

Medicine by John Grauerholz, M.D.

Good and bad cholesterol?

Low levels of high-density lipoprotein (HDL) cholesterol could increase the risk of heart disease.

Ever since the 1950s, when Dr. Ancel Keys first reported on the correlation between elevated levels of cholesterol in the blood and the development of arteriosclerosis and heart disease, there has been a debate about the role of cholesterol and other lipids (fats) in the development of arteriosclerotic heart disease, a leading cause of death and disability in the United States and Europe.

The debate is the product of several factors, one of which is the question of why some people with "high" levels of cholesterol avoid heart attacks while other people with "normal" and even "low" levels of cholesterol still develop arteriosclerosis ("hardening of the arteries") and have heart attacks. It is this paradoxical phenomenon which has produced equivocal results in many studies which sought to document the relation between levels of cholesterol in blood and the development of heart disease.

Some clarification of this issue emerged at a press briefing in Washington, D.C. on June 19 of this year. The meeting, entitled "Can HDL Cholesterol Predict Heart Disease?" was sponsored by the International Lipid Information Bureau (ILIB), an educational organization headquartered in New York City and funded through an educational grant from Warner-Lambert Company, its Parke-Davis division, and its international affiliates.

The Washington meeting was the first scientific media briefing ever held in the United States to discuss the role of HDL in predicting coronary heart disease (CHD). HDL (high-density lipoprotein) cholesterol is a complex of

cholesterol, a fat or lipid, with a carrier protein, hence the name lipoprotein. Unlike the lower density lipoproteins (LDL, or low-density lipoprotein and VLDL, very low-density lipoprotein), which apparently transport cholesterol to the blood vessels, HDL appears to transport cholesterol from the blood vessels back to the liver, whence the cholesterol is excreted in the bile.

"We're beginning to see clearly that the level of HDL cholesterol and the ratio of HDL to total cholesterol are among the most important variables in determining individual cardiac risk," said Antonio Gotto, M.D., Chairman, Department of Medicine, Baylor College of Medicine and Chief, Internal Medicine, Methodist Hospital, Houston, who was the panel moderator. "Patients with low HDL levels may be at risk for heart attack even with total cholesterol levels in the moderate risk category," said Dr. Gotto.

William Castelli, M.D., Medical Director of the Framingham (Massachusetts) Heart Study, concurred with Dr. Gotto, and further observed that "the accumulated data show that HDL is a more powerful risk factor than LDL, triglycerides, or total cholesterol. Research also reveals that raising HDL cholesterol is effective in significantly reducing the risk of coronary heart disease."

Another researcher who stressed the importance of HDL was Vesa Manninen, M.D., Executive Secretary of the Advisory Council of the Helsinki Heart Study. This Finnish study—a major study using the drug

gemfibrozil (Lopid)—showed a direct link between HDL cholesterol levels and cardiac risk. Dr. Manninen's work has been instrumental in determining the role of HDL in coronary heart disease, and his presentation reflected the growing consensus that individual HDL levels should be measured.

The panel was not in complete agreement about the role of HDL in coronary heart disease. "I believe that not all the evidence is in yet," said Basil Rifkind, M.D., Chief, Lipid Metabolism-Atherogenesis Branch, National Heart, Lung, and Blood Institute, National Institutes of Health. "The National Cholesterol Education Program (NCEP) recommends that LDL and total cholesterol be the primary determinants of CHD risk."

"In addition," said Dr. Rifkind, "we recognize that low HDL cholesterol (<35 mg/dL) is as significant as other risk factors such as obesity and cigarette smoking. The NCEP recommends testing of HDL levels in individuals who have a total cholesterol level above 240 mg/dL and in those with a borderline high cholesterol level (200-239 mg/dL) and two other CHD risk factors."

Another panel member, Gerd Assman, M.D., Director, Institute for Clinical Chemistry and Laboratory Medicine, Westphalian-Wilhelms University (West Germany), presented the results of a large, prospective cardiovascular study in West Germany that demonstrated that individuals with low HDL levels, hypertriglyceridemia (elevated non-cholesterol fats), hypertension, and diabetes mellitus are at highest risk of heart attack. He added that in many European countries, it is common practice to measure total cholesterol, HDL cholesterol, and triglyceride levels at initial examination, as well as in preventive care.