Imagine all the people...

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Postoperative atrial fibrillation (AF) after anatomic lung resection is a recognized and common complication, affecting approximately 12% of patients undergoing lobectomy or greater lung resection.^{1,2} Although most cases of AF are not the sole cause of procedure-related mortality, its occurrence is an inconvenience for both patients and surgeons, resulting in longer intensive care unit and hospital stays as well as the need for additional therapies and procedures, such as systemic anticoagulation, antiarrhythmic medication, and cardioversion. Methods for reducing postoperative AF have long been the subject of study for thoracic surgeons; both modifiable and nonmodifiable risk factors for development of postoperative AF have been identified, including age, sex, extent of resection, and clinical stage. To this end, guidelines have been published regarding management and prevention of this condition.^{3,4} To date, however, the only class I, level A evidence recommendation for preventing postoperative AF is to continue β -blockade in the perioperative setting for patients who were taking β -blockers before surgery.

In the American Association for Thoracic Surgery's 2014 guidelines for management of AF,³ it is noted that atorvastatin may be considered for prevention of postoperative AF in patients who have not received statins and are scheduled for intermediate- and high-risk thoracic procedures (class IIB, level of evidence C). In this issue of the *Journal of Thoracic and Cardiovascular Surgery*, Amar and colleagues⁵ present a well-designed, single-institution, double-blind clinical trial of perioperative atorvastatin versus placebo in patients undergoing lung resection. Study subjects were randomly allocated to receive atorvastatin or placebo for 1 week before and 1 week after lung resection, with outcome measures of major postoperative complications as well as serum inflammatory markers. Regrettably, because of challenges with accrual of study subjects who had never received statins, the study was

reduced in scope and subsequently stopped at the interim analysis, far short of its original intended accrual.

In this study, the incidence of postoperative AF after anatomic lung resection was 20%, well within the range reported by other studies. A major finding of the study, reduction in postoperative AF by nearly 50% in patients undergoing anatomic resection and receiving atorvastatin, is potentially clinically significant but was not statistically significant. The study results, if confirmed in a larger cohort and generalizable fashion, have great potential to improve the care of our general thoracic patient population. The difficulty of Amar and colleagues⁵ in enrolling patients at their institution who had never received statins, however, likely led to the study being underpowered and thus contributed to the finding that the difference in incidence of postoperative AF between the groups was not statistically significant. This underscores the need for multicenter or cooperative group trials to investigate further the efficacy of therapies such as this. One can imagine the benefits of a 50% reduction in postoperative AF, if applied to the general thoracic patient population at large, in both patient care and economic terms. A 30-day supply of generic atorvastatin costs on average \$120. In purely economic terms, spending \$60 to prevent \$6000 in increased hospital costs² for patients affected by postoperative AF simply makes sense. We owe it to our patients to collaborate on future studies like these to either definitively demonstrate or refute the utility of this therapy in preventing AF after major lung resection.

Some known risk factors for postoperative AF are nonmodifiable. One can imagine that with a study of perioperative statins in specific patient subpopulations undergoing major lung resection (eg, older patients undergoing pneumonectomy), we can further separate specific patient populations that will benefit from prophylaxis from those that will not, thus decreasing the risk of medication-related adverse events and side effects. Clearly a study of this magnitude would require multi-institutional effort and cooperation.

Another notable finding of the study is that atorvastatin use was associated with an overall lower rate of major pulmonary and cardiovascular complications in the subset analysis of patients who underwent anatomic lung resection. One potential mechanism underlying the reduction in these postoperative complications is the anti-inflammatory pharmacologic action of the statins; however, there were no significant differences in the plasma levels of the measured inflammatory markers. It is a shame that at this point the reasons for this finding remain unknown.

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Imagine all the people who could potentially have benefited from the knowledge gained by this trial had it accrued as originally intended. With continued enthusiasm and surgeon commitment to multicenter clinical trials, we will be able to elucidate further the role of therapies such as this in preventing complications after lung resection.

References

1. Onaitis M, D'Amico TA, Zhao Y, O'Brien S, Harpole D. Risk factors for atrial fibrillation after lung cancer surgery: analysis of the Society of Thoracic Surgeons general thoracic surgery database. *Ann Thorac Surg*. 2010;90:368-74.
2. Vaporciyan AA, Correa AM, Rice DC, Roth JA, Smythe WR, Swisher SG, et al. Risk factors associated with atrial fibrillation after noncardiac thoracic surgery: analysis of 2588 patients. *J Thorac Cardiovasc Surg*. 2004;127:779-86.
3. Frendl G, Sodickson AC, Chung MK, Waldo AL, Gersh BJ, Tisdale JE, et al; American Association for Thoracic Surgery. 2014 AATS guidelines for the prevention and management of perioperative atrial fibrillation and flutter for thoracic surgical procedures. *J Thorac Cardiovasc Surg*. 2014;148:e153-93.
4. Fernando HC, Jaklitsch MT, Walsh GL, Tisdale JE, Bridges CD, Mitchell JD, et al. The Society of Thoracic Surgeons practice guideline on the prophylaxis and management of atrial fibrillation associated with general thoracic surgery: executive summary. *Ann Thorac Surg*. 2011;92:1144-52.
5. Amar D, Park B, Zhang H, Shi W, Fleisher M, Thaler HT, et al. Beneficial effects of perioperative statins for major pulmonary resection. *J Thorac Cardiovasc Surg*. 2015;149:1532-8.

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