LETTERS TO THE EDITOR

Impact of preoperative statin therapy on adverse postoperative outcomes in patients undergoing cardiac surgery: a meta-analysis of over 30 000 patients

We congratulate Liakopoulos et al.1 upon the publication of their meta-analysis and would be grateful that their result of early all-cause mortality strengthens that of our preceding meta-analysis.2 Their meta-analysis of crude odds ratio (OR) from 15 studies with 28 517 patients revealed a 43% reduction in mortality (OR 0.57; 95% confidence interval [CI] 0.49–0.67; P < 0.0001 for overall effect) in patients receiving statins before cardiac surgery. The 15 studies, however, included two studies presented at a scientific meeting (not full-text publication) and the study by Powell et al.3 in which the statin group included 14% on other lipid-lowering therapy. Furthermore, they astonishingly excluded their own study4 that completely meets the inclusion criteria of their meta-analysis. On the other hand, our meta-analysis5 included exclusively 13 full-text publication with 19 542 patients: the remaining 12 studies except for the above-mentioned three studies in the meta-analysis by Liakopoulos et al. plus their own study5 that was excluded in their meta-analysis. Pooled analysis of crude ORs from all 13 studies demonstrated a 45% reduction in mortality with preoperative statin therapy (OR 0.55; 95% CI 0.46–0.66; P < 0.0001 for overall effect)2 that is similar to the result by Liakopoulos et al. Six of the 10 observational studies included in our meta-analysis reported adjusted ORs for mortality by multivariate analysis or propensity score matching; when adjusted ORs from these six observational studies and crude ORs from the three randomized, controlled trials were pooled (representing 18 637 patients), preoperative statin therapy was associated with a 24% reduction in mortality (OR 0.76; 95% CI 0.46–0.90; P < 0.01 for overall effect).2 Additionally, pooled analysis of adjusted and crude ORs, respectively, from three observational studies and two randomized, controlled trials that enrolled patients undergoing coronary artery bypass graft surgery exclusively (representing 7205 patients) demonstrated a 41% reduction in mortality with preoperative statin therapy (OR 0.59; 95% CI 0.36–0.97; P = 0.04 for overall effect).2 In a meta-analysis of observational studies, to correct for and minimize selection bias that exists in observational studies, not crude but adjusted ORs would do better to be combined.

References

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Impact of preoperative statin therapy on adverse postoperative outcomes in patients undergoing cardiac surgery: a meta-analysis of over 30 000 patients: reply

We would like to thank Dr Tahaki et al.1 for their comments that underscore the findings of our meta-analysis with regard to the favourable effect of statin treatment on the endpoint early all-cause mortality after cardiac surgery. In their systematic review,2 which exclusively included evidence from full-text publications of 19 542 cardiac surgery patients, the authors report a similar reduction in postoperative mortality following pooled analysis of crude odds ratios (ORs). Moreover, this favourable effect of a statin pre-treatment persisted even after accounting for adjusted ORs from included observational trials. Although this observation appears to further augment the benefits of a statin therapy prior to cardiac surgery, it should be taken into consideration that confounding variables adjusted for by multivariate analysis or propensity score matching varied among observational studies. Thus, the definite impact of a possible selection and treatment bias derived from this mainly observational data sets remains unclear even after meta-analysis and, especially, with regard to the unequal preoperative use of other known cardioprotective agents such as β-blockers and aspirin that favours statin pre-treated patients.

Only a randomized, controlled trial, with pre-specified statin agents, doses, and clearly defined perioperative treatment periods, will warrant equal distribution of confounding variables among treatment groups and allow definite conclusions about the independent effects of a preoperative statin therapy on early adverse outcomes in cardiac surgery patients. We hope that the present debate will stimulate the initiation of such a trial to investigate these clinically relevant and important questions.

References

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