REFERENCES

1. Aoukar PS, Poole JE, Johnson GW, et al. No benefit of a dual coil over a single coil ICD lead: evidence from SCD-HEFT. Circulation 2010;122:A13672.
2. Mokabberi R, Haftbaradaran A, Pranesh S, et al. Defibrillation thresholds in single versus dual coil ICD lead systems: is there any difference? Circulation 2011;124:A17919.
3. Neuzner J, Carlsson J. Dual- versus single-coil implantable defibrillator leads: review of the literature. Clin Res Cardiol 2012;101:239–45.
4. Maytin M, Love CJ, Fischer A, et al. Multicenter experience with extraction of the Sprint Fidelis implantable cardioverter-defibrillator lead. J Am Coll Cardiol 2010;56:646–50.
5. Wilkoff BL, Love CJ, Byrd CL, et al. Transvenous lead extraction: Heart Rhythm Society expert consensus on facilities, training, indications, and patient management. Heart Rhythm 2009;6:1085–104.

Letters to the Editor

Is Prolong Use of Statins Associated With Increase in the Risk of Diabetes?

The study by Wang et al. (1) assessed the risk of diabetes associated with statin use in the general population. The authors concluded that statin therapy is associated with an elevated risk for diabetes. However, the study does not indicate the classes or proportion of the different antihypertensive drugs (AHDs) administered in the statin-treated and control populations. This information is imperative because thiazide diuretics and specific beta-blockers exhibit undesirable glycemic effects.

Assessment of the ALLHAT study (Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial) revealed that the 4-year incidence of new-onset diabetes mellitus was significantly elevated in the chlorthalidone group compared with either the amlodipine or lisinopril group (11.6% vs. 9.8% and 8.1%, respectively; $p < 0.05$) (2). Comparable outcomes were also obtained from the INSIGHT (International Nifedipine GITS Study of Intervention as a Goal in Hypertension Treatment) and ASCOT-BPLA (Anglo-Scandinavian Cardiac Outcomes Trial–Blood Pressure Lowering Arm) trials (3,4). These effects of diuretic AHDs on glucose metabolism are plausibly due to hypokalemia induced by these drugs.

Hyperglycemia induced by beta-blockers is due to the reduction in peripheral blood flow, followed by the channeling of blood away from locales of glucose uptake, thereby reducing glucose clearance. A systematic review by Elliott and Meyer (5), with 48 randomized groups of 22 clinical trials involving 143,153 participants, revealed that association of AHDs with incident diabetes is the highest for beta-blockers and diuretics (in rank order).

Therefore, the question that remains unrequited in the current study – "Is the adverse glycemic effect of statins observed in the present study getting augmented, as a greater number of subjects in the statin-group are being treated for hypertension with diuretics or beta-blockers?"

Furthermore, a prospective population-based cohort study by Dunder et al. (6) examined the impact of blood glucose elevation on the risk of developing myocardial infarction in individuals between 50 and 60 years of age who were receiving AHDs. They found that the elevated blood glucose and proinsulin levels produced by use of diuretics and beta-blockers were linked to the increased risk of myocardial infarction in these subjects. Therefore, in the current study, if the statin-treated group has a higher number of subjects receiving diuretics and beta-blockers, then the favorable outcome of statins may be further augmented.

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REFERENCES

1. Wang KL, Liu CJ, Chao TF, et al. Statins, risk of diabetes, and implications on outcomes in the general population. J Am Coll Cardiol 2012;60:1231–8.
2. ALLHAT Officers and Coordinators for the ALLHAT Collaborative Research Group. The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial. Major outcomes in moderately hypercholesterolemic, hypertensive patients randomized to pravastatin vs usual care: The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT-LLT). JAMA 2002;288:2998–3007.
3. Brown MJ, Castaigne A, Ruilope LM, et al. INSIGHT: international nifedipine GITS study intervention as a goal in hypertension treatment. J Hum Hypertens 1996;10 Suppl 3:S157–60.
4. Dahlof B, Sever PS, Poulter NR, et al. Prevention of cardiovascular events with an antihypertensive regimen of amlodipine adding perindopril as required versus atenolol adding bendroflumethiazide as required, in the Anglo-Scandinavian Cardiac Outcomes Trial-Blood Pressure Lowering Arm (ASCOT-BPLA): a multicentre randomised controlled trial. Lancet 2005;366:895–906.
5. Elliott WJ, Meyer PM. Incident diabetes in clinical trials of antihypertensive drugs: a network meta-analysis. Lancet 2007;369:201–7.
6. Dunder K, Lind L, Zethelius B, Berglund L, Lithell H. Increase in blood glucose concentration during antihypertensive treatment as a predictor of myocardial infarction: population based cohort study. BMJ 2003;326:681.

Reply

We thank Dr. Banerjee for his comments regarding our publication on statin therapy and the risk of incident diabetes (1). He highlighted for us the importance of diabetogenic effects of concomitant medications, particularly diuretics and beta-blockers, which have been independently associated with a higher risk of diabetes (2,3).

The effects of diuretics and beta-blockers were essential in our analysis because 73.9% of subjects in our population had hypertension and 8.6% had heart failure. Our approach of matching measurable comorbid risks to establish the study cohort resulted in a similar distribution of demographic characteristics and cardiovascular comorbidities. There was no significant difference in the proportions of diuretic and beta-blocker use among the control group and the statin group (13.1% vs. 13.0%, $p = 0.795$ [diuretics]; 34.5% vs. 34.3%, $p = 0.693$ [beta-blockers]). Statins, diuretics, and beta-blockers were associated with an increase in risk of incident diabetes; hazard ratios (95% confidence intervals) were