

Fecal DNA methylation detects gastric and colorectal cancers

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A preliminary evaluation of methylation of two gene promoters in fecal DNA showed promise as a noninvasive method to detect colorectal and gastric cancers, according to a new study published online August 21 in the *Journal of the National Cancer Institute*.

Because many patients are reluctant to undergo invasive tests for the detection of gastrointestinal cancers, the development of nonintrusive screening tests is desirable. Especially in cancer patients, some cells are sloughed off from the [gastrointestinal tract](#), so small amounts of DNA from these cells present in stool samples can be examined for the presence of cancer biomarkers.

Takeshi Nagasaka, M.D., of the Department of Gastroenterological Surgery and Surgical Oncology at the Okayama University of Graduate School of Medicine, and colleagues analyzed methylation of the RASSF2 and SFRP2 gene promoters from 788 primary gastric and colorectal tissue specimens to determine whether methylation patterns could act as stage-dependent biomarkers of gastrointestinal tumorigenesis. Next, a highly-sensitive assay was developed for the detection of these methylation patterns among 296 fecal DNA specimens from patients with colorectal or gastric tumors.

Extensive methylation at these gene promoters was much more likely to be found in advanced gastric tumors and colorectal tumors than in normal tissue. Methylation markers were detected in 57% of [gastric cancer](#) patients, 75% of colorectal cancer patients, and 44% of subjects

with advanced colorectal adenomas, but only 10.6% of patients with none of these cancers.

"Selection of adequate biomarkers is critical to the success of any screening methodology," the authors write. "By identifying disease-specific methylation patterns for human fecal DNA from advanced gastric and colorectal tumors, we could more accurately identify subjects at high risk for developing, or having developed, advanced tumors."

In an accompanying editorial, Steven H. Itzkowitz, M.D., of the Dr. Henry D. Janowitz Division of Gastroenterology at the Mount Sinai School of Medicine in New York, said these findings contribute to the field of noninvasive detection of gastrointestinal neoplasia and confirm that even one or two markers may be useful for fecal DNA testing.

"Because some of these cancers...are hard to screen with current imaging techniques, further development of fecal DNA as a pan-detection assay for gastrointestinal tract cancers represents an intriguing and exciting new frontier," the editorialist writes.

Source: Journal of the National [Cancer](#) Institute ([news](#) : [web](#))

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