LETTERS TO THE EDITOR

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**Statins in perioperative prevention of acute kidney injury in patients undergoing cardiac surgery**

I would like to congratulate Liakopoulos et al. on their excellent work on the impact of preoperative statin use and adverse outcomes. There is a paucity of data on the role of statins preventing acute kidney injury (AKI) in cardiac surgery. However, in their analysis, the authors do not distinguish between AKI and need for dialysis for the purpose of their meta-analysis. In one of the included studies, Theilman et al. report renal failure as requirement of haemodialysis whereas other studies included in the current meta-analysis do not give a clear distinction. If Liakopoulos et al. clarified the study definitions of renal failure with individual primary authors, it would be beneficial to know whether the outcomes pertain to AKI or dialysis. Given the small sample sizes of the included studies, the role of statins in preventing AKI in cardiac surgery has a potential for further investigation.

**Reference**


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**Physical exertion and triggering of myocardial infarction**

von Klot et al. reported that the risk of having myocardial infarction triggered by physical exertion exhibits an exposure–response relationship. This is the first study showing the increased risk of infarction associated with moderate exertion defined as five metabolic equivalents (METs). One previous case–crossover study found no increase in relative risk for mild-to-moderate exertion of three to five METs. Accordingly, in contrast to relatively safe activities of up to four METs, more vigorous activities may bring proportional cardiovascular risk. As, in observational studies on triggering circumstances, mild-to-moderate activities precede average 29% of the infarction onsets in the general population, the significance of moderate exertion in the triggering may be greater than thought before.

One of the most interesting findings of the present study is that among elderly, exercise was associated with a four-times greater risk of myocardial infarction when performed outdoors than indoors, which could not be explained by air temperature.

Indoor activities are usually performed in more controlled and predictable conditions than outdoor activities. Outdoors, a person is more directly exposed to the influence of all weather elements, including wind and rain. Outside activities could also be more associated with unexpected situational factors or distractions that may act as bouts of additional emotional stress.

Exertion is probably a much powerful trigger and outweighs the effect of environmental factors. However, the major confounding may come from the fact that the temperature is not an isolated variable. Change in only one meteorologic factor practically does not occur; it is uneasily interrelated with other factors. Multiple confounding cannot be adequately controlled for, which may cause an incorrect estimation of the effect of a single factor. While one recent study observed modifying effect of atmospheric pressure but not temperature on the risk of cardiac incident associated with soccer matches as a possible emotional

**Statins in perioperative prevention of acute kidney injury in patients undergoing cardiac surgery: reply**

We appreciate the constructive comments by Dr Kandula with regard to our meta-analysis and the potential renoprotective role of statins in patients undergoing cardiac surgery. As correctly stated by the author, only a few studies (n = 5) reported data on the endpoint renal failure with variable definitions, including need for postoperative dialysis or elevated creatinine levels (＞2.0 mg/dL). A clear distinction between the impact of statins on acute kidney injury and the need for dialysis after cardiac surgery was impossible in retrospect and after detailed evaluation of included studies. Therefore, the primary authors’ definitions were accepted for meta-analysis purposes. As stated in our study, this resulted in significant heterogeneity among studies (I² = 58.3%; P = 0.05) with unknown impact on the reported estimated statin treatment effect for the endpoint renal failure (OR 0.78; 95% CI 0.46–1.31; P = ns). Of note, the only study investigating the effects of statins on new-onset renal failure in 1282 patients undergoing myocardial revascularization by Tabata et al. revealed a 61% reduction in the odds for renal failure in propensity-matched cohorts (OR 0.39; 95% CI 0.18–0.82; P = 0.01), but was restricted by its retrospective design. In view of the limited clarity of available data, we fully support Dr Kandula’s demand for future trials investigating the potential renoprotective role of statins in cardiac surgery.

**References**


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