One-hour diagnosis of heart attack possible with troponin T test from Roche

Novel strategy shortens time to heart attack diagnosis drastically, enabling faster start of treatment of patients and better use of healthcare resources

Results from the TRAPID-AMI clinical study have been published online by the Annals of Emergency Medicine, confirming a novel approach for a more rapid diagnosis of heart attack in patients with acute chest pain. The strategy is based on the cardiac troponin T high-sensitivity test from Roche and reduces the observation time needed to rule-in or rule-out a heart attack from 3-6 hours to just 1 hour. It is well established that a fast and reliable diagnosis of heart attack is critical because every hour of delay from the onset of symptoms to treatment increases the mortality risk.

“Thanks to this new approach, we can now shorten the time to heart attack diagnosis for millions of patients presenting in emergency rooms with acute chest pain all over the world,” says Christian Mueller, professor of cardiology at the University of Basel, Switzerland, one of the study’s principal investigators. “Patients no longer have to wait for three or more hours in the emergency department, not knowing whether they have an acute, life-threatening disease or if their chest pain is caused by other reasons.”

Every minute counts

A heart attack, or acute myocardial infarction (AMI), is a common cardiac event in which the blood supply to an area of the heart muscle is interrupted, causing the muscle cells to die. Prompt treatment is essential as every 30 minutes of delay increases the relative risk of mortality by 7.5% in patients with AMI. Patients with chest pain and other symptoms suggestive of AMI account for approximately 10-20% of all emergency room consultations and every 43 seconds, someone in the United States will have a heart attack.

Troponin is a heart muscle protein that is released into the blood stream during a heart attack. A limitation of the earlier generations of blood tests was the time required to detect the troponin release, sometimes requiring up to six hours with less sensitive troponin tests. The mortality rate of heart attacks is highest within hours of onset, so an early diagnosis and initiation of treatment greatly impacts outcome and potentially saves lives.
The European Society of Cardiology adopted this accelerated diagnostic concept at their annual meeting held in London (UK) in August 2015. Their new clinical practice guidelines (2015 ESC NSTEMI) now support the 1-hour diagnostic algorithm with high-sensitive troponin testing validated in the TRAPID-AMI study\(^5\).

“Results of the TRAPID-AMI study once again demonstrate how diagnostics can influence clinical practice to contribute to better patient outcomes,” says Roland Diggelmann, Chief Operating Officer of Roche Diagnostics. “At Roche, we continuously invest in clinical studies to foster innovation and to advance healthcare. We provide physicians and patients around the world with diagnostic tests and solutions that improve health and save lives.”

More about the TRAPID-AMI study
TRAPID-AMI is a prospective observational study supported by Roche and investigated more than 1,200 patients with acute chest pain during 2011-2014. The study was conducted in twelve institutions from nine countries and three continents, led by Professors Christian Mueller, University of Basel (Switzerland), and Bertil Lindahl, University of Uppsala (Sweden). It is the first clinical trial validating a short diagnostic procedure constructed from two blood tests taken from the patient one hour apart in early chest pain patients (i.e. with a pain onset of maximum 6 hours since hospital entry). This new approach was proposed in the earlier APACE trial on patients with later presentation\(^6\). The TRAPID-AMI study results demonstrate that the new diagnostic procedure shortens the time to diagnose heart attack to one hour from three hours or more, enabling healthcare professionals to treat the majority of patients much earlier as recommended in the new guidelines (2015 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation)\(^5\).

More about the cardiac troponin T high-sensitivity test from Roche
The Elecsys cardiac Troponin T high-sensitivity (cTnT-hs) test from Roche detects cardiac troponin which is the preferred biomarker for the diagnosis of heart attack in clinical practice. In combination with an electrocardiogram (ECG), it has become the gold standard for the diagnosis of heart attack. The high sensitivity of the Roche cTnT-hs assay in conjunction with this novel procedure significantly accelerates “rule-in” and “rule-out” decision-making, thereby maximising the potential for effective treatment. At the same time, the faster decision-making may help to better manage the emergency room workload and related costs for healthcare systems.
About Roche
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In 2014, the Roche Group employed 88,500 people worldwide, invested 8.9 billion Swiss francs in R&D and posted sales of 47.5 billion Swiss francs. Genentech, in the United States, is a wholly owned member of the Roche Group. Roche is the majority shareholder in Chugai Pharmaceutical, Japan. For more information, please visit www.roche.com.

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Reference
1) Acronym for: Cardiac troponin T–hs (high sensitivity) assay for RAPID rule-out of Acute Myocardial Infarction
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