

# Study Links Form of 'Bad' Cholesterol with Heart Attack Risk

January 5 2007

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A blood component called glycated LDL -- a form of low-density lipoprotein, the "bad" cholesterol, with a sugar molecule attached -- is known to be higher in diabetics than non-diabetics, and extensive research has shown that diabetics are at increased risk of a heart attack.

Now, for the first time, a new study that followed a cohort of elderly people in southern Italy found that glycated LDL levels increase the risk of heart attack in both diabetics and persons without diabetes.

Results showed that diabetics with the highest levels of the LDL at the start of the study had nearly three times the risk of developing a heart attack within five years than persons with low levels of the LDL. Even in persons without diabetes, those with high glycated LDL levels had twice the risk of having a heart attack.

Results of the study appeared in the December 2006 online edition of *Nutrition, Metabolism and Cardiovascular Diseases* and will appear this month in the print edition.

"The association of glycated LDL with myocardial infarction could explain why diabetes is a risk factor for MI (heart attack)," said Maurizio Trevisan, M.D., dean of the UB School of Public Health and Health Professions and senior author on the study.

"In fact, glycated LDL is more easily oxidized than normal LDL and more easily metabolized by macrophages, the precursors of foam cells of

the atherosclerotic plaque," said Trevisan, a professor of social and preventive medicine. "This is probably because the sugar molecule attached to the apoprotein B of LDL interferes with the link of the apoprotein with its membrane receptor.

"Glycated apoprotein B, like glycated hemoglobin (HbA1c), is present also in non-diabetics and its increase could be due to temporary hyperglycemia, caused by a high-glycemic-load meal, by stress and by other conditions."

The glycated LDL/heart attack study was an arm of the Onconut Study, an on-going investigation of lifestyle and dietary predictors of cancer being conducted in persons over 50 years of age in the Apulia region of Italy.

Of 4,452 participants who had not had a heart attack when the study began, 103 people developed a heart attack within five years; 34 of those were diabetics at the start and 69 were not.

All participants had blood samples taken when they entered the study. Levels of fasting glucose, insulin, cholesterol, triglycerides, HDL (the "good" cholesterol), LDL and glycated LDL were measured. When levels of these blood components in those who had had heart attacks (cases) and those who had not (controls) were measured, the only component that was significantly higher in both diabetic and non-diabetic cases was glycated LDL.

Trevisan noted that while the findings provide interesting information, they can not be applied to the population at large because the study subjects were selected from persons who had sought the services of clinical laboratories affiliated with Italy's National Health Service, not from the general population.

"These findings need to be confirmed," noted Trevisan, "and if the relationship is confirmed, interventions aimed at lowering the glycation of lipoproteins should be organized to test whether such interventions can lower the risk of coronary heart disease." The 20-year follow-up of participants in the study, which began in 1992, should provide more concrete data, he said.

Source: University at Buffalo

Citation: Study Links Form of 'Bad' Cholesterol with Heart Attack Risk (2007, January 5)  
retrieved 23 April 2024 from  
<https://medicalxpress.com/news/2007-01-links-bad-cholesterol-heart.html>

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