Prognostic Implications of Cardiac Marker Elevation After Percutaneous Coronary Intervention

To the Editor:

We read with interest the report by Stone et al1 that showed a highly significant association between the development of Q-wave myocardial infarction (QWMI) and creatine kinase (CK)-MB values >8 times the upper limit of normal after percutaneous intervention (PCI) with in-hospital and late (up to 2 years) mortality.

Evidence of an increased risk of adverse clinical outcome with asymptomatic rises of CK and CK-MB after PCI has previously been clearly documented.2,3 We studied the release of the highly sensitive and specific cardiac troponin I (cTnI) in a series of 344 consecutive patients presenting with stable angina and undergoing elective PCI (balloon angioplasty, stent insertion, and rotational atherectomy).4 We measured cTnI before PCI and at 6, 14, and 24 hours after PCI. cTnI was elevated in 61 (17.7%) patients after PCI in our series, which was comparable to a postprocedural CK-MB rise in 17.9% of patients in the study by Stone et al.1

We found a post-PCI cTnI elevation of >0.2 μg/L (manufacturers’ recommended clinically discriminant value) to be strongly predictive of adverse events (death, QWMI, and repeat revascularization) at a mean follow-up period of 44.5 (±17.7) weeks. The positive predictive value (PPV) of post-PCI cTnI elevation for adverse events was 0.47, and the negative predictive value (NPV) was 0.96 (P<0.0001; OR 18.9, 95% CI 9.7 to 37).

This association seemed to be independent of angiographic procedural complications. Angiographic events occurred in 79 (23%) of our patients. In 40 (15%) of the remaining 265 patients, cTnI was elevated to >0.2 μg/L within 24 hours after PCI in the absence of angiographic complications. The occurrence of angiographic complications had a PPV for adverse events of 0.30 and a NPV of 0.93 (P=0.0003; OR 4.4, 95% CI 2.2 to 8.6). The combination of both angiographic complications and postprocedural cTnI elevation gave a PPV for adverse events of 0.69 and a NPV of 0.92 (P=0.005; OR 22.6, 95% CI 2.6 to 68.5). We did not demonstrate a significant relationship between the type of procedural device and postprocedural cTnI elevation.

Our data add to a growing body of evidence showing that asymptomatic postprocedural myocardial cell injury does have important prognostic implications and would support the need for routine troponin measurements after PCI.

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