Alcohol and Heart Disease

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From the Nutrition Committee of the American Heart Association

Any advice about the consumption of alcohol must take into account not only the complex relation between alcohol and cardiovascular disease but also the well-known association of heavy consumption of alcohol with a large number of health risks. One approach would be to recommend no consumption of alcohol. However, a large number of recent observational studies have consistently demonstrated a reduction in coronary heart disease (CHD) with moderate consumption of alcohol. Any prohibition of alcohol would then deny such persons a potentially sizable health benefit. This advisory examines the complex relation between alcohol and coronary heart disease and offers recommendations for the responsible use of alcohol.

Measurements of Alcohol Consumption

Many beverages contain alcohol in varying amounts, necessitating standardization of the quantity of alcohol contained in various drinks. In general, the amount of absolute alcohol in grams is determined by the number of beverages consumed per day times the amount of alcohol in each beverage. In general, a 12-ounce bottle of beer, a 4-ounce glass of wine, and a 1 1/2-ounce shot of 80-proof spirits all contain the same amount of alcohol (one half ounce). Each of these is considered a "drink equivalent." Recent studies have tried to determine whether specific beverages have unique protective or deleterious effects. The interpretation of this research is complex because one person often consumes several types of beverages.

Relation Between Alcohol Consumption and Total Mortality

A large number of observational studies have consistently demonstrated a J-shaped relation between alcohol consumption and total mortality. This relation appears to hold in men and women who are middle aged or older. The lowest mortality occurs in those who consume one or two drinks per day. In teetotalers or occasional drinkers, the rates are higher than in those consuming one or two drinks per day. In persons who consume three or more drinks per day, total mortality climbs rapidly with increasing numbers of drinks per day.

A number of studies have dissected the J-shaped curve into specific diseases. It is clear that a stepwise decline in CHD death occurs with increasing drinks per day. Because CHD accounts for one third or more of total deaths, those with no alcohol consumption have higher total mortality than those drinking one to two drinks per day. On the other hand, mortality due to a large number of other diseases increases with an increasing number of drinks consumed per day. Diseases related to heavy consumption of alcohol and alcoholism include stroke, alcoholic cardiomyopathy, several kinds of cancer, cirrhosis, and pancreatitis, as well as accidents, suicide, and homicide. It should be noted that heavy consumption of alcohol is a major cause of hypertension, so that the diseases related to hypertension, such as stroke, are generally related to alcohol consumption. Heavy consumption of alcohol also appears to affect heart muscle and possibly arterial tissues directly. Alcoholic cardiomyopathy is a common diagnosis in long-term alcoholics. While the relative and absolute risks of these diseases are negligible at one or two drinks per day, the mortality rates rise sharply. The J-shaped distribution for total mortality is then the sum of the protective effect on CHD mortality and the detrimental effect of high levels of consumption on these other causes of death.

Protective Effects of Alcohol Against CHD

More than a dozen prospective studies have demonstrated a consistent, strong, dose-response relation between increasing alcohol consumption and decreasing incidence of CHD. The data are similar in men and women in a number of different geographic and ethnic groups. Consumption of one or two drinks per day is associated with a reduction in risk of approximately 30% to 50%. Studies of coronary narrowings defined by cardiac catheterization or autopsy show a reduction in atherosclerosis in persons who consume moderate amounts of alcohol. In general, the inverse association is independent of potential confounders, such as diet and cigarette smoking. Concerns that the association could be an artifact due to cessation of alcohol consumption in persons who already have CHD have largely been disproved. No clinical trials have been performed to test the alcohol-CHD relation. However, the large numbers of observational studies support a true protective effect of moderate consumption of alcohol.

Mechanisms for cardioprotective effects of moderate consumption of alcohol

Recent analyses suggest that approximately 50% of the protective effect of alcohol is mediated through increased levels of HDL cholesterol. HDL removes cholesterol from the arterial wall and transports it back to the liver.

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A single reprint is available by calling 800-242-8721 (US only) or writing the American Heart Association, Public Information, 7272 Greenville Avenue, Dallas, TX 75231-4596. Ask for reprint No. 71-0097.

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References

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