

Virtual biopsy probe system is 'almost perfect' in detecting precancerous polyps during colonoscopy

March 23 2010

The newest generation of "virtual biopsy" colonoscopy probes being tested at the Mayo Clinic campus in Florida demonstrate that it might soon be possible to use such a device to determine whether a colon polyp is benign and not remove it for biopsy. Currently, all colon polyps are extracted during a colonoscopy and sent to a pathologist for examination, which adds time, expense, and some surgical risk, to the procedure.

In the March issue of *Gastroenterology*, the researchers report that the most advanced of these two devices, the probe-based Confocal Laser Endomicroscopy (pCLE), is much more accurate than virtual chromoendoscopy, also known as narrow-band imaging. The pCLE — an imaging tool only one-sixteenth of an inch in diameter — can magnify a polyp by a factor of 1,000 to detect potentially dangerous changes in even single cells, such as enlargement of the nuclei. Narrow-band imaging uses blue light to enhance an image.

The researchers found that pCLE was 91 percent accurate in detecting precancerous polyps and narrow-band imaging was 77 percent accurate, when compared to biopsy findings..

"We are getting closer to where we want to be, which is 100 percent accurate," says the study's senior author, Michael Wallace, M.D., M.P.H., professor of medicine at the College of Medicine, Mayo Clinic, in Florida. "Some day soon we will be able to use these probes to

virtually biopsy a polyp, removing only those that could become cancerous."

Half of all polyps now removed during a [colonoscopy](#) are benign, Dr. Wallace says.

Both methods tested by Dr. Wallace and his team are being used in some institutions such as Mayo Clinic to look at the area where a polyp has just been removed to make sure no [precancerous cells](#) remain at the surgical edges. That can be determined by looking at changes in cell color and size, how nuclei look, and whether cells are crowded together due to abnormal growth.

In this study, researchers administered a standard colonoscopy to 75 patients, and during the procedure used narrow-band imaging as well as pCLE to determine cancer risk in the polyps. In all, 119 polyps were removed from the patients and sent to pathologists for analysis. Eighty-one polyps were precancerous and 38 were benign. Both methods were equally specific, meaning that they had the same ability to detect benign polyps, but the pCLE system was much more sensitive in detecting [precancerous polyps](#).

Dr. Wallace continues to test the pCLE system in colonoscopy, and is also researching its use in inflammatory bowel disease and Barrett's esophagus. Patients with inflammatory bowel disease require frequent biopsies of their colon to screen for development of colon cancer, and the probe may be able to eliminate many of these biopsies, he says. "A patient with this condition usually needs 42 biopsies of their colon during a single examination, but only 1 in every 1,000 biopsies ever show precancerous changes," he says. "We have a clinical trial under way using pCLE that suggests we may be able to substantially reduce the need for these biopsies."

Similarly, Dr. Wallace's data shows that the probe system could reduce biopsies in Barrett's esophagus, a potentially precancerous condition in which the tissue lining the esophagus is replaced by tissue that is similar to the lining of the intestine. To rule out cancer development, physicians normally biopsy every four inches of the esophagus in patients who have Barrett's esophagus. "We believe the probe system will perform virtual biopsies that are just as valuable," Dr. Wallace says.

Provided by Mayo Clinic

Citation: Virtual biopsy probe system is 'almost perfect' in detecting precancerous polyps during colonoscopy (2010, March 23) retrieved 12 February 2024 from <https://medicalxpress.com/news/2010-03-virtual-biopsy-probe-precancerous-polyps.html>

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