# New models help predict liver cancer after successful hepatitis C virus treatment

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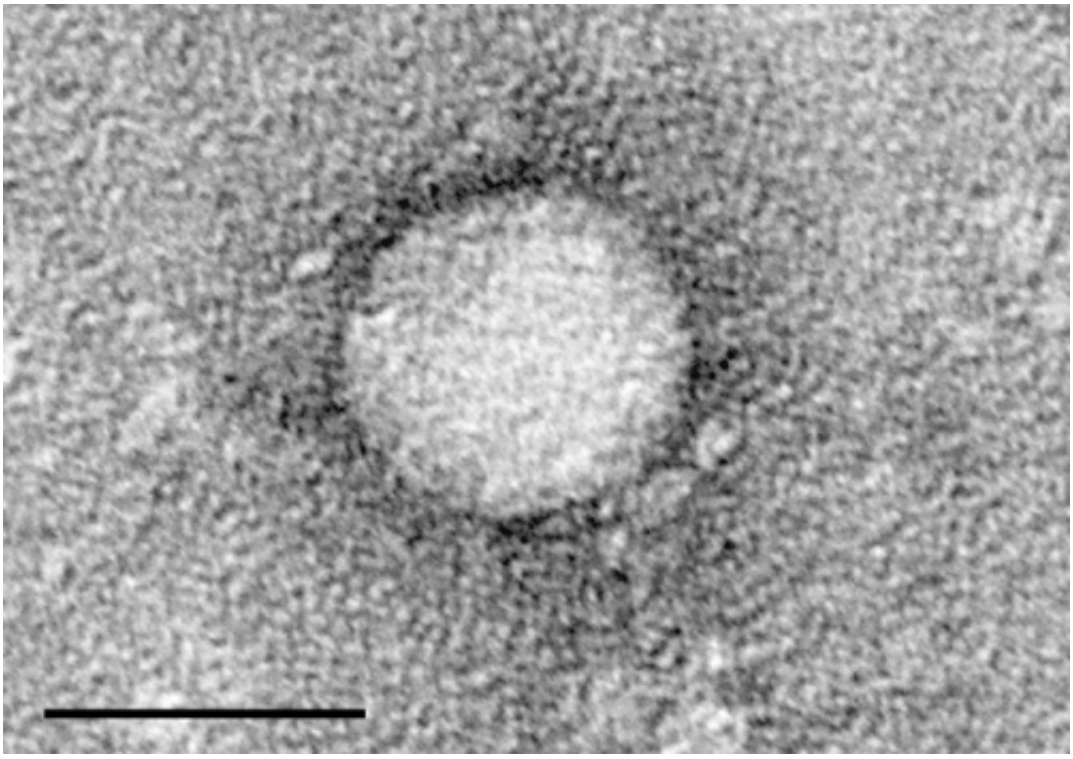

Electron micrographs of hepatitis C virus purified from cell culture. Scale bar is 50 nanometers. Credit: Center for the Study of Hepatitis C, The Rockefeller University.

Predicting who may go on to develop hepatocellular carcinoma (HCC) after successful treatment for chronic hepatitis C virus (HCV) infection may now be easier, thanks to the work of two independent research teams from France and Egypt. The studies, presented at the Digital

International Liver Congress (DILC) 2020, included cohorts of patients with chronic HCV infection who achieved a sustained virological response (SVR) to direct-acting antiviral (DAA) therapy. The studies used readily available clinical parameters to find those at lowest and highest risk of developing HCC in the future. This, the researchers say, could help to individualize HCC surveillance and detect HCC after HCV is cured as early as possible.

DAA-based treatment can achieve an SVR in more than 95% of patients with chronic HCV infection. Despite viral eradication, however, patients with chronic HCV continue to have a residual risk of HCC, especially those with severe underlying liver disease and/or comorbidities. Risk factors and prediction models for HCC are better understood in HCV-infected patients prior to eradication, but these have not yet been established in patients who achieve an SVR with DAA therapy.

Important statistical work was presented by the French group using data from subjects with biopsy-proven compensated cirrhosis from the French ANRS CirVir prospective cohort of patients. They aimed to identify specific longitudinal profiles associated with patients likely to develop HCC after HCV eradication according to serum alpha fetoprotein (AFP) and routine serum biomarkers (gamma-glutamyl transferase [GGT], alanine aminotransferase [ALT] and aspartate aminotransferase [AST]).

In this cohort, a total of 142/717 patients with HCV at baseline and 47/413 who achieved SVR developed HCC over a median follow-up period of 74.2 months. Among those who achieved SVR, the researchers identified two distinct types of patients at an elevated risk of developing HCC: one cluster with elevated serum parameters (n=95; 13.7% HCC incidence) and one with impaired liver function (n=109; 15.6% HCC incidence). A third patient cluster, whose AFP and biochemical marker levels tended toward normalization, had a lower incidence of HCC

(n=228; 7.5% incidence). Examining the pre-SVR population also showed clusters of patients with either a globally worsening liver function (n=198; 26.8% incidence) or a trajectory of increasing levels of AFP and serum biomarkers (n=190; 25.3% incidence). Again, a third cluster of biomarker levels that were favorable and stable overall had lower rates of HCC (n=329; 12.5% incidence; p64 years at SVR, advanced liver fibrosis (fibrosis scores of 3 or 4 [F3 or F4]), HCV genotype 3, presence of oesophageal varices, baseline serum AFP >5.5 ng/ml, AST to platelet ratio index (APRI) >2 at end of treatment, and previous interferon-based regimen(s) with or without ribavirin. The team then developed an HCC risk score using these variables, enabling stratification of patients into three groups according to HCC risk level (high, intermediate, low) at 1 and 3 years post-treatment. The HCC risk score was found to have a good predictive performance; most individuals evaluated (76.5%) were in the low-risk group at 3 years, with an HCC incidence of