Medical Xpress

Elevated protein levels in cardiac muscles could predict mortality following angioplasty

May 13 2011

New research shows that elevated levels of cardiac troponin T (cTnT) or I (cTnI) in patients who had angioplasty indicate a higher risk of all-cause mortality and long-term adverse events such as heart attack. Routine monitoring of these protein levels following nonemergent percutaneous coronary intervention (PCI) could improve long-term outcomes for these patients. Details of the analysis are available online in *Catheterization and Cardiovascular Interventions*, a peer-reviewed journal of The Society for Cardiovascular Angiography and Interventions (SCAI).

More than one million Americans undergo coronary angioplasty each year to improve blood flow in blocked or narrowed arteries leading to the heart, according to the National Heart, Lung and Blood Institute. In cases where elective PCI was performed medical evidence has found that up to 30% of these patients experience minor elevations in cardiac enzymes, particularly levels of creatine kinase muscle-brain (CK-MB), which are associated with an increase in in-hospital adverse cardiac events. Greater elevations of CK-MB are associated with greater long-term mortality.

Recent studies suggest that elevated levels of cardiac troponins T or I are more specific indicators of cardiac muscle damage than CK-MB. However, conflicting data have been published in medical literature regarding the association between cardiac troponin elevation post-PCI and adverse cardiac events. In the current meta-analysis, Dmitriy Feldman, MD, FSCAI, and colleagues from New York Presbyterian

Hospital and Weill Cornell Medical College, assessed the prevalence and mortality risk associated with elevated levels of cTnT or cTnI following elective PCI.

The research team conducted electronic and manual searches of all published studies reporting on the prognostic impact of cTnT or cTnI elevation following elective angioplasty. Twenty-two studies, published between 1998 and 2009, were identified and included 22,353 patients. A meta-analysis—the largest to date—of study findings showed that post-PCI levels of cTnT or cTnI were elevated in 26% and 34% of patients, respectively. The follow-up period of participants in the studies analyzed ranged from 3 to 67 months.

"Our analysis demonstrates that post-procedural elevation of cTnT or cTnI provides long-term prognostic information regarding mortality or myocardial infarction," said Dr. Feldman. Results showed that long-term all-cause mortality in patients with elevated cardiac troponin levels after PCI was 5.8% compared to only 4.4% in patients who did not experience an elevation in the cardiac enzymes. Adverse events (death or heart attack) following elective angioplasty were significantly higher in patients with elevated cTnT or cTnI levels (9.2%) compared to those without cTn elevations (5.3%). "Routine monitoring of peri-procedural cTn levels and more intensive outpatient monitoring and treatment of patients with cTn elevations following elective PCI may help to improve long-term adverse outcomes in these patients," Feldman advised.

More information: "Prognostic Value of Cardiac Troponin-I or Troponin-T Elevation Following Nonemergent Percutaneous Coronary Intervention: A Meta-analysis." Dmitriy N. Feldman, Luke Kim, A. Garvey Rene, Robert M. Minutello, Geoffrey Bergman and S. Chiu Wong. Catheterization and Cardiovascular Interventions; Published Online: May 13, 2011 (DOI: 10.1002/ccd.22962); Print Issue Date: May 2011.

Provided by Wiley