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NEWS

RSNA Press Release

3-D Doppler Ultrasound Helps Identify Breast Cancer

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At A Glance

- Three-dimensional (3-D) power Doppler ultrasound helps identify malignant breast masses.
- Doppler ultrasound measures tumor vascularity, or blood flow.
- Cancerous tissue exhibits a higher rate of blood flow than noncancerous tissue.

OAK BROOK, Ill. — Three-dimensional (3-D) power Doppler ultrasound helps radiologists distinguish between malignant and benign breast masses, according to a new study being published in the November issue of *Radiology*.

"Using 3-D scans promises greater accuracy due to more consistent sampling over the entire tumor," said lead author, Gerald L. LeCarpentier, Ph.D., assistant professor in the Department of Radiology at University of Michigan in Ann Arbor. "Our study shows that 3-D power Doppler ultrasound may be useful in the evaluation of some breast masses."

Malignant breast masses often exhibit increased blood flow compared to normal tissue or benign masses. Using 3-D power Doppler ultrasound, radiologists are able to detect vessels with higher flow speeds, which likely indicate cancer.

For the study, Dr. LeCarpentier and colleagues studied 78 women between the ages of 26 and 70 who where scheduled for biopsy of a suspicious breast mass. Each of the women underwent a 3-D Doppler ultrasound exam followed by core or excisional biopsy of the breast.

The results showed that 3-D power Doppler ultrasound was highly accurate in identifying malignant breast tumors. When combined with age-based assessment and gray scale visual analysis, 3-D Doppler showed a sensitivity of 100 percent in identifying cancerous tumors and a specificity of 86 percent in excluding benign tumors.

"Using speed-weighted 3-D power Doppler ultrasound, higher flow velocities in the malignant tumor-feeding vessels may be detected, whereas vessels with slower flow velocities in surrounding benign masses may be excluded," Dr. LeCarpentier said.

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"Suspicious Breast Lesions: Assessment of 3D Doppler US Indexes for Classification in a Test Population and Fourfold Cross-Validation Scheme." Collaborating with Dr. LeCarpentier were Marilyn A. Roubidoux, M.D., J. Brian Fowlkes, Ph.D., Jochen F. Krücker, Ph.D., Karen A. Hunt, M.D., Chintana Paramagul, M.D., Timothy D. Johnson, Ph.D., Nancy J. Thorson, R.T., R.D.M.S., C.C.R.P., M.F.A., Karen D. Engle, M.L.S., and Paul L. Carson, Ph.D. Journal attribution requested.

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