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Preliminary evidence-based review of the influence of emboli and temperature on the systemic inflammatory response after cardiac surgery

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Introduction

Heterogeneity exists in conduct and reporting of cardiopulmonary bypass (CPB). Landis and colleagues previously established minimal criteria for the conduct and reporting of studies related to the influence of CPB on the systemic inflammatory response¹. Using Landis' framework, we sought to summarize and grade the level and class of evidence relating to two characteristics of CPB (emboli and temperature) on the systemic inflammatory response in the setting of adult cardiac surgery.

Methods

A systematic search of the peer-reviewed literature was conducted to identify English language papers published 1970-2008. Abstracts of all papers were read, and when found to be pertinent, full papers reviewed. To be included in the final review, at least one causal inflammatory marker had to be measured¹. The literature was gathered, synthesized and graded for level and class of evidence by two reviewers (when possible) in accordance with the recommendations put forth by the American College of Cardiology and American Heart Association.

Results

The systematic search of the literature initially identified 399 articles relating emboli, the inflammatory response and CPB. Only 3 of 36 articles pertinent to emboli met the minimal inclusion criteria of measuring a single causal inflammatory marker, and no meaningful interpretation could be made with respect to emboli, inflammation and CPB. 250 articles were identified relating temperature, the inflammatory response and CPB. Only 17 of 51 articles pertinent to temperature met the inclusion criteria. A number of different causal markers were reported. No equivocal relationship was found between temperature (hypothermia, normothermia and tepid) and changes in causal markers of inflammation.

Conclusions

Using the criterion developed by Landis et al⁽¹⁾ no meaningful conclusion may be generated regarding the association between either emboli or temperature and systemic inflammatory response in the setting of adult cardiac surgery. Future research should adopt minimal criteria for conducting and reporting investigations in order to enhance our understanding of the influence of CPB on inflammatory response.

References

1. Landis et al. Consensus statement: defining minimal criteria for reporting the systemic inflammatory response to cardiopulmonary bypass. *Heart Surgery Forum* 2008;11:290-296