

MR Colonography Becomes Option for Patient-Tolerated Colorectal Screening

RESearchers evaluating the capability of MR colonography to assess extracolonic organs reported that MR was up to the challenge, further establishing itself alongside CT as a less invasive alternative to conventional colonoscopy.

While conventional colonoscopy is the gold standard for evaluating the entire colon and its pathologies, the procedure is not without its drawbacks. Not all patients want or can undergo colonoscopy due to its invasiveness, and in some types of patients the ability of CT and MR to evaluate the extracolonic findings can be important for further patient management.

A team of researchers led by Waleed Ajaj, M.D., of the Medical Center at the University Hospital Hamburg-Eppendorf in Germany, began a three-year study in 2003 to evaluate dark-lumen MR colonography for the assessment of extracolonic organs. Results were published in the Jan. 24, 2007, issue of *European Radiology*.

Two radiologists evaluated data collected from 375 patients, assessing the large bowel as well as extraintestinal organs from the lung bases to the pelvis for the presence of pathologies. Other diagnostic imaging tests were performed when necessary to further assess findings. Study protocol dictated that all patients undergo a standardized bowel-cleansing procedure prior to MR colonography, with 2,000 ml of a polyethylene glycol solution ingested the night



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before and 1,000 ml the morning of the examination.

“We looked at the extracolonic findings and, based on our judgments, we distinguished between clinically relevant findings and non-relevant findings,” said study co-author Stefan G. Ruehm, M.D., Ph.D., an associate professor of radiology at UCLA’s David Geffen School of Medicine. “It was interesting to see what we could get out of MR.”

What researchers got, he said, was solid evidence that dark-lumen MR colonography can assess the entire colon and evaluate extracolonic organs—in total, 510 extracolonic findings were made in 260 (69 percent) of 375 patients. In those 260 patients, 54 percent had known extracolonic findings and 12 percent

had therapeutically relevant findings.

“This shows that intra- and extracolonic pathologies can be diagnosed within the same examination,” said Dr. Ruehm.

MR Still Faces Obstacles

As optimistic as they are about the potential of MR colonography, researchers are also realistic. Cost could be a deterrent to widespread use, they said, especially in the U.S., where CT is currently winning the cost battle. As a result, said Dr. Ruehm, “Radiologists are still more familiar with reading CT data than with MR.”

CT raises questions about radiation dose, said Dr. Ruehm. While physicians in the U.S. have responded by using low-dose CT, dose concerns have thrust MR center stage in Europe. “The awareness of radiation risks are higher there, so if Europeans have a choice, they prefer the method that is less inva-

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sive and without radiation,” he said.

Whether the modality is CT or MR, the issue of extracolonic findings is an important one, said Elizabeth G. McFarland, M.D., director of CT colonography at the Center for Diagnostic Imaging and an adjunct professor of radiology at the Mallinckrodt Institute of Radiology at Washington University in St. Louis.

“The issue of proper management of the extracolonic findings is becoming an increasingly important topic,” she said. She warned, however, that for either CT or MR to be cost effective for screening populations, the extracolonic findings must not be excessive.

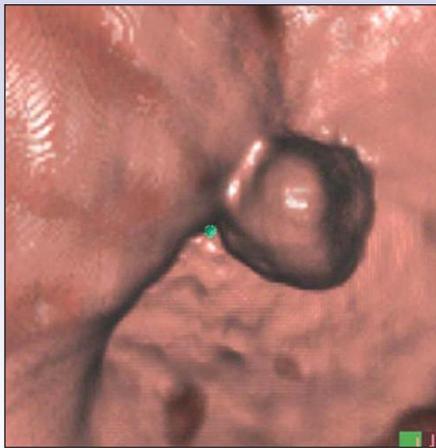
“The more you find is not always better,” Dr. McFarland said. “You need to evaluate very common diagnostic problems, like lesions that likely have little clinical significance, and can lead to unnecessary costs and additional patient distress if not managed correctly.” She pointed out that only 12 percent of subjects in the *European Radiology* study had therapeutically relevant findings.

“To see the extracolonic organs can be a double-edged sword,” she said. “That’s why standards on how to categorize and manage these findings are so important.” The C-RADS reporting structure for CT colonography introduced in the July 2005 issue of *Radiology*, she noted, is one example of how extracolonic findings, in addition to the colonic findings, are categorized from low to high importance.

Larger Goal is More Colorectal Screenings

Beyond the question of MR’s ability to assess extracolonic organs—and the relative value of that ability—Dr. Ruehm and colleagues said they hope their work leads to important changes in preventive screening for colorectal cancer. So many people are afraid of conventional colonoscopy that it makes sense to offer MR alongside CT as another less-invasive option, said Dr. Ruehm.

“In the U.S., we have heard about



ON THE COVER

Virtual endoscopic view of dark lumen MR colonographic data set shows 5mm polyp.

Image courtesy of Stefan G. Ruehm, M.D., Ph.D., University of California, Los Angeles

CT colonography, but not as much about MR colonography,” he said. “I’m trying to raise awareness as I build the program here at UCLA.” He added that while there haven’t been many studies comparing MR and CT in colonography, the results are nearly comparable.

“Many people do not want to undergo colonoscopy,” he said. “If you are able to offer something that is less invasive and also accurate, people have a choice.”

Dr. Ruehm noted that patients undergoing MR colonography must endure the same bowel prep necessary for colonoscopy, but the test itself is much shorter. “The time for data is about 20 seconds, so it’s pretty fast, and without need for sedation,” he said.

MR colonography will likely continue to gain popularity as innovations occur, said Dr. Ruehm. He said research is under way to offer the procedure with a technique called fecal tagging, which eliminates the bowel prep by giving the patient something to add to their daily food intake that tags the residual food or stool.

“MR has many options with a vari-

ety of sequence designs in this area,” said Dr. Ruehm. “You are more flexible with sequence parameters.” He acknowledged, however, an unavoidable reality with CT or MR—if something is detected, the patient may still have to undergo conventional colonoscopy.

Dr. McFarland agreed that the less-invasive nature of MR, like CT, could lead to higher patient compliance with colorectal screening. “The main issues will be cost and accuracy, with the added advantage of no radiation exposure with MR,” she said.

“Studies have shown that CT colonography has been highly acceptable to patients, so I would assume MR would also be favorable. If it leads to more people getting screened, then it’s a good thing.” □

Learn More

More information about the studies cited in this article is available online.

■ “Utility of dark-lumen MR colonography for the assessment of extra-colonic organs” Go to www.springerlink.com/content/100472 and select the June 2007 issue.

■ “CT Colonography Reporting and Data System: A Consensus Proposal” radiology.rsna.org/cgi/content/full/236/1/3

Colonography at RSNA 2007

The gastrointestinal series course at RSNA 2007 will feature a session (VG21) on CT colonography, including technical considerations, colon polyp description and radiographic classification, CT

colonography interpretation and results of the American College of Radiology Imaging Network (ACRIN) colonography trial. Registration for all RSNA 2007 courses begins June 18. More information is available at RSNA2007.RSNA.org.



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