PHYSICAL EXAMINATION AND LABORATORY RESULTS

Physical examination revealed the following: height, 60 inches; weight, 150 lb; body mass index (BMI), 25.1 kg/m²; blood pressure, 130/84 mm Hg; and heart rate, 78/min. Laboratory evaluation showed no evidence of statin-induced myopathy. A fasting lipid profile revealed a total cholesterol level of 324 mg/dL, low-density lipoprotein cholesterol (LDL-C) level of 229 mg/dL, high-density lipoprotein cholesterol (HDL-C) level of 64 mg/dL, and triglyceride level of 154 mg/dL. The lipoprotein (a) [Lp(a)] was 35 mg/dL. Additional laboratory tests showed a homocysteine level of 10.3 µmol/L, fasting blood glucose of 84 mg/dL, creatine phosphokinase level of 18 U/L, aspartate aminotransferase level of 18 U/L, and alanine aminotransferase level of 20 U/L.

DIAGNOSIS AND TREATMENT

The most likely cause of this patient's hypercholesterolemia was polygenic hypercholesterolemia; she also had prior myositis resulting from statin therapy. The patient was advised to follow the Mediterranean diet and was instructed to keep her caloric intake at approximately 1500 kilocalories per day. In addition, she was to supplement her diet with a multivitamin containing folic acid. Pravastatin, 20 mg daily, was added to her existing medication regimen, and she was referred to the clinic's exercise evaluation and instruction program.

FOLLOW-UP

At 6-week follow-up, no change was noted in the patient's weight or blood pressure. Her total cholesterol level was reduced to 245 mg/dL, with an LDL-C level of 164 mg/dL and an HDL-C level of 60 mg/dL, and a triglyceride level of 105 mg/dL. Additional laboratory evaluation showed an aspartate aminotransferase level of 20 U/L, alanine aminotransferase level of 24 U/L, and creatine phosphokinase level of 158 U/L. Her Lp(a) level was 39 mg/dL. The patient reported no skeletal muscle pain or weakness. She was advised to add niacin, 1 g after her evening meal, and to take aspirin, 325 mg, just before her evening meal.

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A 53-YEAR-OLD WOMAN WITH HYPERCHOLESTEROLEMIA

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HISTORY

A 53-year-old woman was referred for evaluation and treatment of hypercholesterolemia. She was taking atorvastatin, 40 mg daily, until 8 weeks ago, at which time the drug was discontinued because of drug-induced myositis. Her medical history included coronary artery bypass graft surgery at age 50, as well as hysterectomy, oophorectomy, and cholecystectomy. She had irritable bowel syndrome, which flared up occasionally. Her drug regimen consisted of amlodipine, losartan potassium, aspirin, and estradiol. She was a nonsmoker, reported consuming 3 to 4 alcoholic drinks per week, and had a paternal family history of coronary heart disease (CHD).
Eight weeks later, a repeated fasting lipid profile revealed a decrease in total cholesterol level to 176 mg/dL, with an LDL-C level of 77 mg/dL, HDL-C of 89 mg/dL, triglyceride level of 50 mg/dL, and Lp(a) level of 22 mg/dL. Additional laboratory testing showed the following: aspartate aminotransferase, 24 U/L; alanine aminotransferase, 28 U/L; fasting blood glucose, 94 mg/dL; homocysteine, 9.5 µmol/L; and creatine phosphokinase, 130 U/L. The patient’s BMI was reduced to 24.9 kg/m², and her blood pressure was 132/80 mm Hg. The patient had no myalgia or other adverse effects from the lipid-lowering medications. She claimed to be following the dietary recommendations and to be exercising daily with a regimen that included 15 minutes of stretching followed by a 45-minute brisk walk.

**DISCUSSION**

Polygenic hypercholesterolemia is common; approximately 10% of the US population is affected. Multiple genes interact with environmental factors to contribute to hypercholesterolemia, and overproduction and reduced catabolism of LDL-C are thought to play roles in the disease’s pathophysiology. An elevated Lp(a) level also contributed to the premature nature of this patient’s CHD. Although initial evaluation indicated a modest elevation of Lp(a), conjugated estrogen tends to lower it. The patient was not able to tolerate a high dose of a statin. Therefore, combination therapy with a low statin dose, which the patient was able to tolerate, with a second agent was suggested. Because the Lp(a) level was elevated, the decision was to add niacin as the second agent. The patient was advised to remain prudent with her approach to diet, continue her daily activity program, and also to continue the pravastatin/niacin combination. She was asked to return for follow-up in 4 months.

This case demonstrates the need for combination therapy to manage hypercholesterolemia that is not adequately controlled with monotherapy. It also illustrates the value of Lp(a) testing in helping the clinician to determine a second agent to choose for combination therapy. Whereas niacin and bile acid sequestrants effectively lower LDL-C, niacin lowers Lp(a) as well. If the patient’s Lp(a) value is within the normal range (<20 mg/dL), the agent of choice would be a bile acid sequestrant. For patients whose Lp(a) values are elevated, niacin may be helpful in restoring those values to the normal range.