Reviewer's report

Title: Atrial fibrillation following cardiac surgery: Risk analysis and long-term survival

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Reviewer: Sten Lyager Nielsen

Reviewer's report:

This is an interesting paper studying potential risk factors for postoperative atrial fibrillation (POAF) in a large cohort of patients who underwent open heart surgery. Among 744 patients without prior history of AF who underwent CABG (n=513), OPCAB (n=207), and/or AVR (n=156) at Landspitali Hospital in 2002–2006 the rate of POAF was 44%, and was higher following AVR (74%) than after CABG (44%) or OPCAB (35%).

The objective of the study is clear. The title and abstract accurately convey what has been found, the data reporting adhere to relevant standard.

The major strengths of this retrospective study is that the patients represent an unselected population of patients referred for cardiac surgery in Island (no selection bias), completeness of follow-up (no patients were lost during follow-up) and the comprehensive 6-days constant postoperative monitoring of all patients undergoing cardiac surgery. Therefore, the reported incidence of POAF is quite high but probably more realistic compared to studies in which postoperative telemetry is only conducted on indication.

The discussion and conclusion is well-balanced and the authors also demonstrate appropriate reservation for interpreting cause-effect relationship in this retrospective cohort study.

Minor Essential Revision

In a multivariate analysis, the authors show that AVR (OR 4.4), a preoperative history of cardiac failure (OR 1.8), higher EuroSCORE (OR 1.1), and advanced age (OR 1.1) were independent prognostic (predictive?/risk?) factors for POAF.

Without having consulted statistical expertise I am concerned on this part of the analysis. I believe that a finalized logistic regression model must be based on independent risk factors for POAF; however cardiac failure (Ejection fraction), AVR (other surgery than CABG) and age are all components of EuroSCORE, and therefore the proposed risk factors are closely interrelated. To avoid this interference, I will suggest a more straightforward analysis in which the individual (or major) components of Euroscore are included in the regression model (e.g. age, LVEF, AVR, previous surgery, pulmonary, renal cerebrovascular disease) to identify essential risk-factors for POAF. The remaining statistical analysis appears sound and well controlled.
Level of interest: An article of importance in its field

Quality of written English: Acceptable

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

Declaration of competing interests:

Consultant for Edwards Lifesciences in valve repair programme