Real-Life Results of Statin Therapy Fall Short

Frolkis JP, Pearce GL, Nambi V, et al. Statins do not meet expectations for lowering low-density lipoprotein cholesterol levels when used in clinical practice. Am J Med 2002;113:625–9.

Study Overview

Objective. To compare the results of low-density lipoprotein (LDL) cholesterol lowering using statin medications in clinical practice with the results expected from clinical trials.

Design. Prospective observational cohort.

Setting and participants. 454 patients receiving care at a preventive cardiology clinic in Cleveland who were not using statin medications at their initial visit but who had one prescribed were eligible. 57% of these patients had coronary artery disease.

Intervention. All patients were prescribed atorvastatin (n = 133), pravastatin (n = 162), or simvastatin (n = 72) at the discretion of their clinicians.

Main outcome measures. Observed LDL reduction compared with expected LDL reduction and the ratio of observed LDL reduction to expected. Expected LDL reduction was taken from the medication package inserts.

Main results. 367 (81%) of the eligible patients returned for follow-up LDL testing, and the mean time to follow-up was 4.3 months. Patients who did not return were younger and more likely to be smokers. The observed LDL reduction was significantly less than expected for each of the 3 statins (26% ± 20% SD observed versus 34% ± 7% SD expected; $P < 0.001$). The observed to expected ratio was 0.79 for the entire cohort ($P < 0.001$) and was not significantly different among the 3 statins used (0.79 ± 0.48 SD for atorvastatin, 0.88 ± 0.61 SD for pravastatin, and 0.75 ± 0.69 SD for simvastatin; $P < 0.39$). 27% of patients had less than half the expected LDL decrease, and 38% had more than the expected amount of LDL reduction.

Conclusion. In a clinical setting, statin medications led to less LDL lowering than reported in trials summarized in package inserts.

Commentary

In this population of patients prescribed statin medications for primary and secondary prevention, LDL lowering clearly fell short of the results obtained in clinical trials. Had the 19% of patients who were lost to follow-up returned for laboratory monitoring, the shortfall would have been even more pronounced. Unlike in the clinical trials, where there was a more evenly distributed range of cholesterol reduction, in this study a subgroup had better than expected LDL lowering but another substantial subgroup had little or no reduction in LDL. The authors are correct to point out that medication nonadherence is the best explanation for the observed differences.

Several factors can lead patients not to fill their prescriptions or not to persist with treatment once begun. These factors can apply very differently to patients within and outside of randomized trials. Medication cost is generally not an issue in randomized trials but can be a major obstacle to adherence in practice. Lack of insurance and high out-of-pocket expenses are known barriers to preventive and chronic disease care. Medicare patients with coronary heart disease who lack supplemental drug coverage are much less likely to use statins compared with those who have coverage, but this difference is not nearly as dramatic for less costly drugs, such as β blockers or nitrates [1]. Second, clinical trials often have more organizational and staff support to improve adherence than what is available in routine practice. Lastly, the general public may have more unfavorable attitudes towards medications than do volunteers who participate in clinical trials. These views could lead to less willingness to use a medication or towards worse perceived side effects once medication is begun.

Applications for Clinical Practice

Routine results from statin medication use are likely to fall short of those seen in clinical trials. When the expected cholesterol reduction does not occur, clinicians should explore the possibility of nonadherence with their patients. When prescribing a chronic medication like a statin, clinicians should be alert to a variety of practical barriers to medication adherence.

–Review by Stephen D. Persell, MD

References

1. Federman AD, Adams AS, Ross-Degnan D, et al. Supplemental insurance and use of effective cardiovascular drugs among elderly medicare beneficiaries with coronary heart disease. JAMA 2001;286:1732–9.