Vaccines for Pancreatic and Kidney Cancer

A Phase I pancreatic cancer study is evaluating a vaccine called autogene cevumeran.

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Growing evidence suggests that personalized vaccines may help prevent cancer recurrence.

To create a customized cancer vaccine, scientists genetically sequence a patient's tumor and identify neoantigens—abnormal proteins unique to cancer cells—that are most likely to trigger a robust immune response. Compared with some other malignancies, such as melanoma, however, pancreatic and kidney cancers have few targetable mutations to work with.

The Phase I pancreatic cancer study is evaluating a vaccine called autogene cevumeran (BNT122 or RO7198457). Sixteen people underwent surgery, and a customized messenger RNA (mRNA) vaccine was made for each of them. They received several primer and booster doses along with the checkpoint inhibitor Tecentriq (atezolizumab) and a four-drug chemotherapy regimen.

The researchers previously reported that half of the patients had strong T-cell responses against at least one neoantigen in the vaccine. Now, they have found that activated T cells lasted more than three years in the responders. What's more, six of the eight responders remained cancer-free, while most nonresponders relapsed. The vaccine, which was safe and well tolerated, has advanced to a larger randomized Phase II trial.

The Phase I kidney cancer study included nine people with advanced renal cell carcinoma who underwent surgery but were considered to be at high risk for recurrence. A custom vaccine containing neoantigen peptides, or chains of amino acids, was produced for each patient. They received a series of primer doses and two boosters; some also used the checkpoint inhibitor Yervoy (ipilimumab).

After about three years of follow-up, all had T-cell immune responses against tumor neoantigens and none relapsed. This vaccine was also safe and well tolerated. An mRNA kidney cancer vaccine, dubbed V940 or mRNA-4157, is now being tested in a larger Phase II trial. "These results support

the feasibility of creating a highly immunogenic personalized neoantigen vaccine in a lower mutation burden tumor," says study coauthor Patrick Ott, MD, PhD, of Dana-Farber Cancer Institute.
