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July 1992

Serum Cholesterol Level and Mortality Findings for Men Screened in the Multiple Risk Factor Intervention Trial

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Arch Intern Med. 1992;152(7):1490-1500. doi:10.1001/archinte.1992.00400190110021

Abstract

Background.— With increased efforts to lower serum cholesterol levels, it is important to quantify associations between serum cholesterol level and causes of death other than coronary heart disease, for which an etiologic relationship has been established.

Methods.— For an average of 12 years, 350 977 men aged 35 to 57 years who had been screened for the Multiple Risk Factor Intervention Trial were followed up following a single standardized measurement of serum cholesterol level and other coronary heart disease risk factors; 21 499 deaths were identified.

Results.— A strong, positive, graded relationship was evident between serum cholesterol level measured at initial screening and death from coronary heart disease. This relationship persisted over the 12-year follow-up period. No association was noted between serum cholesterol level and stroke. The absence of an association overall was due to different relationships of serum cholesterol level with intracranial hemorrhage and nonhemorrhagic stroke. For the latter, a positive, graded association with serum cholesterol level was evident. For intracranial hemorrhage, cholesterol levels less than 4.14 mmol/L (<160 mg/dL) were associated with a twofold increase in risk. A serum cholesterol level less than 4.14 mmol/L (<160 mg/dL) was also associated with a significantly increased risk of death from cancer of the liver and pancreas; digestive diseases, particularly hepatic cirrhosis; suicide; and alcohol dependence syndrome. In addition, significant inverse graded associations were found between serum cholesterol level and cancers of the lung, lymphatic, and hematopoietic systems, and chronic obstructive pulmonary disease. No significant associations were found of serum cholesterol level with death from colon cancer, with accidental deaths, or with homicides. Overall, the inverse association between serum cholesterol level and most cancers weakened with increasing follow-up but did not disappear. The association between cholesterol level and death due to cancer of the lung and liver, chronic obstructive pulmonary disease, cirrhosis, and suicide weakened little over follow-up.

Conclusions.— The association of serum cholesterol with specific causes of death varies in direction, strength, gradation, and persistence. Further research on the determinants of low serum cholesterol level in populations

and long-term follow-up of participants in clinical trials are necessary to assess whether inverse associations with noncardiovascular disease causes of death are consequences of noncardiovascular disease, whether serum cholesterol level and noncardiovascular disease are both consequences of other factors, or whether these associations are causal.(*Arch Intern Med*. 1992;152:1490-1500)