

Meeting abstract

Open Access

1011 Cardiac MRI enhances predictive models for length of stay after coronary artery bypass surgery

Peter R Zeman*, Subodh B Joshi, Daniel Zalkind, Peter C Hill, Roquell E Wyche, Steven W Boyce and Anthon R Fuisz

Address: Washington Hospital Center, Washington, DC, USA

* Corresponding author

from 11th Annual SCMR Scientific Sessions
Los Angeles, CA, USA. 1–3 February 2008

Published: 22 October 2008

Journal of Cardiovascular Magnetic Resonance 2008, **10**(Suppl 1):A136 doi:10.1186/1532-429X-10-S1-A136

This abstract is available from: <http://jcmr-online.com/content/10/S1/A136>

© 2008 Zeman et al; licensee BioMed Central Ltd.

Introduction

Coronary artery bypass surgery (CABG) is among the most common surgical procedures worldwide and accounts for more resources expended in cardiovascular medicine than any other single procedure. As a result, many surgical risk models predicting outcome and length of stay (LOS) after CABG surgery have been developed. Numerous cardiovascular risk and operative factors are incorporated into such models, including traditional estimates of left ventricular ejection fraction (LVEF) by echocardiography or angiography. No study to date has included LVEF by cardiac MRI into these models, despite it being considered the gold standard technique for assessment of systolic function.

Purpose

This study was done to determine whether LVEF by MRI adds independent predictive value to standard surgical risk models estimating mortality and length of stay after CABG surgery.

Methods

This retrospective study included only patients undergoing cardiac MRI within 6 months of CABG surgery at the Washington Hospital Center from 2003–2007. Out of 6069 CABG patients, 167 met the inclusion criteria. For each patient, 31 major demographic, cardiovascular risk, diagnostic, operative and post-operative factors were recorded, including LVEF by MRI and by a more traditional (echocardiographic or angiographic) modality.

MRI LVEF was derived from tracings of multiple short axis cardiac cine acquisitions using balanced TFE technique on a 1.5 T Philips Intera scanner. In addition, Society of Thoracic Surgeons (STS) prediction model scores for surgical mortality, short LOS (< 6 days) and long LOS (> 14 days) were calculated from the data collected. Appropriate univariate and multivariate analyses were performed.

Results

Both MRI and traditional measurements of LVEF correlated inversely with the LOS ($P < 0.001$ for both). Apart from the STS prediction models, the presence of a major post-operative complication was the only factor as significantly correlated with LOS ($P < 0.001$). On multivariate analyses, STS prediction models for short LOS and long LOS correlated significantly with a LOS below median value (< 7 days) and above median value (≥ 7 days) respectively ($P < 0.001$ for both). LVEF by MRI independently correlated with LOS on multivariate analyses using either the STS short LOS ($P < 0.03$) or long LOS ($P < 0.03$) model, despite these already incorporating a traditional LVEF measurement. Overall, MRI LVEF was significantly higher than traditional LVEF by approximately 8% ($P < 0.001$). Although lower LVEF by MRI predicted in-hospital mortality independent of the STS mortality prediction model ($P < 0.04$), this study was not powered for such an analysis as only 5 deaths occurred in the entire cohort.

Conclusion

Measurement of left ventricular ejection fraction by cardiac MRI adds significant independent predictive value to established surgical models estimating length of stay after CABG surgery. This study is the first to show that, compared to traditional LVEF measurements, cardiac MRI more accurately predicts patient outcome and their length of hospital stay after CABG surgery.

Publish with **BioMed Central** and every scientist can read your work free of charge

"BioMed Central will be the most significant development for disseminating the results of biomedical research in our lifetime."

Sir Paul Nurse, Cancer Research UK

Your research papers will be:

- available free of charge to the entire biomedical community
- peer reviewed and published immediately upon acceptance
- cited in PubMed and archived on PubMed Central
- yours — you keep the copyright

Submit your manuscript here:
http://www.biomedcentral.com/info/publishing_adv.asp

