



Literature Reviews

Randomized trial of atorvastatin for reduction of postoperative atrial fibrillation in patients undergoing cardiac surgery: Results of the ARMYDA-3 (atorvastatin for reduction of myocardial dysrhythmia after cardiac surgery) study.

Patti G, Chello M, Candura D, Pasceri V, D'Ambrosio A, Covino E, Sciascio G. *Circulation* 2006;114:1455-1461.

Reviewer:

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Abstract Excerpt

Postoperative atrial fibrillation (AF) is associated with increased risk after cardiac surgery. This the first prospective, double-blind, placebo-controlled study conducted to determine the potential beneficial effects of statins administered seven days preoperatively to patients undergoing elective cardiac surgery associated with cardiopulmonary bypass. Two hundred subjects were included in the study and randomized to receive either 40 mg of atorvastatin or placebo seven days preoperatively. The primary end-point was AF and secondary end-points included hospital length of stay, 30-day major adverse cardiac and cerebrovascular events, and postoperative C-reactive protein variations. Although the incidence of major adverse events at 30 days was comparable, the incidence of AF was significantly ($p=0.003$) lower in the treatment group (35%) versus the placebo group (57%). The length of stay was shorter in the treatment group (6.3 days versus 6.9 days) and the peak C-reactive protein levels were significantly lower in the patients who did not develop AF, without regard to assignment.

Reviewer's Comments

The development of AF after cardiac surgery is a well-known complication that can lead to prolonged hospital stay, increased cost, and extended ventilatory support and use of vasopressors. Previous retrospective analyses have shown statin use is correlated with a decreased incidence of postoperative AF. The mechanism for AF postoperatively following cardiac surgery perhaps involves modulation of the systemic inflammatory response.

Recent studies have shown a decrease in cytokine release and other inflammatory mediators in patients who are being treated with statins. The potential protective mechanism of statins may be due to the pleiotropic functions of statins, i.e., their ability to modulate the inflammatory cascade by decreasing cytokines and other mediators of the inflammatory process. Therefore, statin use may be associated with a decreased incidence of AF in this patient population.

There are several limitations to this study. Firstly, only 21% of the patients that were included in this study underwent valvular procedures. The incidence of AF is higher in this group that is disproportionately represented, and therefore could have skewed the results. Secondly, the authors noted a higher incidence of AF than previously reported in the literature, which may account for a larger difference between the two groups. Thirdly, the subjects were not followed throughout the month with regular electrocardiograms and therefore, brief episodes of AF that may or may not become significant greater than one month out could have been missed. And, finally, all patients enrolled in the study received atorvastatin upon discharge, therefore confounding the results in the placebo group.

Statin use has potential beneficial effects with respect to both cardiac and overall morbidity and mortality. Essentially, this study attempted to define the time interval necessary for statins to exert their potential beneficial effects. This study has some important implications with respect to the preoperative workup in this patient population. It raises the question of whether or not statin therapy should be initiated in all patients who are coming in for cardiac surgery, regardless of their lipid profile. And finally, whether or not this effect is accentuated if treatment is started earlier or later remains to be seen.