Clinical trial data show investigational cancer vaccine may elicit lasting immune response in pancreatic cancer

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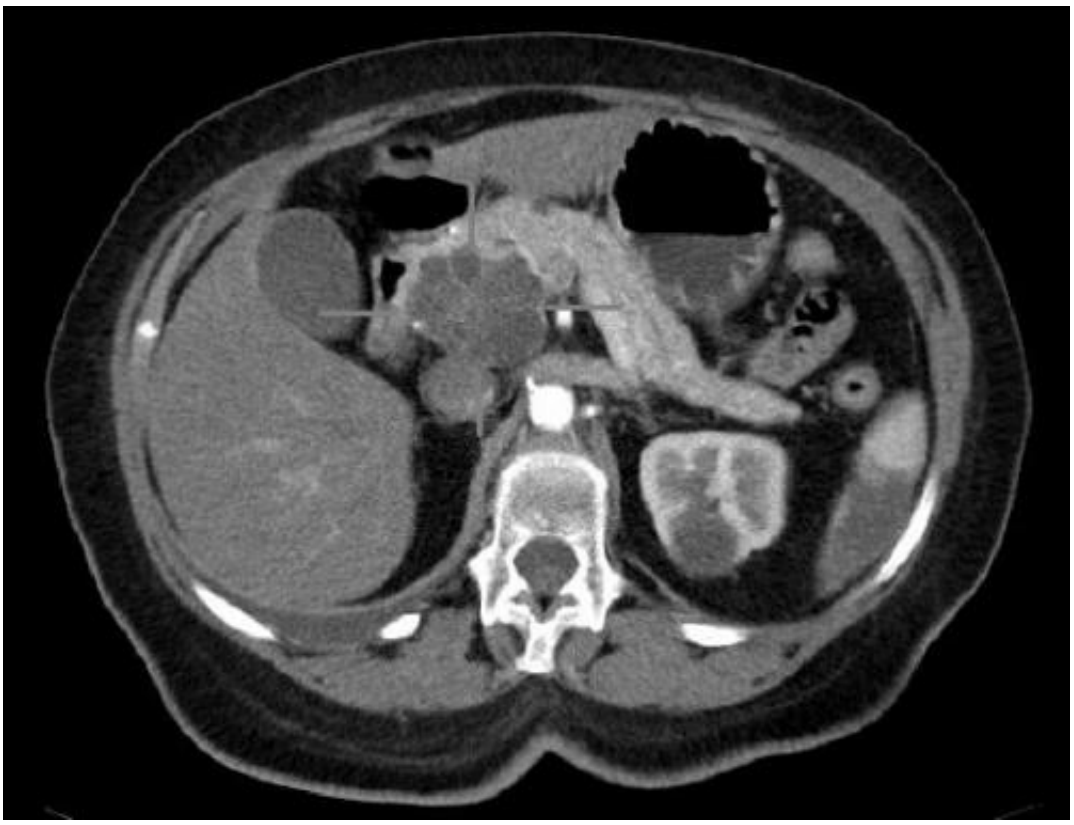

Axial CT image with i.v. contrast. Macrocystic adenocarcinoma of the pancreatic head. Credit: public domain

New data presented by Memorial Sloan Kettering Cancer Center (MSK) researchers show an experimental approach to treating pancreatic cancer

with the messenger RNA (mRNA)-based therapeutic cancer vaccine candidate, autogene cevumeran, continues to show potential to stimulate an immune response that may reduce the risk of the disease returning after surgery.

New results from a Phase I clinical trial show that the cancer vaccine candidate activated immune cells that persisted in the body for up to three years after treatment in certain patients. In addition, a vaccine-induced immune response correlated with reduced risk of the cancer coming back. These data were presented by MSK surgeon-scientist Vinod P. Balachandran, MD, at the American Association for Cancer Research (AACR) Annual Meeting, held in San Diego April 5–10.

The investigational mRNA cancer vaccine, called autogene cevumeran (BNT122, RO7198457), was developed in a collaboration between BioNTech, an immunotherapy company, and Genentech, a member of the Roche Group. In the Phase I clinical trial, vaccines were custom-made for every participant based on the mutational profile of their individual tumor.

The mRNA-based therapeutic cancer vaccines are intended to teach T cells—specialized immune cells that protect the body from pathogens and cancer—to recognize proteins found exclusively in their pancreatic tumors, called neoantigens. This alerts T cells that the cancer cells are foreign. The goal of this approach is to train the body to protect itself against cancer cells.

Pancreatic cancer is the third leading cause of cancer death in the United States, and its incidence is rising. "Current treatment options for pancreatic cancer remain very limited, and only about 12% of patients survive five years after diagnosis," said Dr. Balachandran, a Member of the Human Oncology and Pathogenesis Program and the David M. Rubenstein Center for Pancreatic Cancer Research at MSK.

"We are encouraged by our latest findings, which continue to support exploring autogene cevumeran as an approach to treat pancreatic cancer in the post-surgical, adjuvant setting."

Earlier results from the Phase I trial, reported in *Nature* in May 2023, showed the vaccine was well tolerated and that it activated immune cells in half of treated patients.

Now, at a three-year median follow-up, the team continues to find evidence of a robust vaccine-activated T cell response. Through analysis of blood collected from trial patients, the researchers found 98% of the T cells specifically activated by the cancer vaccine candidate were not present in patients prior to vaccination, and that in six of eight patients analyzed, >80% of the vaccine-induced T cells persisted from two to up to three years post vaccination.

Notably, this immune response was associated with delayed recurrence, with relapse during the follow-up window seen in only two of the eight patients with a vaccine-induced immune response. Meanwhile, cancer returned in seven of eight patients whose immune systems did not respond to the vaccine during the study. The researchers do not yet know if the vaccines caused the delay in cancer recurrence; investigating this question is a goal of ongoing studies.

An ongoing randomized Phase II trial (NCT05968326) will evaluate the efficacy and safety of adjuvant autogene cevumeran in comparison to the current standard chemotherapy regimen (mFOLFIRINOX). The aim of the approach is to reduce the risk of pancreatic cancer returning after the tumor is removed by surgery. The trial is enrolling approximately 260 patients globally, including at MSK.

Provided by Memorial Sloan Kettering Cancer Center