RADIOLOGICAL SOCIETY OF NORTH AMERICA
820 JORIE BLVD, OAK BROOK, IL 60523
TEL 1-630-571-2670 FAX 1-630-571-7837
RSNA.ORG

NEWS

RSNA Press Release

MR Spectroscopy Significantly Reduces Need for Breast Biopsy

Released: May 30, 2006

Media Contacts:

RSNA Media Relations: (630) 590-7762

Maureen Morley
(630) 590-7754
mmorley@rsna.org

Heather Babiar
(630) 590-7738
hbabiar@rsna.org

At A Glance

- With MR spectroscopy, the need for biopsy of suspicious breast lesions is reduced by 58 percent.
- By looking at an MR spectroscopy image, a radiologist can differentiate the chemical make-up of a malignant versus a benign breast tumor.
- Adding MR spectroscopy to an MRI breast exam takes only 10 minutes and may reduce patient anxiety and cost.

OAK BROOK, Ill.—In a study featured in the June issue of *Radiology*, researchers found that imaging suspicious breast lesions with magnetic resonance (MR) spectroscopy reduced the need for biopsy by 58 percent. The investigators, from Memorial Sloan-Kettering Cancer Center in New York, discovered that with the addition of MR spectroscopy to their breast MR imaging (MRI) protocol, 23 of 40 suspicious lesions could have been spared biopsy, and none of the resultant cancers would have been missed.

"All cancers in this study were identified with MR spectroscopy. There were no false-negative results," said Lia Bartella, M.D., lead investigator and assistant professor in the Department of Breast Imaging at Memorial Sloan-Kettering. "With the addition of MR spectroscopy to our breast MRI exam, we found that the number of biopsies recommended on the basis of MRI findings decreased significantly. These results should encourage more women to take this potentially life-saving test."

MRI is playing an increasingly important role in the screening of women at high risk for breast cancer. One drawback of the technology, however, has been a considerable number of breast biopsy procedures recommended on the basis of imaging findings, which turn out to be benign. With MR spectroscopy, the radiologist is able to see the chemical make-up of a tumor, so in most cases, he or she can tell without biopsy whether or not the lesion is cancerous.

"Breast tumors have elevated levels of choline compounds, which are a marker of an active tumor," Dr. Bartella said. "By performing a brief MR spectroscopy procedure after an MRI scan, which takes only 10 additional minutes, we can noninvasively see which tumors show elevated choline levels, and therefore which lesions are likely malignant. This eliminates the need for biopsy to find out what the tumor is made of."

In Dr. Bartella's study, 56 patients with 57 breast lesions underwent MRI first, followed by MR spectroscopy. Biopsy was performed after imaging, and results were compared.

At biopsy, there were 31 malignant lesions (54 percent) and 26 benign lesions (46 percent). All 31 malignant lesions were diagnosed correctly with MR spectroscopy (100 percent sensitivity), and 23 of 26 benign lesions were diagnosed correctly (88 percent specificity). The remaining three benign lesions showed elevated choline levels, even though they turned out to be benign at biopsy. Researchers are still exploring why certain types of benign lesions would have elevated choline levels, despite their non-malignant status.

Overall, in 23 of 40 lesions of unknown histologic type (58 percent), biopsy could have been prevented if patients had undergone MR spectroscopy during their MRI exam, and all cancers would have been detected.

"MR spectroscopy is fast and well tolerated, and could be readily incorporated into a breast MRI examination," said Dr. Bartella. "By reducing the number of benign biopsies recommended at MRI, the use of MR spectroscopy will not only reduce patient morbidity, but will save unnecessary anxiety, cost and time for both the patient and the medical staff."

Dr. Bartella hopes that in the future, MR spectroscopy will be incorporated into routine diagnostic breast MRI exams, which will prevent most patients from having to return to the imaging center for a second examination.

"By working to improve this technology, we hope to improve the acceptability and cost-effectiveness of this imaging technique," Dr. Bartella concluded. "The door to breast MR spectroscopy in the clinical setting is now beginning to open."

# # #

Journal attribution required.

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, Va. *Radiology* is owned and published by the Radiological Society of North America, Inc. (radiology.rsna.org)

The Radiological Society of North America (RSNA) is an association of more than 38,000 radiologists, radiation oncologists, medical

Copyright © 2014 Radiological Society of North America (RSNA)

physicists 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. (RSNA.org)

"Proton MR Spectroscopy with Choline Peak as Malignancy Marker Improves Positive Predictive Value for Breast Cancer Diagnosis: Preliminary Study." Collaborating with Dr. Bartella on this paper were Elizabeth A. Morris, M.D., D. David Dershaw, M.D., Laura Liberman, M.D., Sunitha B. Thakur, Ph.D., Chaya Moskowitz, Ph.D., Jennifer Guido, B.A., and Wei Huang, Ph.D.

Copyright © 2014 Radiological Society of North America (RSNA)