Caffeine consumption associated with less severe liver fibrosis

January 5 2010

Researchers from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) determined that patients with chronic hepatitis C virus (HCV) who consumed more than 308 mg of caffeine daily had milder liver fibrosis. The daily amount of caffeine intake found to be beneficial is equivalent to 2.25 cups of regular coffee. Other sources of caffeine beyond coffee did not have the same therapeutic effect. Details of this study are available in the January 2010 issue of *Hepatology*, a journal published by Wiley-Blackwell on behalf of the American Association for the Study of Liver Diseases.

Liver fibrosis or scaring of the liver is the second stage of liver disease and characterized by a degradation of liver function due to accumulated connective tissue. Past studies have looked at modifiable behaviors, such as coffee consumption, that mitigate the progression of liver disease. A number of studies have looked at the benefits of higher coffee intake with results that include: lower prevalence of chronic liver disease, reduced risk of hepatocellular carcinoma (liver cancer), and lower risk of death from cirrhosis complications. "From data collected to date it remains unclear whether coffee itself, or caffeine provides the beneficial effect," said Apurva Modi, M.D. and lead author of the current study that focuses on caffeine intake and its impact on liver fibrosis.

From January 2006 to November 2008 all patients evaluated in the Liver Disease Branch of the National Institutes of Health were asked to complete a questionnaire to determine caffeine consumption. Questions were asked pertaining to all sources of caffeine including regular and

diet soft drinks; regular and decaffeinated coffee; black, green, Chinese and herbal teas; cocoa and hot chocolate; caffeine-fortified drinks; chocolate candy; caffeine pills; and medications with caffeine. Participants were asked about their frequency of caffeine consumption, which was quantified as never; 1-3 times per month; 1, 2-4, or 5-6 times per week; 1, 2-3, 4-5, and 6 or more times per day.

The analysis included 177 participants who were undergoing liver biopsy with a mean age of 51 years and mean body mass index (BMI) of 27.5. Of those in the cohort 56% were male, 59% Caucasian, 19% Black, 19% Asian, 3% Hispanic, and 68% had chronic HCV. Daily consumption of caffeine from food and beverages raged from none to 1028 mg/day with an average of 195 mg/day, which is equivalent to 1.4 cups of coffee daily. Most caffeine consumed came from regular coffee (71%) followed by caffeinated soda (13%), and black tea (4%). Repeated administration of the questionnaire within a 6-month period displayed consistent responses suggesting caffeine intake does not significantly change over time.

Patients with an Ishak fibrosis score of less than 3 had a mean caffeine intake of 212 mg/day compared with 154 mg/day for those with more advanced fibrosis. The Ishak fibrosis score is the preferred system that measures degree of liver scarring with 0 representing no fibrosis through 6 indicating cirrhosis. For each 67 mg increase in caffeine consumption (about one half cup of coffee) there was a 14% decrease in the odds of advanced fibrosis for patients with HCV. "Our data suggest that a beneficial effect requires caffeine consumption above a threshold of approximately 2 coffee-cup equivalents daily," noted Dr. Modi. The protective effects of consuming more than 308 mg of caffeine daily persisted after controlling for age, sex, race, liver disease, BMI and alcohol intake for all study participants.

Researchers further evaluated caffeine and coffee separately to

determine the individual effect of each on fibrosis. Results showed that consumption of caffeinated soda, green or black tea was not associated with reduced liver fibrosis. However, a significant protective effect could have been missed due to small numbers, as 71% of total caffeine consumed came from coffee. Caffeinated coffee had the most pronounced effect on reduced liver fibrosis. The authors suggest that further research is needed to determine if the protective benefits of coffee/caffeine intake plateau at amounts beyond the daily consumption threshold.

More information: "Increased caffeine consumption is associated with reduced hepatic fibrosis." Apurva A Modi, Jordan J Feld, Yoon Park, David E Kleiner, James E. Everhart, T. Jake Liang, and Jay H. Hoofnagle. Hepatology; Published Online: September 9, 2009 (DOI:10.1002/hep.23279); Print Issue Date: January 2010

Provided by Wiley