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NEWS

RSNA Press Release

Contrast Mammography Reveals Hard-to-Find Cancers

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At A Glance

- A new mammography technique reveals cancers not visible on conventional mammograms.
- Conventional mammography misses 10 - 20% of breast cancers.
- Dual-energy, contrast-enhanced digital mammography shows the tumor as a bright object while eliminating the surrounding normal tissue from the image.
- The technique is less costly than breast MRI.

OAK BROOK, Ill. - A new technique accurately identifies breast cancers that are difficult to detect with conventional mammography, according to a study appearing in the October issue of the journal *Radiology*.

"The dual-energy contrast-enhanced digital subtraction mammography technique is feasible for hard-to-demonstrate breast cancers and is worthy of further study," said the study's lead author, John M. Lewin, M.D. Dr. Lewin is an associate professor of radiology at the University of Colorado Health Sciences Center in Denver, and director of breast imaging research and co-director of breast imaging at the University of Colorado Hospital Breast Center in Aurora.

Conventional mammography misses 10 percent to 20 percent of breast cancers, including 9 percent of those that can be felt during physical examination.

Dual-energy, contrast-enhanced digital subtraction mammography involves the injection of a contrast agent to highlight new blood vessel development that accompanies malignant growth. Two images are taken at different energy levels and subtracted from one another to disclose the tumor. Similar techniques are being successfully employed in other areas of radiology.

"We expect that dual-energy, contrast-enhanced digital subtraction mammography will become an alternative to breast magnetic resonance imaging (MRI) in evaluating difficult to interpret mammograms or for screening women who have an elevated risk for breast cancer," Dr. Lewin said. "This technique may also be useful for examining breasts of women who have already been diagnosed with one cancer to identify potential undetected malignancies," he added.

For the study, the researchers used dual-energy, contrast-enhanced digital subtraction mammography to evaluate 26 patients whose mammograms or breast exams warranted a biopsy.

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"By using a contrast agent with digital mammography, we were able to see cancers that were invisible on conventional mammography. About half of the women in the study had cancer, and this technique lit up all the malignancies," Dr. Lewin said.

Specifically, the researchers found that 13 of the patients had invasive cancers. Eleven of the invasive cancers were strongly enhanced, one showed moderate enhancement and another was weakly enhanced. In another patient, a case of intraductal carcinoma in situ showed a weakly enhanced duct. The 12 benign cases either showed weak enhancement or none at all.

Dr. Lewin said that the new technique is less costly than MRI, which is being used to screen high-risk women. The procedure is similar to conventional mammography with the addition of an intravenous injection.

"This is still a research technique," Dr. Lewin said. "If the results we achieve in further research are as good as what we have so far reported, then I expect this could be clinically available in two to five years."

The University of Colorado Health Sciences Center, the University of California, San Francisco and Brigham and Women's Hospital in Boston are planning a joint clinical trial to study this technique's appropriateness for screening women at very high risk for breast cancer. The trial would begin in October 2004.

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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)

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"Dual-Energy, Contrast-enhanced Digital Subtraction Mammography: Feasibility." Collaborating with Dr. Lewin on this study were Pamela K. Isaacs, D.O., Virginia Vance, R.N., and Fred J. Larke, M.S.

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