

Effects of Alcohol Consumption and Metabolic Syndrome on Mortality in Patients With Nonalcoholic and Alcohol-Related Fatty Liver Disease

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Abstract

Background & aims: Non-alcoholic and alcohol-related fatty liver disease are overlapping diseases in which metabolic syndrome and alcohol consumption each contribute to progressive liver disease. We aimed to assess the effects of alcohol consumption and metabolic syndrome on mortality in individuals with fatty liver.

Methods: We searched the National Health and Nutrition and Examination Survey III for adults (20-74 years old) with hepatic steatosis, detected by ultrasound, for whom mortality and follow-up data were available. We collected data from the alcohol use questionnaire (self-reported number of days a

participant drank alcohol; the number of drinks [10 g alcohol] per day on a drinking day; the number of days the participant had 5 or more drinks) and calculated the average amount of alcohol consumption in drinks/day for each participant during the year preceding enrollment. Excessive alcohol consumption for men was >3 drinks/day and for women was >1.5 drinks/day. We also collected clinical data, and mortality data were obtained from the National Death Index. Demographic and clinical parameters were compared among consumption groups using the χ^2 test for independence or survey regression models. We used Cox proportional hazard models to identify independent predictors of all-cause and cause-specific mortality.

Results: The study cohort included 4264 individuals with hepatic steatosis (mean age, 45.9 years; 51% male; 76% white; 46% with metabolic syndrome; 6.2% with excessive alcohol use). There was no significant difference in mean age between individuals with vs without excessive alcohol consumption ($P=.65$). However, overall mortality was significantly higher among participants with excessive alcohol consumption (32.2%) vs participants with non-excessive alcohol use (22.2%) after mean 20 years of follow up ($P=.003$), as well as after 5 years of follow up. In multivariate analysis, the presence of metabolic syndrome (adjusted hazard ratio [aHR], 1.43; 95% CI, 1.12-1.83) and excessive alcohol consumption (aHR, 1.79; 95% CI, 1.21-2.66) were independently associated with an increased risk of death in individuals with hepatic steatosis; any lower average amount of alcohol consumption was not associated with mortality (all $P>.60$). In a subgroup analysis, the association of excessive alcohol use with mortality was significant in individuals with metabolic syndrome (aHR, 2.46; 95% CI, 1.40-4.32) but not without it ($P=.74$).

Conclusion: In review of data from the National Health and Nutrition and Examination Survey III, we associated alcohol consumption with increased mortality in participants with fatty liver and metabolic syndrome. These findings indicate an overlap between non-alcoholic and alcohol-related fatty liver disease.

Keywords: Alcohol Abuse; Chronic Liver Disease; Diabetes; NASH; Outcomes.

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