Researchers Develop More Sensitive Colon Cancer Screening Method

Protein biomarkers reveal more precancerous growths and colorectal cancer.

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Testing for proteins in stool samples can detect more precancerous growths and colorectal tumors than testing for blood alone, which could make colon cancer screening more accurate, according to research published in the Annals of Internal Medicine.

Colorectal cancer develops when cells grow out of control in the colon or rectum, sections of the large intestine. Colon cancer is often preceded by growths known as polyps and benign tumors called adenomas that can progress to cancer. Early detection and treatment of colorectal cancer increases the likelihood of long-term survival.

Doctors primarily use two types of screening methods: colonoscopy and tests that look for blood or DNA in a stool sample. Colonoscopy involves looking at the inside of the colon with a lighted instrument. It requires bowel preparation and may be done under sedation. Noninvasive tests like the fecal immunochemical test (FIT) are not as accurate, but they are easier and can be done at home. The American Cancer Society recommends that people over 50 who are at average risk for colon cancer get a colonoscopy every 10 years or a FIT test annually.

Linda Bosch, PhD, and colleagues performed a case-control study to identify protein biomarkers in stool samples that could outperform or complement tests that detect hemoglobin (a component of red blood cells) for identifying people with advanced adenomas or colorectal cancer.

The researchers used mass spectrometry to examine more than 300 stool samples from patients with colorectal cancer, people with early or advanced precancerous growths and people without abnormal colon growths.

The study team identified more than 800 human proteins, 29 of which occurred more often in people with colorectal cancer than in people without abnormal growths. A combination of four proteins enabled the researchers to detect almost twice as many colorectal cancers and five times as many advanced adenomas as hemoglobin testing alone, according to a press release from the American College of Physicians, which publishes the journal.

The sensitivity of the four-protein test (meaning it accurately detected abnormalities when present) was 80 percent for colon cancer and 45 percent for advanced adenomas, with specificity (meaning it didn't falsely identify abnormalities that weren't present) of 95 percent, which was significantly better than testing for blood alone.

These proteins could be detected in the small amounts of stool collected for home-based tests like FIT, indicating that the biomarkers could be easily adapted for widespread population screening, the study authors suggested.

Click here to read the study abstract.

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