New Blood Test Can Detect Wide Range of Cancers

More than 50 cancers could be discovered, even before symptoms develop.

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Damon Runyon Clinical Investigator Geoffrey R. Oxnard, MD; Board Member Michael V. Seiden, MD, PhD; and colleagues published results of a new blood test that can detect more than 50 types of cancer, often before symptoms develop. This may give patients and doctors a huge advantage and opportunity to treat the disease before it reaches advanced stages.

With a simple blood draw, the new test zeroes in on cell-free DNA released into the bloodstream when cancer cells die and identifies abnormal patterns of methylation on the DNA that characterize cancer type. Methylation adds chemical tags to DNA, which generally turns genes on or off. When this process malfunctions in cells, the resulting changes in gene expression can lead to tumor growth.

“Our previous work indicated that methylation-based tests outperform traditional DNA-sequencing approaches to detecting multiple forms of cancer in blood samples,” said Dr. Oxnard, of Dana-Farber Cancer Institute and Harvard Medical School. “The results of this study suggest that such assays could be a feasible way of screening people for a wide variety of cancers.”

Investigators used the test to analyze cell-free DNA in 6,689 blood samples, including 2,482 from people diagnosed with cancer and 4,207 from people without cancer. The samples from patients with cancer represented more than 50 cancer types.

The overall specificity of the test was 99.3 percent, meaning that only 0.7 percent of the results were false positive—an incorrect diagnosis of cancer. When cancer was detected, the test correctly identified the organ or tissue where the cancer originated in more than 90 percent of cases, which is critical for determining how the disease is diagnosed and managed.

Finding a non-invasive way to test patients before cancer symptoms arise is critical since the majority of cancer types have no way of screening for early detection and treatment. This is particularly relevant for 12 types of cancer, including anal, bladder, bowel, esophageal, stomach, head and neck, liver and bile duct, lung, ovarian, and pancreatic cancers, as well as lymphomas and cancers of white blood cells (like multiple myeloma), which account for about 63% of all cancer deaths in the United States annually.

The test developed by Grail, Inc., of Menlo Park, California will continue in further clinical testing. “If validated, this has the potential to totally change the cancer screening landscape,” said Dr. Seiden, President, The US Oncology Network. Earlier detection of more than 50% of cancers could save millions of lives every year worldwide and could dramatically reduce morbidity induced by aggressive treatments.

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