MedicalXpress

New DNA testing for liver cancer could improve survival

September 10 2015

Detection of small fragments of tumor DNA, known as circulating tumor DNA, in a patient's pre-surgery serum samples predicts early recurrence of hepatocellular carcinoma and may guide treatment, according to a study published in *Cellular and Molecular Gastroenterology and Hepatology*, the basic and translational science journal of the American Gastroenterological Association. Hepatocellular carcinoma—the most common type of liver cancer—is the third leading cause of cancer deaths worldwide.

"We uncovered that circulating tumor DNA levels accurately reflect cancer progression and therapy effects on hepatocellular carcinoma," said lead study author Atsushi Ono, from Hiroshima University. "With further research, the identification of genome profiles through circulating tumor DNA analysis may guide individualized management of hepatocellular carcinoma."

The researchers performed whole-genome sequencing on 46 patients undergoing hepatocellular carcinoma resection—removal of the liver or liver transplantation—and for whom pre-surgery and post-surgery serial serum samples were available. By comparing DNA isolated from the tumor to normal DNA from the same patient, they detected mutations in all 46 samples.

While mutations were present in all tumors, only seven patients had detectable circulating tumor DNA in their serum. The presence of circulating tumor DNA was associated with larger tumor size and

increased risk of tumor recurrence within two years after liver removal. Circulating tumor DNA levels in serum also increased with disease progression and reflected response to treatments.

Hepatocellular carcinoma is often diagnosed at a late stage, which has resulted in a five-year survival rate of only 11 percent. Identifying a new method to monitor disease progression and identify patients who could benefit from treatment is critical to improve the morbid survival rate associated with this deadly form of liver cancer.

"Circulating tumor DNA analysis represents a potential paradigm shift in personalized medicine for liver cancer," said Jerrold R. Turner, MD, PhD, AGAF, editor-in-chief, Cellular and Molecular Gastroenterology and Hepatology. "We look forward to seeing future research build on this encouraging data to ultimately improve the effectiveness of therapy against advanced hepatocellular carcinoma."

More information: Ono, Atsushi, et al. Circulating Tumor DNA Analysis for Liver Cancers and Its Usefulness as a Liquid Biopsy, *Cellular and Molecular Gastroenterology and Hepatology* 2015: 1(5): 516-534 www.cmghjournal.org/article/S2 … (15)00111-3/fulltext

Provided by American Gastroenterological Association