Prognostic value of troponin after elective percutaneous coronary intervention: a meta-analysis

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CRD summary
This review found that measurement of troponin levels provides important prognostic information on risk of death during follow-up in patients who have undergone an elective percutaneous coronary intervention. The authors’ conclusions are in line with the evidence presented, but should be treated with caution given that the review had various methodological and reporting limitations.

Authors’ objectives
To assess the prognostic value of cardiac troponin elevation following elective percutaneous coronary intervention (PCI).

Searching
MEDLINE was searched for English language publications up to 2007 using the keywords ‘troponin’, ‘PCI’, ‘PTCA’ and ‘follow-up’. Major general and cardiological journals (unspecified) were handsearched and reference lists of retrieved articles were screened for additional studies.

Study selection
Clinical trials and cohort studies that tested for post-procedural troponin elevation in patients undergoing elective PCI were eligible for the review. Studies that included patients with ST-elevation myocardial infarction (MI) and those with strict inclusion and exclusion criteria were excluded. The majority of participants in the included studies (80%) received a stent, while 20% underwent multi-vessel PCI. The threshold for troponin elevation in the included studies ranged from 0.03 to 2.3 ng/mL; some studies assessed troponin I and some assessed troponin T. The primary outcome of the review was death during follow-up; occurrence of death or MI was a secondary outcome.

The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
For the primary and secondary outcome, data on numbers of events in patients with and without elevated troponin were extracted and used to derive odds ratios (ORs) with 95% confidence intervals (CIs).

The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Methods of synthesis
The studies were combined by meta-analysis using the Mantel-Haenszel method. The authors did not state that they assessed heterogeneity or publication bias, although some differences between the studies were discussed in the text.

Results of the review
Twenty cohort studies (n=15,581) were included in the review: 17 prospective and 3 retrospective. The duration of follow-up ranged from 3 to 67 months (mean 16.3).

Patients with elevated troponin were significantly more likely to die during follow-up than those without elevated troponin (OR 1.35, 95% CI: 1.13, 1.60) and were also significantly more likely to suffer death or MI (OR 1.59, 95% CI: 1.29, 1.95).
Authors' conclusions
Measurement of troponin elevation after elective PCI provides important prognostic information.

CRD commentary
This review addressed a clear question. The inclusion criteria were generally clear but left some scope for subjective interpretation. The search was limited to one database and selected journals, was restricted to English language publications, and only a few keywords were used, so it is possible that some relevant studies could have been missed. The risk of publication bias was not assessed. The authors did not assess validity, which makes it difficult to comment on the reliability of the included studies and the synthesis derived from them. In additions, since review methods were not reported, the risk of bias and error during the review process is uncertain. Adequate details of the included studies were provided in the text and tables. The studies were combined by meta-analysis but, since the authors do not appear to have assessed heterogeneity, it is unclear whether it was appropriate to pool them. The authors' conclusions are in line with the evidence presented, but should be treated with caution in view of the methodological and reporting limitations of the review.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that further research is required to assess the use of troponin assays alongside or instead of creatine kinase, and to determine whether more intensive monitoring and treatment of patients with elevated troponin reduces cardiac events.

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Bibliographic details

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.