High-Cholesterol Diet May Accelerate Fatty Liver Disease

Excess cholesterol can cause liver scarring and inflammation.

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The link between a high-fat, high-sugar diet and fatty liver disease is well known, but a new study by researchers from the Keck School of Medicine at USC have found that cholesterol can affect fatty liver disease progression.

Published in Frontiers in Immunology, the lab study found that high cholesterol intake can increase the likelihood that fatty liver disease will progress to cirrhosis, which causes inflammation and scarring that can continue despite changing to a low-cholesterol diet, as well as to liver cancer.

The study also found that a diet high in cholesterol can lead to long-term dysfunction in a group of immune cells known to play a role in fatty liver disease.

“We saw that you may have a high-fat and high-sugar diet, but when you add high cholesterol to that, it will accelerate the process that causes inflammation in your liver,” said corresponding author Ana Maretti-Mira, PhD, an assistant research professor of medicine at USC, in a Keck news release. “People focus on high cholesterol as a risk for heart disease, but we showed that your liver may also be affected, causing inflammation, scarring and, potentially, cirrhosis.”

For the study, researchers split mice into three groups and gave them different levels of cholesterol in their food for six months, about half of a mouse’s life span.

After six months, the mice from all three groups accumulated fat on their livers, a harmless symptom of fatty liver disease, but the group with the highest cholesterol levels had more advanced disease, characterized by increased inflammation and scar tissue.

Maretti-Mara noted that the high-fat, high-sugar diet given to mice in the study is similar to the average Western diet in humans. She also emphasized that rather than eliminating cholesterol entirely, people should consume it in moderation, since our bodies require a certain amount of fat—which includes cholesterol—to function adequately.

“Everything’s a balance,” Maretti-Mira said. “If what—and how much—you eat is causing this excessive inflammation in your liver, it’s time to take care of yourself. Change your diet and

exercise more so you can burn that fat in the liver, because it can cause damage in the long term.”

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