

Study examines dietary influences of liver disease

July 1 2009

Diets high in protein and cholesterol are associated with a higher risk of hospitalization or death due to cirrhosis or liver cancer, while diets high in carbohydrates are associated with a lower risk. These findings are in the July issue of *Hepatology*, a journal published by John Wiley & Sons on behalf of the American Association for the Study of Liver Diseases (AASLD).

There are many reasons to suspect that dietary factors influence the development of hepatic steatosis and its progression to more severe liver disease. First, poor diet may lead to obesity, insulin resistance and diabetes, which are the most important known risk factors for hepatic steatosis. Also, dietary lipids may directly affect fat in the liver. Furthermore, a high cholesterol diet has been shown to induce serious steatosis in animal studies.

Researchers, led by George Ioannou of Veterans Affairs Puget Sound Health Care System in Seattle, investigated whether dietary nutrient composition was associated with the subsequent development of cirrhosis or liver cancer in a representative sample of the U.S. population. They utilized data from 9,221 participants in the National Health Examination Survey who had completed a 24-hour dietary recall questionnaire. Participants were excluded if they suffered from cirrhosis or liver cancer at the start of the study, or received a diagnosis within five years.

During the follow-up period, an average of 13.3 years, 123 participants

received a new diagnosis of cirrhosis (118 people) or liver cancer (5 people) according to hospitalization records and death certificates. These individuals were more likely to be older, more obese with more central fat distribution. They had lower educational attainment and higher alcohol consumption, and were more likely to be male, diabetic and non-white.

Dietary nutrient composition was a strong predictor of hospitalization or death due to cirrhosis or liver cancer in the U.S. population. "In particular, we identified that [protein](#) and cholesterol consumption were associated with elevated risk, whereas consumption of carbohydrates was associated with reduced risk of hospitalization or death related to cirrhosis or liver cancer," the authors report.

The association with cholesterol intake is potentially the most important finding of this study, the authors suggest. While cholesterol is well-known for its role in non-hepatic diseases like atherosclerosis, it has never before been linked to human liver disease. The findings suggest that drugs blocking intestinal cholesterol absorption might reduce the progression of fatty liver disease but this needs to be investigated in prospective studies.

"Subgroup analyses showed that the significant associations of protein, carbohydrate and [cholesterol](#) intake with cirrhosis or liver cancer that we described in the entire study population, were limited to overweight or obese persons," the authors report. "No such associations were observed in normal-weight persons." This suggests that the relevant dietary factors are more likely to have hepatic effects through obesity-related fatty liver disease.

"Our study raises the possibility that dietary factors may be important, modifiable, and hitherto unrecognized determinants of [liver disease](#) progression," the authors conclude.

More information: "The Association Between Dietary Nutrient Composition and the Incidence of [Cirrhosis](#) or [Liver Cancer](#) in the U.S. Population." Ioannou, George; Connole, Marah; Morrow, Olivia; Lee, Sum. *Hepatology*; July 2009.

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Citation: Study examines dietary influences of liver disease (2009, July 1) retrieved 1 May 2024 from <https://medicalxpress.com/news/2009-07-dietary-liver-disease.html>

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