Researchers Identify New Blood Markers That May Detect Early Pancreatic Cancer

Four-marker panel funded by NIH could one day help catch one of deadliest cancers at more treatable stages.

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National Institutes of Health (NIH)-supported investigators have developed a blood test to find pancreatic ductal adenocarcinoma, one of the deadliest forms of cancer. The new test could improve survival rates from pancreatic cancer, which tends to be diagnosed at late stages when therapy is less likely to be effective. The findings were published in Clinical Cancer Research.

Overall, only about 1 in 10 pancreatic cancer patients survive more than five years from diagnosis. However, experts expect that when the cancer is found and treated at an earlier stage, survival would improve. While finding the cancer early is key, there are no current screening methods to do so.

In the study, scientists at the University of Pennsylvania Perelman School of Medicine, Philadelphia, and Mayo Clinic, Rochester, Minnesota, used a phased approach to testing biomarkers in the blood collected from patients with pancreatic cancer and similar patients without the malignancy.

They included two blood biomarkers previously explored for use in this way, carbohydrate antigen 19-9 (CA19-9), which is used to monitor treatment response in patients with pancreatic cancer, and thrombospondin 2 (THBS2), another previously used marker. Neither worked well as a screening tool. CA19-9 can be elevated in people with benign conditions such as pancreatitis and bile duct obstruction while other patients don’t produce it at all due to genetic factors.

In analyzing banked blood samples, the team found two novel biomarker proteins that were elevated in the blood of early-stage pancreatic cancer patients compared with healthy volunteers, aminopeptidase N (ANPEP) and polymeric immunoglobin receptor (PIGR).

When they combined ANPEP and PIGR with CA19-9 and THBS2 the four-marker panel successfully distinguished pancreatic cancer cases from non-cases 91.9% of the time for all stages combined at a false positive rate of 5% in non-cases. Similarly, for early-stage (Stage I/II) cancer, the four-

marker test identified 87.5% of cases.

"By adding ANPEP and PIGR to the existing markers, we've significantly improved our ability to detect this cancer when it's most treatable," said the study's lead investigator, Kenneth Zaret, PhD, University of Pennsylvania's Perelman School of Medicine.

Importantly, the four-marker test successfully distinguished cancer patients from both healthy individuals and those with non-cancerous pancreatic conditions, such as pancreatitis.

"Our retrospective study findings warrant further testing in larger populations, particularly in people before they show symptoms," Zaret said. "Such 'prediagnostic' studies would help determine if the test could be used as a screening tool for people at high risk of developing the disease based on family history, genetic screening results or personal history of pancreatic cysts or pancreatitis."

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