

DNA-based vaccine treatment for colorectal cancer to undergo first human study

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For the first time in humans, researchers will test a two-pronged approach to treat advanced stage colorectal cancer (CRC), potentially increasing life expectancy. Combining a DNA vaccine, which boosts the body's immune response against tumors, with an antibody that blocks the body's natural defense against the potency of the DNA vaccine, may lead to the development of an effective treatment for late stage CRC, when a cure is not often possible. Preliminary research leading up to this trial will be presented at [Digestive Disease Week 2018](#).

Study implications

"We are on the cusp of testing something that could be transformative for [cancer treatment](#)," said Robert Ramsay, Ph.D., BSc, group leader of the Gastrointestinal Cancer Center at the Peter MacCallum Cancer Center at the University of Melbourne, Australia, and lead researcher of the study. "Cancer vaccines are getting closer to the clinic every day and are likely to provide a safer and more effective pillar of treatment for patients. Right now, the pillars of treatment include surgery, chemotherapy and radiotherapy, and vaccines would bring immunotherapy to the mix."

Immunotherapies failed to meet expectations in previous studies. The body naturally puts the brakes on the cancer-fighting immune responses stimulated by vaccines to protect against a potentially out-of-control immune response. The development of new immune checkpoint

blockade antibodies, which are being used with the DNA [vaccine](#) in this study, is intended to get past this obstacle by temporarily blocking the protective response.

Study results

In preliminary mouse studies, Ramsay and his colleagues tested the DNA vaccine TetMYB and anti-PD1 on mice that were induced to develop cancer cells. Tumors in the mice responded very well to the treatment, and the cancer was cured in about half of them. Mice were expected to live for only a couple of days or weeks, but about 50 percent of them survived up to two years.

The vaccine also created an "[immune memory](#)" in the animal studies. When mice cured during the study were later re-challenged with the same tumor, it was immediately rejected. "There is an immune memory for the vaccine," Ramsay said.

Next steps

Ramsay and his team are testing the regimen for the first time in humans in a phase 1 trial of 32 patients with advanced stage CRC. The study is designed to test safety and, if safety is shown, to allow all patients in the trial to receive the full treatment.

"Once cancer has spread to other parts of the body, patients with CRC have few other viable options; therefore, this treatment could be life-changing for these patients," said Toan Pham, a Ph.D. candidate and research fellow at the Peter MacCallum Cancer Centre at the University of Melbourne, who is conducting the study with Dr. Ramsay.

Provided by Digestive Disease Week

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