Lipid control in patients with coronary heart disease treated in primary care or cardiology clinics

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BACKGROUND: Guidelines recommend low-density lipoprotein-cholesterol (LDL-C) target of <70 mg/dL in patients with coronary disease. However, this goal is not achieved in many patients.

OBJECTIVES: We compared LDL-C control in patients with coronary disease treated by a primary care physician or with the addition of a cardiologist.

METHODS: Included were patients with coronary disease who had full lipid profile. Primary end points included the percentage of patients who achieved the LDL-C goals of <100 mg/dL and <70 mg/dL.

RESULTS: Of the 27,172 patients, 12,965 (47.7%) were followed only by a primary care physician and 14,207 (52.3%) were also followed by a cardiologist. Overall, 18,366 patients (67.6%) achieved the LDL-C goal of <100 mg/dL, and 6517 patients (24%) achieved the LDL-C goal of <70 mg/dL. Patients followed by a cardiologist more frequently achieved the LDL-C goal of <100 mg/dL (74.3% and 60.3%; $P < .0001$, in patients treated by a cardiologist or by a primary care physician, respectively), as well as the lower LDL-C goal of <70 mg/dL (27.2% and 20.4%; $P < .0001$, in patients treated by a cardiologist or by a primary care physician, respectively). Differences in LDL-C control remained significant after a multivariate adjustment. Patients followed by a cardiologist were more commonly treated with highly potent statins and with non–statin cholesterol-lowering drugs.

CONCLUSIONS: Among patients with coronary disease, those followed by a cardiologist receive a more aggressive antilipid treatment and more frequently achieve lipids goals. Nevertheless, the disappointingly poor lipid control in both groups warrants an effort to improve adherence for guidelines in both primary care and cardiology clinics.
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Optimal lipid control is one of the cornerstones of secondary prevention in patients with coronary heart disease (CHD) and has been well documented to reduce

the risk of cardiovascular events in this high-risk population.[1,2] On the basis of this observation a target low-density lipoprotein cholesterol (LDL-C) of <70 mg/dL has been recommended in patients with clinically evident CHD.[3,4] However, previous studies have shown disappointingly poor lipid control with most patients with CHD not achieving the optimal lipid goals.[5,6] A recent study has reported that, although among patients with CHD treated in a cardiology clinic, 79% achieve an LDL-C goal of <100 mg/dL, LDL-C levels <70 mg/dL were achieved in only 35% of patients.[7] Similar findings have been reported in another large international cohort in which only 30% of patients with CHD attained the LDL-C goal of <70 mg/dL.[8] However, these studies included selected patients; therefore, they may not reflect trends in achieving lipid goals in the "real world" and especially the practice of the primary care physicians. The purpose of this study was to compare lipid control of patients with CHD treated only by a primary care physician or also by a cardiologist.

Methods

Study population

The cohort included residents of the Sharon-Shomron district who were medically insured by the Clalit Health Services, the largest health maintenance organization in Israel. Clalit Health Services insures most of the district population that is mostly urban, and its computerized database was the source of data for our study. All medical information obtained at the primary care clinics is recorded in the database and can be accessed at the level of the individual patient. Each primary care physician is responsible for updating the computerized medical records routinely during each patient visit and after any hospital admission. The database includes a list of all diagnoses, demographic data, laboratory values, medications, and medical procedures. Data from ambulatory cardiology clinics in the Sharon-Shomron district are recorded in the database and are available for analysis similar to the primary care clinics.

Study design

A cross-sectional study included women and men 18 years of age or older with a history of CHD before January 1, 2010, who had at least 1 full lipid profile available during 2010. In patients with >1 complete lipid panel, the most recent panel was used. CHD was defined when the diagnosis of myocardial infarction or coronary revascularization with either percutaneous coronary interventions or coronary artery bypass grafting surgery appeared in the medical records. Follow-up by a cardiologist was defined by at least 1 visit at an ambulatory cardiology clinic during the year of the study (2010), in addition to regular follow-up by a primary care physician.

Age, sex, cigarette smoking status, diabetes mellitus, hypertension, body mass index (BMI; calculated as weight divided by height; kg/m^2), and current lipid-lowering medications were extracted from the electronic medical records.

Study end points

The primary end points were the percentage of patients who achieved the LDL-C goal of <100 mg/dL and the percentage of patients achieving LDL-C goal of <70 mg/dL. We also examined the percentage of patients treated with the more-potent statins (atorvastatin and rosuvastatin), ezetimibe, or niacin. Furthermore, adherence for medical treatment was assessed by examining the actual collection of medications from the pharmacy. All outcomes were compared between patients who were followed only by their primary care physicians or also by a cardiologist.

Laboratory analysis

The measurement of serum lipids was performed on fresh samples in a core laboratory facility. The laboratory is authorized to perform tests according to the international quality standard ISO-9002. Periodic assessment of quality control is performed regularly. All measured biochemical markers were identified with the use of a BM/Hitachi917 automated analyzer (Boehringer Mannheim).

Ethical considerations

The study was approved by the local institutional ethics committee in keeping with the principles of the Declaration of Helsinki. In accordance with Ministry of Health regulations, the institutional ethics committee did not require written informed consent because data were collected anonymously from the computerized medical files, with no active participation of patients.

Statistical analysis

The study subjects were stratified into 2 groups. The first group included patients who were followed solely by a primary care physician. The second group consisted of patients who were also followed in a cardiology clinic. The baseline clinical characteristics of the 2 groups as well as the study's outcomes were compared with analysis of variance test for continuous variables and χ^2 test for nonparametric variables. Multivariate logistic regression analysis methods were applied to control confounding effects with the study outcomes (achieved vs not achieved and cardiology clinic vs primary care physician visit) as the dependent variable and predictors of age, sex, cigarette smoking, BMI, hypertension, triglycerides, diabetes, medication group, and adherence as the independent variables. Statistical analysis was performed with the use of Statistical Package for the Social Sciences software for Windows version 17.0 (SPSS Inc).