Diet Key to Managing Cholesterol Levels in Kids

BY HEIDI SPLETE
Senior Writer

WASHINGTON — Attention to diet will successfully manage cholesterol in many children, especially young ones, said Dr. Samuel S. Gidding of the Alfred I. duPont Hospital for Children in Wilmington, Del.

"Cholesterol levels are determined by genetics, plus or minus how bad your diet is," he noted at the annual meeting of the American Academy of Pediatrics. Test cholesterol levels in all children at age 5 or 6 years, and again after puberty.

Dr. Gidding, who has received research funding from AstraZeneca, explained that he rarely puts children younger than 10 years on lipid-lowering drugs, and almost never starts girls younger than 13. Cholesterol levels vary greatly around puberty, with the lowest levels occurring during the pubertal growth spurt. If they remain high after puberty, they are likely to remain high without management.

A cholesterol treatment diet involves taking in less than 30% of calories from fat, less than 7% of calories from saturated fat, and fewer than 200 mg of cholesterol daily. Also, the diet must be sufficient in micronutrients and provide appropriate energy for normal growth.

Dr. Gidding was involved in a 3-year randomized trial in which children who underwent dietary intervention significantly reduced their cholesterol levels, compared with children who did not change their diets. Both groups grew equally well.

An oil that is liquid at room temperature contains monounsaturated or polyunsaturated fats, and is okay for children on controlled diets, Dr. Gidding noted. If the product is solid at room temperature, then it contains saturated fats or trans fats, and should be avoided.

Additional diet directions include reducing salt intake and encouraging children to increase their intake of dietary fiber through the consumption of fruits, vegetables, and legumes.

A low-fat diet can lower cholesterol in most children. Such a diet is safe and effective, but if the child's LDL cholesterol level is extremely high, such as 190 mg/dL, diet is not enough.

How to Gauge When Children Need Lipid-Lowering Drugs

	Healthy	Borderline Risk*	High Risk**	Genetic Disease
LDL cholesterol (mg/dL)	<100	100-129	130-189	≥160
Triglycerides (mg/dL)	<100	100-199	200-399	≥400
HDL cholesterol (mg/dL)	≥60	40-59	<40	<30

*Overweight with no genetic disorder.
**Associated with elevated LDL and smoking, diabetes, hypertension, or obesity/insulin resistance, but no genetic disorder.
Source: Dr. Gidding

It was once thought that the liver was the main synthesizer of LDL cholesterol, but it is now known that the liver receives nearly 80% of its LDL cholesterol from synthesis in other parts of the body, as well as other sources, Dr. Gidding said.

The LDL cholesterol receptors sit on the liver cell and scavenge LDL cholesterol from the bloodstream. In children with genetic disorders, such as familial hypercholesterolemia, the liver receptors don't function and LDL cholesterol essentially gets stuck in the bloodstream. These children will have LDL levels of 160 mg/dL or higher. The main issue for these children is when—not whether—to start drug treatment. Diet remains extremely important as well, Dr. Gidding said.

When selecting children or adolescents for drug therapy, consider the child's age and gender; the family's prior experience with medications; the drug's safety; the child's likely compliance; and the goal of therapy. Also consider whether the child has either an LDL cholesterol level of at least 190 mg/dL, or an LDL level of at least 160 mg/dL plus multiple risk factors.

Statins can lower cholesterol by approximately 20%, and are generally safe and well tolerated, although risks increase with the use of multiple medications, Dr. Gidding said.

Starting doses range from 5 to 10 mg/day, and liver function, as well as cholesterol levels, must be monitored. Four statins available on the market—Lovastatin, Pravastatin, Simvastatin, and Atorvastatin—have demonstrated safety and efficacy for more than 1 year in children.

In addition to monitoring liver function, monitor children on statins for complaints of muscle pain. If a child reports such pain, stop the drug immediately and have the child evaluated for rhabdomyolysis, a rare but serious condition in which muscle pain is an important early symptom.

Adolescent girls who become pregnant or who are breast-feeding should not take statins.

There are no specific guidelines for the treatment of high triglyceride levels in children, Dr. Gidding said. Drugs that are currently approved for adults may have unfavorable side effects in children.

An elevated triglyceride level has emerged as a significant lipid problem in children because of the obesity epidemic; it also may be a marker for insulin resistance. High carbohydrate intake increases triglyceride levels.

Weight control and exercise are the primary treatments for high triglyceride levels, Dr. Gidding said. Simply limiting a child's intake of fruit juice or sweetened drinks to no more than 12 ounces daily can significantly reduce triglyceride levels.

