gallstone formation are still present. It is estimated that the re-formation rate after dissolution is as high as 30% to 40% in the first five years after dissolution therapy. These stones can generally be dissolved with another course of therapy.

GREGORY ZUCCARO JR., MD
Department of Gastroenterology

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HYPERCHOLESTEROLEMIA: ROLES OF THE PHYSICIAN AND REGISTERED DIETITIAN

An increasing number of patients consult their physicians because they have been told their blood cholesterol level is elevated. A difficult problem for the clinician in a busy office practice is the issue of what to tell patients about a cholesterol-lowering diet, within the time frame the office setting allows.

Data from the Multiple Risk Factor Intervention Trial (MRFIT) has shown that certain high-fat eating behaviors are easier for patients to change than others,[1] and these changes can be recommended by the physician in a few minutes. Changes made with relative ease include 1) increasing consumption of fish and poultry and reducing intake of fatty red meat, 2) use of skim or low-fat milk products, 3) substituting polyunsaturated margarines for butter, 4) use of polyunsaturated oils for cooking, and 5) reducing the consumption of egg yolks. When these changes are made, diet specifications generally approach the National Cholesterol Education Program (NCEP) Step 1 diet (less than 30% calories as fat and less than 300 mg cholesterol/day).[2]

However, most people find it more difficult to reduce meat consumption to less than six to seven ounces per day, avoid high-fat cheeses and high-fat snacks such as crackers and potato chips (which contain a high content of saturated fat) and/or eliminate consumption of high-fat processed meat such as sausage and lunch meats. It may be necessary to make these changes if blood cholesterol levels fail to fall after a three- to six-month trial on the Step 1 diet. When this is the case, referral to a registered dietitian can be quite helpful because considerable time must be spent to implement the level of fat restriction specified in the NCEP Step 2 Diet. This diet contains less than 7% calories as saturated fat and less than 200 mg of cholesterol/day.

The dietitian is instrumental in helping patients achieve specified dietary goals, because patient education and behavior modification are required. Most clinicians in an office practice are not able to devote the 40 to 60 minutes typically required for a comprehensive nutritional evaluation.

Furthermore, many patients have already made substantial dietary changes before seeing their physician. We reviewed results of three-day food records of 384 patients referred to our lipid clinic. It was interesting to note that approximately 60% of these patients were already on a low-fat Step 1 diet (less than 30% of total calories as fat) at the time of the initial visit. Fat intake was less than 25% of calories in 145 (38%) of the 384 patients, 25-30% in 88 (23%) patients, and more than 30% in 151 (39%) patients.

This referred population is obviously not representative of the general public, but our data raise the important point that many persons who are aware of a blood cholesterol problem have already made many diet changes before they consult a physician. For these patients, a brief discussion with a physician about the principals of dietary therapy for hypercholesterolemia is likely to be of limited benefit. When this situation arises, it is desirable to have access to a registered dietitian who can provide the level of support required to further lower blood cholesterol levels by dietary means.

In our lipid clinic, food diaries have been useful as educational and self-monitoring tools. Diaries are analyzed using a computerized nutrient data base. This provides information about the average daily intake of cholesterol as well as the distribution of calories as fat, protein, and carbohydrate. Our lipid clinic nutritionists use these food records to point out areas where further dietary changes can be made. Using this approach, ap-

proximately 60% of the patients whose fat intake exceeded NCEP Step 1 specifications were able to reduce fat intake to meet Step 1 goals after a single session with a dietitian. Of 92 patients with more than 30% fat intake at baseline, 34 (37%) had lowered their fat intake to less than 25% at first follow-up; 22 (24%) lowered their fat intake to 25-30%. Fat intake remained at more than 30% for 36 (39%) subjects.

The physician and nutritionist can provide positive feedback during follow-up visits and enhance long-term adherence to diet. For many patients, a substantial reduction in blood cholesterol level can be achieved.

MICHAEL D. CRESSMAN, DO, Lipid Research Clinic; BYRON J. HOOGWERF, MD, Department of Endocrinology; HERBERT K. NAITO, PhD, Department of Biochemistry; KAREN MILLER-KOVACH, MS, RD; CINDA CHIMA, MS, RD; MARGARET A. ZELLER, RD, Nutrition Services.

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COST-EFFECTIVE EVALUATION OF ORTHOSTATIC HYPOTENSION

Because of the multiple etiologic factors in orthostatic hypotension, it is necessary that the approach to diagnosis be cost effective. Our long-term experience with the hemodynamic evaluation of patients with orthostatic hypotension[1–5] has led to the development of such an approach (*Table 1*). Screening graded tilt testing, blood volume determination, and noninvasive hemodynamic evaluation form the basic minimum requirement of the work-up.

Noninvasive hemodynamic evaluation includes determination of cardiac output and cardiopulmonary volume in the supine position and during head-up tilt to 60°, or as tolerated by the patient, with subsequent calculation of changes in total peripheral resistance. Plasma catecholamines are measured with the patient in the supine position and during head-up tilt. Specific tests can then be planned according to the suspected diagnosis.

In patients with suspected autonomic insufficiency or in whom a diagnosis is not confirmed, intra-arterial blood pressure recording with autonomic reflex testing[1-3] is performed. This includes the Valsalva maneuver, cold pressor test, and pharmacologic baroreflex testing (phenylephrine IV and/or amylnitrite inhalation). In cases of suspected pacemaker syndrome, the tilt test is repeated with the pacemaker off (if safe and feasible) or with the pacemaker turned down as low as 30-40 bpm, in order to test the response of the underlying cardiac rhythm. In cases of suspected vasovagal syncope, the tilt test is repeated after administration of sublingual atropine or transdermal scopolamine. When hypovolemia is documented, the tests are repeated after expansion of blood volume, acutely with human serum albumin or long term with alpha fluorohydrocortisone and a high-salt diet. In patients with excessive upright peripheral venous pooling, the tilt test is repeated after lower limb compression with a support hose.

TABLE 1
EVALUATION OF ORTHOSTATIC HYPOTENSION

Screening tests
1. Graded tilt test
Hemodynamic evaluation
1. Blood volume determination
2. Noninvasive hemodynamics
3. Autonomic reflex testing
Specific tests
1. Repeat tilt test with lower limb compression in patients with excess venous pooling
2. Repeat tilt test following blood volume expansion in patients with hypovolemia syndrome
3. Repeat tilt test; postsublingual atropine or transdermal scopolamine in patients with vasovagal syncope
4. Repeat tilt test at a low pacing rate (or deactivate pacemaker) in patients diagnosed as pacemaker syndrome

LOCALIZING THE LESION IN AUTONOMIC DYSFUNCTION

The hallmark of autonomic insufficiency is an abnormal Valsalva test result. The normal Valsalva response has four components. Phase I is characterized by an initial rise in blood pressure associated with deep inspiration. Phase II represents the increase in intrathoracic pressure, resulting in a reduction of venous return and consequent marked diminution of pulse pressure. During phase II, severe vasoconstriction occurs in a normal person. Phase III represents the restart of normal breathing with the initial filling of the pulmonary circulation leaving the systemic circulation empty; thus, the arterial pressure falls dramatically. During phase IV, cardiac output is distributed again to the systemic circulation, which is markedly vasoconstricted, and therefore the end result is an overshoot of systemic blood pressure, both systolic and diastolic.

Heart rate changes during these phases have been well described. The blood pressure decrease during phase