

Iodine-Contrast Screen Snags Missed Breast Lesions

BY PATRICE WENDLING
Chicago Bureau

CHICAGO — Iodine contrast-enhanced digital mammography may be a useful and inexpensive alternative to follow-up magnetic resonance imaging in women with suspicious lesions on mammography, according to data presented at the annual meeting of the Radiological Society of North America.

The use of iodine-based contrast medium as an adjunct to mammography significantly reduced the average number of overlooked malignant lesions from 17 to 11, compared with digital mammography alone in a study of 70 women with 80 suspicious findings. Overlooked lesions were defined as malignant lesions with a Breast Imaging Reporting and Data System score of 3 or lower.

The biggest benefit of contrast-enhanced digital mammography (CEDM) was observed in women with dense breasts, said Dr. Ulrick Bick, department of radiology, Charité School of Medicine–Berlin. In all of the women, sensitivity improved from 43% with standard digital mammography to 62% with CEDM, and from 57% to 64% for women with American College of Radiology (ACR) density I-II breasts, and from 35% to 59% for women with ACR density III-IV breasts. Specificity decreased from 70% to 65%; 72% to 71%; and 69% to 62%, respectively.

“You are [not] going to see additional lesions compared with MRI, but you may have less trouble with false positives,” Dr. Bick said in an interview. “On MRI, you see a lot of small enhancing foci that may not be significant, and that may be different with iodine contrast. [There’ll be fewer] false positives.”

In addition, iodine contrast is more widely available and less expensive than MRI. The main application for an iodine contrast-enhanced mammogram would be as an adjunct in cases in which a lesion is difficult to visualize on mammogram, typically because of dense breasts or lesions embedded in dense parenchyma, he said.

A receiver-operator analysis showed that all three independent readers saw an improvement with the addition of CEDM. The increase was significant for two of the three readers.

Of note was that two of the three read-

ers used CEDM only to upgrade lesions to a higher probability of malignancy, whereas the third reader, who saw less benefit from CEDM, used it to downgrade lesions.

“This is something we also learned in a separate-reader study—if you don’t see enhancement on CEDM, then you cannot use that to exclude malignancy,” Dr. Bick said. “This is a very important finding.”

Among the 80 suspicious findings at baseline, 50 were benign and 30 were malignant, including 25 invasive cancers and 5 ductal

carcinoma in situ cancers. The lesions were fairly large, with an average size of 3.2 cm.

The images were acquired on modified Senographe 2000D (GE Healthcare) full-field digital mammography machine, and obtained before and 60, 120, and 180 seconds after injection of 1 mg/kg of iodine-based contrast medium (Ultravist 370, Schering, Germany). The machine was modified with a copper filter for iodine imaging, and a subtraction imaging technique was used to visualize the contrast

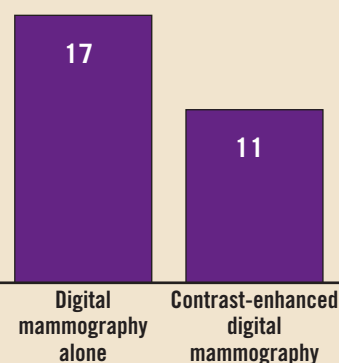
enhancement, Dr. Bick said. Interpretation of the images was done first without the CEDM images, then with them. The mean age of the women was 55 years.

Although severe adverse reactions to intravenous iodine contrast are rare, at about 1 in 10,000 patients, one woman had a moderate, but not life-threatening reaction to the contrast medium, said Dr. Bick, who disclosed no relevant conflicts of interest. Dr. Felix Diekmann, also of Charité School of Medicine–Berlin, led the study. ■

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Average Number of Overlooked Malignant Lesions



Note: Based on a study of 70 women with 80 suspicious findings.
Source: Dr. Bick