POSTER PRESENTATION



Open Access

Release kinetics of cardiac biomarkers in patients undergoing valve replacement surgery for rheumatic heart disease

SK Agarwal^{1*}, S Singh², A Kapoor², S Pandey¹, A Sinha², S Kumar², H Rai², S Tewari², N Garg², PK Goel²

From 23rd World Congress of the World Society of Cardio-Thoracic Surgeons Split, Croatia. 12-15 September 2013

Background

Levels of brain natriuretic peptide (BNP) increase following CABG and predict post-operative outcomes. Release kinetics of BNP, Troponin-I (TnI) and CKMB after valve replacement are not well characterized.

Methods

We assessed levels of these biomarkers 24 hours prior and 6,24, 48 hrs, 1 month following mitral/aortic valve replacement in 50 patients (mean age 36.7 yrs, LVEF 54.4%, 80% males).

Results

Mean baseline BNP, TnI and CK-MB levels were 304.01 pg/ml, 0.03 ng/ml and 0.99 ng/ml. BNP initially decreased within 6 hours of surgery, and peaked at 24 hours; TnI and CKMB showed an early rise, with declining trends by 24 hrs. Peak BNP levels occurred in 90% patients by 24-48 hrs, while for TnI and CKMB this occurred in only 15-30%. Mean delta (peak-baseline) BNP, TnI, CKMB was 660.1pg/ml, 8.1ng/ml and 32.3ng/ml. At 1 month, levels of all biomarkers were not significantly different from baseline. Patients with higher baseline BNP more commonly had atrial fibrillation (71vs 33%,p=.02), higher right ventricular systolic pressure (69.7vs43.9 mm Hg, p< 0.001), higher Euroscore II(2.42vs1.49,p=0.006), longer inotrope duration (56.1vs26.5hrs,p=0.03), ventilator support time (35.6vs21.7 hrs,p=0.04), longer ICU (4.8vs3.2 days, p=0.02) and hospital stay (6.8vs5.2 days, p=0.03). Inotrope duration>42 hrs, ventilation time>29 hrs and ICU stay>4 days was seen in 42%vs19%, 30%vs9% and 33%vs14% respectively in patients with baseline BNP >/< 200 pg/ml. Only baseline BNP was a significant predictor of inotrope duration (p=0.01) and ventilation time (p=0.02). Only 24 hour post-operative BNP and delta BNP were predictors of inotrope duration>42 hrs, ventilation time>29 hrs and ICU stay>4 days.

Conclusion

Release kinetics of cardiac biomarkers following valve surgery are significantly different from each other. Of all the biomarkers, only BNP levels had an association with post-operative inotrope duration, ventilation time and ICU stay in patients undergoing valve replacement.

Authors' details

¹Cardio-Thoracic Surgery, Sanjay Gandhi PGIMS, Lucknow, India. ²Cardiology, Sanjay Gandhi PGIMS, Lucknow, India.

Published: 11 September 2013

doi:10.1186/1749-8090-8-S1-P145

Cite this article as: Agarwal *et al.*: **Release kinetics of cardiac biomarkers** in patients undergoing valve replacement surgery for rheumatic heart disease. *Journal of Cardiothoracic Surgery* 2013 **8**(Suppl 1):P145.

¹Cardio-Thoracic Surgery, Sanjay Gandhi PGIMS, Lucknow, India

Full list of author information is available at the end of the article



© 2013 Agarwal et al; licensee BioMed Central Ltd. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/2.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

^{*} Correspondence: surendra@sgpgi.ac.in