Quantitative Point-of-Care Troponin T Measurement for Diagnosis and Prognosis in Patients With a Suspected Acute Myocardial Infarction

Carsten Stengaard, MD[a,*], Jacob Thorsted Sørensen, MD, PhD[a], Søren Andreas Ladefoged, MD, DMSc[b], Erika Frischknecht Christensen, MD[c], Jens Flensted Lassen, MD, PhD[a], Hans Erik Bøtker, MD, DMSc[a], Christian Juhl Terkelsen, MD, DMSc[a], and Kristian Thygesen, MD, DMSc[a]

Improvement of prehospital triage is essential to ensure rapid management of patients with acute myocardial infarction (AMI). This study evaluates the feasibility of prehospital quantitative point-of-care cardiac troponin T (POC-cTnT) analysis, its ability to identify patients with AMI, and its capacity to predict mortality. The study was performed in the Central Denmark Region from May 2010 to May 2011. As a supplement to electrocardiography, a prehospital POC-cTnT measurement was performed by a paramedic in patients with suspected AMI. AMI was diagnosed according to the universal definition of myocardial infarction using the ninety-ninth percentile upper reference level as diagnostic cut point. The paramedics performed POC-cTnT measurements in 985 subjects with a symptom duration of 70 minutes (95% CI, 35 to 180); of whom, 200 (20%) had an AMI. The prehospital sample was obtained 88 minutes (range, 58 to 131) before the sample made on admission to the hospital. The sensitivity for detection of patients with an AMI was 39% (95% CI, 32% to 46%) and the diagnostic accuracy of the POC-cTnT values was 0.67

promote rapid and appropriate treatment. Prehospital electrocardiographic diagnosis of patients with ST elevation myocardial infarction (STEMI) is a commonly used technology that reduces treatment delay and mortality.[1–3] However, in many patients with AMI, the electrocardiographic patterns may be ambiguous, and identification of all patients with AMI using the electrocardiogram solely is not possible.[4] Prehospital cardiac troponin T (cTnT) analysis has the potential to accelerate triage and diagnosis of patients with suspected AMI. Large-scale qualitative point-of-care analytical sensitivity. Quantitative POC-cTnT assays with improved analytical properties are now available, but the prehospital utility has not been evaluated.[8] The purposes of the present study were to (1) evaluate the feasibility of prehospital quantitative POC-cTnT analysis performed by paramedics, (2) determine whether a quantitative prehospital POC-cTnT test is useful for early prehospital identification of AMI, and (3) evaluate the prognostic value of prehospital POC-cTnT analysis in patients with suspected AMI.

Departments of [a]Cardiology and [b]Clinical Biochemistry, Aarhus University Hospital, Aarhus, Central Denmark Region, Denmark; and [c]Prehospital Emergency Medical Services, Aarhus, Central Denmark Region, Denmark. Manuscript received May 17, 2013; revised manuscript received and accepted June 24, 2013.

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*Corresponding author: Tel: (+45) 2874-1998; fax: (+45) 7845-2260.
E-mail address: carstengaard@hotmail.com (C. Stengaard).

Methods

The observational prospective study was performed in ambulances in the eastern part of the Central Denmark Region with a population of approximately 500,000 inhabitants. The paramedics routinely recorded a prehospital electrocardiogram in patients with ongoing or prolonged periods of chest discomfort within the past 12 hours, acute dyspnea in the absence of known pulmonary disease, or a clinical suspicion of AMI. The electrocardiogram was transmitted to the invasive cardiology center at Aarhus University Hospital and interpreted by the cardiologist on call. A telephonic interview was conducted with the patient, and after establishment of a cardiac or a noncardiac tentative