

The Ability of Elevated Troponin I Values following Cardiac Surgery to Predict 30-Day and Long Term Major Adverse Cardiovascular Events: A Single Center Experience

Background: The association between elevated troponin levels after coronary artery bypass grafting (CABG) surgery and short term all-cause mortality as well as major adverse cardiovascular events (MACE) is well documented. However, there is paucity of data reported on long term outcomes. Methods: Baseline patient characteristics, perioperative characteristics, and cardiac biomarkers within 24 hours were evaluated prospectively in a consecutive cohort of 419 subjects who underwent cardiac surgery in a single center, from 1 July 2002 through 30 March 2007. Death, myocardial infarction, stroke, target vessel revascularization, and composite MACE were abstracted over a median follow-up of 16.8 months. Results: Troponin I values above 4.13 ng/mL were associated with a 45% increased risk for composite MACE (HR 1.45, 95% CI 1.023-2.067, $p=0.038$) over the first 2 years post cardiac surgery. Additionally, troponin I levels >4.13 ng/mL were also associated with worse survival free from MACE ($p=0.034$). Troponin I values were not predictive of death, myocardial infarction, stroke or target vessel revascularization nor associated with survival free from these events. Multiple pre-, intra-, and periprocedural patient characteristics were associated with increased observed MACE rates to include preoperative ejection fraction $<40\%$, chronic kidney disease, reoperation, and increased cardiopulmonary bypass times. Only EF $\geq 40\%$ was associated with lower observed MACE. Conclusion: A troponin I level above 4.13 ng/mL was associated with a 45% observed increase in composite MACE during the first 2 years following CS. This finding is hypothesis generating only and may suggest measurement of troponin I level 24hrs after the CS may provide valuable prognostic data.