Cardiac troponin T release patterns after off-pump coronary bypass surgery

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Background

Cardiac troponin T (cTnT) is used as a specific marker for myocardial ischaemia, although its value remains ill-defined in off-pump coronary surgery (OPCAB). The present retrospective observational study aimed to determine the release patterns of cTnT after OPCAB and relate these to electrocardiographic changes.

Methods

• After ethical committee approval and informed consent, data from 131 OPCAB patients were retrieved from a database of which 57 patients were excluded for further analysis because of missing data
• cTnT samples were measured preoperatively, at arrival at the intensive care unit (ICU), and 6, 12, 24 and 48 hours afterwards
• 12-lead ECGs were recorded preoperatively, at arrival at ICU, 1, 2 and 5 days postoperatively

Results

Three different postoperative cTnT levels could be identified:
• group 1 (6/74) showed an important increase of cTnT > 1 from which 3/6 patients developed a new Q-wave infarction
• group 2 (20/74) cTnT levels remained below 0.2

In group 3 (0 < cTnT < 1) three distinct patterns could be identified:
• pattern A (8/39) manifested as a gradual increase of cTnT levels during the first 48 hours
• pattern B (9/39) showed an early peak at arrival
• pattern C (22/39) demonstrated a peak value between 6-12 hours postoperatively

Interestingly, the incidence of electrocardiographic diagnosis of myocardial infarction was significantly higher in the groups showing a transient peaking pattern (pattern B and C) than in those who showed a progressive rise in postoperative troponins (pattern A) (12/31 vs 0/8; p = 0.0471).

Conclusion

Different magnitudes of cTnT release could be identified after OPCAB surgery. In the patients with moderate cTnT release between 0 and 1 three different release patterns could be identified: gradual increase over 48 hours, a peak at arrival and those peaking between 6 and 12 hours.