Abstract

Arterioscler Thromb Vasc Biol. 1997 Jun;17(6):1098-105.

Associations of HDL2 and HDL3 subfractions with ischemic heart disease in men. Prospective results from the Québec Cardiovascular Study.

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BACKGROUND: Individuals with elevated plasma concentrations of HDL cholesterol are at lower risk for ischemic heart disease (IHD). Whether the cardioprotective effects of HDL can be attributed to one or both HDL subfractions (HDL2 and HDL3) remains, however, controversial.

DESIGN: The relationship of HDL subfractions to the incidence of IHD was investigated in a sample of 1169 French-Canadian men younger than 60 years and living in the Quebec City suburbs. Between 1980 to 1981 and 1990, 83 of the 944 men with complete follow-up in 1990 (80.8%) had a first IHD. Men who developed IHD had lower HDL, HDL2, and HDL3 cholesterol concentrations at baseline than men who remained free from IHD. Adjusted relative risk (RR) of IHD was calculated among quartiles of HDL cholesterol and HDL subfractions with the use of Cox survival models.

RESULTS: Men in the fourth quartile of HDL2 (RR = 0.21; 95% confidence interval [CI], 0.08 to 0.56) and HDL3 cholesterol distributions (RR = 0.37; 95% CI, 0.15 to 0.94) were at lower risk for IHD than men in the first quartile. Despite the fact that the respective contributions of HDL2 and HDL3 to IHD risk were of the same magnitude in a multivariate model that included both subfractions, the contribution of the HDL2 subfraction was statistically significant (standardized RR = 0.84; 95% CI, 0.74 to 0.95), whereas it did not reach significance for HDL3 (standardized RR = 0.87; 95% CI, 0.69 to 1.11). Neither the linear combination of HDL2 and HDL3 nor their ratio provided further information on the risk of IHD compared with HDL cholesterol alone or with the ratio of total to HDL cholesterol.

CONCLUSION: From a statistical standpoint, the present data suggest that the HDL2 subfraction may be more closely related to the development of IHD than the HDL3 subfraction. However, the qualitative difference in the relative predictive value of each subfraction was trivial, since it only corresponded to a modest quantitative difference. Thus, the possibility that a significant proportion of the cardioprotective effect of elevated HDL cholesterol levels may be mediated by the HDL3 subfraction still cannot be excluded. Finally, from a clinical point of view and within the limits of resolution provided by these data, the measurement of HDL subfractions does not appear to provide any additional information on the risk of IHD than HDL cholesterol alone or the ratio of total to HDL cholesterol.

PMID: 9194760

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