New markers in suspected acute coronary syndromes: are they relevant for primary care?

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Problem: Although the number of patients with an acute coronary syndrome (ACS) seen by the GP largely differs between countries, all GPs have to deal with chest pain patients more or less frequent. Only in 5-15 percent a coronary problem is the underlying problem. Therefore, the main challenge for the GP is to distinguish patients with serious disease (most frequently ACS) from patients with less demanding diagnoses.

The GP's decision will mainly be based on signs and symptoms, that are however unreliable in their ability to predict or exclude ACS. Electrocardiography has a high false negativity rate, especially when performed early after onset of complaints. Thus, a GP has to refer most patients presenting with chest complaints although up to 70% of referred patients are discharged without a life threatening diagnosis. Among patients that are not referred, 6 % has ACS

Biomarkers: Currently, cardiac Troponin (TnT or TnI) and, still, CK-MB and myoglobin are used. Quantitative Troponin values are the gold standard. However, measurement has to be performed in a laboratory while the cut-points for ACS are being discussed and dropping rapidly from 100 to 14pg/ml (for Troponin T). From a recent questionnaire we learned that GPs, if available, would use a point of care test (POCT) when dealing with a possible acute coronary syndrome. However, they need to be small (to be carried in a doctor's bag), easy to use, reliable and fast (less than 5 minutes). Although POCTs are available for Troponins with a cut-off value between positive and negative of 100 pg/ml, this is not the case for the lower cut points that are currently considered as a guidance for invasive procedures. Recently, a POCT for H-FABP has become available (with a cut-off value of 4ng/ml (FABPulous). The test is expected to perform better shortly after start of the pain.

Methods: We designed a delayed type cross-sectional diagnostic study in patients presenting to the GP with chest pain or discomfort in the Netherlands and Flanders. We intend to include 600 patients starting later this year. Additionally to collecting standard information about signs and symptoms, a H-FABP POCT will be performed. In preparation for this GP study, we performed a similar study in 200 consecutive chest pain patients presenting to the emergency department (ED) of a regional hospital in Genk, Belgium (ED-study). In all patients, both serial quantitative H-FABP (FABPulous) and hs-TnT tests (Roche) were performed in order to directly compare both tests and confirm the optimal cut-points.

Results ED study: In 218 consecutive patient (duration of complaints 1-42 hours), the prevalence of acute myocardial infarction (AMI) - was 51%. ROC-curves based on the results of the first H-FABP and hs-TnT tests were similar (p=0.73) with the H-FABP curve positioned slightly but not significantly more to the left during the first six hours (AUC 0.73 versus 0.71).

Using a cut-off value of 4.0 ng/mL for H-FABP and 14 pg/mL for hs-TnT, sensitivity of the H-FABP (hs-TnT) tests were 0.75 (0.74) for all patients at presentation and 0.57 (0.51), 0.88 (0.83), 0.92 (0.96) for patients presenting 0-3,4-6, 7-12 h after beginning of complaints. When using the combination of H-FABP and hs-TnT, sensitivity increased to 0.86 (all patients).