New model could benefit liver cancer transplant patients

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A simple blood test may better predict which patients diagnosed with liver cancer will experience disease recurrence, according to new research from Weill Cornell Medicine scientists. The findings may help physicians determine who would benefit most from a liver transplant.

Depending on disease severity, oncologists may recommend liver transplantation for patients whose tumors have not yet metastasized. Physicians have traditionally used a special set of criteria, based on the size and number of tumors, to assess patients' risk of cancer reoccurrence if they receive a new organ – the findings from which ultimately determine if transplantation is the appropriate treatment.

In their study, published Sept. 16 in the *Annals of Surgery*, Weill Cornell Medicine investigators demonstrate that measuring the concentration of molecules in the blood that increase in the presence of liver cancer can discern which patients will experience disease relapse more effectively than the current model. The scientists say the new criteria, known as the Model of Recurrence After Liver Transplant – or MORAL score – can help ensure that those who are selected for liver transplants have the best chance of staying cancer-free after surgery.

"At the end of the day, our goal is to use better predictors to provide patients with improved treatment options," said Dr. Robert Brown, the Gladys and Roland Harriman Professor of Medicine at Weill Cornell Medicine and co-creator of the MORAL criteria. "By using pre-transplant biomarkers focused more on the growth and aggressiveness of

liver cancer, we can determine which patients will do better with a liver transplant and which patients would benefit from more aggressive pre-transplant therapies to control their cancer."

In conjunction with surgeon Dr. Karim Halazun, an assistant professor of surgery at Weill Cornell Medicine, and other surgeons from NewYork-Presbyterian, Brown prospectively studied a cohort of 339 patients with hepatocellular carcinoma who had undergone liver transplantation to determine whether the MORAL criteria, compared with the traditional Milan criteria, could better predict cancer recurrence. Measuring common blood tests – including the breakdown of the white blood cells, specifically the neutrophil and lymphocytes, and the amount of a tumor marker protein, the alpha-fetoprotein, in the blood – correctly predicted cancer recurrence 91 percent of the time, while the Milan criteria only yielded a 63 percent accuracy rate, Brown said.

"Using our MORAL score, we want to help patients lead longer lives," said Brown, director of the Center for Liver Disease and Transplantation and a hepatologist at NewYork-Presbyterian Weill Cornell Medical Center. "By combining this score with therapies we are developing to selectively change immune suppression in high-risk patients, we would be able to tell patients the risk of their cancer returning and at the same time tell them we have a plan for reducing that risk – that we can do something about it."

Provided by Cornell University