

Molecular imaging and CT colonography team up to bring comfort to patients

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A study published in the June issue of *The Journal of Nuclear Medicine* shows that positron emission tomography (PET)—a molecular imaging technique—combined with computer tomography (CT) colonography may provide a suitable alternative for detecting polyps and cancer in the colon. This particular imaging method may be especially desirable for patients because it does not require sedation or bowel preparation.

"One of the first indications of colorectal cancer is often the presence of polyps, which are abnormal tissue growths on the inner lining of the colon or large intestine," said Stuart A. Taylor, M.D., University College London, and lead researcher of the study. "If these polyps are detected non-invasively and without the use of bowel preparation and sedatives, investigation can be much easier on patients who would otherwise undergo colonoscopies."

Until now, the standard [diagnostic test](#) for colorectal cancer and polyps has been [colonoscopy](#), whereby a telescopic camera is introduced into the colon via the back passage and passed around the one to two meters of colon to look for abnormalities in the bowel lining.

Although this technique is very effective, it is also invasive and can be uncomfortable for patients, as they need to empty their bowel using laxatives beforehand, they may require sedation during the test and may need to take a whole day off from their normal activities. Strong laxatives can also be harmful to older patients, as they may cause [dehydration](#) and disturb their salt levels.

CT colonography (CTC) is an imaging technique that presents a promising, less invasive alternative to colonoscopy. The CTC scan provides images of the lining of the bowel, which has been gently distended with gas, without the need for sedatives. One potentially major advantage of CTC over colonoscopy is its ability to visualize the large

bowel—without the patient having to take strong laxatives. PET scanning produces images of the uptake of [blood sugar](#) (glucose) by body tissues. Because cancerous cells tend to take up more blood sugar than normal tissue, these concentrations provide clear evidence of any abnormalities.

This study researched the effectiveness of using a combination of CTC and PET scans without any bowel preparation to detect significant abnormalities in the colon. Although other work has demonstrated that combined PET CTC is technically feasible, most have required patients to undergo complete bowel preparation and only a small number of patients have been studied. The current study is the largest to date investigating combined PET CTC in patients without any bowel preparation.

56 patients agreed to undergo a one-hour CTC and PET scan about two weeks before their scheduled colonoscopy. This was done without the use of laxatives. Patients were also asked to complete a questionnaire to see how they tolerated the tests and which ones they preferred.

The colonoscopy results were then compared with the CTC scan on its own and with the CTC and PET scans combined. The study found that the combined PET CTC scans detected all the important larger [polyps](#) found by the invasive colonoscopy technique. In addition, most patients found the combined scan technique more comfortable and preferred it to colonoscopy.

"The work has shown that combined PET CTC is technically feasible, well tolerated by patients and capable of achieving high diagnostic accuracy," said Taylor. "This test would be mainly used in patients less able to tolerate invasive investigations or the preparation required if physicians want to exclude any major pathology in the colon and abdomen."

Provided by Society of Nuclear Medicine

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