OTHER PAPERS

Oral amiodarone prophylaxis reduces atrial tachyarrhythmia following cardiac surgery

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Background

There is some evidence that amiodarone may reduce atrial tachyarrhythmias after cardiac surgery, but previous studies have been small.

Objective

Mitchell and colleagues examined whether oral amiodarone before and after surgery is safe and effective for reducing atrial tachyarrhythmias after cardiac surgery. The primary endpoint was incidence, up to 6 days after surgery, of atrial tachyarrhythmias lasting five minutes or more that required treatment.

Method

One tertiary care hospital in Canada enrolled participants in this double-blind randomised controlled trial between February 1999 and September 2003. Follow up ended after one year.

Participants

Participants were 601 adults undergoing non emergent coronary artery bypass grafting, valve replacement or repair, or both. Mean age 62 years; 28% were women. Groups were stratified by age, type of surgery, and use of preoperative beta-blockers.

Intervention

Participants received 10 mg/kg daily oral amiodarone or placebo for 13 days: six days prior to surgery, the day of surgery, and six days after surgery.

Main results

People receiving amiodarone had a lower incidence of atrial tachyarrhythmias compared to controls (16.1% vs. 29.5%, hazard ratio 0.52, 95% CI 0.34 to 0.69, \( p < 0.001 \)). This trend was sustained in people younger than 65 years, in people older than 65 years, in people who had CABG surgery alone, in people who had valve replacement or repair with or without CABG, in people who received preoperative beta-blockers, and in people who did not receive preoperative beta-blockers. People receiving amiodarone were more likely than controls to have their dosage reduced (11.4% vs 5.3%, \( p = 0.008 \)). There were no significant differences between groups in serious postoperative complications, in-hospital mortality, readmission within six months, or one-year mortality.

Authors’ conclusions

The authors concluded that oral amiodarone is safe and effective for reducing atrial tachyarrhythmias after cardiac surgery for a variety of subgroups.

Overall quality

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Commentary

Atrial tachyarrhythmias are common after cardiac surgery, occurring in 30% to 50% of people. They are a significant source of morbidity after surgery and lead to increased costs and hospital stay. One strategy to prevent these arrhythmias has been to administer antiarrhythmic drugs such as amiodarone. Previous studies in this field have been small and yielded somewhat conflicting results, although there appeared to be agreement that older people and those undergoing valve surgery would be most likely to benefit. Shorter durations of amiodarone therapy preoperatively have not been found to be effective.

This study’s contribution

At 601 patients, the PAPABEAR study was large enough to examine the effect of treatment not only in the overall population, but also in important subgroups. Amiodarone reduced the incidence of postoperative atrial tachyarrhythmias lasting more than five minutes that required therapy. The incidence of sustained ventricular arrhythmias was also lower in the amiodarone group.

Implications

Since the incidence of atrial tachyarrhythmias was highest in older people, those undergoing valve surgery (with or without CABG), and those not receiving beta-blockers, amiodarone would seem to be most attractive for these subgroups. The number of these people who had to be treated in order to prevent one patient from having an arrhythmia was only five, a highly attractive ratio for a pharmaceutical intervention. Even when atrial arrhythmias occurred in the amiodarone group, the rate was slower than in controls.

There was no significant difference in length of hospital stay. However, other studies, including a meta-analysis, have found a significant reduction in hospital stay with amiodarone treatment.

Caveats

The need to start amiodarone treatment six days before surgery is a limitation of this strategy. Clearly this approach would not work in people undergoing emergent surgery. Even with elective procedures, it would take a coordinated effort between the cardiologist and the surgeon to initiate amiodarone treatment sufficiently in advance of surgery in order to have an impact on postoperative arrhythmias. It should also be noted that although beta-blockers have long been found to be effective in preventing postoperative atrial arrhythmias after cardiac surgery, many people still do not receive this fairly simple therapy.

While there were significant differences in the primary endpoint of this study and in one set of secondary endpoints (incidence of atrial arrhythmias in the pre-specified subgroups), there were no significant differences in other important secondary endpoints. There was no difference in the mean number of atrial tachyarrhythmia episodes per person, the duration of the longest episode, the postoperative day of onset, or the total arrhythmia burden per person. The conclusion one could draw from these results is that amiodarone is highly effective in reducing the number of people who will experience postoperative atrial tachyarrhythmias, but if they occur, they are likely to be as recurrent and long-lasting as in people taking placebo.

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References


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