Genetic Markers May Predict Liver Cancer

Investigators have found biomarkers that might one day be used to help detect liver cancer during earlier stages.

November 5, 2018 By Benjamin Ryan

Scientists have found new genetic indicators associated with the development of hepatocellular carcinoma (HCC, the most common form of liver cancer) as well as worse outcomes among those with the disease. With more research, investigators could establish expression of the genes in question as biomarkers that could be used to help detect liver cancer early and provide more effective treatment.

“We know that 90 percent of all hepatocellular carcinoma cases start with liver cirrhosis,” study author Salvatore Papa, PhD, of the University of Leeds in the United Kingdom said in a press release. “So by pinpointing when cirrhosis progresses to cancer, we could improve early detection and treatment—with surgery, chemo and radiotherapy, but perhaps also with new treatments which reverse the transition.”

Publishing their findings in Frontiers in Cell and Developmental Biology, Papa and his colleagues analyzed liver cells that were normal, cells that indicated cirrhosis, and cancerous cells among people who were followed for more than 10 years after receiving a liver biopsy.

In particular, the scientists looked at the expression of genes associated with a shift in liver cells from metabolizing energy from sugar with the use of oxygen to extracting energy from sugar without oxygen, or anaerobically. Called glycolysis, this anaerobic metabolic process produces lactate, which causes the burning sensation experienced during strenuous exercise. A shift to glycolysis is associated with inflammation; cirrhosis is an inflammatory condition.

Genes related to glycolysis were highly expressed in both cancerous and cirrhotic liver cells, compared with normal liver cells. This indicated that glycolysis occurs during the liver’s precancerous stage. Indeed, the expression of genes related to glycolysis was associated with the progression of cirrhosis to liver cancer, not to mention poor health outcomes among those who already had liver cancer when they received their biopsy.

More research is needed to establish the expression of these genes as official biomarkers predicting liver cancer or liver cancer outcomes.

To read a press release about the study, click here.

To read the study, click here.
