Serum Triglyceride Concentration and Coronary Heart Disease

To the Editor:

The independent prognostic significance of fasting triglyceride concentration is currently debated. The article by Sharrett et al reports the impact of several lipid parameters on the subsequent occurrence of coronary heart disease in the Atherosclerosis Risk in Communities Study, in which a large middle-aged population free from coronary heart disease at baseline was followed for 10 years.

The authors’ statement that triglycerides provide “substantial” and “independent” coronary heart disease prediction, at least in women, is not fully supported by the study results. The authors affirm that the association between triglycerides and subsequent coronary heart disease they found in women after adjustment for age and race holds in a multivariate analysis that takes into account several other risk factors (“fully adjusted” model). In the authors’ view, this latter analysis “shows similar patterns” as the former. As a matter of fact, triglycerides are associated with a significant age- and race-adjusted risk for coronary heart disease (1.29 per 0.70 mmol/L increase, \(P<0.01\); see Table 2 in Sharrett et al) in a model that also includes LDL and HDL cholesterol. However, this relation is substantially weakened and loses its significance when smoking, systolic blood pressure, use of medications for hypertension, and diabetes are also included in the model (relative risk, 1.15 per 0.70 mmol/L, \(P=0.01\)). The strength of the relationship is not materially affected by the inclusion of lipoprotein(a) in the model, although the association reaches statistical significance (relative risk, 1.15 per 0.70 mmol/L, \(0.01<\text{ }	ext{ }P<0.05\)). In men, no prognostic value of serum triglycerides was found, both in the age- and race-adjusted analysis and in the “fully adjusted” model.

These data suggest that the adverse prognostic significance of triglycerides depends to a large extent on the confounding effect of important independent coronary risk factors, such as hypertension and diabetes, which were taken into account in the “fully adjusted” model. A significant association exists between serum triglycerides and high blood pressure, medications, and diabetes. The relative risk of triglyceride-rich lipoproteins might be somewhat greater than suggested by a model that includes correlated variables such as HDL cholesterol and diabetes because a single triglyceride measurement is not a good index of a person’s daily or long-term triglyceridemia. We claimed independent prediction for women, but consistent with literature we cited, not in men. We did not claim that the independent contribution of triglycerides was “substantial”, but that its top quintile relative risk was much greater in women (4.7) than in men (2.1).


Response

Drs Schillaci et al correctly state our article’s findings.1 Triglycerides were independent coronary heart disease (CHD) predictors in women in all the age and race models examined, regardless of other lipids included. Triglycerides were also independently predictive in women in the preferred full model that included all the significant lipid factors (LDL cholesterol, HDL cholesterol, and lipoprotein(a)), together with smoking, blood pressure, medications, and diabetes. The relative risk of triglyceride is reduced in the full model, but its persistent independence interests us. In fact, the etiological importance of triglyceride-rich lipoproteins might be somewhat greater than suggested by a model that includes correlated variables such as HDL cholesterol and diabetes because a single triglyceride measurement is not a good index of a person’s daily or long-term triglyceridemia. We claimed independent prediction for women, but consistent with literature we cited, not in men. We did not claim that the independent contribution of triglycerides was “substantial”, but that its top quintile relative risk was much greater in women (4.7) than in men (2.1).


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