Reviewer's report

Title: Hemodynamic Effects of Peri-Operative Statin Therapy in On-Pump Cardiac Surgery Patients

Version: 1 Date: 19 January 2012

Reviewer: Oliver Radke

Reviewer's report:

This manuscript presents the results of a retrospective analysis of patients who underwent surgery with cardiac bypass. The authors were interested in the effects of perioperative statin use on hemodynamic parameters in the postoperative period as a surrogate parameter of systemic inflammation. The only significant difference between the statin- and non-statin group was a lower systemic vascular resistance index in the statin group. The authors conclude that they could not detect any benefit in perioperative statin therapy in regards to postoperative hemodynamic parameters and clinical outcome.

General comment

Systemic inflammation after cardiac bypass is certainly a common problem, which complicates and potentially delays postoperative recovery. A simple pharmacologic intervention such as the use of statins to reduce the incidence of SIRS is intriguing. The research question is therefore quite interesting. However, there are some gaps in the presentation of the methods and the data, which preclude a profound appraisal of the validity of the results.

Major Compulsory Revisions

The authors conducted an extensive accumulation of perioperative data on an impressive number of patients. Simply comparing the predictors per group doesn’t do this effort justice. A more detailed analysis such as a regression analysis or even a propensity score analysis aimed at a solid primary outcome could potentially yield more robust results.

- Page 5: The authors state that this was a retrospective study, but “patient approval was obtained BEFORE participation”. Please clarify.
- Page 5: Was the study approved by the local ethics committee?
- Page 5: The study included 478 patients during a 12 month period. What were the in- and exclusion criteria? Did every patient treated in the 12 month period have a pulmonary artery catheter or were only those with a PAC included in the study? Did the authors control for selection bias?
- Page 5: How were the risk factors defined (hypertension, diabetes, positive family history, peripheral artery disease, neurocerebral events, COPD, renal dysfunction etc.)?
• Page 6: What were the primary and secondary endpoints?
• Page 6: The use of tests is not appropriate: The Student’s T would be appropriate for scaled variables, not Fisher’s exact test. Fisher’s is appropriate for categorical variables.
• Page 6: The statistics section mentions a multifactorial analysis, but no details. There are no results of this analysis presented or discussed.
• Page 8: From the data one cannot deduct that that statin use did not influence mortality, only that you saw no association. Was the power of the study adequate to detect changes in mortality?
• Page 9: “quite uniform” is very vague, please rephrase.
• Page 12: “The data of this study showed that there was no benefit …” is not supported by the results and the analysis. However “The results of this study do not support a benefit in perioperative statin therapy…” would be valid.
• Tables: The tables lack legends.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

No conflicts of interest.