Mediterranean-style diet improves gut microbial diversity and reduces hospitalization

April 12 2018

A diet that is Mediterranean style, and rich in vegetables and fermented milk products such as yoghurt, along with coffee, tea and chocolate, is associated with greater gut microbial diversity and a lower risk of hospitalization in patients with liver cirrhosis, according to the results of an international study presented today at The International Liver Congress 2018 in Paris, France. The study, which enrolled almost 300 individuals in the USA and Turkey, showed that the entire Turkish cohort, including healthy individuals as well as those with compensated and decompensated cirrhosis, had a significantly higher microbial diversity than their counterparts in the USA.

Liver cirrhosis is a major, growing, and largely preventable cause of death worldwide, accounting for more than 1 million deaths globally per year. The risk of death from liver cirrhosis differs markedly between countries, driven primarily by alcohol consumption, the type and quality of alcohol consumed, and the presence of viral hepatitis B and C infections. Gut microbiota have been implicated in the pathogenesis and progression of cirrhosis, and a progressive decrease in microbial diversity is observed in healthy individuals, individuals with compensated cirrhosis, and those with decompensated disease.

'Diet is a major determinant of gut microbial composition, but there is very little information currently linking diet, microbial diversity and clinical outcomes in patients with cirrhosis', said Dr. Jasmohan Bajaj

from Virginia Commonwealth University and McGuire VA Medical Center in Richmond, USA, and lead author of the study. 'Our hypothesis for this study was that diet and the severity of cirrhosis might interact to determine microbiota composition and, ultimately, clinical outcomes in patients with liver cirrhosis'.

The study presented by Dr. Bajaj recruited three groups of individuals in the USA (n=157) and Turkey (n=139): healthy controls, outpatients with compensated cirrhosis, and outpatients with decompensated cirrhosis. All individuals underwent dietary and stool microbiota analysis and those with liver cirrhosis were followed for at least 90 days to capture data on non-elective hospitalizations. The US population tended to follow a Western diet with a relatively low consumption of fermented foods (yoghurt, ayran, curds) and a high consumption of coffee and carbonated drinks, while the Turkish cohort consumed a Mediterranean-style diet that was rich in fermented foods and vegetables.

Stool sample analysis revealed that the entire Turkish cohort had a significantly greater diversity in their gut microbiota than the US cohort and that there was no difference in diversity between healthy controls and those with liver cirrhosis in Turkey. In contrast, in the US cohort, diversity was highest in the control group and lowest amongst those with decompensated cirrhosis. Coffee, tea, vegetables, chocolate, and fermented milk intake predicted a higher diversity, while the Model for End-stage Liver Disease (MELD) score, lactulose use and carbonated drink consumption predicted a lower microbial diversity. There was a significantly higher number of all-cause and liver-related hospitalizations during the 90-day follow-up in the US cohort compared with the Turkish cohort (p=0.016 for all-cause; p=0.02 for liver-related).

'This study demonstrates that patients with cirrhosis have gut microbiota profiles that are highly responsive to dietary factors, and it is the first study to confirm a link between diet, microbial diversity and clinical

outcomes in liver cirrhosis', said Dr. Bajaj. 'Additional studies are now required to evaluate whether dietary modification might improve both microbial diversity and clinical outcomes in these patients'.

'This is an important study stressing that an antioxidant-rich Mediterranean diet has a protective effect not only in the early phases of chronic liver disease, but also in its more advanced phases', said Prof. Annalisa Berzigotti from the University of Bern, Switzerland, and EASL Governing Board Member. 'Whether or not dietary changes can be used as a non-pharmacological tool to improve patients' outcomes in cirrhosis remains to be tested by specifically designed studies that take into account possible confounders. Nonetheless, this study adds to the existing evidence indicating a robust, pleiotropic beneficial effect of following a "Mediterranean-style diet" on human health'.

Provided by European Association for the Study of the Liver