

## CORONARY ARTERY DISEASE

## New troponin T test allows prediction of CV events in patients with stable CAD

The current lower limit for detection of plasma troponin T in most commercially available tests is approximately 0.01 µg/l, and levels higher than this value are associated with increased mortality. However, even small elevations in cardiac troponins are linked to recurrent coronary ischemic events in patients with suspected acute coronary syndromes. According to Dr Torbjørn Omland from the Akershus University Hospital in Norway, “using conventional assays, the prevalence of detectable troponin T levels in the general population is less than 1%, suggesting that conventional assays are unlikely to provide prognostic information in low-risk populations.”

Roche Diagnostics has developed a highly sensitive troponin T assay that can detect levels as low as 0.001 µg/l. Omland states that “when [the PEACE trial investigators] learned that a prototype of a new, highly sensitive troponin T assay had been developed, we hypothesized that troponin T measured with the new assay would be detectable in a high proportion of patients with stable coronary artery disease (CAD) and be associated with the incidence of cardiovascular events.” They have now demonstrated that this new assay can be used to distinguish between patients with stable CAD who are at high risk of having future cardiovascular events and those who are at low risk.

“The new generation of high-sensitivity cardiac [troponin] assays are able to

detect about 1–10 pg of the protein, corresponding to [cardiac troponin] content of less than 1 mg of myocardial tissue” explains Professor Aldo Clerico from the Scuola Superiore Sant’Anna in Italy, who was not involved in the PEACE trial. “In other words,” he continues, “these assays are able to detect very small (focal) areas of damaged myocardial tissue, and greatly better than the sophisticated (and more expensive) cardiac imaging investigations, including echocardiography, X-ray CT, and MRI.”

In the PEACE substudy, baseline troponin T levels were assessed for 3,679 patients who had stable CAD. Of these patients, 98.7% had troponin T levels below the lower limit of sensitivity of conventional troponin T assays, but only 2.3% had levels below the lower limit of the new assay. Levels of troponin T were found to be positively associated with cumulative incidence of cardiovascular deaths, heart failure, and cardiovascular deaths classified as not resulting from heart failure. The investigators also showed that adding troponin T levels to risk assessment models improved their predictive power. Unexpectedly, since troponin levels are considered markers of acute cardiovascular injury and are predictive of myocardial infarction in patients with acute coronary syndromes, levels of troponin T in the patients with stable CAD were not found to be positively



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associated with acute myocardial infarctions after adjustment for potentially confounding factors.

“Unresolved issues that need to be addressed in future testing should include whether serial testing should be performed and whether changes in very low levels are stronger predictors of events than absolute values” comments Dr Omland. Professor Clerico believes that “future studies may test the hypothesis that highly sensitive [cardiac troponin] assays may be useful as a screening method in order to identify most (or even all) patients with asymptomatic cardiovascular diseases.” He reminds us, however, that “a positive (abnormal) test strongly suggests the presence of myocardial damage, but not the pathophysiological mechanism responsible for the myocardial injury.”

*Bryony M. Mearns*

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