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NEWS

RSNA Press Release

'Camera Pill' Promising for Diagnosis of Small Bowel Disease

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At A Glance

- Capsule endoscopy (CE) uses a pill-size camera swallowed by patients to display the entire small bowel.
- CE can "see" areas of the intestines current endoscopic techniques cannot, including the small intestine.
- Mayo Clinic Scottsdale researchers envision CE being combined with computed tomography (CT) to give them an accurate picture of small bowel abnormalities and their precise locations.

For Immediate Release

CHICAGO, Jan. 6, 2004—An ingestible video camera that produces digital images of the small intestine can "see" areas other diagnostic techniques cannot, and holds promise in the diagnosis of small bowel disease, according to a study published in the January issue of the journal *Radiology*.

Capsule endoscopy (CE) displays the small bowel's entire length (as long as 25 feet) as the intestine's involuntary muscles push this "camera pill" forward.

CE heralds an important step forward in the diagnosis of small bowel disorders, demonstrating more abnormalities than standard small bowel imaging techniques. But its greater promise may lie in conjunction with computed tomography (CT). CE does a good job of indicating the presence of abnormalities, but does not tell their location.

The video capsule—the size of a large vitamin pill—is swallowed by a patient after an eight-hour fast. Eliminated about eight hours later, the capsule transmits a continuous stream of digital images to a small data recorder worn around the patient's waist. The physician then downloads the data and analyzes the images at a workstation.

"As the camera tumbles through the intestine, you don't know exactly where the mass is located. CT, by contrast, provides a very good global view of the body, and specialized parameters can be employed to localize lesions," said lead author Amy K. Hara, M.D., diagnostic radiologist at Mayo Clinic in Scottsdale, Ariz.

Among those who may benefit from CE are people with Crohn's disease, a form of inflammatory bowel disease that occurs most often in the lower portion of the small intestine and is marked by diarrhea, abdominal pain and bleeding. Unlike standard endoscopy, CE—also known as wireless endoscopy—can examine the entire small

intestine. Endoscopy, which uses a fiberoptic scope, reaches only the upper and very lower portion of the small intestine.

CE also demonstrated more tumors, ulcers, vascular malformations and other small bowel abnormalities than ingested barium exams or CT, the current diagnostic standards for small intestine disorders.

The Mayo study reviewed data on the first 52 patients to undergo CE at the clinic following a barium study or CT for unexplained gastrointestinal bleeding, inflammatory bowel disease or chronic abdominal pain. Forty patients received a barium study and CE. Of those, CE helped radiologists detect abnormalities in 22 patients (55 percent), while barium studies yielded abnormal results in only 1 patient (3 percent). Nineteen patients underwent CT examination as well as CE. Of those, CE helped radiologists detect abnormalities in 12 patients (63 percent), while CT yielded abnormal results in 4 patients (21 percent).

"We wanted to see what we were missing or not missing with standard radiology techniques," said Dr. Hara, principal author of the study. "The information we are gaining from CE will allow us to improve our use of CT for better diagnoses and determine when to pair the two technologies."

# # #

"Small Bowel Findings: Comparison of Capsule Endoscopy, Barium Studies, and CT." Collaborating with Dr. Hara on this paper were Jonathan A. Leighton, M.D., Virender K. Sharma, M.D., and David E. Fleischer, M.D.

Radiology is a monthly scientific journal devoted to clinical radiology and allied sciences. The journal is edited by Anthony V. Proto, M.D., School of Medicine, Virginia Commonwealth University, Richmond, Virginia. *Radiology* is owned and published by the Radiological Society of North America, Inc. (http://radiology.rsna.org)

The Radiological Society of North America is an association of more than 35,000 radiologists, radiation oncologists and related scientists committed to promoting excellence in radiology through education and by fostering research, with the ultimate goal of improving patient care. The Society is based in Oak Brook, Ill. (http://www.rsna.org)

Other Highlights from the January issue of *Radiology*:

- Contralateral High-Grade Carotid Artery Stenosis or Occlusion Is Not Associated with an Increased Risk for Poor Neurologic Outcome after Elective Carotid Stent Placement (Sabeti, et al.)

Contralateral high-grade ICA stenosis or occlusion was not associated with an increased risk of neurologic events after elective carotid stent placement; therefore, unprotected carotid stent placement could be performed safely in these patients.

- Multi--Detector Row Spiral CT Angiography of the Thoracic Outlet: Dose Reduction with Anatomically Adapted Online Tube Current Modulation and Preset Dose Savings (Mastora, et al.)

Anatomically adapted online tube current modulation with preset minimum dose savings at spiral CT angiography of the thoracic outlet enabled a reduction in

radiation dose to the patient from a mean of 19.4 mGy for conventional scanning to 8--10 mGy for low-dose scanning, with no loss in image quality.

- Percutaneous Radiofrequency Ablation for Inoperable Non-Small Cell Lung Cancer and Metastases: Preliminary Report (Lee, et al.)

CT-guided lung radiofrequency ablation appears to be a promising technique for the treatment of inoperable non-small cell lung cancer.

- Recurrent Hepatocellular Carcinoma: Percutaneous Radiofrequency Ablation after Hepatectomy (Choi, et al.)

A high rate of successful treatment and good survival rates were achieved with percutaneous radiofrequency ablation of recurrent hepatocellular carcinoma in the liver after hepatectomy.

- Influence of Body Size and Section Level on Calcium Phantom Measurements at Coronary Artery Calcium CT Scanning (Stanford, et al.)

Differences in attenuation related to body mass index and image section level appear to have a significant effect on current calcium scoring methods, and there appears to be a need for use of a phantom for value adjustments in longitudinal and multicenter investigations.

- Cost-Effectiveness of Uterine Artery Embolization and Hysterectomy for Uterine Fibroids (Beinfeld, et al.)

Our results suggest that uterine artery embolization is a cost-effective alternative to hysterectomy for the treatment of women with symptomatic uterine fibroids.