half the [heart-attack patients](#) in Europe received early treatment with this cheap drug, the savings in treatment for heart failure alone could exceed €10 billion a year. But as Dr. Fuster is careful to emphasize, it is important to remain cautious, and these estimates will need to be confirmed in a much larger study population across Europe. The research team is already preparing a new clinical trial, with more than 3000 patients in several European countries, which will be powered to demonstrate a reduction in mortality with this treatment. According to the authors, "The results presented today and published simultaneously in this issue of *JACC* are unprecedented and extremely promising, but rigorous clinical investigation requires corroboration in an independent population." The European consortium for this larger scale study, which will be led from Spain by the CNIC, is already being formed, and includes renowned researchers from Belgium, the Netherlands, Germany, France, Denmark, Serbia, Poland, Sweden, and the United Kingdom.

Dr. Borja Ibáñez, leader of the Imaging in Experimental Cardiology group at the CNIC and cardiologist at the Hospital Clínico San Carlos, emphasizes that the new study "will be a flagship project for our country that reinforces Spain's international leadership in research into cardiovascular diseases." The CNIC, a center dedicated to the study of cardiovascular diseases, has been led by internationally renowned cardiologist Dr. Valentín Fuster since 2007. Since Dr. Fuster's arrival, the CNIC has become an international reference center, and the leadership of studies such as the one published today demonstrates the high quality of cardiovascular research in our country.

Dr. Gonzalo Pizarro, one of the first authors on the study, comments that "it has been possible to demonstrate the beneficial and sustained effect of this acute treatment thanks to the realization of advanced cardiac magnetic resonance analysis of almost all the patients in this clinical trial." The CNIC is recognized for its expertise and research in different

imaging technologies, particularly magnetic resonance imaging. The center runs a range of training programs in cardiovascular imaging in collaboration with the Mount Sinai School of Medicine, which is also directed by Dr. Fuster. Many of the cardiologists who contributed to the design, performance and analysis of the MRI scans in the METOCARD-CNIC trial, including Drs. Pizarro and Fernández-Friera (joint first authors on the study), received training on these programs, and now work at the CNIC, combining their research activity and their clinical work in the Spanish hospital network.

This is one of the first studies to reveal extraordinary benefits from very early intervention—in this case with metoprolol—during the first contact with the emergency [medical services](#). Dr. Vicente Sánchez-Brunete, a doctor with the ambulance service SUMMA112 and a principal co-investigator on METOCARD-CNIC is in no doubt about the significance of the study, which has "highlighted the importance of the out-of-hospital emergency medical services, which are the first link in the chain of patient care. We have indirect data showing the earlier the patient receives metoprolol during a heart attack, the greater the benefit."

The active participation of the emergency medical services (SUMMA112, 061 Galicia and SAMUR) in METOCARD-CNIC has been voluntary. As Sánchez-Brunete explained, "the professionals in the emergency medical services were motivated by the promise of this treatment to change clinical guidelines and the perception that the study was motivated purely by scientific interest."

Provided by Centro Nacional de Investigaciones Cardiovasculares

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