IMPACT OF HDL-C AND ITS SUBFRACTIONS ON RISK FOR CHD IN THE FRAMINGHAM OFFSPRING POPULATION

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Introduction: The NCEP recognizes low HDL-C as an important predictor of cardiovascular risk; however, while the relationship between HDL-C and CHD risk is established, the nature of HDL subclass contributions to CHD risk is still debated, with continued labeling of HDL2 as “good” HDL and HDL3 as “bad” HDL.

Hypothesis: In the Framingham Offspring Cohort Study (FOCS), HDL2 and HDL3 provide similar protection from incident CHD (inclusive of coronary death, MI, coronary insufficiency, and angina pectoris) and hard CHD (CHD endpoints exclusive of angina pectoris).

Methods: Vertical auto profile measurements were performed on 819 men and women on no lipid modifying therapy in an analysis of the FOCS. The relationship between lipoproteins/lipoprotein subfractions and 12-year risk for CHD and hard CHD events was examined using multivariable Cox proportional hazard regression for two models adjusted for Framingham risk factors (model 1 adjusts for age, sex, systolic blood pressure and use of antihypertensives, prevalent diabetes, and smoking; model 2 adjusts for model 1 risk factors, HDL-C, and TC).

Results: In model 1, HDL-C, HDL2 and HDL3 showed significant, similar relationships to risk of CHD. Model 1 also showed HDL-C and HDL3 as significantly and similarly protective against hard CHD, but HDL2 did not achieve statistical significance. As expected, HDL-C, HDL2, and HDL3 were not statistically significant factors in model 2, as TC and HDL-C were model 2 covariates (HDL-C was only a model 2 covariate for the HDL2 and HDL3 analysis). There were effect modifications by sex, with the relationship in women generally stronger than in men.

Conclusions: In this exploratory analysis, controlling for Framingham risk factors in men and women on no lipid-lowering therapy, HDL-C, HDL2 and HDL3 are independent, similarly strong protective factors against CHD and hard CHD, although HDL2 does not reach significance for hard CHD.