Alcohol Consumption and Risk of Stroke

A Meta-analysis

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Context Observational studies suggest that heavy alcohol consumption may increase the risk of stroke while moderate consumption may decrease the risk.

Objective To examine the association between alcohol consumption and relative risk of stroke.

Data Sources Studies published in English-language journals were retrieved by searching MEDLINE (1966–April 2002) using Medical Subject Headings alcohol drinking, ethanol, cerebrovascular accident, cerebrovascular disorders, and intracranial embolism and thrombosis and the key word stroke; Dissertation Abstracts Online using the keywords stroke and alcohol; and bibliographies of retrieved articles.

Study Selection From 122 relevant retrieved reports, 35 observational studies (cohort or case control) in which total stroke, ischemic stroke, or hemorrhagic (intracerebral or total) stroke was an end point; the relative risk or relative odds and their variance (or data to calculate them) of stroke associated with alcohol consumption were reported; alcohol consumption was quantified; and abstainers served as the reference group.

Data Extraction Information on study design, participant characteristics, level of alcohol consumption, stroke outcome, control for potential confounding factors, and risk estimates was abstracted independently by 3 investigators using a standardized protocol.

Data Synthesis A random-effects model and meta-regression analysis were used to pool data from individual studies. Compared with abstainers, consumption of more than 60 g of alcohol per day was associated with an increased relative risk of total stroke, 1.64 (95% confidence interval [CI], 1.39-1.93); ischemic stroke, 1.69 (95% CI, 1.34-2.15); and hemorrhagic stroke, 2.18 (95% CI, 1.48-3.20), while consumption of less than 12 g/d was associated with a reduced relative risk of total stroke, 0.83 (95%, CI, 0.75-0.91) and ischemic stroke, 0.80 (95% CI, 0.67-0.96), and consumption of 12 to 24 g/d was associated with a reduced relative risk of ischemic stroke, 0.72 (95%, CI, 0.57-0.91). The meta-regression analysis revealed a significant nonlinear relationship between alcohol consumption and total and ischemic stroke and a linear relationship between alcohol consumption and hemorrhagic stroke.

Conclusions These results indicate that heavy alcohol consumption increases the relative risk of stroke while light or moderate alcohol consumption may be protective against total and ischemic stroke.

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