Fish oil has been shown to lower triglyceride levels, and may be the best choice, but its anticoagulation properties may be a concern for children who are involved in sports that involve a lot of physical contact or a high risk of injury. For patients who want to try fish oil, Dr. Gidding recommends starting with 2 g daily. However, patients with triglyceride levels greater than 1,000 mg/dL require an individualized diet and must be seen by a specialist.

For user-friendly information about cholesterol and children, and about diet and nutrition, visit or direct patients to the American Heart Association's Web site: www.americanheart.org. ■

ECG Screening of Newborns Backed by 50,000-Infant Study

BY BRUCE JANCIN
Denver Bureau

STOCKHOLM — A policy of ECG screening of all neonates is a highly cost-effective means of detecting potentially lethal yet treatable genetic arrhythmogenic disorders, according to an interim analysis of an ongoing 50,000-infant Italian prospective study.

Such a screening strategy also provides several major side benefits. It permits early identification of babies with congenital heart malformations while they are still asymptomatic, when surgical correction can often markedly improve prognosis.

And identification of long QT syndrome (LQTS) in a screened neonate often leads to a previously unsuspected diagnosis of the arrhythmogenic genetic disorder in one or more asymptomatic family members, allowing physicians to institute timely prophylactic therapy, Dr. Marco Stramba-Badiale said at the annual congress of the European Society of Cardiology.

He reported on the first 36,263 babies who underwent ECG screening during day 15-25 of life as part of an ongoing 50,000-infant study funded by the Italian Ministry of Health.

In a separate presentation at the congress, Dr. Peter J. Schwartz, the project's coordinator, said that on the basis of data from this and other studies, the estimated cost-effectiveness of routine ECG screening of all neonates is $8,254 per year of life saved.

Even after the analysis is tweaked by plus-or-minus 30% in terms of diagnostic yield and treatment efficacy, the cost per year of life saved remained within the range of $4,800-$18,000.

"These figures do not consider the uniquely tragic emotional trauma [caused by] the sudden death of a child. Thus, screening with ECG every infant born in a large European country is highly cost effective. European taxpayers should be informed about the cost-benefit ratio of neonatal ECG screening," said Dr. Schwartz, professor and chairman of the department of cardiology at the University of Pavia (Italy) and chief of the coronary care unit at the San Matteo Polyclinic, Pavia.

The rationale for routine neonatal ECG screening is that LQTS is an important cause of sudden death beginning as early as the first year of life. Recent genetic studies by Dr. Schwartz and coworkers indicate that roughly 12% of all cases labeled as sudden infant death syndrome are actually attributable to LQTS, which is a highly treatable disorder. First-line therapy is a β-blocker, typically propranolol at 2 mg/kg per day. Second-line therapy, reserved for the minority of patients whose QT intervals are not successfully shortened below the danger zone by medication, is an implantable cardioverter defibrillator, he said.

Also at the meeting, Dr. Schwartz was named a corecipient of the Arrigo Recordati International Prize for Scientific Research. He shares the $120,000 prize with Dr. Leonard A. Cobb of the University of Washington, Seattle, and Dr. Hein J.J. Wellens of the University of Maastricht (the Netherlands). The three cardiologists were honored for their lifetime achievements in the field of sudden cardiac death.

Dr. Stramba-Badiale said that to date in the ongoing study, the prevalence of LQTS as defined by a QTc of at least 470 milliseconds—that is, more than two standard deviations above the population mean—is 0.9/1,000 screened neonates. In the study protocol, 470 milliseconds is also the threshold for performing genetic analysis, which has shown that 53% of affected babies have one of the known LQTS genetic mutations. One case involved a sporadic mutation. The others led to the previously unsuspected diagnosis of LQTS in additional family members.

Another 1.3% of neonates had a QTc greater than 440 but less than 470 milliseconds.

European Society of Cardiology guidelines recommend treatment of such children if they have a family history of LQTS or other serious arrhythmias.

Other cardiac abnormalities detected through the screening program included a 0.4/1,000 prevalence of Wolff-Parkinson-White syndrome, a 0.3/1,000 rate of right bundle branch block, and a 1/1,000 prevalence of atrial septal defect, all in asymptomatic babies.

There were also four still-asymptomatic cases of coarctation of the aorta, three of which featured cardiac involvement and one marked by anomalous origin of the left coronary artery, added Dr. Stramba-Badiale of the Istituto Auxologico Italiano, Milan.

Dr. Stramba-Badiale and Dr. Schwartz are members of a European Society of Cardiology task force charged with developing guidelines for interpretation of neonatal ECGs, since most cardiologists who care for adults are unfamiliar with doing so. ■