

Cardiac Troponin as a biomarker of early myocardial injury after cardiac surgery.

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Background: Early myocardial injury occurring in post-cardiac surgery patients markedly impacts short-, intermediate-, and long-term survival rates. There is promising but inconclusive evidence that troponin measurements may identify prognostically important myocardial injury after cardiac surgery. The proposed threshold to define an important myocardial injury in the latest guidelines are arbitrary and not informed by high-quality observational data. Identifying those who suffer a prognostically important myocardial injury will have immense implications for improving the postoperative outcomes in a vulnerable patient population.

Objectives: We will utilize the contemporary measure of high-sensitivity Troponin in order to determine the distribution of peak troponin values and change from preoperative values. Primary objective is to determine the relationship between troponin measurements and the 1-year risk of death. Our second objective is to determine the incidence of major vascular events (i.e., a composite of vascular death, nonfatal myocardial infarction, nonfatal stroke, and mechanical assist device) at 30 days and 1-year after surgery.

Materials and methods: This is a prospective cohort study of a representative sample of 1,000 adult patients undergoing cardiac surgery in San Raffaele Hospital. Patients will be evaluated prior to surgery, throughout their hospitalization, and contacted at 30 days and 1 year after surgery. All patients will have a troponin measured within the 4 hours prior to surgery, 3 to 12 hours postoperatively, and on the first, second, and third day after surgery.

Expected results: This study will establish the role of perioperative high-sensitivity troponin measurements in identifying prognostically relevant troponin thresholds that significantly impact 1-year mortality after cardiac surgery. Knowing the current burden of perioperative vascular events will inform clinicians, administrators, and granting agencies about resources required to address the problem and this will have profound public health implications. This study received a grant from Italian Ministry of Health, Giovani Ricercatori 2013, n. GR-2013-02356129.